

NORTH BAY VILLAGE, FLORIDA



INVITATION TO BID FOR WATER METER REPLACEMENT PROGRAM

BID NO. NBV 2017-001



SEALED PROPOSALS WILL BE RECEIVED BY THE VILLAGE CLERK,
1666 KENNEDY CAUSEWAY, SUITE 300, NORTH BAY VILLAGE, FL 33141
ON OR BEFORE MARCH 10, 2017 4:00 P.M.
NORTH BAY VILLAGE, FLORIDA

**WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE**

CONTRACT DOCUMENTS

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**WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE**

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**NORTH BAY VILLAGE
INVITATION TO BID**

**WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE**

BID NO. NBV 2017-001

Public Notice is hereby given that North Bay Village, Florida is soliciting bids from experienced and qualified vendors for the furnishing of all materials, labor, equipment and supplies necessary for North Bay Village Water Meter Replacement Program, including necessary appurtenances and all in accordance with the project specifications.

The nature and scope of this project is:

Furnish all labor and materials to manage the design, equipment supply, replacement of existing water meters, field installation, system implementation, and optimization of a Mobile Based Advanced Metering Infrastructure and Water Loss Management system to read meters in an automated and cost effective manner as well as reduce the Village's unaccounted for and non-revenue water. The scope of work involves, but is not limited to, providing and installing software, hardware, as well as providing all necessary training and installation support. The project also includes repairing or replacing associated water service piping as needed from the new water meters to the water main, water meter box replacement, water system testing, removal of existing water meters and boxes, maintenance of traffic, trench/roadway restoration, site restoration, and all other appurtenances necessary for a complete project. Construction of this project will require close coordination with the Owner and Engineer. Maximum project duration for project completion is ten (10) months.

Sealed Responses clearly labeled with the BID title and number must be received by mail or hand delivered on or before March 10, 2017, no later than 4:00 p.m. local time, at which time they will be publicly opened. Late submittals and facsimile submissions will not be considered. The respondent shall bear all costs associated with the preparation and submission of the submittal documents.

All bids must be submitted as a Total Bid Amount with associated Contract Unit Pricing per the Proposal Form. Bid Security in the amount of five percent (5%) of the Bid must accompany each bid in accordance with the Instructions to Bidders.

Respondents must submit an original bound package, one unbound copy, five (5) bound additional copies, and one (1) CD ROM to the Office of the Village Clerk, North Bay Village, 1666 Kennedy Causeway, Suite 300, North Bay Village, Florida 33141.

Copies of this Proposals Document may be obtained at DemandStar by Onvia at www.demandstar.com, at the www.nbvillage.com; at the Village Administrative Offices, 1666 Kennedy Causeway, Suite 300, North Bay Village, Florida 33141 from 9:00 A.M. to 4:00 P.M., Monday through Friday, or by emailing yvonne.hamilton@nbvillage.com.

The Village reserves the right at any time to modify, waive or otherwise vary the terms and conditions of this BID including but not limited to deadlines for submission, submission requirements, informalities or irregularities in any submittal, and the Scope of Work. The Village further reserves the right to reject any or all submittals, to cancel or withdraw this BID at any time or take any other such actions that may be deemed in the best interest of the Village, to award in whole or in part to one or more respondents, or take any other such actions that may be deemed in the best interest of the Village.

Pursuant to Section 38.18 of the Village Code, "Ethics Ordinance", a Cone of Silence is hereby imposed whereby any communications between any potential bidder, service provider, lobbyist or consultant and the Village's staff and elected officials pertaining to this BID are prohibited.

Yvonne P. Hamilton, CMC
Village Clerk

SCHEDULE OF EVENTS

Below is the current schedule of the events that will take place in the procurement process. The Village reserves the right to make changes or alterations to the schedule as the Village determines is in the best interests of the public. Proposers will be notified sufficiently in advance of any changes or alterations in the schedule. Unless otherwise notified in writing by the Village, the dates indicated below for submission of items or for other actions on the part of a Proposer shall constitute absolute deadlines for those activities and failure to fully comply by the time stated shall cause a Proposer to be disqualified.

Date	Event
February 16, 2017	Advertisement
February 17, 2017	Documents Available for Public Inspection and digital copies
February 28, 2017	10:00 AM, Non-Mandatory Pre-bid meeting at: 1666 Kennedy Causeway, Commission Chambers 1st Floor, North Bay Village, Florida 33141.
March 3, 2017	Last day opportunity for questions by emailing yvonne.hamilton@nbvillage.com , no later than 3:00 PM local time.
March 10, 2017	Bid Documents Submittal due in to Village Clerk Office, no later than 3:00 PM local time.
March 17, 2017	Technical Review Committee Meeting
March 21, 2017	Award Recommendation to Village Clerk and Village Manager
April 11, 2017	Commission Public Meeting to review and confirm Award Recommendation 7:30 pm local time

INSTRUCTIONS TO BIDDERS

WATER METER REPLACEMENT PROGRAM NORTH BAY VILLAGE

Each bidder is encouraged to familiarize themselves with the North Bay Village – Code of Ordinances and Consolidated Land Development Regulations. Below is an excerpt of the procurement requirements and general industry practices as they pertain to the Bond and Insurance requirements for North Bay Village. This is **not a full list** of the North Bay Village requirements.

North Bay Village Municode

Article 36.25 - Procurement requirements.

(B) *Responsibilities of the Village Manager.*

... The Village Manager may delegate responsibility for the administration of this Code as he or she deems necessary.

(D) (7) - *Bonds.*

a) *Construction contracts greater than \$50,000.00.* For construction contracts exceeding \$50,000.00, contractors shall submit the following with the bid documents:

- 1) A bid guarantee equal to five percent of the bid price;
- 2) A performance bond for 100 percent of the contract price; and
- 3) A payment bond for 100 percent of the contract price.

b) *All other contracts.* The Village Manager may require any or all of the three bonds or guarantees listed above. The bid specification shall include the amount and type of bond(s) or guarantees that are required.

Chapter 151 - Buildings

Article 151.12 – Bond

The Village will require a 5% bond of the bid price, to meet requirements of Article 151.12.

Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition)

1. DEFINED TERMS

Terms used in these Instructions to Bidders which are defined in the NSPE-ACEC Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition) have the meanings assigned to them in the General 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 non-refundable sum, if any, stated in the Advertisement or Invitation to Bid may be obtained from Engineer (unless another issuing office is designated in the Advertisement or 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 five days of Owner's request written evidence of the types set forth in the Supplementary Conditions, 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.

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 Supplementary Conditions for the identification of those reports of investigations and tests 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 Bidder may deem necessary to determine his Bid for 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 Supplementary Conditions, 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.
- 4.6 **Bidder to document as part of their bid any areas of non-compliance with the system specifications. Areas of non-compliance may result in rejection of a bid.**

5. INTERPRETATIONS

All questions about the meaning or intent of the Contract Documents shall be submitted to Owner in writing. Replies will be issued by Addenda mailed or delivered to all parties recorded by Owner as having received the Bidding Documents. Questions received less than ten 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 an amount of five percent (5%) of the Bidder's maximum Bid price and in the form of a certified or bank check or a Bid Bond (on form attached, if a form is prescribed) issued by a Surety as specified in the General Conditions.
- 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 10 days of the Notice of Award, Owner may annul the Notice of Award and the Bid Security of that 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 in the General Conditions) by Owner to Contractor 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 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, application for such acceptance will not be considered by 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 the General Conditions which may be supplemented in the General Requirements.

10. SUBCONTRACTORS, ETC.

- 10.1 If the Supplementary Conditions require the identity of certain Subcontractors and other persons 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, may before giving the Notice of Award request the apparent Successful Bidder to submit an acceptable substitute without an increase in the Bid price. If the apparent Successful Bidder declines to make any such substitution, the contract shall not be awarded to such Bidder, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any Subcontractor, other person or organization so 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 In contracts or portions thereof, where the Contract Price is on the basis of Cost-of-the-Work Plus a Fee, the apparent Successful Bidder, prior to the Notice of Award, shall identify in writing to Owner those portions of the Work that such Bidder proposes to subcontract and after the Notice of Award may only subcontract other portions of the Work with Owner's written consent.

- 10.3 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 typed. The Bid price of each item on the form must be stated in numerals. Contractor must bid on all alternates in the bid form.
- 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 or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 11.4 Bids by partnerships or joint venture, 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. Documentation supporting the partnership or joint venture may be requested at the discretion of the Village.
- 11.5 All names must be typed or printed below the signature.
- 11.6 The Bid shall contain an acknowledgement 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.

12. SUBMISSION OF BIDS

Bids shall be submitted at the time and place indicated in the Invitation to Bid.

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.

- 14.1 Bids are opened publicly, 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 ninety days after the day of the Bid opening, but Owner may, in his sole discretion, release any Bid and return the Bid Security prior to that date.

16. AWARD OF CONTRACT

- 16.1 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 value and the correct value as calculated by the product of the unit price and the estimated quantity will be resolved by using the stated unit price.
- 16.2 In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, alternates, additive/deductive amounts, and unit prices, if requested in the Bid forms. **THE VILLAGE AT ITS SOLE DISCRETION SHALL AWARD THIS CONTRACT BASED ON THE TOTAL BID AMOUNT.** 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 award will not be based on alternates and the Owner may accept them in any order or combination.

- 16.3 Owner will consider the qualifications and experience of the Contractor, Subcontractors, and other persons or organizations (including those who are to furnish the principal items of material or equipment) proposed for all portions of the Work. 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 will also be considered by Owner.
- 16.4 Owner will conduct such investigations as Owner 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. Issues such as past performance, adherence to schedule, and change order requests will be included in this evaluation. The weighing of these factors is at the discretion of the Village.
- 16.5 At the sole discretion of the Owner, the Owner reserves the right to reject the Bid of any Bidder based upon the evaluation noted in Section 16.4 above. References will NOT be limited to those submitted by the Contractor.
- 16.6 If the contract is to be awarded, it will be awarded to the lowest responsible Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.
- 16.7 If the contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within 10 days after the day of the Bid opening.

17. PERFORMANCE AND OTHER BONDS

Paragraph 5.01 of the General Conditions and the Supplementary Conditions set forth Owner's requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by the required Contract Security.

18. SIGNING OF AGREEMENT

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least six (6) unsigned counterparts of the Agreement and all other Contract Documents. Within ten days thereafter, Contractor shall sign and deliver at least six (6) counter-parts 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.

19. CONE OF SILENCE

You are hereby advised that this Invitation to Bid is subject to the “Cone of Silence” in accordance with Section 38.18 of North Bay Village Code of Ordinances. From the time of advertising until the Village Manager issues his recommendation, there is a prohibition on communication with the Village’s professional staff. This ordinance does not apply to oral communications at pre-submittal conferences, oral presentations before evaluation committees contract discussions made to Village Commission during any duly noticed public meeting, contract negotiations with the staff following the award of a bid by any Village Commission, or communication in writing at any time with any Village employee, official, or member of the Village Commission unless specifically prohibited. A copy of all written communications must be filed with the Village Clerk. A proposer who violates these provisions shall not be considered for this Invitation to Bid.

20. STATE REVOLVING FUND PROGRAM

This project is funded through the Florida Department of Environmental Protection State Revolving Fund Program and subject to the Supplementary Conditions included as Appendix C.

PROPOSAL
WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE

North Bay Village
1666 Kennedy Causeway, Suite 300
North Bay Village, FL 33141

Gentlemen:

The undersigned, as Bidder, hereby declares that the only persons, company, or parties interested in the Proposal or the Contract to be entered into, as principals, are named herein; and that this Proposal is made without connection with any other person, company, or parties making a Bid or Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

That the Bidder has carefully and to his full satisfaction examined the attached Instructions to Bidders, General Conditions, Special Conditions, Detailed Specifications, and Form of Contract and Bond, together with the accompanying Plans, and that he has read all addenda issued prior to the opening of Bids; and that he has made a full examination of the location of the propose work and hereby agrees to furnish, unless otherwise provided, all implements, machinery, equipment, transportation, tools, materials, supplies, labor, and other things necessary to the prosecution and completion of the work generally described as follows:

Water Meter Replacement Program BID NO. NBV 2017-001

Furnish all labor and materials to manage the design, equipment supply, replacement of existing water meters, field installation, system implementation, and optimization of a Mobile Based Advanced Metering Infrastructure and Water Loss Management system to read meters in an automated and cost effective manner as well as reduce the Village's unaccounted for and non-revenue water. The scope of work involves, but is not limited to, providing and installing software, hardware, as well as providing all necessary training and installation support. The project also includes repairing or replacing associated water service piping as needed from the new water meters to the water main, water meter box replacement, water system testing, removal of existing water meters and boxes, maintenance of traffic, trench/roadway restoration, site restoration, and all other appurtenances necessary for a complete project. Construction of this project will require close coordination with the Owner and Engineer. Maximum project duration for project completion is ten (10) months.

It is proposed that the project herein described shall be constructed for the Total Bid Amount based on the Contract Unit Prices in this Proposal, all in accordance with the requirements and provisions of the Contract Documents. The Village at its sole discretion shall award this contract based on the Total Bid Amount and in accordance with Section 16 (Award of Contract) in the Instructions to Bidders.

TOTAL BID AMOUNT \$ _____

TOTAL BID AMOUNT (IN WORDS) _____

BID FORM

The following Bid Form is presented to assist the Village in evaluating the Bid. After award, the Village reserves the right to modify estimated quantities subject to the unit price, and eliminate line items if necessary. In the event of discrepancy or approved quantity change, the Unit Price for each item will govern. Payment shall be made for the items listed on the Bid Form on the basis of the Work actually performed and completed.

<u>Item</u>	<u>Description</u>	<u>Estimated Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Value</u>
1.	Mobilization, Bonds & Insurance	1	LS	_____	_____
2.	Maintenance of Traffic	1	LS	_____	_____
3.	Mobile Based AMI System Implementation and Support	1	LS	_____	_____
4.	Mobile AMI Analytics Software Implementation and Support	1	LS	_____	_____
5.	Water Loss Management System Implementation and Support	1	LS	_____	_____
6.	Customer Engagement Program Implementation and Support	1	LS	_____	_____
7.	Furnish and Install (F & I) 5/8" Solid State meters	265	EA	_____	_____

8.	F & I, 3/4" Solid State meters	65	EA	_____	_____
9.	F & I, 1" Solid State meters	200	EA	_____	_____
10.	F & I, 1 1/2" Solid State meters	75	EA	_____	_____
11.	F & I, 2" Solid State meters	70	EA	_____	_____
12.	F & I, 3" Solid State meters	30	EA	_____	_____
13.	F & I, 4" Solid State meters	15	EA	_____	_____
14.	F & I, 5/8" Standard meters	10	EA	_____	_____
15.	F & I, 3/4" Standard meters	10	EA	_____	_____
16.	F & I, 1" Standard meters	10	EA	_____	_____
17.	F & I, 1 1/2" Standard meters	10	EA	_____	_____
18.	F & I, 2" Standard meters	10	EA	_____	_____
19.	F & I, 3" Standard meters	10	EA	_____	_____
20.	F & I, 4" Standard meters	10	EA	_____	_____
21.	1" Service Connections, HDPE	320	EA	_____	_____
22.	2" Service Connections, HDPE	80	EA	_____	_____
23.	4" Service Connections	20	EA	_____	_____
24.	Meter Box and Lid Replacement	420	EA	_____	_____
25.	Site Restoration	1	LS	_____	_____
26.	Allowance	1	LS	<u>\$340,000.00</u>	<u>\$340,000.00</u>

TOTAL BID AMOUNT \$ _____

TOTAL BID AMOUNT (IN WORDS) _____

As part of this Proposal, the Bidder is to provide the following information:

The Bidder shall provide a narrative description of their company, relevant experience, qualifications, past performance, and the project. The narrative should include a system overview of the proposed Mobile Based Advanced Metering Infrastructure and Water Loss Management system as well as the Bidders methodology, project approach, and description of the proposed metering equipment, endpoints, system software, etc.

This narrative description should be included as a separate document generated by the Bidder, but included in the sealed bid response with the Proposal.

TRENCH SAFETY

Bidder acknowledges that included in the various items of the proposal and in the Total Bid Price are costs for complying with the Florida Trench Safety Act (90-96, Laws of Fla.) effective October 1, 1990. The bidder further identifies the costs to be summarized below.

TRENCH SAFETY MEASURE (DESCRIPTION)	UNITS OF MEASURE (LF, SY)	UNIT (QUANTITY)	UNIT COST	EXTENDED COST
A. _____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____

Failure to complete the above may result in the bid being declared non-responsive.

QUALIFICATION REQUIREMENTS

Only those Bidders and Subcontractor(s) who are qualified will be considered as bona fide bidders. As Bidder, we certify to have constructed at least three (3) similar projects in the last five (5) year period as indicated by the following:

- | | | |
|----|---------------------|----------|
| 1) | NAME OF PROJECT | _____ |
| | YEAR OF PROJECT | _____ |
| | OWNER OF PROJECT | _____ |
| | OWNER TELEPHONE NO. | _____ |
| | LOCATION OF PROJECT | _____ |
| | DESIGNING ENGINEER | _____ |
| | ADDRESS | _____ |
| | SCOPE OF WORK | _____ |
| | APPROXIMATE VALUE | \$ _____ |
| 2) | NAME OF PROJECT | _____ |
| | YEAR OF PROJECT | _____ |
| | OWNER OF PROJECT | _____ |
| | OWNER TELEPHONE NO. | _____ |
| | LOCATION OF PROJECT | _____ |
| | DESIGNING ENGINEER | _____ |
| | ADDRESS | _____ |
| | SCOPE OF WORK | _____ |
| | APPROXIMATE VALUE | \$ _____ |
| 3) | NAME OF PROJECT | _____ |
| | YEAR OF PROJECT | _____ |
| | OWNER OF PROJECT | _____ |
| | OWNER TELEPHONE NO. | _____ |

LOCATION OF PROJECT _____
DESIGNING ENGINEER _____
ADDRESS _____
SCOPE OF WORK _____
APPROXIMATE VALUE \$ _____

List Subcontractors and other persons and organizations proposed by the Bidder to perform portions of the work:

- 1) NAME OF SUBCONTRACTOR _____
- 2) NAME OF SUBCONTRACTOR _____
- 3) NAME OF SUBCONTRACTOR _____

NOTE: For additional Subcontractors: Copy this form and attach additional pages as needed.

If awarded the Contract, the undersigned agrees to execute the attached Contract within ten (10) calendar days after the date on which Notice of Award is received and to be substantially complete within 270 calendar days and all work within not more than 300 calendar days after date of receipt of written Notice to Proceed with such extensions of time as are provided for in the General Conditions.

The undersigned understands the contract time starts on date of Notice to Proceed.

There is enclosed a Bid Guarantee consisting of five percent (5%) of Total Bid Amount.

The undersigned furthermore agrees that, in case of failure on his part to execute said contract and bond within ten (10) days after being awarded the contract, the check, bond or other security accompanying his bid and the money payable thereon, shall become the property of the Village, by forfeit as agreed and liquidated damages; otherwise the check or bond accompanying his proposal shall be returned to the undersigned.

The undersigned, if awarded the contract, agrees to furnish at time of signing of contract, Performance and Payment Bonds each in the amount of 100% of the contract as set forth in "Instructions to Bidders".

The undersigned states that this proposal is the only proposal for this project in which he is interested.

The undersigned further agrees to bear the full cost of maintaining all work until final acceptance.

SUBMITTED

FIRM NAME

BUSINESS ADDRESS

BUSINESS TELEPHONE

SIGNATURE OF RESPONSIBLE OFFICIAL

TITLE

STATE OF INCORPORATION

FULL NAMES & ADDRESSES OF
PERSONS OR PARTIES INTERESTED
IN THE FOREGOING BID, AS PRINCIPALS:

Addenda No(s) _____ received and attached hereto.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, (hereinafter called the Principal), and _____ (hereinafter called the Surety), a Corporation chartered and existing under the laws of the State of _____ with its principal offices in the City of _____ and authorized to do business in the State of Florida, and North Bay Village, and having an Agent resident therein, such Agent and Company acceptable to North Bay Village, are held and firmly bound unto North Bay Village (hereinafter called Owner), in the sum of _____ Dollars (\$ _____), good and lawful money of the United States of America, to be paid upon demand of the said Owner, to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally and firmly by these presents.

WHEREAS; the above bounded Principal contemplates submitting or has submitted a proposal to the said Owner for furnishing all necessary labor, materials, equipment, machinery, tools, apparatus, services, all State Workmen's Compensation and Unemployment Compensation Taxes incurred in the performance of the contract, and means of transportation for construction of:

**NORTH BAY VILLAGE
WATER METER REPLACEMENT PROGRAM
BID NO. NBV 2017-001**

for said Owner, and;

WHEREAS; the Principal desires to file this Bond in accordance with law, in lieu of a certified Bidder's check otherwise required to accompany this Proposal in the amount of five percent (5%) of the base bid.

NOW THEREFORE, the conditions of this obligation are such that, if the Proposal be accepted, the Principal shall within ten (10) days after receipt of notification of the acceptance thereof, execute a contract in accordance with the Proposal and upon the terms, conditions and price set forth therein, in the form and manner required by the Owner and execute sufficient and satisfactory Performance and Payment Bonds payable to North Bay Village, Florida, each in an amount of one hundred percent (100%) of the total contract price, as indicated in the Proposal, in form and with security satisfactory to the said Owner, then this obligation to be void, otherwise to be and remain in full force and virtue in law; and the Surety shall upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above immediately pay to the aforesaid Owner upon demand the amount hereof in good and lawful money of the United States of America, not as a penalty but as liquidated damages.

IN WITNESS WHEREOF, THE said _____, as "Principal" herein has caused these presents to be signed in its name, by its _____ under its corporation seal, and the said _____ as "Surety" herein, has caused these presents to be signed in its name by its _____, and attested by its _____, under its corporate seal, this ____ day of _____, A.D., 2017.

ATTEST:

BY: _____(Title)
(Principal)

ATTEST:

BY:
(Surety) Attorney-in-Fact

(Attorneys-in-Fact who sign this bond must file with it a certified copy of their power-of-attorney to sign said Bond).

NOTICE OF INTENT TO AWARD

TO: _____
Contractor

Address

ATT: _____
Name and Title

PROJECT: NORTH BAY VILLAGE
WATER METER REPLACEMENT PROGRAM
BID NO. NBV 2017-001

Gentlemen:

This is to advise that you have been awarded the contract for the above referenced project as a

result of your bid of: _____

_____(\$_____) submitted to North Bay Village (Owner) on _____

_____ (Date).

Six (6) sets of the Project Manual for this project are attached. Each set contains an unexecuted Agreement and the requirement for attaching the Performance and Payment Bonds. Please execute all copies of the Agreement and attach a copy of the Performance and Payment Bonds to each Agreement and return the Project Manuals to our office for final execution by the Owner.

Your attention is invited to the provision whereby your proposal guarantee may be forfeited in the event the Agreement with satisfactory Performance and Payment Bonds attached is not executed and delivered to the Owner within ten (10) consecutive calendar days from _____
_____ (Date).

Sincerely yours,

By: _____
Gary R. Ratay, P.E.

AGREEMENT (CONTRACT)
BETWEEN OWNER AND CONTRACTOR

THIS AGREEMENT is dated as of the _____ day of _____ in the year 2017 by and between North Bay Village (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

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

Article 1. WORK. CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Furnish all labor and materials to manage the design, equipment supply, replacement of existing water meters, field installation, system implementation, and optimization of a Mobile Based Advanced Metering Infrastructure and Water Loss Management system to read meters in an automated and cost effective manner as well as reduce the Village's unaccounted for and non-revenue water. The scope of work involves, but is not limited to, providing and installing software, hardware, as well as providing all necessary training and installation support. The project also includes repairing or replacing associated water service piping as needed from the new water meters to the water main, water meter box replacement, water system testing, removal of existing water meters and boxes, maintenance of traffic, trench/roadway restoration, site restoration, and all other appurtenances necessary for a complete project. Construction of this project will require close coordination with the Owner and Engineer. Maximum project duration for project completion is ten (10) months.

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

NORTH BAY VILLAGE
WATER METER REPLACEMENT PROGRAM
BID NO. NBV 2017-001

Article 2. ENGINEER. The Project has been designed by the following:

ENGINEER

Kimley-Horn and Associates, Inc.
600 N Pine Island Road, Suite 450
Fort Lauderdale, FL 33324

who is hereinafter called ENGINEER and who will assume all duties and responsibilities and will have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME.

- 3.1 The Work will be substantially completed within 270 calendar days after the date when the Contract Time commences to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within 300 calendar days after the date when the Contract Time commences to run.
- 3.2 Project Milestones. In accordance with paragraph 2.05 of the General Conditions, the CONTRACTOR is required to provide as part of the Preliminary Schedule the number of days or dates for starting and completing the various stages of work including the following project milestones:
- Mobile based AMI system design for review by the OWNER (not to exceed 1 month from Notice to Proceed)
 - Mobile based AMI system configuration and Set Up (not to exceed 4 month from Notice to Proceed)
 - Installation of the approved mobile based AMI system (not to exceed 8 months from Notice to Proceed)
 - Substantial and Final completion within the time specified in paragraph 3.1 above.
- 3.3 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not substantially complete within the time specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not substantially complete on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree, that as liquidated damages for delay (but not as a penalty), CONTRACTOR shall pay OWNER Five Hundred and 00/100 dollars (\$500) for each day that expires after the time specified in Paragraph 3.1 for substantial completion until the Work is substantially complete. Liquidated damages shall be deducted from the final CONTRACTOR pay request.

Article 4. CONTRACT TIME.

- 4.1 OWNER shall pay CONTRACTOR for performance of the Work in accordance with the Contract Document in current funds as follows:

According to the TOTAL BID AMOUNT contained in the proposal and the Schedule of Values provided for payment request purposes.

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for payment will be processed by ENGINEER as provided in the General Conditions.

5.1. Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, on or before the 28th day of each month during construction as provided below. The Applications for Payment shall be in AIA format. All progress payments will be on the basis of the progress of the Work measured by the schedule of values provided for in paragraph 14.01 of the General Conditions.

5.1.1 Prior to Substantial Completion, progress payments will be in an amount equal to: 90% of the Work completed and 90% of materials and equipment not incorporated in the Work but delivered and suitably stored, less in each case the aggregate of payments previously made.

5.1.2 Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 95% of the Contract Price, less such amounts as ENGINEER shall determine in accordance with paragraph 14.02.B.5 of the General Conditions.

5.2. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.07.B.1 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.B.1.

Article 6. INTEREST. Not Applicable

Article 7. CONTRACTOR'S REPRESENTATIONS.

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

- 7.1. CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and federal, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.
- 7.2. CONTRACTOR has studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which were relied upon by ENGINEER in the preparation of the Drawings and Specifications and which have been identified in the Supplementary Conditions.
- 7.3. CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in paragraph 7.2 as he deems necessary for the performance of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required by CONTRACTOR for such purposes.
- 7.4. CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.
- 7.5. CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR are attached to this Agreement, made a part hereof and consists of the following:

- 8.1. This Agreement (all pages)
- 8.2. Exhibits and Appendices to this Contract Document/Agreement
- 8.3. Performance and Payment Bonds
- 8.4. Notice of Award
- 8.5. General Conditions (pages 1 to 62, inclusive)
- 8.6. Supplementary Conditions

- 8.7. Specifications bearing the following general title:
North Bay Village
Water Meter Replacement Program
BID NO. NBV 2017-001
- 8.8. Drawings bearing the following general title:
North Bay Village
Water Meter Replacement Program
BID NO. NBV 2017-001
- 8.9 Addenda
- 8.10. CONTRACTOR'S BID
- 8.11 Documentation submitted by CONTRACTOR prior to Notice of Award
- 8.12 Any Modifications, including Change Orders, duly delivered after execution of Agreement.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be altered, amended or repealed by a Modification (as defined in Section 1 of the General Conditions).

Article 9. MISCELLANEOUS

- 9.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions shall have the meanings indicated in the General Conditions.
- 9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 9.3. OWNER and CONTRACTOR each binds himself, his partners, successors, assigns and legal representatives to the other party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, the parties hereto have signed six (6) sets of this Agreement. At least one counterpart each has been delivered to OWNER, CONTRACTOR, and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

OWNER

North Bay Village

ADDRESS

1666 Kennedy Causeway, Suite 300

North Bay Village, FL 33141

BY _____
(CORPORATE SEAL)

ATTEST _____

CONTRACTOR

ADDRESS

BY _____
(CORPORATE SEAL)

ATTEST _____

PERFORMANCE BOND

CONTRACT DATED:

34

(2) Obtain a Bid or Bids for completion of the Contract in accordance with its terms and conditions and upon determination by Surety of the lowest responsive, responsible Bidder, or, if Oblige elects, upon determination by Oblige and the Surety jointly of the lowest responsive, responsible Bidder, arrange for a Contract between such Bidder and Surety for completion of the Contract in accordance with its terms and conditions, and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding the amounts set forth in the first paragraph hereof.

The term "balance of the Contract price" as used in this Bond, shall mean the total amount payable by Oblige to Principal under the Contract and amendments thereto, less the amount paid by Oblige to Principal and less amounts withheld by Oblige pursuant to its rights under the Contract.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same, shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the work to be performed thereunder and further agrees to all of the terms contained in the Contract.

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

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this ____ day of _____, 20____.

Witness: _____

Witness: _____

Principal

Surety

By: _____

By: _____

Name: _____
(Print)

Name: _____
(Print)

Title: _____

Title: _____

Address: _____

Address: _____

The name and address of the Resident Agent for service of process on Surety is:

Name: _____

Address: _____

Phone: _____

PROJECT TITLE: WATER METER REPLACEMENT PROGRAM
BID NO. NBV 2017-001

CONTRACTOR:
CONTRACT NO: **CONTRACT DATED:**

KNOW ALL MEN BY THESE PRESENTS: That, by this Bond, we _____, of the City of _____, County of _____, State of _____, as Principal, and _____, a corporation, authorized, licensed and admitted to do business under the laws of the State of Florida, as Surety, are held and firmly bound to North Bay Village, as Oblige, in the sum of \$_____ for the payment of which Principal and Surety bind ourselves our heirs, personal representatives, successors, and assigns, jointly and severally.

1. Promptly makes payments to all lienors or other claimants supplying labor, material, or supplies used directly or indirectly by Principal in the prosecution of the work provided in Contract No. () between Principal and Oblige (the "Contract") for construction of the WATER METER REPLACEMENT PROGRAM, the Contract being made a part of this Bond by reference; and
2. Pays Oblige all loss, damage, expenses, costs, and attorneys' fees, including appellate proceedings that Oblige sustains because of default by Principal under this Bond; then this Bond is void; otherwise, it remains in full force.

Any changes, extensions of time, alterations or additions in or under the Contract, Contract Documents, plans, specifications and/or drawings, or the work to be performed thereunder, and compliance or noncompliance with formalities connected with the Contract or with the changes do not affect Surety's obligations under this Bond, and Surety does hereby waive notice of any such changes, extensions of time, alterations or additions in or under the Contract, Contract Documents, plans, specifications and/or drawings, or the work to be performed thereunder.

This Bond is filed in accordance with Section 713.23, Florida Statutes, and/or Section 255.05, Florida Statutes, whichever or both as may be applicable.

DATED on _____, 20_____.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this ____ day of _____, 20____.

Witness: _____

Witness: _____

Principal

Surety

By: _____

By: _____

Name: _____
(Print)

Name: _____
(Print)

Title: _____

Title: _____

Date: _____

Date: _____

Address: _____

Address: _____

The name and address of the Resident Agent for service of process Surety is:

Name: _____

Address: _____

Phone: _____

NOTICE TO PROCEED

TO: _____
Contractor

Street Address

City

ATTN: _____
Name and Title

PROJECT: NORTH BAY VILLAGE
WATER METER REPLACEMENT PROGRAM
BID NO. NBV 2017-001

Gentlemen:

One executed copy of your contract for the above project has been forwarded to you through the Engineer. The Commencement date is _____, 20__. Completion date shall be _____, 20__.

Your attention is invited to the provision whereby you shall start to perform your obligations under the Contract Documents on the Commencement date. Said date shall begin the Contract Time.

The Engineer in charge of the Work for North Bay Village will be:

Gary R Ratay, P.E.

Kimley-Horn and Associates, Inc.
600 N Pine Island Road, Suite 450
Fort Lauderdale, FL 33324
954-535-5100

Sincerely yours,

Gary R Ratay, P.E.

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.
 12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop

Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The words or terms discussed in Paragraph 1.02.B-F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

- F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on

Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

- c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

- a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Owner's Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's

interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, 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 solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
- b. Contractor certifies that, if approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item 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 other work on the Project) to adapt the design to the proposed substitute item, and

- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
 - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

- 1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
- 2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
- 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought

by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* 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.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and

shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is

required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

- a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
- b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
- d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Engineer;
 - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 - 6. any inspection, test, or approval by others; or
 - 7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
1. written notice thereof will be given to Contractor prior to starting any such other work; and
 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly 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 Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 3. the extent of such authority and responsibilities will be provided.

- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or

continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not

exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, and shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of

said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:*
 1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance:*
 1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to

the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E 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 in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner 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 to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
 2. correct such defective Work; or
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an

Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or

involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

- b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If,

after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A-D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work

has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when

so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days

to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first 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 by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

**WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE**

SUPPLEMENTARY CONDITIONS

1.01 GENERAL:

These Supplementary Conditions amend or supplement the NSPE-ACEC Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect. If there is a conflict between the Contract, General Conditions (EJCDC C-700 (2007 Edition)) and these Supplementary Conditions, the terms of the Supplementary Conditions shall control.

The Contractor shall note physically by cross out or cross reference notations all changes in the General Conditions called for in the Supplementary Conditions before submitting his Bid.

ARTICLE 1 - DEFINITIONS - Page 1

SC-1.01.A

The terms used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract (EJCDC C-700 (2007) Edition) have the meanings assigned to them in the General Conditions, unless otherwise indicated.

Amend paragraph SC-1.01.A.28 by replacing the terminology Notice of Award with Notice of Intent to Award.

Amend paragraph SC-1.01.A.43 by replacing it with the following paragraph:

Subcontractor – An individual or entity having a direct contract with Contractor. Sub-Subcontractor is an individual or entity having a direct contract with any Subcontractor for the performance of a part of Work at the Project.

Amend paragraph SC-1.01.A.29 by replacing it with the following paragraph:

Village – The individual, entity, public body, Village Manager, or authority with whom Contractor has entered into the Contract and for whom the Work is to be performed.

Add SC-1.01.A.52 as the following paragraph:

Promptly – The period of time not exceeding five business days.

ARTICLE 2 - PRELIMINARY MATTERS - Page 6

SC-2.03

Amend paragraph 2.03.A by replacing the number of days from “30” to “90”.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS - Page 14

SC-4.04

Amend paragraph 4.04.B.2 by replacing the last sentence with the following:

If Village or Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, a Claim may be made as provided in paragraph 10.05.

ARTICLE 5 - BONDS AND INSURANCE - Page 16

5.01

Amend paragraph 5.01.A by adding the following language at the end of the paragraph:

Any additional costs shall be borne by the Contractor.

5.04

Add the new paragraphs immediately after paragraph 5.04 of the General Conditions.

The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by law:

5.04.A.1 and 5.04.A.2 Workers' Compensation, etc. under paragraphs 5.04.A.1 and 5.04.A.2 of the General Conditions:

1. Comprehensive General Liability:
 - (a) Coverage to include Premise/Operations, Broad Form Property Damage, Contractual and Personal Injury, and XCU (where applicable).
2. Limits:
 - (a) General Aggregate \$1,000,000
 - (b) Each Occurrence \$1,000,000
 - (c) Personal Injury \$1,000,000
3. Coverage is to be written on an "occurrence" basis.
4. Village's and Contractors Protection:
 - (a) Bodily Injury:

Annual Aggregate	\$1,000,000
Each Occurrence	\$1,000,000
 - (b) Property Damage:

Annual Aggregate	\$1,000,000
Each Occurrence	\$1,000,000
5. Worker's Compensation shall be in accordance with the provisions of the laws of the State of Florida.
- 5.04.A.7 Comprehensive Automobile Liability:
 - (a) Coverage to include all owned, hired, non-owned vehicles, and/or trailers and other equipment required to be licensed.
 - (b) Limits:

Combined Single Limit	\$1,000,000
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- 5.04.B.8 Umbrella:
 - (a) Limits:

Aggregate	\$1,000,000
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 - (b) Cover all claims arising out of the Contractor's operations or premises, anyone directly or indirectly employed by the Contractor or Subcontractor, and the Contractor's obligations under indemnification under this Contract.
- 5.04.B.9 North Bay Village, shall be included as a named insured party under the Contractors Liability Insurance. The following paragraph is required to appear unaltered on the Certificate of Insurance.

"North Bay Village, Florida is hereby named Additional Insured under the terms of this policy."

5.04.B.10 A thirty (30) day Notice of Cancellation is required and must be stated on the Certificate of Insurance.

5.04.B.11 The Certificate of Insurance shall be issued to North Bay Village, Florida at the following address:

North Bay Village
1666 Kennedy Causeway, Suite 300
North Bay Village, FL 33141

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES - INDEMNIFICATION - Page 22

SC-6.01

Add the new paragraphs immediately after paragraph 6.01.B of the General Conditions.

The Contractor shall perform all work in compliance with all applicable safety codes. A competent English speaking superintendent will be on the job at all times during working hours, and will be subject to call during off-duty hours for emergency situations. The superintendent shall have overall charge of the work with complete authority regarding the Contractor's workmen, equipment and material purchases. The superintendent shall have complete authority to act on behalf of the Contractor. This person must be sufficiently qualified and have read and understood the Drawings, Specifications and all Contract Documents.

SC-6.02

Modify paragraph 6.02.B to allow work on Saturday per the following new paragraph added immediately after paragraph 6.02.B of the General Conditions.

The Project sites being located in a single-family residential area, there shall be no undue noise created, whether by workers arriving at the sites or by actual construction work, before 8:00 a.m. or after 4:00 p.m. Monday through Saturday. No work shall be performed on Sunday or legal holidays as defined by Village Code and Ordinance. There are no public sanitary facilities nearby the work sites, and the Contractor must therefore make arrangements for portable sanitary facilities as authorized by the Village.

SC-6.06

Amend paragraph 6.06.A by replacing the last sentence of the paragraph with the following sentence:

Contractor shall not be required to employ any Subcontractor, supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection, except as required by 6.06.B and the Instruction to Bidders.

Amend paragraph 6.06.B by adding the words “Instructions to Bidders” before Supplementary Conditions where ever it appears.

Amend paragraph 6.06.B by deleting the following sentence from the paragraph:

Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued or Written Amendment signed.

Amend paragraph 6.06.B by adding the following language at the end of the last sentence of the paragraph:

nor does such acceptance create a contractual relationship between the Village and any subcontractor, supplier, individual or entity.

SC-6.09

Amend paragraph 6.09.C by replacing the first sentence of the paragraph with the following sentence:

Changes in Laws or Regulations which become effective after the time of opening of Bids (or, on the Effective Date of the Contract if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times.

Add the new paragraphs immediately after paragraph 6.09.C. of the General Conditions:

All vehicles used in connection with the Contractor's operations will be required to have identification signs.

SC-6.11

Amend paragraph 6.11.A.2 by adding the following language at the end of the last sentence:

, as set forth on the Resident Complaint Resolution Protocol attached hereto and made a part of the Contract Documents.

Add the new paragraphs immediately after paragraph 6.11.B. of the General Conditions:

Adjacent residents must have access to their driveways at all times. All barricades and warning signs for any traffic lane closures will be provided and maintained by the Contractor. Cost of all barricades and signs shall be the responsibility of the Contractor. Any off-duty officers as may be required in the maintenance of traffic shall be provided by the Contractor at the Contractor's expense.

SC-6.12

Amend paragraph 6.12.A by replacing the first sentence of the paragraph with the following sentence:

Contractor shall maintain in a safe place at the Project one record copy of all Drawings, Project Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, AsBuilts, and written interpretations and clarifications in good order and annotated to show changes made during construction.

SC-6.13

Amend paragraph 6.13.A.3 by replacing it with the following paragraph:

other property at the Project or adjacent thereto, including, but not limited, to trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and underground facilities not designated for removal, relocation, or replacement in course of construction.

SC-6.20

Amend the paragraphs 6.20.A.1 and 6.20.A.2 by replacing them with the following paragraph.

To the fullest extent permitted by Laws and Regulations, the Parties agree that in consideration of the first \$1,000.00 dollars to be paid by Village to Contractor hereunder and other specific consideration, the receipt and sufficiency of which is hereby acknowledged, the Contractor shall indemnify, defend and hold harmless the Village and Village Engineer and their consultants, agents, officers and employees, and the elected officials of the Village, from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professional and court and arbitration costs) arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is implied by Law and Regulations regardless of the negligence of any such party.

Amend paragraphs 6.20.B by replacing it with the following paragraph:

In any and all claims against Village and Village Engineer and their consultants, agents, officers and employees, and the elected officials of the Village by any Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20 shall not be limited in any way, by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 8 - VILLAGE'S RESPONSIBILITIES - Page 36

SC-8.02

Amend paragraph 8.02.A by replacing it with the following paragraph:

In case of termination of the employment of Village Engineer, Village shall appoint an engineer whose status under the Contract Documents shall be that of the former Village Engineer.

ARTICLE 9 - VILLAGE ENGINEER'S STATUS DURING CONSTRUCTION - Page 37

SC-9.03

Amend paragraph 9.03.A by adding the following language at the end of the paragraph:

The Village Engineer will provide a Resident Project Representative for this Project with duties, responsibilities and limitations of authority as outlined in Exhibit "B" attached at the end of these Supplementary Conditions. The Resident Project Representative will not be a full time Representative, but will work such periods of time so as to cover the Project in accordance with Exhibit "B".

SC-9.04

Amend paragraph 9.04.A by deleting the following sentence from the end of the paragraph:

If Village and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefore as provided in paragraph 10.05.

SC-9.07

Amend paragraph 9.07.A by replacing the word "decision" in the second sentence with the word "recommendation" and adding the words "recommendation will be submitted to the Village Manager whose" into the third sentence between the words "written" and "decision".

SC-9.08

Amend paragraph 9.08.D by replacing the word "decision" with "recommendation" in the second paragraph and deleting the words "Village or" from the last sentence.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS - Page 40

SC-10.01

Amend paragraph 10.01.A by replacing the first sentence of the paragraph with the following sentence:

Without invalidating the Contract and without notice to any Surety, Village may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, a Work Change Directive, or a Field Directive.

Amend paragraph 10.05.D by adding the following sentence at the end of the paragraph:

Adherence to the terms of paragraph 10.05 is a condition precedent to bringing any further action in litigation.

SC-10.05

Amend paragraph 10.05.A by replacing it with the following paragraph:

B. Village Manager's Decision: Village Engineer will render a formal recommendation to the Village Manager for a binding decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. Village Managers decision on such Claim, dispute, or other matter will be final and binding upon Village and Contractor:

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCE; UNIT PRICE WORK - Page 42

SC-11.01

Amend paragraph 11.01.A.1 by deleting the word Saturday from the last sentence of the paragraph.

Delete paragraph 11.01.A.4 in its entirety.

SC-11.03.C

Amend paragraph 11.03.C by replacing it with the following paragraph:

C. A Claim may be made for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES –
Page 46

SC-12.01.C

Amend paragraph 12.01.C.2.a. by replacing the entire sentence with the following sentence:

for costs incurred under paragraph 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 10 percent;

SC-12.01.C

Modify paragraph 12.01.C.2.c. to change the fee as follows in the first sentence:

Will be paid a fee of 10 percent of the costs incurred by such Subcontractor under paragraph 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

SC-12.03

Amend paragraph 12.03 by replacing the entire paragraph with the following paragraph:

Contractor will not be entitled to any adjustment in the Contract Price for delays extended general conditions, extended overhead, loss of productivity, acceleration or any damages or other compensation whatsoever in the event of any delays in the progress of the Work on account of hindrances or delays from any cause whatsoever. Such causes of delay include but are not limited to differing site conditions, difficulty in acquiring building permits, limited access to the Project, failure to approve plans and shop drawings on time, delays caused by governmental action, inaction or regulation, subsurface conditions, material shortages or delay in delivery of materials. It is the specific intent hereunder that an extension of time will be the sole and exclusive remedy for delay of any type, description of category. However, if occasioned by an act of God, or by any act or omission on the part of the Village such act, hindrance or delay may entitle the Contractor to an extension of time in which to complete the Work which shall be determined by the Village Engineer, provided that the Contractor will give notice as provided herein.

The foregoing limitations on adjustments to Contract Price also apply to any causes of delay which affect any subcontractor, materialman, supplier or laborer on the Project. In no event, if any such events of delay occur, shall any subcontractor, materialman, supplier or laborer be entitled to additional compensation for delays including claims for extended general conditions, extended overhead and the like against the Village or Village Engineer.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK - Page 48

SC-13.04

Amend paragraph 13.04.A by replacing it with the following paragraph:

If any Work is covered contrary to the Technical Specifications, Drawings or Contract Documents, it must, if requested by Village Engineer, be uncovered for Village Engineer's observation and replaced at Contractor's expense.

Amend paragraph 13.04.B by adding the following language at the end of the second sentence:

,or direct payment if remaining Contract funds are not sufficient.

SC-13.09

Amend paragraph 13.09.C by adding the following language at the end of the first sentence:

, or direct payment if remaining Contract funds are not sufficient.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION - Page 52

SC-14.02.A.2

Amend paragraph 14.02.A.2 by deleting the existing paragraph and replacing it with the following paragraph:

With each Application for Payment, the Contractor shall include a Partial Waiver Upon Progress Payment or Statutory Waiver and Final Release, as appropriate from each and every materialman, supplier and or laborer ("Potential Lienor") who has provided labor, services or materials for the Project. Contractor shall submit its own Statutory Waiver and Partial Release of Lien or Statutory Waiver and Final Release of Lien, as appropriate, with each Application for Payment. Moreover, Contractor shall ensure that no construction liens, or any encumbrances in the nature thereof or any other encumbrances whatsoever (including equitable lien claims), shall be filed or maintained by the Contractor or by any Potential Lienor in connection with any Work for which Village has made payment or for which payment is not yet due. As a condition precedent to the receipt of each progress payment from the Village, Contractor must furnish the Partial Waiver Upon Progress Payment Statutory Waiver and Final Release from each Potential Lienor, in the form prescribed by Village and/or Village Engineer, together with a Contractor's Affidavit and Partial Release, in the form prescribed by the Village and/or Village Engineer. Further, as a condition precedent to the receipt of the final payment, the Contractor shall provide Village with a Statutory Waiver and Final Release from each Potential Lienor in the form prescribed by Village and/or the Village Engineer, together with a Contractor's Affidavit and Final Release. Each Release given to the Village shall waive and release any lien rights of the Potential Lienor to the extent payment is made with respect to any Work performed through the date of the Release. For any Potential Lienor who has served a Notice to Village and/or Notice to Contractor, but who has not provided labor, services or materials during the period of time covered by an Application for Payment, the Contractor shall provide a Zero Dollar Release in the form prescribed by Village and/or Village Engineer. Contractor shall comply with all requirements of Florida Statutes, Chapter 713. Contractor agrees to indemnify, defend and hold the Village harmless from and against any and all liens or other claims whatsoever filed against the Village or the Village's property by any Potential Lienor for worked performed or materials or services furnished in connection with the Work for which Contractor has been paid or for which payment is not yet due at the time the Lien is recorded. In the event a Claim of Lien is recorded against the Village's property, the Contractor shall cause the same to be satisfied within ten (10) days following the date of recordation of the Claim of Lien, or in the alternative, shall cause the Claim of Lien to be transferred to a Bond. In the event any Liens are not cleared of record within ten (10) days of recordation, Village shall have the right to settle, satisfy, or transfer such Lien to a Bond at Contractor's sole cost and expense and Village may offset any such cost against the next payment due to Contractor, or Contractor shall make a direct payment if remaining Contract funds are not sufficient.

Village shall not be limited to and is entitled to all other remedies available at law or in equity. The provisions of this paragraph shall be deemed an independent covenant of the Contractor and shall be effective with respect to all Work performed and materials and services furnished under the Contract Documents, Change Orders or any other agreement for work with respect to the Project.

SC-14.02.D.1.b

Amend paragraph 14.02.D.1.b by deleting the existing paragraph and replacing it with the following:

Liens have been recorded in connection with the Work or the Project.

SC-14.07

Amend paragraph 14.07.A.1 by replacing it with the following paragraph:

After Contractor has, in the opinion of Village Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operation instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in paragraph 6.12), final releases, final affidavits, Asbuilts, and other documents, Contractor may make application for final payment following the procedure for progress payments.

Amend paragraph 14.07.A.2 by adding the following language at the end of the first sentence:

or claims made against the Bonds provided by Contractor under the Contract Documents.

Delete paragraph 14.07.A.3 in its entirety.

SC-14.09

Amend paragraph 14.09.A.1 by replacing it with the following paragraph:

a waiver of all Claims by Village against Contractor, except Claims arising from unsettled Liens or Claims against the Bonds, from defective Work appearing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION - Page 59

SC-15.03

Delete paragraph 15.03.A.3 in its entirety.

Delete paragraph 15.03.A.4 in its entirety.

SC-15.04

Amend paragraph 15.04.B. by deleting the last sentence of the paragraph.

EXHIBIT "B"

**A LISTING OF THE DUTIES, RESPONSIBILITIES AND LIMITATIONS
OF AUTHORITY OF THE RESIDENT PROJECT REPRESENTATIVE**

Village Engineer shall furnish a Resident Project Representative (RPR), assistants and other field staff to assist Village Engineer in observing performance of the Work of the Contractor.

Through more extensive on-site observations of the Work in progress and field checks of materials and equipment by the RPR and assistants, Village Engineer shall endeavor to provide further protection for Village against defects and deficiencies in the Work; but, the furnishing of such services will not make Village Engineer responsible for or give Village Engineer control or supervisory control over construction means, methods, techniques, sequences or procedures or for safety precautions or programs, or responsibility for Contractor's failure to perform the Work in accordance with the Contract Documents.

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

A. General

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

B. Duties and Responsibilities of RPR

1. Schedules: Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by Contractor and consult with Village Engineer concerning acceptability.
2. Conferences and Meetings: Attend meetings with Contractor, such as pre-construction conferences, progress meetings, job conferences and other Project-related meetings, and prepare and circulate copies of minutes thereof.
3. Liaison:
 - a. Serve as Village Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of the Contract Documents; and assist Village Engineer in serving as Village's liaison with Contractor when Contractor's operation affect Village's on-site operations.
 - b. Assist in obtaining from Village additional details or information, when required for proper execution of the Work.
4. Shop Drawings and Samples:
 - a. Record date of receipt of Shop Drawings and samples.
 - b. Receive samples that are furnished at the site by Contractor, and notify Village Engineer of availability of samples for examination.
 - c. Advise Village Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or sample if Village Engineer has not approved the submittal.

5. Review of Work, Rejection of Defective Work, Inspections and Tests:
 - a. Conduct on-site observations of the Work in progress to assist Village Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Village Engineer whenever RPR believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Village Engineer of Work that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that Contractor maintains adequate records thereof; and observe, record and report to Village Engineer appropriate details relative to the test procedures and startups.
 - d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to Village Engineer.
6. Interpretation of Contract Documents: Report to Village Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Village Engineer.
7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report with RPR's recommendations to Village Engineer. Transmit to Contractor decisions as issued by Village Engineer.
8. Records:
 - a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Work Directive Changes, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, Village Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.

- b. Keep a diary or log book, recording Contractor hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Orders or changed conditions, list of job site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Village Engineer.
 - c. Record names, addresses and telephone numbers of all Contractors, subcontractors and major suppliers of materials and equipment.
- 9. Reports:
 - a. Furnish Village Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and sample submittals.
 - b. Consult with Village Engineer in advance of scheduled major tests, inspections or start of important phases of the Work.
 - c. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from Contractor and recommend to Village Engineer Change Orders, Work Directive Changes, and Field Orders.
 - d. Report immediately to Village Engineer and Village upon the occurrence of any accident.
- 10. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Village Engineer, noting particularly the relationship of the payment requested to the schedule of values. Work completed and materials and equipment delivered at the site but not incorporated in the Work.
- 11. Certificates, Maintenance and Operation Manuals: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to Village Engineer for review and forwarding to Village prior to final payment for the Work.
- 12. Completion:
 - a. Before Village Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.

- b. Conduct final inspection in the company of Village Engineer, Village and Contractor and prepare a final list of items to be completed or corrected.
- c. Observe that all items on final list have been completed or corrected and make recommendations to Village Engineer concerning acceptance.

C. Limitations of Authority

Resident Project Representative:

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

END OF SECTION

**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 _____
[print name of the public entity]

by _____
[print individual's name and title]

for _____
[print name of entity submitting sworn statement]

whose business address is

and (if applicable) its 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 of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

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 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. **[indicate which statement applies.]**

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

____ The entity submitting this sworn statement, or one or more of 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 subsequent to July 1, 1989.

____ 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 subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in public interest to place the entity submitting this sworn statement on the convicted vendor list. **[attach 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 THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED, I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE 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 INT HIS FORM.

[signature]

Sworn to and subscribed before me this ____ day of _____, 20 ____.

Personally known _____

OR Produced identification _____

Notary Public - State of

My commission expires

(Type of identification)

(Printed typed or stamped commissioned
name notary public)

SECTION 01000

GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish all labor and materials to manage the design, equipment supply, replacement of existing water meters, field installation, system implementation, and optimization of a Mobile Based Advanced Metering Infrastructure and Water Loss Management system to read meters in an automated and cost effective manner as well as reduce the Village's unaccounted for and non-revenue water. The scope of work involves, but is not limited to, providing and installing software, hardware, as well as providing all necessary training and installation support. The project also includes repairing or replacing associated water service piping as needed from the new water meters to the water main, water meter box replacement, water system testing, removal of existing water meters and boxes, maintenance of traffic, trench/roadway restoration, site restoration, and all other appurtenances necessary for a complete project. Construction of this project will require close coordination with the Owner and Engineer. Maximum project duration for project completion is ten (10) months.
- B. Omission of a specific item or component part of a system obviously necessary for the proper functioning of the system shall not relieve the Contractor of the responsibility of furnishing the item as part of the work at no additional cost to Owner.
- C. The Specification Divisions and Drawings are an integrated part of the Contract Documents and as such will not stand alone if used independently as individual Sections, Divisions, or Drawing Sheets. The Drawings and Specifications establish minimum standards of quality for this Project. They do not purport to cover all details entering into the design and construction of materials or equipment.
- D. Where portions of the work traverse or cross federal, state, county or local highways, roads, streets, or waterways, and the agency in control of such property has established standard specifications governing items of work that differ from these specifications, the most stringent requirements shall apply.

- E. The Contractor shall become familiar with the existing operating conditions of the Owner's water distribution system and take such into consideration in planning and scheduling work. No extra claims shall be made for work required to achieve conditions beyond those obtainable under normal operation of the existing water distribution facilities necessary to accomplish the work.

1.02 QUALITY ASSURANCE

- A. Laws and Regulations: Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations applicable to the work. If Contractor observes that the Specifications or Drawings are at variance therewith, Contractor shall give Engineer prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate modification. If Contractor performs any work, knowing or having reason to know, that it is contrary to such laws, ordinances, rules, and regulations, and without such notice to Engineer, Contractor shall bear all costs arising therefrom. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules, and regulations.

1.03 PROJECT SPECIFICATIONS

- A. Automated Meter Reading System specifications are included in Appendix A.
- B. The Miami-Dade Standard Specifications and Details for Design and Construction of water and wastewater improvements, latest edition are hereby incorporated by reference and the Contractor shall comply with all requirements. Select Miami-Dade Water and Sewer specification and details are included in Appendix B for reference.
- C. Portions of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction and their Roadway and Traffic Design Standards, hereinafter referred to as the DOT Standard Specifications, are referred to herein and amended, in part, and the same are hereby made a part of this Contract to the extent of such references and shall be as binding upon the Contract as though reproduced herein. Such reference shall mean the current edition, including all supplements. In case of a conflict in the requirements of the DOT Specifications and the requirements stated herein, the requirements herein shall prevail.
- D. Contractor will be required to submit Maintenance of Traffic (MOT) plans for work on the Village streets and State highways. Contractor shall coordinate with MOTs for nearby or highway work and obtain approval for all traffic control as required by the permit jurisdiction having authority

- E. This project is funded through the Florida Department of Environmental Protection State Revolving Fund Program and subject to the Supplementary Conditions included as Appendix C.
- F. The applicable portions of North Bay Village Code and Florida Building Code shall apply to the project.

PART 2 SEQUENCE OF OPERATIONS

2.01 SCHEDULING

- A. General: Prepare and submit schedule in accordance with the provisions of Section 01300.
- B. Plan the Work and carry it out with minimum interference to the operation of the existing facilities. Prior to starting the work, confer with the Engineer and Owner's representative to develop an approved work schedule which will permit the facilities to function normally as practical. It may be necessary to do certain parts of the construction work outside normal working hours in order to avoid undesirable conditions. The Contractor shall do this work at such times, and at no additional cost to the Owner. Do not make connections between existing work and new work until necessary inspection and tests have been completed on the new work and it is found to conform in all respects to the requirements of the Contract Documents.
- C. No work shall be started until the Contractor has received approved shop drawings, established material/delivery dates for all equipment, and received approval of the construction schedule from the Engineer or Owner. The Contractor shall have sufficient manpower, equipment, and material to complete the project.
- D. No work shall commence without express consent of the Engineer or Owner.
- E. If a privately owned staging area is required, no work shall commence until approval of the facility is obtained in accordance with Village requirements.

2.02 MOBILIZATION AND DEMOBILIZATION

- A. Contractor shall be responsible for mobilization and demobilization of labor, materials and equipment. Payment for mobilization and demobilization shall be included in the lump sum price for the Project.

2.03 COORDINATION

- A. Contractor shall cooperate in the coordination of separate activities in a manner that will provide the least interference with the Owner's operations and other contractors and utility companies working in the area, and in the interfacing and connection of the separate elements of the overall project work.
- B. If any difficulty or dispute should arise in the accomplishment of the above, the problem shall be brought immediately to the attention of the Project Manager or Owner.

2.04 SHUTDOWN OF EXISTING OPERATIONS OR UTILITIES

- A. Continuous operation of the Owner's service functions is of critical importance. The Contractor's work shall not result in the interruption of sewage, water, or solid waste service to any customers.
- B. Minimizing conflicts with the ongoing area-wide commercial activities is of critical importance. The Contractor's work shall minimize in the interruption of operations at any facility or business.
- C. Connections to existing services or utilities, or other work that requires the temporary shutdown of any existing operations or utilities shall be planned in detail with appropriate scheduling of the work and coordinated with the Owner or Project Manager. Two business days advanced notice shall be given in order that the Owner or Project Manager may witness the shutdown, tie-in, and startup. The temporary shutdown must be approved by the Owner. All tie-in and bypass operations shall be the responsibility of the Contractor and are considered incidental to the cost of construction and provided at no additional cost to the Owner.
- D. All materials and equipment (including emergency equipment) necessary to expedite the tie-in shall be on hand prior to the shutdown of existing services or utilities.

2.05 OPERATION OF EXISTING SYSTEM PROHIBITED

- A. At no time undertake to close off any utility lines or open valves or take any other action which would affect the operation of existing systems. The Owner's forces will operate all valves. Provide at least one business day notice to Owner prior to any operations.

PART 3 SITE CONDITIONS

3.01 SITE INVESTIGATION AND REPRESENTATION

- A. The Contractor acknowledges satisfaction as to the general nature and location of the work, the general and local conditions, particularly those bearing upon availability of transportation, availability of labor, water, electric power, roads, and uncertainties of weather, or similar physical conditions, the character of equipment and facilities needed preliminary to and during the prosecution of the work, and all other matters which can in any way affect the work or the cost thereof under this Contract.
- B. Failure by the Contractor to become acquainted with the physical conditions and all the available information will not relieve the Contractor from responsibility for properly estimating the difficulty or cost of successfully performing the work.

3.02 UTILITIES

- A. The Contractor shall be responsible for determining and/or confirming, at his cost, the locations of all utilities within the project area, and shall be responsible for contacting each utility for location and notification prior to commencing work.
- B. The Contractor shall contact potentially affected utilities as needed.
- C. The Contractor shall contact Sunshine State One Call at 1-800-432-4770 at least 2 working days prior to any excavation and make arrangements for locating all utilities in the project area.

3.03 CONTRACTOR RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

- A. Where the Contractor's operations could cause damage or inconvenience to utilities, telephone, television, power, water, or sewer systems, the operations shall be suspended until all arrangements necessary for the protection of these utilities and services have been made by the Contractor with the owner of the utility affected.
- B. Notify all utility offices which are affected by the construction operation at least 2 working days in advance. Under no circumstances expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities.

- C. The Contractor shall be solely and directly responsible to the Owner and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the construction operations under this Contract.
- D. Neither the Owner nor its officers or agents shall be responsible to the Contractor for damages as a result of the Contractor's failure to protect utilities encountered in the work.
- E. In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, promptly notify the proper authority. Cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no case shall interruption of any water or utility service be allowed to exist outside working hours unless prior approval is granted.
- F. In the event the Contractor encounters water service lines or sewer laterals that interfere with trenching, he may, by obtaining prior approval of the property owner, the Engineer and the Owner, cut the service, dig through, and restore the service with similar and equal materials at the Contractor's expense.
- G. The Contractor shall replace, at his own expense, all existing utilities or structures removed or damaged during construction, unless otherwise provided for in these Contract documents or ordered by the Engineer.

3.04 INTERFERING STRUCTURES

- A. Take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground.
- B. Protect underground and aboveground existing structures from damage. Where such existing fences, gates, sheds, buildings, or any other structure must be removed in order to properly carry out the construction, or are damaged during construction, restore to their original condition to the satisfaction of the property owner involved at the Contractor's own expense. Notify the Project Manager of any damaged underground structure, and make repairs or replacements before backfilling.
- C. Without additional compensation, the Contractor may remove and shall replace in a condition as good as or better than original, such small miscellaneous structures as fences, mailboxes, and signposts that interfere with the Contractor's operations.

PART 4 SAFETY AND CONVENIENCE

4.01 SAFETY AND ACCESS

- A. The Contractor shall do all work necessary to protect the general public from hazards, including, but not limited to, surface irregularities or unramped grade changes in pedestrian sidewalk or walkway, and trenches or excavations in roadway. Barricades, lanterns, and proper signs shall be furnished in sufficient amount to safeguard the public and the work. All barricades and signs shall be clean and serviceable, in the opinion of the Project Manager.
- B. The Contractor shall notify all residences and businesses of planned construction at least 5 working days prior to the start of work in the block where they are located. Such notices shall be brochures or door-hangers with sufficient information to describe the extent and duration of the planned work. Notification activities shall be coordinated with the Village Engineer.
- C. Homeowners and business owners shall be provided reasonable access. The Contractor shall provide temporary sidewalks, bridges or driveway access, including safe passage over open excavations as required.

4.02 ACCIDENT REPORTS

- A. In addition, the Contractor must promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses. If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Project Manager.
- B. If a claim is made by anyone against the contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Project Manager, giving full details of the claim.

4.03 PROTECTION OF PROPERTY

- A. Protect stored materials located adjacent to the proposed work. Notify property owners affected by the construction at least two business days in advance of the time construction begins. During construction operations, construct and maintain such facilities as may be required to provide access by all property owners to their property. No person shall be cut off from access to his residence or place of business for a period exceeding 2 hours, unless the Contractor has made special arrangements with the affected persons.

- B. The Contractor shall identify and isolate his active work zone in such a manner as to exclude all personnel not employed by him, the Project Manager, and the Owner.

4.04 FIRE PREVENTION AND PROTECTION

- A. The Contractor shall perform all work in a fire-safe manner. He shall supply and maintain on the site adequate fire-fighting equipment capable of extinguishing incipient fires. The Contractor shall comply with applicable federal, state, and local fire-prevention regulations. Where these regulations do not apply, applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241) shall be followed.

4.05 ACCESS FOR POLICE, FIRE, AND POSTAL SERVICE

- A. Notify the fire department and police department before closing any street or portion thereof. No closing shall be made without the Owner's approval of MOT plan. Notify said departments when the streets are again passable for emergency vehicles. Do not block off emergency vehicle access to consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without special written permission from the fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access.
- B. Maintain postal service facilities in accordance with the requirements of the U.S. Postal Service.

PART 5 PRESERVATION, RESTORATION, AND CLEANUP

5.01 SITE RESTORATION AND CLEANUP

- A. At all times during the work, keep the premises clean and orderly, and upon completion of the work, repair all damage caused by equipment and leave the project free of rubbish or excess materials of any kind.
- B. Stockpile excavated materials in a manner that will cause the least damage to adjacent lawns, grassed areas, gardens, shrubbery, or fences, regardless of whether these are on State or Village rights-of-way. Remove all excavated materials from grassed and planted areas, and leave these surfaces in a condition equivalent to their original condition.

5.02 FINISHING OF SITE, BORROW, AND STORAGE AREAS

- A. Upon completion of the project, all areas used by the Contractor shall be properly cleared of all temporary structures, rubbish, and waste materials and properly graded to drain and blend in with the abutting property. Areas used for the deposit of waste materials shall be finished to properly drain and blend with the surrounding terrain. Grassed areas shall be restored as specified.

PART 6 PERMITS

6.01 GENERAL

- A. Permits to be Obtained by the Contractor may include, but are not limited to the following:
1. Local Building permits.
 2. Local and State contracting licenses.
 3. State utility permit.
 4. State/County dewatering permit.

END OF SECTION

SECTION 01020

ALLOWANCE

PART 1 SCOPE OF WORK

1.01 DEFINITION

- A. Included in the contract sum is an allowance account for unforeseen conditions, potential construction changes and adjustments, if ordered and authorized by the Village in accordance with the contract documents.

1.02 ALLOWANCE ACCOUNT

- A. Monies in the allocation account will be used only with pre-approval in writing by the Village and issuance of change order.
- B. At the closeout of contract, monies remaining in the allowance account will be credited to the Village by change order.

1.03 SELECTION OF PRODUCTS UNDER ALLOWANCES

- A. Engineer's Duties:
 - 1. Consult with the Contractor in consideration of products and supplier or installers or changes in quantities of Proposal items.
 - 2. Make selection in consultation with the Owner. Obtain Owner's written decision, designating:
 - a. Product, model and/or class of materials.
 - b. Accessories and attachments.
 - c. Supplier and installer as applicable.
 - d. Cost to Contractor, delivered to the site or installed, as applicable.
 - e. Warranties
 - f. Quantities
 - 3. Transmit Owner's decision to the Contractor.
 - 4. Prepare change orders.

B. Contractor's Duties:

1. Assist Engineer and Owner in determining qualified suppliers, quantities or subcontractor.
2. Obtain proposals from a minimum of three (3) suppliers and/or subcontractors when requested by Engineer.
3. Make appropriate recommendations for consideration of the Engineer.
4. Notify Engineer promptly of:
 - a. Any reasonable objections Contractor may have against any supplier, or party under consideration for installation.
 - b. Any effect on the construction schedule anticipated by selection under consideration.

1.04 CONTRACTOR RESPONSIBILITY FOR PURCHASE, DELIVERY AND INSTALLATION

- A. On notification of selection, execute purchase agreement with designated suppliers and/or subcontractors.
- B. Arrange for and process shop drawings, product data and samples, as required.
- C. Make all arrangements for delivery.
- D. Upon delivery, promptly inspect products for damage or defects.
- E. Submit claims for transportation damage.
- F. Install and finish products in compliance with requirements of referenced specification sections, including restoration.

1.05 ADJUSTMENT OF COSTS

- A. Should the net cost be more or less than the specified amount of the allowance, the contract sum will be adjusted accordingly by change order. Should work be changed by change order:

1. The amount of the change order will recognize any changes in handling costs at the site, equipment, labor, installation costs, overhead, profit, and other expenses caused by the change order.
 2. For products specified under a unit cost in the change order schedule of values, the unit cost shall apply to the additional quantities actually used.
- B. Submit any claims for anticipated additional costs at the site, or other expenses caused by the selection under the allowance, prior to execution of the work.
- C. Failure to submit claims within the designated time will constitute a waiver of claims for additional costs.
- D. At contract closeout, reflect all approved changes in contract amounts in the final statement of accounting.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF THIS SECTION

- A. The following explanation of the Measurement and Payment for the Bid Form items is provided; however, the omission of reference to any item shall not alter the intent of the Bid Form or relieve the Contractor of the necessity of constructing a complete project under this Contract.

1.02 METHOD OF MEASUREMENT

- A. **Measurement of Length:** Unless otherwise specified for the particular items involved, all measurements of distance for items to be paid for on the basis of length shall be taken horizontally or vertically.
- B. **Measurement of Area:** In the measurement of items paid for on the basis of area of finished work, the lengths and/or widths to be used in the calculations shall be the actual dimensions measured along the surface of the completed work within the neat lines shown or designated. At intersections, the measurement used for length of side area will be measured from the outside edge of the width allowed along the main trench.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 BID ITEMS

- A. **BID ITEM NO. 1 - Mobilization, Bonds & Insurance**

Measurement: Work as specified in this section shall consist of work preparatory to actual construction at the site. It shall include, but not be limited to, 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, sanitary and other facilities as required by these Specifications and state and local laws and regulations. This cost should include the construction of two

(2) project signs that shall be displayed at approaches to the project area. The intent is that the signs will be freestanding. The sign shall display on both sides the project name, Village Logo, elected officials, and contact information. The costs of permits, bonds and any required insurance, and any other preconstruction expense necessary for the start of the work, excluding the cost of construction materials, shall be included in this section. Also included in this section will be all costs associated with meetings and coordination with the Owner and Engineer for the purpose of discussing project progress.

Payment: Payment shall be made as a lump sum quantity in accordance with the following schedule and the contract documents:

<u>Percentage</u> <u>Contract</u> <u>Amount Earned</u>	<u>Allowable</u> <u>Percentage of</u> <u>Lump Sum Price</u>
5%	25%
10%	50%
25%	75%
50%	100%

The standard retainage will be applied to these allowances.

B. BID ITEM NO. 2 – Maintenance of Traffic

Measurement: The cost shall include all work associated with Maintenance of Traffic throughout the duration of the project.

Payment: Payment for this work shall be made at the lump sum price and shall include all labor and equipment needed to maintain vehicular and pedestrian traffic during the replacement of all water meters, repair or replacement of water service lines, site impacts, and site restoration. All crosswalks and sidewalks shall remain open and free of obstructions. Temporary painting for roadways and crosswalks shall be maintained throughout the project. Costs shall include the use of flagmen.

C. BID ITEM NO. 3 – Mobile Based AMI System Implementation and Support

Measurement: The cost shall include all work associated with the design, material/equipment supply, system implementation, and optimization of a Mobile Based Advanced Metering Infrastructure as specified.

Payment: Payment for this work shall be made at the lump sum price and shall include all labor, materials, personnel, and equipment needed to provide and install the Mobile Based Advanced Metering Infrastructure system as well as all necessary set-up, start-up, training, and support for a period of one year after completion and acceptance of the project.

D. **BID ITEM NO. 4 – Mobile AMI Analytics Software Implementation and Support**

Measurement: The cost shall include all work associated with the design, material/equipment supply, system implementation, and optimization of the Mobile Based Advanced Metering Infrastructure analytics software as specified.

Payment: Payment for this work shall be made at the lump sum price and shall include all labor, materials, personnel, and equipment needed to provide and install the analytics software associated with the Mobile Based Advanced Metering Infrastructure system as well as all necessary set-up, start-up, training, and support for a period of one year after completion and acceptance of the project.

E. **BID ITEM NO. 5 – Water Loss Management System Implementation and Support**

Measurement: The cost shall include all work associated with the design, material/equipment supply, system implementation, and optimization of the Water Loss Management System as specified.

Payment: Payment for this work shall be made at the lump sum price and shall include all labor, materials, personnel, and equipment needed to provide and install a Water Loss Management System associated with the Mobile Based Advanced Metering Infrastructure system as well as all necessary set-up, start-up, training, and support for a period of one year after completion and acceptance of the project.

F. **BID ITEM NO. 6 – Customer Engagement Program Implementation and Support**

Measurement: The cost shall include all work associated with the design, material/equipment supply, system implementation, and optimization of the Customer Engagement program as specified.

Payment: Payment for this work shall be made at the lump sum price and shall include all labor, materials, personnel, and equipment needed to provide and install a Customer Engagement program associated with the Mobile Based Advanced Metering Infrastructure system as well as all necessary set-up, start-up, training, and support for a period of one year after completion and acceptance of the project.

G. **BID ITEM NO. 7 through 13 – Furnish and Install 5/8”, 3/4”, 1”, 1 ½”, 2”, 3” and 4” Solid State Water Meters**

Measurement: The cost shall include material and work associated with installing new water meters in accordance with the unit prices contained in the proposal. Contractor shall receive payment for service connections, Bid Items 21 through 23, on a unit price basis per installed service connection as specified in accordance with the unit prices contained in this proposal.

Payment: Payment for this work shall be made at the unit cost basis and shall include all labor, equipment, material, location and coordination of all existing utilities prior to construction, water meter installation, existing water meter removal, installation of new locking curb stop, fittings, couplings, disposal of undesirable material, associated site restoration, safety, dust/erosion, disinfection and bacteriological testing, survey layout, asbuilt drawings, and repair or replacement of existing utilities impacted or damaged during construction for a complete water meter installations. Any item not specified shall be considered incidental to the work.

H. **BID ITEM NO. 14 through 20 – Furnish and Install 5/8”, 3/4”, 1”, 1 ½”, 2”, 3” and 4” Standard Water Meters**

Measurement: The cost shall include material and work associated with rehabilitant/replacing existing mechanical water meters if needed and as directed by the Village in accordance with the unit prices contained in the proposal. Contractor shall receive payment for service connections if required, Bid Items 21 through 23, on a unit price basis per installed service connection as specified in accordance with the unit prices contained in this proposal.

Payment: Payment for this work shall be made at the unit cost basis and shall include all labor, equipment, material, location and coordination of all existing utilities prior to construction, water meter installation, existing water meter removal, installation of new locking curb stop, fittings, couplings, disposal of undesirable material, associated site restoration, safety, dust/erosion, disinfection and bacteriological testing, survey layout, asbuilt drawings, and repair or

replacement of existing utilities impacted or damaged during construction for a complete water meter installations. Any item not specified shall be considered incidental to the work.

I. BID ITEM NO. 21 through 23 – 1”, 2” and 4” Service Connections

Measurement: The cost shall include material and work associated with installing water service connections as specified by the Miami-Dade Water and Sewer specification and details and in accordance with the unit prices contained in the proposal. Assume 20’ service connection length.

Payment: Payment for this work shall be made at the unit cost basis and shall include all labor, equipment, material, location and coordination of all existing utilities prior to construction, water service installation, existing service piping removal and disposal, water service corporation stops, service piping based on service connection size, fittings, couplings, and taps, connection to water main and water meter, clearing, grubbing, excavation and back fill, dewatering, compaction, disposal of undesirable material, new fill, grading, associated site restoration, safety, dust/erosion, disinfection and bacteriological testing, pressure testing, survey layout, asbuilt drawings, and repair or replacement of existing utilities impacted or damaged during construction for a complete water service installation. Any item not specified shall be considered incidental to the work.

J. BID ITEM NO. 24 – Meter Box and Lid Replacements

Measurement: The cost shall include material and work associated with replacing existing meter boxes with new meter boxes and lids as needed in accordance with the unit prices contained in the proposal.

Payment: Payment for this work shall be made at the unit cost basis and shall include all labor, equipment, material, location and coordination of all existing utilities prior to removal and installation of meter boxes with lids, clearing, grubbing, excavation and back fill, dewatering, compaction, disposal of undesirable material, new fill, grading, associated restoration, safety, dust/erosion, survey layout, asbuilt drawings, and repair or replacement of existing utilities impacted or damaged during construction for a complete installation. Any item not specified shall be considered incidental to the work.

K. **BID ITEM NO. 25 – Site Restoration**

Measurement: The cost shall include all general construction requirements for project restoration not included as part of a separate bid item so that all areas disturbed or damaged during construction shall be restored to conditions existing prior to the work.

Payment: Payment for the site work shall be made at the lump sum price and shall include all materials, labor and equipment necessary to perform site restoration work including grading, planting, sodding, landscape, irrigation, lighting, striping, signage, fencing, monuments, removal and replacement of asphalt, sidewalk, driveway, curb and gutter, limerock, base material, clean-up, and any other work required to restore the project area to its original condition. Any trench or site restoration costs referenced as part of other bid items should be included in those bid items accordingly.

Restoration other than or in addition to what is indicated by the plans, specifications, and defined herein will be considered incidental to the construction and the costs of this incidental restoration should be included in the cost of project.

L. **BID ITEM NO. 26 – Allowance**

Measurement: The cost shall include a fixed amount per the Bid Form.

Payment: Use of the allowance account shall be for unforeseen conditions, for construction changes and for utility adjustments, if ordered and authorized by the Village. At the closeout of contract, monies remaining in the allowance account will be credited to the Owner by change order.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This section covers the requirements for submittal procedures as they pertain to:

1. Construction progress schedules
2. Proposed Products list
3. Shop drawings
4. Product data

1.02 SUBMITTAL PROCEDURES

- A. Submittals shall be addressed to:

North Bay Village
1666 Kennedy Causeway, Suite 300
North Bay Village FL 33141

- B. Identify Project, Contractor, Subcontractor or supplier, pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.
- C. 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 approval as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval shall be returned to the Contractor for resubmission.

1.03 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in triplicate within 15 days after date established in the Notice to Proceed for Engineer review.

- B. Revise and resubmit as project conditions require. Revised schedules shall be submitted a minimum of two (2) weeks prior to commencement of Work covered by schedule.
- C. An updated project schedule in accordance with this section will be provided with every application for payment.

1.04 SHOP DRAWINGS

- A. When used in the Contract Documents, the term "Shop Drawings" shall be considered to mean, Contractor's drawings plans for material and equipment which become an integral part of the Project. These drawings shall be complete and detailed. Shop Drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, and wiring and control diagrams. Cuts, catalogs, pamphlets, descriptive literature, and performance and test data, shall be considered only as supportive to required Shop Drawings as defined above.
- B. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.

1.05 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to Engineer for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.06 RECORD DOCUMENTS

- A. Engineer will review submitted record documents for compliance with specifications.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.01 WORK INCLUDED

A. This section covers the work as required to provide and/or coordinate:

1. Quality assurance and control of installation
2. References
3. Inspection
4. Manufacturers' field services and reports

1.02 REFERENCES

- A. Conform to reference standard by date of current issue on date for receiving bids.
- B. Should specified reference standards conflict with Contract Documents, request clarification from Owner or Engineer before proceeding.
- C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Owner or Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.
- B. Temporary Controls: Enclosures and fencing, protection of the Work, traffic control, temporary bypass sanitary pumping, and water control.
- C. Construction Facilities: Access roads, parking, progress cleaning, and temporary buildings.
- D. Some of the items specified herein are not specifically required for the project. However, these items shall be provided as required for the convenience of the Contractor or as required for proper completion of the Work.

1.02 TEMPORARY ELECTRICITY (AS APPLICABLE)

- A. Provide and pay for power service, as required, from Florida Power and Light source.
- B. Provide temporary electric feeder from electrical service. Power consumption shall not disrupt Owner's need for continuous service.
- C. Provide separate metering and pay Florida Power and Light for cost of energy used.
- D. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- E. Provide main service disconnect and overcurrent protection at a convenient location.
- F. Permanent convenience receptacles may not be utilized during construction.

1.03 TEMPORARY LIGHTING (AS APPLICABLE)

- A. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.
- B. Maintain lighting and provide routine repairs.

1.04 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Provide ventilation and other equipment and procedures as required to meet OSHA Confined Spaces Entry Requirements.

1.05 TEMPORARY WATER SERVICE (AS APPLICABLE)

- A. Provide and maintain suitable quality water service, as required, for construction operations.
- B. All water used must be metered by Owner, but Contractor will not be charged for the metered water use.
- C. Extend branch piping with outlets located so water is available by hoses with threaded connections.
- D. Make arrangements with Owner for obtaining meter. Owner will also direct contractor as to where water may be obtained.

1.06 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing private facilities shall not be used.

1.07 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6-foot high fence to secure material storage areas. Security fence shall be equipped with gates and locks.

1.08 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Prohibit traffic from landscaped areas.

1.09 SECURITY

- A. Provide security and facilities to protect Work, and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.10 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
- C. Remove waste materials, debris, and rubbish from sites weekly and dispose of at an approved site.

1.11 REMOVAL OF TEMPORARY UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary equipment, facilities, materials, prior to Final Inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01700

CONTRACT CLOSE-OUT

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Contract Close-out Procedures.
- B. Final Inspection.
- C. Contract Close-out Submittals.
- D. Final Application for Payments.

1.02 SUBSTANTIAL COMPLETION

- A. When Contractor considers the Work is substantially complete, he shall submit to the Owner or Engineer:
 - 1. A written notice that the Work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, the Owner or Engineer will make an inspection to determine the status of completion.
- C. Should the Owner or Engineer determine that the Work is not substantially complete:
 - 1. The Owner or Engineer will promptly notify the Contractor in writing, giving the reasons therefor.
 - 2. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Owner or Engineer.
 - 3. The Owner or Engineer will reinspect the Work.

D. When the Owner or Engineer finds that the Work is substantially complete, he will:

1. Prepare and deliver to Owner a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment.
2. After consideration of any objections made by the Owner as provided in the Contract Documents, and when the Owner or Engineer considers the Work substantially complete, he will execute and deliver to the Owner and the Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.03 FINAL INSPECTION

A. When Contractor considers the Work is complete, he shall submit written certification that:

1. Contract Documents have been reviewed.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.
4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
5. Work is completed and ready for final inspection.

B. The Owner or Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should the Owner or Engineer consider that the Work is incomplete or defective:

1. The Owner or Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the Owner or Engineer that the Work is complete.
3. The Owner or Engineer will reinspect the Work.

- D. When the Owner or Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closet submittals

1.04 RE-INSPECTION FEES

- A. Should the Owner or Engineer perform re-inspections due to failure of the Work to comply with the claims of status of completion made by the Contractor:
 - 1. Owner will compensate the engineer for such additional services.
 - 2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.05 CONTRACTOR'S CLOSE-OUT SUBMITTALS TO OWNER OR ENGINEER

- A. Evidence of compliance with requirements of governing authorities.
- B. Shall be in accordance with Section 01720 - Project Record Documents.
- C. Spare Parts and Maintenance Materials: To requirements of the individual Specification Sections, as applicable.
- D. Evidence of Payment and Release of Liens: To requirements of Contract Documents, Supplementary Conditions, and Supplementary Conditions (Construction) Exhibit WWFS-04Li.
- E. Certificate of Insurance for Products and Completed Operations, as applicable.
- F. Consent of Surety for final payment.
- G. Final building permit inspection documents and Certificate of Occupancy as applicable.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Owner or Engineer.
- B. Statement shall reflect all adjustments to the contract Sum:
 - 1. The original Contract Sum.

2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Allowances.
 - c. Unit Prices.
 - d. Deductions for uncorrected Work.
 - e. Penalties and Bonuses.
 - f. Deductions for liquidated damages.
 - g. Deductions for re-inspection payments.
 - h. As-Built Quantities.
 - i. Other adjustments.
3. Total Contract Sum, as adjusted.
4. Previous payments.
5. Sum remaining due.

1.07 FINAL APPLICATION FOR PAYMENT

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

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01720

PROJECT RECORD DRAWINGS

PART 1 GENERAL

1.01 PROJECT RECORD DOCUMENTS

- A. Maintain at the site for the Owner one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed Shop Drawings.

1.02 RELATED SECTIONS

- A. Section 01300 – Submittals
- B. Section 01700 – Contact Closeout

1.03 MAINTENANCE OF DOCUMENTS

- A. Store documents in approved location apart from documents used for construction.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents available at all times for inspection by Owner and Engineer.

1.04 MARKING DEVICES

- A. Provide felt tip marking pens for recording information in a color code.

1.05 RECORDING

- A. Label each document "RECORD DRAWINGS" in neat large printed letters.

- B. Record information currently with construction progress.
 - 1. Do not conceal any work until required information is recorded.
- C. Drawings; Legibly mark to record actual construction:
 - 1. Field changes of dimension and detail.
 - 2. Changes made by Field Order or by Change Order.
 - 3. Details not on original Contract Drawings.
- D. Specifications and Addenda; Legibly mark each Section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each item actually installed.
 - 2. Changes made by Field Order or by Change Order.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 SUBMITTAL

- A. During the entire construction operation, the Contractor shall maintain records of all deviations from the Drawings and Specifications and shall prepare there from "Record Drawings" showing correctly and accurately all changes and deviations from the work made during construction to reflect the work as it was actually constructed. Each month with the Contractor's Application for Payment, or as otherwise agreed, the Contractor shall submit to the Engineer a current listing and description of each change incorporated into the work since the preceding submittal. These drawings shall conform to recognized standards of drafting, shall be neat and legible, and signed and sealed by a Florida Registered Professional Land Surveyor.

- B. At Contract Close-out, the Contractor is required to provide one (1) set of reproducible "Record Drawings" to the Engineer for the Owner. These drawings shall conform to recognized standards of drafting, shall be neat and legible, and signed and sealed by a Florida Registered Professional Land Surveyor.
- C. Accompany "Record Drawing" submittal with transmittal letter in duplicate, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. Title and number of each record document.
 - 5. Signature of Contractor or his authorized representative.

END OF SECTION

SECTION 02064

MODIFICATIONS AND REPLACEMENT OF EXISTING STRUCTURES AND EQUIPMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all supervised labor, materials, equipment, and incidentals required to modify, rehabilitate, alter and/or convert existing structures as required.
- B. Replacement includes but is not limited to the following:
 - 1. Removal of existing equipment and appurtenances as specified.
 - 2. Installation of proposed utilities and structures.

1.02 NOTICES

- A. The Contractor shall inform the Owner and the Engineer of the date of commencement and anticipated completion of the work one week before actual work begins. Sewage service must be maintained during Replacement work. The Contractor shall coordinate all work and scheduling with the Owner.

1.03 SAFETY

- A. The Contractor shall conform to all work safety requirements of pertinent regulatory agencies and shall secure the site for working condition in compliance with the same. The Contractor shall erect such signs and other devices as are necessary for the safety of the work site. The Contractor shall perform all work in accordance with the applicable OSHA standards. Emphasis is placed upon the requirements for entering confined spaces, scaffolding, and the handling and storage of chemicals.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall dismantle and remove all existing equipment, piping, and other appurtenances required for the completion of the Work. Where called for or required, the Contractor shall cut existing pipelines for the purpose of making connections thereto.
- B. No existing structure, equipment, or appurtenances shall be shifted, cut, removed, or otherwise altered except as indicated in the Contract Documents or with the express approval of and to the extent approved by the Engineer.
- C. All cutting of existing concrete or other material which requires bonding to new work shall be done in a manner to meet the requirements of the respective section of these Specifications covering the new work. If the work is not covered, the cutting shall be carried on in the manner and to the extent directed by the Engineer.
- D. The surfaces of any seals which are visible in the completed work shall be made to match as nearly as possible the adjacent surfaces.
- E. Where necessary or required for the purpose of making connections, the Contractor shall cut existing pipelines in a manner to provide an approved, restrained, joint. Where required, the Contractor shall weld beads, flanges, or provide Dresser couplings, as required.
- F. The Contractor shall supply, install and maintain all flumes, hoses, piping, plugs, bulkheads and other related items used to divert or hold back the flow of wastewater, water, or other liquids, as required in the performance of the work under this Contract.

3.02 CONNECTING TO EXISTING PIPING AND EQUIPMENT

- A. The Contractor shall verify exact location, material, alignment, joint, etc., of existing piping and equipment prior to making the connections called out in the Drawings. The verifications shall be performed with adequate time to correct any potential alignment or other problems prior to the actual time of connection.

3.03 REMOVAL AND REPLACEMENT OF PIPING AND APPURTENANCES

- A. Removal of piping, anchors and accessories shall be done in a manner that will cause as little damage to the structure as possible. Pipes and anchors shall be drilled or sawed out with as little hammering as possible. Care shall be made to preserve existing reinforcement as much as possible and not structurally damage the structure. Before grouting of new piping, anchors or appurtenances into place, the concrete surfaces shall be cleaned of all loose material curing compounds, grease oil, standing water. The cleaned surface shall receive a coating of epoxy bonding/grouting adhesive before application of grout.

3.04 FINAL ACCEPTANCE

- A. After the specified work has been completed, the structures shall be visually inspected and tested by the Contractor (as required and specified) in the presence of the Engineer and found to be acceptable.

END OF SECTION

SECTION 02800

RESTORATION OF SURFACE FEATURES

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. The work includes restoration of driveways, lawn areas, trees and plants, and any other existing areas affected by the utility replacement, rehabilitation, or relocation work. This section includes furnishing equipment, labor and materials, and performing all necessary and incidental operations to perform the required work.
- B. All areas disturbed or damaged during construction shall be restored to conditions existing prior to the work.

1.02 RELATED SECTIONS

- A. Section 01000 – General Requirements

1.04 SUBMITTALS

- A. Certification of quality by producer shall be delivered to Engineer ten days prior to use.
- B. Submit sod certification for grass species and location of sod source.
- C. Submit mix design for asphaltic concrete.
- D. Submit data on joint filter, concrete admixtures, and curing compound.
- E. Submit mix design for Portland cement concrete.

PART 2 PRODUCTS

2.01 SOD

- A. The sod used for restoration shall match the existing in the area. In areas without well-established sod, Argentine Bahia sod shall be used.

- B. The sod shall be sufficiently thick to secure a dense stand of live grass, with a minimum thickness of two inches. The sod shall be live, fresh, and uninjured at the time of planting. It shall be planted as soon as possible after being dug and shall be shaded and kept moist from the time it is dug until it is planted. The sod shall be approved by the Engineer before placing.
- C. The sod shall be a minimum age of 18 months, with root development that will support its own weight without tearing when suspended vertically by holding the upper two corners.

2.02 PLANTS

- A. Existing damaged plants shall be replaced by plants of equal type, quality and size whenever possible. All new plants shall be sound, healthy, vigorous, and free from defects, decay, disfigurement, bark abrasions, plant diseases, insects, and insect eggs/larvae. The new plants shall be approved by the Engineer before placing.
- B. Existing plants may be removed, preserved, and replaced at the Contractor's option. Plants shall be handled by an approved nursery.

2.03 COMMERCIAL FERTILIZER

- A. Commercial fertilizers shall comply with the state fertilizer laws.
- B. The numeral designations for fertilizer indicate the minimum percentages respectively of (1) total nitrogen, (2) available phosphoric acid, and (3) water soluble potash contained in the fertilizer.
- C. The chemical designation of the fertilizer shall be 12-8-8. At least 50 percent of the phosphoric acid shall be from normal super phosphate or an equivalent source that will provide a minimum of two units of sulfur. The amount of sulfur shall be indicated on the quantitative analysis card attached to each bag or other container.

2.04 WATER

- A. The water used in the grassing operations may be obtained from any approved spring, pond, lake, stream, or municipal water system. The water shall be free of excess and harmful chemicals, acids, alkalies, or any substance that might be harmful to plant growth or disruptive to traffic. Salt water shall not be used.

2.05 ASPHALTIC CONCRETE PAVING

- A. Asphaltic concrete for surface and base course applications shall be as specified in Section 331 of the FDOT Standard Specifications.
- B. Primer: In accordance with FDOT Section 300, Prime and Tack Coats of Basis Courses.
- C. Tack Coat: In accordance with FDOT Section 300.
- D. Perform work in accordance with FDOT Section 300.
- E. Pavement markings shall be replaced in their original location, color, and material where disturbed.
- F. All equipment associated with the operations of pavement placement and related work shall be entirely suitable for the applicable operations performed and shall be maintained in good condition.

2.06 PORTLAND CEMENT CONCRETE PAVING AND SIDEWALKS

- A. Portland cement concrete used in the performance of this concrete shall be Type I or Type II with a minimum 28-day compressive strength of 3,000 psi and shall conform to the requirements of Section 345 of the FDOT Standard Specifications.
- B. Form materials shall conform to ACI 301.
- C. Joint filter material shall be per FDOT Section 932.
- D. Reinforcement shall be welded steel and wire fabric: Deformed type, A497.
- E. Concrete materials shall be in accordance with FDOT Section 345 and related sections referenced under Section 345.
- F. Curing compound shall be in accordance with FDOT Section 350.
- G. Pavement markings shall be replaced in their original location, color, and material where disturbed.
- H. All equipment associated with the operations of pavement placement and related work shall be entirely suitable for the applicable operations performed and shall be maintained in good condition.

PART 3 EXECUTION

3.01 LANDSCAPING RESTORATION

- A. Any lawn area affected by the required work shall be restored to a condition equal to or better than the conditions existing before the work.
- B. Where required plants shall be adequately balled with firm natural balls of soil, sized as set forth in "Grades and Standards." Balls shall be firmly wrapped with burlap or equally approved strong cloth. No balled plant will be planted if the ball is cracked or broken before or during the process of planting.

3.02 SOD PLACEMENT

- A. The areas over which the sod is to be placed shall be scarified or loosened to suitable depth. On areas where the soil is sufficiently loose, particularly on shoulders and fill slopes, the Engineer may, at his discretion, authorize the elimination of the ground preparation.
- B. Contractor shall, at his expense, maintain the planted areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include watering, filling, leveling, and repairing of any washed or eroded areas as necessary.

3.03 PAVEMENT REPLACEMENT

- A. Asphalt pavement shall be removed by saw cutting on a straight line with edges as vertical as possible. Concrete pavement or asphalt surfaced concrete shall be removed by cutting with a concrete saw in as straight a line and as vertically as possible.
- B. When placing the aggregate base course:
 - 1. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and recompacting.
 - 2. Place aggregate in maximum six inch layers and compact to 98% AASHTO T180.
 - 3. Add small quantities of fine aggregate as appropriate to assist compaction.

4. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
 5. Use mechanical tamping equipment in areas inaccessible to compaction equipment.
 6. The following tolerances for the aggregate base course shall be maintained.
 - a. Flatness: maximum variation of 1/4 inch measured with 10 foot (3m) straight edge.
 - b. Scheduled compacted thickness: within 1/4 inch.
- C. When placing asphaltic concrete paving:
1. Verify that compacted granular base is dry and ready to support paving and imposed loads.
 2. Verify gradients and elevations of base are correct.
 3. Apply primer in accordance with FDOT Section 300.
 4. Apply tack coat in accordance with FDOT Section 300.
 5. Install Work in accordance with FDOT standards.
 6. Place asphalt within 24 hours of applying primer or tack coat.
 7. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
 8. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.
 9. All existing pavement edges shall be saw cut prior to placing new abutting asphalt pavement.
 10. The following tolerances for the asphaltic concrete paving shall be maintained.

- a) Flatness: maximum variation of 1/4 inch measured with 10 foot (3m) straight edge.
- b) Scheduled compacted thickness: within 1/4 inch.
- c) Variation from true elevation: within 1/4 inch.

D. When placing Portland cement concrete paving and sidewalks:

- 1. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- 2. Verify gradients and elevations of base are correct.
- 3. Prepare subbase in accordance with FDOT Section 350 Compact Subgrade to 100% maximum density AASHTO T-99.
- 4. Moisten subgrade to minimize absorption of water from fresh concrete.
- 5. Notify Engineer at least 24 hours prior to commencement of concrete operations.
- 6. Place and secure forms to correct locations, dimension, profile, and gradient.
- 7. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.
- 8. Place reinforcement at bottom of slabs-on-grade, 2" clear.
- 9. Place concrete in accordance with FDOT Section 350.
- 10. Place joint filler between paving components and building or other appurtenances.
- 12. Sidewalk paving: Broom finished with even, dustless surface.
- 13. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

3.04 CURB REMOVAL AND REPLACEMENT

- A. Curb removal and replacement required in the construction of this work shall be done by the Contractor. Reasonable care shall be exercised in removing the curb, and the Contractor shall either stockpile or dispose of this material as directed by the Engineer. Curb shall be replaced of like material in a manner and condition equal to or better than that existing at the time of removal. Materials and methods of replacing state highway sidewalks or curbs shall conform to the FDOT Standard Specifications.

3.05 CONCRETE SIDEWALK

- A. Concrete sidewalk shall be removed by saw cutting on a straight line with edges as vertical as possible. The new sidewalk segments shall match the existing sidewalk as to width, thickness, and elevation and have a medium broom finish.
- B. Expansion joints between the sidewalk and the curb or driveway or at fixed objects and sidewalk intersections shall be 1/2-inch joints formed with a preformed joint filler.
Not Used.

END OF SECTION

**WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE**

BID NO. NBV 2017-001

Appendix A

Mobile Based AMI System Specifications:

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1 Introduction

1.1 Overview

North Bay Village is hereby requesting proposals for a Mobile Based Advanced Metering Infrastructure and Water Loss Management system to read meters in an automated and cost effective manner as well as reduce the Village's unaccounted for and non-revenue water. The Village also seeks to conduct advanced data analysis through this system based upon the data it provides.

This invitation to bid (ITB) requests a response for purchase of the following:

- Radio endpoints to encode, store, and transmit register data, interval data, leak data and tamper data.
- A Mobile Based AMI reading system (Flexible collection of data, using handhelds, mobile and fixed collection systems in tandem or migrating from one system to another without costly equipment change-outs) to collect register data, interval data, tamper data and reliably process this data, and pass this data to the customer information system (CIS) or Analytics software.
- A Water Loss Management system that values a solution that supports water conservation programs for both the utility and its customers.
- Replacement of residential water meters that support either standard mechanical measuring elements or non-moving part "solid state meters" that can give added benefit and support to the Mobile AMI system.
- An endpoint programming system with the capability to initialize endpoints upon installation and pass pertinent installation data to the system.
- A solution that supports conservation through meter right-sizing without complicated IT support.
- A user interface for all value-added functionality which is simple to use, ubiquitous in nature, and allows access from all appropriate departments.
- Customer support services, including: assistance with software operation; troubleshooting and reconciling failed devices; network growth and the addition of new devices; training needs; recurrent software upgrades; and other activities to sustain proper operation of the system.
- A system with flexible customer engagement options, data presentment through PC and smart phones.
- A system with user-friendly data display so that customer service representatives can provide clear and accurate information to customer who call with usage questions or billing concerns.

- A system that provides multiple, flexible reading options for all endpoints.
- Application software and licenses
- Experienced and Local professional services for installation and training
- Ongoing hardware and software maintenance and support

Any systems and services proposed must cover the meters in use at North Bay Village and must be compatible with standard communication protocols to cover other meters and/or service types, as well as other applications in the future.

North Bay Village seeks to acquire a meter reading system that meets the following objectives:

- Meter reading and meter data collection in the most safe and cost-effective manner possible
- Data collection using mobile based reading processes.
- The System must be capable functioning as a “Hybrid System” for both mobile base and fixed based reading. **This ITB does not include the installation of a fixed based network at this time.**
- Manual entry of meter readings and other meter data using the computer keyboard
- Collection of meter readings, tamper data and up to 40 days of daily and hourly interval data from water meters via handheld, drive-by radio or fixed base.
- Ability to perform remote disconnect and reconnect of water service via handheld, drive-by, or fixed based radio incorporated into meter reading routes
- Ability to collect acoustic water leak sensor data via handheld, drive-by or fixed based radio incorporated into meter reading routes
- Ability to collect data from endpoints where the data is in an encrypted format
- Ability to migrate from walk-by or drive-by data collection to advanced meter capabilities using a networked system using the same meters and modules
- Ability to integrate readings from a network with the mobile system allowing for: mobile to fixed network migration, contingency reading of meters under the network, and a single interface to the billing system for all meter readings
- Provide in-home leak detection flags by monitoring minimum usage to reduce lost water and avoid high water bills for improved customer service.
- Enhance service to our customers with ability to conduct timelier bill complaint investigation and resolution using detailed data collected by the mobile AMI system that can be used by the customer support team as well as shared directly with the customer.

1.2 General Instructions

- 1.2.1 This ITB outlines the requirements for a Mobile Based AMI system to be purchased and owned by North Bay Village.
- 1.2.2 The system shall be comprised of all new equipment. Components shall be produced by established manufacturers. Bidder supplying proposal must provide local service and provide documentation that bidder has been in business for more 10 years.
- 1.2.3 Bidder will provide 3 references of projects in Southeast Florida. References shall include the name and phone number of the Utility contact.
- 1.2.4 **Bidder to document as part of their bid any areas of non-compliance with the system specifications. Areas of non-compliance may result in rejection of a bid.**

2 Technical Requirements

The bidder's system shall meet the following technical requirements:

2.1 Water Endpoints

- 2.1.1 The endpoint must be capable of operating in harsh environments. As a minimum, the endpoint must function accurately and not be damaged over an operating temperature range of -40 to +70 degrees Celsius.
- 2.1.2 The endpoint must withstand submersion in one (1) meter of water for a minimum of 30 minutes in accordance with IPx7 testing, per IEC 529 (EN 60529).
- 2.1.3 **The endpoint must be designed to last in the field without need for servicing for a minimum of 20 years.**
- 2.1.4 **Battery operated endpoints must have a battery design life of 20 years with engineering data to support the claim.**
- 2.1.5 The bidder's solution must provide the same functionality for both indoor water meters and those located in pit settings. Endpoints proposed for pit settings must be able to withstand the harsh pit environment and have no exposed electrical connections.
- 2.1.6 The endpoint must be factory installable at the meter manufacturer.
- 2.1.7 The endpoint in pit setting must offer an in-line connector that enables removal of the meter for periodic testing while allowing the endpoint to stay in the field. Connector must be a proven device with three 3 or more years of use in the field.
- 2.1.8 The endpoint must utilize an accurate and reliable encoding technology to capture readings.
- 2.1.9 The endpoint must be capable of detecting and reporting potential theft. At a minimum, the endpoint must report cut cable tampers, register communication errors, and reprogramming attempts.
- 2.1.10 The system must be capable of detecting and reporting reverse flow events.

- 2.1.11 The endpoint must be capable of detecting and reporting metered leak events.
- 2.1.12 The system shall allow the addition of meter modules at any time without the need for system reconfiguration.
- 2.1.13 The endpoint shall have the option of having a remote antenna for exceptionally unfriendly RF environments where standard mobile read mode is not sufficient for satisfactory reading performance.
- 2.1.14 The endpoint should have a second port to connect an acoustic leak sensor, telemetry device or automatic shut off valve
- 2.1.15 Bidder must have sold a minimum of ten million radio-frequency based endpoints to the water utility market to assure familiarity with the water market.
- 2.1.16 The endpoint must be able to connect to pulse accumulating or absolute encoder-type registers.
- 2.1.17 Endpoints capable of auto-configuring themselves when connected to encoded registers are preferable over endpoints that require programming after being connected to an encoded register.
- 2.1.18 Endpoints shall be capable of reading the water meter on top of the hour every hour and storing a minimum of 40 days of readings. The endpoint shall be capable of transmitting any or all of the readings via radio commands to avoid having to physically visit the endpoint site.
- 2.1.19 The endpoint shall be capable of being read by a Mobile Reading System as well as by a Fixed Network System. If different operating modes are required, the endpoint shall be capable of switching from one mode to the other without the need of replacing any equipment or visiting each meter box. When in Fixed Network mode (future application) the endpoint shall still be capable of being read by a Mobile System for contingency readings.
- 2.1.20 The endpoint should support remote shut-off.
- 2.1.21 As part of North Bay Village's commitment to system integrity and conservation, North Bay Village requires the ability to meter right-size. One-minute resolution is preferred.
- 2.1.22 Endpoint should have secure data communications.

2.2 Radio Frequencies

- 2.2.1 North Bay Village is seeking a solution with low power and high-throughput data handling characteristics.
- 2.2.2 The endpoint can operate in the licensed or non-licensed ISM band according to the rules and regulations of the Federal Communications Commission (FCC) and Industry Canada (IC).

2.3 Meter Compatibility

- 2.3.1 Bidder must be compatible with multiple meter bidders to allow for complete freedom of meter choice.

2.4 Retrofit Hardware Requirements

- 2.4.1 Bidder must be capable of performing retrofit installations of endpoints in the field as needed.

2.5 Application Software for Route Processing

2.5.1 *Application Architecture*

- 2.5.1.1 The application software must be a multi-tier client-server application based on the Microsoft's .NET development environment.
- 2.5.1.2 The application software database management system must support Microsoft® SQL Server 2012 or Oracle® 11g.
- 2.5.1.3 The application software server operating system must support Windows Server 2012.
- 2.5.1.4 The application software client operating system must support Windows 7 and Windows 8.
- 2.5.1.5 The application software must support the ability to horizontally scale to support potential utility growth without installing multiple instances of the software.
- 2.5.1.6 The application software must support the ability to operate in a virtual environment using the VMWare platform.
- 2.5.1.7 The application software must support wired and wireless communications to handhelds and mobile collectors.

2.5.2 *System Configuration*

- 2.5.2.1 The application software must provide the ability to configure lists of codes and translations for the various meter reading and route processing functions.
- 2.5.2.2 The application software must provide the ability to configure various business process rules.
- 2.5.2.3 The application software must provide the ability to integrate user defined scripts, batch files and programs that can then be accessed and executed by application users.
- 2.5.2.4 The application software must provide the ability to configure the main display of the handheld device using drag and drop mechanisms.
- 2.5.2.5 The application software must provide the ability to install and manage multiple versions of handheld software components.

- 2.5.2.6 The application software must automatically update software on handheld devices based on software components assigned to specific handhelds or groups of handhelds by a system administrator.

2.5.3 *Security*

- 2.5.3.1 The application software must provide the ability to configure organizational hierarchy of the utility and assign routes, employees and collection devices to groups in the hierarchy
- 2.5.3.2 The application software must provide the ability to control access to groups of the organizational hierarchy and the routes, employees and collection devices within those groups for each employee on the system.
- 2.5.3.3 The application software must provide the ability to integrate users and authentication with LDAP compliant systems including Windows Active Directory.
- 2.5.3.4 The application software must provide the ability to store and manage user names and passwords for application users and handheld users
- 2.5.3.5 The application software must provide the ability to allow the system administrator to define the minimum length of user passwords.
- 2.5.3.6 The application software must provide the ability to allow the system administrator to define the duration of time before passwords expire.
- 2.5.3.7 The application software must provide the ability to allow the system administrator to define the maximum amount of failed log in attempts by a user before the user is locked out.
- 2.5.3.8 The application software must provide the ability to view a history of successful logins and failed login attempts.

2.5.4 *Drive-by Computer Interface*

- 2.5.4.1. The proposed system must provide for complete interface to the drive-by data collection device. Route unloading and loading must be provided either by manual operation or by automatic loading with pre-assigned reading activity.
- 2.5.4.2. Transfer of route data shall be allowed through the use of external compact flash media including USB drives or via a direct transfer over wired or wireless network connection.
- 2.5.4.3. The application server software must have the ability to automatically post uploaded route files from the mobile computer.

2.6 *Handheld Computer and Related Hardware*

2.6.1 *Collection Characteristics and Memory*

- 2.6.1.1 Memory for application and data used in the data capture devices must be secure data technology, a non-volatile memory that improves data integrity and security.

2.6.1.2 The handheld computer must have the capability to store all meter reading data collection information—including routes—on a removable, user accessible Secure Data (SD) Compact Flash (CF) card. This removable media should be able to be copied to an alternate handheld in the event of a handheld failure to retain and restore the meter reading data.

2.6.1.3 The device must have persistent memory storage of system configuration and user setting to prevent having to reload them after a system reset or the main battery gets completely discharged.

2.6.2 ***Keyboard***

2.6.2.1 The device must have an easy-to-use data input system. The keyboard must provide the following:

- Environmental protection without the need for special covers or cases.
- Alphanumeric data entry without need for a Shift key.
- Dedicated New Service and/or Meter keys.
- A dedicated Change Meter Information key.
- A keyboard legend that facilitates the use of the application indicating software shortcuts or speed keys.
- Large numeric and Enter keys to support use with gloved hands.
- Keyboard and key legends that are backlit for use in low-light settings.
- Keyboard keys must give the user a tactile feedback.

2.6.3 ***Display and Physical Characteristics***

2.6.3.1 The devices must use color liquid crystal display (LCD) technology with a minimum of 16 bits of resolution for applications that require a graphical user interface (GUI).

2.6.3.2 The display must be backlit and be readable in outdoor applications.

2.6.3.3 A touch-screen display shall be standard with every system. It needs to be pressure-sensitive and activated by the finger or a passive stylus.

2.6.3.4 The display must support the use of a protective transparent film without negatively affecting its usability or readability.

2.6.3.5 All handheld devices must be equipped with:

- Hot swappable, field replaceable and rechargeable batteries
- Battery capacity indicator with at least 4 levels
- A battery charging system that completely charges the battery pack within 4 hours

- The handheld computer must provide data security in the event of loss of power from the main battery supply. This protection is required even if the main battery supply is removed while the handheld computer is turned on for a minimum of 24 hours.
- Battery must utilize smart lithium-ion technology with a minimum capacity of 2500 mAH.
- The device must be chargeable outside of the communications cradle, including in a utility vehicle.

2.6.4 *Processing*

2.6.4.1 The system shall support a minimum processor running at least 800 MHz

2.6.4.2 The system must be able to run at a minimum Microsoft® Windows CE® 5.0 Professional.

2.6.5 *Communications*

2.6.5.1 The handheld must have the capability to perform its functions via radio with no wire connections required to the meter or meter module.

2.6.5.2 All radio components must be fully integrated into the handheld computer.

2.6.5.3 Should North Bay Village choose to purchase a non-radio version of the handheld; it must be feasible to upgrade these units in the future to support wirelessly reading meters.

2.6.5.4 The handheld must be IP-addressable and must communicate via Ethernet, USB, and serial port connections.

2.6.5.5 The system shall have, as an option, an internal GPS radio to capture latitude and longitude coordinates.

2.7 *Drive-by Mobile Collection System*

2.7.1. The drive-by system must be capable of operating inside of any utility vehicle in harsh environments.

2.7.2. The drive-by system must be easily installed into new or existing utility vehicles.

2.7.3. The drive-by system must provide the ability collect meter readings, tamper data and up to 40 days of daily and hourly interval data from water meters via handheld or drive-by radio.

2.7.4. The drive-by system must provide the ability to perform remote disconnect and reconnect of water service via handheld or drive-by radio incorporated into meter reading routes. The commands must be secured using industry standard encryption and authentication protocols.

2.7.5. The drive-by system must provide the ability to collect acoustic water leak sensor data via handheld or drive-by radio incorporated into meter reading routes.

- 2.7.6. The drive-by system must provide diagnostics capability to allow troubleshooting in the field.
- 2.7.7. The drive-by system must distinguish endpoints to be read based on priority via colored symbology on the mapping application.
- 2.7.8. The drive-by system must provide a mapping application, including GPS, that allows the meter reader to visually determine which meters have been read and those that remain to be read via colored symbology.
- 2.7.9. The drive-by system mapping application must provide the meter reader the flexibility to see only those meters that have not been read.
- 2.7.10. The drive-by system mapping application must provide the meter reader the ability to view geographically where the vehicle is in relation to the end points being read.
- 2.7.11. The drive-by system application must include functionality to calculate latitude and longitude GPS data for mapping purposes from address locations provided by the utility.
- 2.7.12. The drive-by system must provide the ability to filter out interference that may be interpreted as meter reads.
- 2.7.13. The drive-by system must have 80 channels of read capability.
- 2.7.14. The drive-by system must be able to migrate from handheld to drive-by and to fixed network without changing the endpoint.

2.8 Analytics Software

- 2.8.1. North Bay Village requires that our existing Tyler Technologies billing and customer information software be usable with the Mobile Based AMI system. As a minimum, a utility employee will see the mobile AMI data and be able to accomplish daily activities such as:
 - Reconciling bill complaints
 - Recognizing possible leaks
 - Creating new bills for move-out
 - Identifying usage in unoccupied locations
- 2.8.2. North Bay Village billing department employees and customer service representative need accurate, up-to-date data about individual customers. North Bay Village Manager needs accurate, complete information about routes, groups of customers, and the system as a whole.
- 2.8.3. North Bay Village requires proof of system performance with software that tracks system performance and reports it to North Bay Village employees.

- 2.8.4. As part of our commitment to system integrity and accuracy, North Bay Village requires the ability to identify tampers such as usage on an inactive meter or no usage on an active meter.
- 2.8.5. As part of our commitment to system integrity and conservation, North Bay Village requires the ability to conduct district metering analysis.
- 2.8.6. North Bay Village requires that Interval data be accessible in multiple views such as: Hourly, Daily, Weekly, as well as current billing period, any of the above compared to a previous period, filtered by week, weekend, holidays, etc.
- 2.8.7. North Bay Village requires the ability to schedule reports to be run and e-mailed to customers.
- 2.8.8. North Bay Village requires that the software have the ability to check for reading anomalies (high/low) and report them.
- 2.8.9. North Bay Village requires leak detection capabilities.

2.9 Consumer Engagement

- 2.9.1. North Bay Village requires that vendor's consumer engagement interface provide near real-time data for end-customer use.
- 2.9.2. North Bay Village require that the consumer engagement data be readable by end-customers on a variety of platforms such as a PC and smartphone.
- 2.9.3. North Bay Village requires interactive budgeting capabilities for end-use customers.
- 2.9.4. North Bay Village requires that CIS customers have available multi-site, multi-resource usage data that provide the opportunity to analyze, date limit, and email reports.

2.10 Water Loss Management System

- 2.10.1. North Bay Village requires a permanent monitoring and proprietary (non-third party) integrated distribution level leak detection system.
- 2.10.2. North Bay Village requires leak detection system software that prioritizes leaks by severity.
- 2.10.3. North Bay Village requires that the leak detection system be hosted and accessible in the field.
- 2.10.4. North Bay Village requires a leak management system that can record history of previous leaks/ repairs at sensor locations.
- 2.10.5. North Bay Village requires the leak detection sensors to have a minimum of 10-year battery life and must be completely submersible without impacting sensor integrity or performance.

- 2.10.6. North Bay Village requires a web-based user interface (UI) that displays a digital map of the service territory with each sensor location properly identified with GPS coordinates. UI must also display leak status for each sensor with an appropriate legend, such as: red for probably leak, yellow for possible leak and green for no leak likely.
- 2.10.7. North Bay Village requires that the leak sensor be readable with a two-way radio controller. Digital leak sensors must: employ a two-way, multi-band radio protocol, use advanced direct sequence techniques to increase range; and be approved by the FCC for unlicensed or licensed operation under FCC rules in the U.S. or equivalent applicable rules in other territories.
- 2.10.8. North Bay Village requires that the leak sensors have a self-calibrating, real-time calendar clock for implementation of nighttime recording and power management.
- 2.10.9. North Bay Village requires that the leak sensors record vibrations during the night a minimum of 256 times over a 4-hour period in order to characterize nighttime vibrations in the environment of the sensor.
- 2.10.10. North Bay Village requires that the analysis software include computation of a leak status for every acoustic leak detection sensor. The leak status is derived from a leak index, which is a number between 0 and 99 that represents the relative likelihood of there being a leak in the vicinity of the acoustic leak detection sensor.
- 2.10.11. North Bay Village requires that bidders must offer 24 hours per day customer support, 7 days a week.

3 Scope of Work

3.1 Experienced Project Management

The bidder, and its representatives, shall have a proven program of professional project management to ensure detailed follow-through for successful execution of system installations. Project managers shall be experienced in managing the design, installation and optimization of systems. Project management experience shall include system integration capabilities and any necessary training support.

- 3.1.1 Selected vendor's authorized distributor is to provide local technical support and project management for 1 year after initial system implementation.
- 3.1.2 Project Management will be responsible for working with Utilities and Customer Service to develop Standard Operating Procedures (SOP's) for post implementation maintenance.

3.2 System Configuration

The bidder selected shall provide a preliminary study team that works with North Bay Village to determine exact requirements and recommends a configuration solution. This team will deal with the entire project, including an agreed-upon phased approach to implementation, if required.

3.3 System Design

The Bidder selected shall provide a project team to determine what system configuration, installation options, performance criteria and redundancy will work best. This includes interface requirements with the Village's Tyler Technology billing software, application requirements, platforms supported, and program management responsibilities.

3.4 Configuration and Set Up

Include as part of your pricing proposal (Bid Items #3 through #6) all costs associated with the expected hardware configuration setup, operating system and software installation, parameter setups, definition of required reports, and development of input and output files. If your software must be customized include all costs to customize in your system pricing.

3.5 Installation

3.5.1. Include as part of your pricing proposal all aspects of the installation and construction of the systems used to provide the proposed Mobile Based AMI meter reading services.

3.5.2. Electronic Data Collection

3.5.2.1. Contractor shall utilize a Field Computer or electronic device for the specific purpose of collecting new meter information. The field computer shall be equipped with a barcode code scanner, camera and integrated GPS, at a minimum, to ensure data collection accuracy and integrity. It is acceptable to utilize a hardcopy form in the field for the purpose of production planning and supervision, but at no time should the hardcopy be used to solely collect the new meter information to be later hand keyed into a database for data processing, this is specifically to prevent human error in the field and in the office.

3.5.2.2. It is required that a job Forman, or crew leader, perform the data collection at each location, to include a final quality control review of the installation upon completion. A picture shall be taken of old meter read and new meter set.

3.5.2.3. Contractor shall have the means to automate and perform a thorough quality control review on a daily basis. The specifics are noted below, at a minimum, and must be able to demonstrate their process in detail if required.

- Endpoint – Verify there are no duplicates in the system.

- Endpoint – Utilize Certification File from manufacture and / or supplier to ensure data accuracy.
 - New Meter – Verify there are no duplicates in the system.
 - New Meter – Utilize Certification File from manufacture and / or supplier to ensure data accuracy.
 - Final Read – Compare final read to a threshold, including an upper and lower limit, to prevent erroneous reads from inadvertently entering billing.
 - Meter Attributes – Utilize Certification File from manufacture and / or supplier to ensure data accuracy.
- 3.5.2.4. Contractor shall prepare nightly reports to reflect the day's production.
- 3.5.2.5. Contractor shall prepare weekly project progress reports to communicate inventory levels as well as project progress.
- 3.5.2.6. Contractor shall prepare weekly and / or monthly system integrity reports to include route/book saturation levels as well as read rates.
- 3.5.2.7. Contractor shall have the in-house expertise to work with the client's billing provider to develop and implement an interface that will facilitate the electronic exchange of data.
- 3.5.2.8. Typical interface specification:
- Download:
 - Account Number
 - Account Status
 - Service Type
 - Meter Number
 - Meter Type
 - Meter Size
 - Previous Read
 - Service Address
 - Occupant
 - Occupant Contact
 - Location Notes
 - Upload:
 - Account Number
 - Meter Number
 - Final Read

- New Read
 - New Meter Number
 - New MIU / MXU Number
 - Meter Brand
 - Meter Type
 - Meter Size
 - Install Date
 - Latitude
 - Longitude
- 3.5.3. Contractor will be responsible for any site or utility damage resulting from the installation of meters, meter boxes, and/or new water services. See Bit Item #23 for additional criteria.
- 3.5.4. Contractor shall include a current Safety Program.
- 3.5.5. Contractor is responsible for obtaining all applicable permits from the Village's Public Works and Building Departments and for arranging for all required inspections associated with this project.
- 3.5.6. Contractor shall put out door hangers 24 to 48 hours prior to meter installation.
- 3.5.7. All employees will wear a uniform marked with a visible company logo.
- 3.5.8. All vehicles will be marked with appropriate company logos.
- 3.5.9. Contractor shall schedule appointments for all commercial accounts.
- 3.5.10. Contractor shall report any unauthorized use of water.
- 3.5.11. It is the Contractor's responsibility to return all old meters back into the Village.
- 3.5.12. Experience:
- 3.5.12.1. Contractor shall have a minimum of 8 years of experience performing meter installations with AMR and AMI type systems.
- 3.5.12.2. Contractor shall have a verifiable experience record of having installed 25,000 meters per year, during the previous 4 consecutive years, of this ITB.

3.6 Training

- 3.6.1. North Bay Village requires training on all facets of the Mobile Based AMI System.
- 3.6.2. North Bay Village requires training on the Hand held meter reading system.
- 3.6.3. North Bay Village requires training on the Mobile meter reading system.
- 3.6.4. North Bay Village requires training on Hand held and Mobile meter reading Software.

- 3.6.5. North Bay Village requires training on the Reporting and Analysis Processes.
- 3.6.6. North Bay Village requires training on the Endpoint Installation and Maintenance.
- 3.6.7. North Bay Village requires training on Field Maintenance Procedures for Meter boxes, endpoints and Network hardware.

4 Made in America

In Accordance with Appendix D of the FDEP Supplemental Conditions, North Bay Village requires that all major components of the Mobile Based AMI System be manufactured and supported in the United States of America.

5 Standard Water Meters (Rehabilitation/Replacement of Existing Meters Only)

- 5.1. All meters offered must comply with the latest NSF 372 standards. These specifications include the rehabilitation or replacement of existing water meters if needed and as directed by the Village. The specifications cover cold water meters and the materials and workmanship employed in their fabrication. The displacement meters covered are known as nutating disc meters and are positive in action in that the discs displaces or carries over a fixed quantity of water for each nutation of the disc when operated under positive pressure. Only nutating disc meters offering bronze bodies conforming to NSF 372 standards are acceptable. Displacement meters with coatings applied on their housing bodies to meet NSF 372 standards are not acceptable.
- 5.2. An affidavit from the manufacturer that the meters furnished under the purchaser's order comply with all applicable requirements of AWWA specifications and these detailed specifications.
- 5.3. All meters shall have a bronze outer case with a separate removable bottom plate made of bronze or polymer material for meter sizes 5/8" x 3/4" and bronze for 1" meters. A bronze removable top plate shall be supplied for larger size meters. The size, model, and direction of flow shall be molded in the upper casing of the meter housing. Meters shall meet AWWA standards as it applies to working pressure and shall be in conformance to NSF 61 standards.
- 5.4. The outer case shall be so designed to accept either a totally sealed straight reading or digital absolute encoder register as described in these specifications.
- 5.5. 1 1/2" and 2" meters shall be equipped with female threads or oval flanges. Oval flanged meters shall have casted in place a 1" NPT threaded test plug, for inline field testing, or pressure checks and shall accept the register configurations stated above.

- 5.6. All external closures shall be designed for easy removal after long service. Special torx tamper style seal screws shall be available and provided. Plastic push through pins are not acceptable. Bolts to secure the top and bottom plates to the meter body shall be made of non-corrosive stainless steel.
- 5.7. All meters shall have an absolute encoder register that is permanently sealed using a glass reading dome and brass or stainless steel housing, reading in US gallons. The encoder register shall incorporate a sweep hand and leak indicator on the dial face. The encoder register shall have a plastic lid with the meter serial number stamped on it. The encoder register shall be designed with a resolution encoder which includes eight-digit resolution to AMR/AMI Endpoints and the option of four, five, six, seven or eight-dial resolution. The Encoder register shall be mechanical; LCD or LED will not be accepted.
- 5.8. The measuring chambers shall be self-contained units smoothly finished, firmly seated, easily removed from the main cases, and shall not be a part of the main case. The measuring chamber, 5/8" through 2", shall be made of a dimensionally stable reinforced thermoplastic. They shall be of two-piece snap joint design and shall be secured in the main casing so that the accuracy of the meter will not be affected by any distortion of the cases that may occur when operating under pressures to 150 psi.
- 5.9. The measuring device shall be made of a suitable synthetic polymer as near the specific gravity of water as possible. It shall be smoothly finished and shall be fitted accurately into the measuring chamber. The disc style shall be equipped with a thrust roller and disc spindle. The disc nutations shall not exceed those listed below.
- 5.10. All meters shall be provided with strainer screens of rigid non-ferrous material which fit snugly, are easy to remove, and have an effective straining area at least double that of the main-case inlet.
- 5.11. All meters offered shall meet or exceed the latest AWWA accuracy standards for new water meters.
- 5.12. Meters supplied under these specifications shall operate without leakage or damage to any part at a working pressure of 150 psi.
- 5.13. **All bids shall include the manufacturers nationally published warranty.**

6 Solid State Residential Water Meters (New Meters)

- 6.1. These specifications include the installation of new Solid State meters throughout the Village's system. This specification covers Cold Water Ultrasonic Meter in sizes 5/8", 5/8" x 3/4", 1", and the material and workmanship employed in their fabrication. The meter must utilize ultrasonic measurement technology and have no moving parts within the meter.

- 6.2. The basis for measurement is the use of ultrasonic signals sent consecutively in forward and reverse directions of flow. Velocity is determined by measuring the time difference between the measurement in the forward and reverse direction. Flow totalization can then be calculated from the measure flow velocity using water temperature and pipe diameter. The meter is all electronic with totally potted circuitry, display and battery. There are no moving parts to wear or replace and no part of the meter is removable or serviceable.
- 6.3. The purchaser may require, in their supplemental specifications, an affidavit from the manufacturer or vendor that the meters furnished under the purchaser's order comply with all applicable requirements of this specification. Failure to meet any part of the specification shall be sufficient cause for rejection.
- 6.4. Meters supplied under this specification shall operate without leakage or damage at a working pressure of 175 psi.
- 6.5. The housing shall be lead-free, made of stainless steel or engineered polymer, and shall be designed so that at a working pressure of 175 psi, any distortion will not affect the accuracy of the meter. Metering tube shall not be repaired in any manner. The flow direction and meter size shall also be cast in the meter tube and the inlet and outlet shall have a common axis.
- 6.6. The ultrasonic metering insert shall be self-contained within the meter flow tube, seated, and not removable. The insert shall be secured to the main case, providing a method of minimizing turbulence and cleaning the reflectors, so that the accuracy of the meter will not be affected by any distortions of the case when operating at a pressure of 175 psi. The metering insert shall be made of engineered polymer and stainless steel and the ultrasonic transducers shall be wetted components that extend through the meter tube and shall have a surface of stainless steel.
- 6.7. The electronic circuit shall be micro-processor based and include a non-replaceable battery, and non-volatile memory capable of storing all programmable data and accumulated data. The circuit shall control the ultrasonic transducers. No field programming or calibration shall be necessary. The entire meter circuit and related components shall be fully potted and sealed from water intrusion. No components shall require service or replacement over the life of the meter. For reliability, the use of inductive coil technology shall not be permitted with an electronic residential meter.
- 6.8. The name of the manufacturer shall be permanently molded and the serial number shall be imprinted on the lid of the register box. The lid and shroud components shall overlap to protect the lens. Register box enclosures and lids shall be made of engineered polymer.
- 6.9. The Register shall be encased in an integral non-corrosive polymer housing, with the electronics, display, and battery completely potted within. It must be permanently epoxy sealed to provide moisture resistance to flooded pit or submerged conditions. The permanent seal between the lens and non-corrosive plastic housing shall utilize an adhesive seal.

- 6.10. The Register shall be an integral part of the meter assembly. The register must be available as factory pre-wired to an endpoint, or factory pre-wired to an inline connector that can be used to connect to an endpoint.
- 6.11. The Register shall consist of an electronic local display combined with electronic circuitry to provide either a high resolution absolute encoder output. This electronic register assembly shall transmit a signal through properly shielded (grounded) transmission wire for electronic reading connectivity.
- 6.12. The High Resolution Absolute Encoder Register option, available for the engineered polymer and stainless steel meters, shall use an industry ASCII protocol. Capable of sending a 9-digit encoder output to the endpoint as well as extended status messages. Resolution being sent to the reading software is based on the output of the endpoint.
- 6.13. The display shall be a straight reading, permanently sealed electronic LCD with digits 0.25 inches high. The display will contain 9 digits plus a decimal point and display consumption, units of measure, rate of flow and alarm information. The digital display shall provide a totalized consumption resolution to 0.01 gallons.
- 6.14. The size, model, and direction of flow through the meters shall be permanently visible on the topside of all meter displays. The units of registration, U.S. gallons, cubic feet, or meters cubed shall also be designated on the Register display. The enhanced resolution of the totalized flow display can be utilized as a flow indicator for leak detection.
- 6.15. The Register shall have a lid that covers the display face for added protection and optional identification of serial number.
- 6.16. The meter shall register not less than 98.5% and not more than 101.5% of the water actually passed through the meter. At the extended low test flow rate, the meter shall register not less than 97.0% and not more than 103.0% of the water actually passed through the meter.
- 6.17. **All bids shall include the manufacturers nationally published warranty.**

7 Solid State Commercial Water Meters (New Meters)

- 7.1. These specifications include the installation of new Solid State meters throughout the Village's system. This specification covers Commercial Water Meters sizes 1 1/2"- 4" meters under this specification shall be a microprocessor- based electronic water meter capable of displaying total net consumption and flow rate in both forward and reverse flow direction.
- 7.2. The water meter shall have no moving parts to ensure that there is no damage from particulate matter, e.g. stones, sticks, weeds, etc.

- 7.3. The meter shall be suitable for operation from internal batteries that provide an operating life of 10 years for sizes 1 ½” up to 4”. The meter shall provide an alarm at least 3 months prior to end of life to alert user of battery status. The alarm shall be visible on the meter display. Once the battery is dead the display should still function, showing the final registered volume, and provide another alarm stating the meter is no longer measuring flow.
- 7.4. As an optional feature, meters 2” and larger may include a replaceable battery pack as the means of powering. The battery pack shall be interchangeable among all of these sizes of meter and shall be labeled with the anticipated battery life for each size of meter to which it may be attached.
- 7.5. The battery pack shall include Torx head screws to secure the battery to the meter. The meter will have further features to indicate or prevent removal of the battery by unauthorized personnel. The battery pack connection port shall be double O-ring sealed and include material to indicate contact with moisture. The battery cells shall be encased in an engineering polymer or epoxy resin to protect them from physical or water damage.
- 7.6. Accuracy in the normal flow range shall be comparable to AWWA C701, AWWA C702, AWWA C703 and AWWA C712 in both forward and reverse flow direction. The meter shall have a turndown ratio of 350:1. The lowest measured flow should be 350th of the max flow and the accuracy shall be >95%.
- 7.7. An accuracy of ±1.50% shall be achieved for normal flows starting at 1% of max flow and up to the stated maximum flow (for 1.5” meters or larger). This performance is required for water management and/or billing purposes.
- 7.8. The battery powered electromagnetic meter shall have a sampling rate of at least 500ms and maintain a 10-year battery life (with sealed battery supply) at this sampling rate. Any slower sampling rate will not be accepted.
- 7.9. The 500ms sampling rate is required to ensure that the meter maintains its accuracy during variable flow rates and will provide an accurate reading in commercial billing applications.
- 7.10. The meter must contain internal grounding rings to ensure that any electro-static charge that could affect the meter’s performance is dissipated before entering the flow tube. External groundings rings will not be accepted.
- 7.11. The meter performance shall have been verified on a fully traceable test facility that is internationally accepted (such as NAMA, NIMJ, NIST or equivalent). Laboratory traceability packs shall be available on request.
- 7.12. Meters sizes 1 ½” to 4” shall have laying lengths no more than specified by AWWA C701 Turbine Type Meter Standard, most recent revision.
- 7.13. Flanged ends for meters 1 ½” to 4” shall conform to ANSI B16.5 Class 125.

- 7.14. The wetted materials shall be compatible with, and suitable for, potable water. An internationally recognized body such as AWWA, NSF, WRC or equal shall certify the liner. Acceptable electrode material is 316 Stainless Steel. All other electrode material is not accepted.
- 7.15. The meter body and display enclosure must be constructed of a durable 304 stainless steel. The flow tube shall be constructed of 316 stainless steel.
- 7.16. The flow tube liner must be of a high density polyethylene to ensure that it is not susceptible to mineral build up.
- 7.17. The meter and register display shall be rated to IP68 (NEMA 6P) and be suitable for indefinite submergence to a depth of up to 33 feet (10 m). The meter should be fully IP68 sealed at the factory and not require additional potting material at installation. The sensor shall also be suitable for installation in underground pipes without the need for a meter vault or pit. The manufacturer shall, on request, provide evidence of satisfactory operation of similar sensors for a minimum period of 5 years in buried installations.
- 7.18. A remote-mounted display suitable for installation up to 200 feet from the sensor must be available and easily retrofitted in the field for pit applications.
- 7.19. The remote mounted display must be able to provide a pulse output capable of interfacing with external data loggers, AMR/AMI devices and 4-20mA Frequency to Analog converters.
- 7.20. The Remote display unit shall be protected to IP63 (NEMA 4P) resistant to water spray at a 60° angle. An IP68 (NEMA 6P) protective box may also be required.
- 7.21. There shall be independent totalizer displays to give net total and flow rate.
- 7.22. The meter shall be compatible with electronic meter reading systems, including hand-held scan reading and Walk-by, Drive-by and Fixed Network radio frequency systems.
- 7.23. The meter shall provide two pulse outputs. The pulse outputs must be capable of interfacing with external data loggers, AMR/AMI devices and 4-20mA Frequency to Analog converters. The meter shall also have the ability to provide an absolute encoded output for interfacing with AMR/AMI devices.
- 7.24. The output of the meter shall be easily changed out in the field without removal of the register, without compromising the IP68 rating, without the need to remove and replace potting material and without programming.
- 7.25. Manufacturers shall, on request, provide a reference list of battery-powered electromagnetic flow meters that have been supplied to users on major international leakage detection and water supply projects and which have been in operation for at least 5 years.
- 7.26. **All bids shall include the manufacturers nationally published warranty.**

**WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE**

BID NO. NBV 2017-001

Appendix B

1. Miami-Dade Water and Sewer Department (WASD) Specifications for reference:
 - Section UC-075 Water Service Installations
 - Section UC-080 Meter Boxes, Sectional Plates and Vaults for Water Service
 - Section UC-085 Water Meter Valves
 - Section UC-170 Cleaning and Testing of Main
 - Section UC-175 Disinfection of Water Main
 - Section 15060 Piping and Fittings
 - Section 15100 Valves, General
2. WASD Details for reference:
 - GS 0.5, 1 of 2 Standard Requirements Water and Sewer Construction
 - GS 0.5, 2 of 2 Standard Requirements Water and Sewer Construction
 - GS 2.0, 1 of 5 Standard Requirements Mechanical Thrust Restraint
 - GS 2.0, 2 of 5 Standard Requirements Mechanical Thrust Restraint
 - GS 2.0, 3 of 5 Standard Requirements Mechanical Thrust Restraint
 - GS 2.0, 4 of 5 Standard Requirements Mechanical Thrust Restraint
 - GS 2.0, 5 of 5 Standard Requirements Mechanical Thrust Restraint
 - WS 2.05, 1 of 1 Casting Standards
 - WS 2.10, 1 of 3 Single Meter Box Installation

- WS 2.10, 2 of 3 Single Meter Box Installation
- WS 2.12, 1 of 2 Dual Meter Box Installation
- WS 2.12, 2 of 2 Dual 5/8" Meter Installation
- WS 2.16, 1 of 4 Typical 2" Service Installation with 2" Meter
- WS 2.16, 2 of 4 Typical 2" Service Installation with 1 1/2" Meter
- WS 2.16, 3 of 4 Typical 1" Service Connection (Copper or HDPE)
- WS 2.16, 4 of 4 Typical 2" Service Connection (HDPE)
- WS 2.21, 1 of 3 Easement Requirements for Service and Fire Hydrant
- WS 4.10, 1 of 1 Typical Service Plan
- WS 4.16, 1 of 2 Meter Bank – 2" Supply
- WS 4.16, 2 of 2 Meter Bank – 4" Supply
- WS 4.20, 1 of 4 Typical Fire & Domestic Water Service Connections
- WS 4.21, 1 of 2 Dual 2" Meter Installation for Typical 4" Domestic Service
Lines
- WS 4.21, 2 of 2 Dual 2" Meter Installation for Typical 2" Domestic Service
Lines

SECTION UC-075
WATER SERVICE INSTALLATIONS

PART 1 - GENERAL

1.01 SCOPE

This Contractor shall furnish all labor, material and equipment required to construct water service installations, as specified herein.

1.02 RELATED SECTION

Section UC-080 - Meter Boxes, Sectional Plates and Vaults for Water Service
Section UC-085 - Water Meter Valves

1.03 LEAD FREE REQUIREMENT

- A. It is a requirement that all components of water service installations be certified lead free. All brass components for water service installations shall comply with the S3874 amendment (Reduction of Lead in Drinking Water Act) to Section 1417 of the Federal Safe Drinking Water Act.
- B. All meters, meter accessories, copper pipe, brass pipe, fittings, corporation stops, saddles, washers, tailpieces, couplings and other appurtenant items used for water services shall be "NL" no lead Type for installation in the WASD system. Solders and flux shall contain no more than 0.2% lead.
- C. All brass components shall be marked "NL" to indicate no lead.
- D. All valves 2-inch and smaller shall conform to the No Lead, NL, requirement. Valves larger than 2-inches are exempt.

PART 2 - PRODUCTS

2.01 HDPE Pipe for Services

- A. All 2-inch high density polyethylene pipe used for services shall be IPS-O.D. Controlled with Standard Outside Dimension Ratio (SODR) of 9, pressure rating of 250 psi, nominal outside diameter of 2.375-inches, minimum wall thickness of 0.264-inches, in conformance with Materials Standard PE 4710 "Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter". Pipe shall conform with ANSI/AWWA C901 "Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service" as modified herein. Pipe shall have a (natural) inner core with a blue colored outer shell. Pipe shall have footage marks at a maximum interval of every two feet. Polyethylene material shall have a minimum cell classification in accordance with ASTM D3350 "Polyethylene Plastics Pipe and Fitting Materials" of 445576D for

the core, which shall be 100% virgin material, and 445576E for the outer shell. Note that both of these materials are UV stabilized as signified by the "D" for natural colored and "E" for the colored shell. Pipe shall conform with NSF 61 or 14. Manufacturer shall supply certification of compliance with all of the above requirements. Certification shall ship with the pipe on material sold to the Department and shall always be submitted with shop drawings and catalogue cuts. When required by the Chief, Engineering Division, Miami-Dade Water and Sewer Department or his designee, certification shall be signed and sealed by a professional engineer licensed to practice in the state in which the manufacturer is located or in the State of Florida.

- B. All 1-inch high density polyethylene tubing used for services shall be CTS-O.D. Controlled with Standard Outside Dimension Ratio (SODR) of 9, pressure rating of 250 psi, nominal outside diameter of 1.315-inches, minimum wall thickness of 0.125-inches, PE 3408, all in conformance with Materials Standard PE 4710 "Polyethylene (PE) Plastic Tubing". Tubing shall conform with ANSI/AWWA C901 "Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service" as modified herein. Tubing shall have a (natural) inner core with a blue colored outer shell. Tubing shall have footage marks at a maximum interval of every two feet. Polyethylene material shall have a minimum cell classification in accordance with ASTM D3350 "Polyethylene Plastics Pipe and Fitting Materials" of 445576D for the core, which shall be 100% virgin material, and 445576E for the outer shell. Note that both of these materials are UV stabilized as signified by the "D" for natural colored and "E" for the colored shell. Tubing shall conform with NSF 61 or 14. Manufacturer shall supply certification of compliance with all of the above requirements. Certification shall ship with the tubing on material sold to the Department and shall always be submitted with shop drawings and catalogue cuts. When required by the Chief, Engineering Division, Miami-Dade Water and Sewer Department or his designee, certification shall be signed and sealed by a professional engineer licensed to practice in the state in which the manufacturer is located or in the State of Florida.
- C. All HDPE services require the use of a 10 gauge direct bury stranded copper blue tracer wire tapped every four feet with poly or duct tape for location purposes. The tracer wire shall be accessible at the meter box and connected to the corporation stop for continuity of the signal. The 10 AWG standard tracer wire shall have 0.030" HDPE insulation and measure 0.162" min O.D.

2.02 COPPER

- A. Copper tubing shall conform to the requirements of NSF 61 and ASTM Standard B88. "Seamless Copper Water Tube", Type "K". All tubing shall be furnished in straight lengths. Fittings and valves shall be of the solder-joint type except where specified otherwise. Type L copper shall only be used on the customer side of the property and is not allowed on public right-of-ways.
- B. Fittings for use with copper tubing shall be one of the following:
 - 1. Cast bronze solder-joint fitting shall be in accordance with ANSI Standard B-16.18, "Cast Brass Solder-Joint Fittings", and ASTM Standard B62-90, "Composition Bronze or Ounce Metal Castings". Cast bronze solder-joint fittings shall be as manufactured by Chase Brass and Copper Co., Stanley G. Flagg & Co., Inc. Or approved equal.
 - 2. Wrought copper solder-joint fittings shall be in accordance with ANSI Standard B16.22, "Wrought Copper and Bronze Solder-Joint Pressure Fittings".

Connection of copper pipe or fittings with galvanized pipe or fittings shall be made with dielectric fittings. Solder shall be lead free type.

2.03 SERVICE TERMINAL FITTINGS

A. Single Meter Box Installation

- a. One inch or 2-in copper or High Density Polyethylene (HDPE) tubing and terminal fittings.
- b. 1" lock wing style valve, drilled for wire sealing, Cat. No. KV23-444W Ford Meter Box Co. or Cat. No. 14255, Mueller Co.
- c. C.I. cover and lid as per MDWASD Standard Details

B. Duel Meter Box Installation

- a. One inch or 2-in copper or High Density Polyethylene (HDPE) tubing and terminal fittings.
- b. 1" branch valve assembly, with Standard 7 ½ -in spacing between outlet centers, drilled for wire sealing, Cat. No. UV23-42W Ford Meter Box Co. or 1-in branch connection with Standard 7 ½ in spacing between outlet centers Cat. No. H-15362, fitted with angle stops for 5/8 inch meters, drilled for wire sealing, Cat. No. H-14265, (3/4" Inlet) Mueller Co.
- c. C.I. cover and lid as per MDWASD Standard Details

2.04 CASINGS FOR TORPEDO INSTALLATIONS

- A. Provide a PVC Schedule 40 casing or black steel pipe casing one inch in diameter larger than the service pipe when the service is installed with the use of a torpedo. When the service is installed by the direct bury method, no casing is required.

2.05 BRASS FITTINGS AND VALVES

- A. All brass components shall be marked "NL" to indicate no lead.
- B. Angle Key Meter Valves – Ford Meter Box Company KV-444W, Mueller or approved equal.
- C. Brass Fittings – Merrit Brass or approved equal
- D. Pack Joint, Swivel Nut – A.Y. McDonald Model 4761-22
- E. Ball Corporation Stop – Ford Meter Box Company FB800, Mueller H-10003 or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION OF SERVICES

- A. Services from the new water mains shall consist of corporation stops, HDPE or copper tubing and terminal fittings as shown in the Standard Details. All service installations from the new

main shall be installed by the Contractor. Service installations from existing mains, if required, will be installed by Department forces, and the cost for materials and labor furnished by the Department shall be borne by the Contractor.

- B. Where possible, all meter boxes shall be installed in non-traffic and non-parking areas.
- C. Where meter boxes are located in existing sidewalks, the whole flag of sidewalk shall be removed and replaced with new concrete. The concrete walk shall be 4 inches thick and finished with the proper tools and techniques to resemble the existing walk. The concrete support for meter boxes shall be eliminated when the box is installed in an existing sidewalk. Where meter boxes are located out of sidewalk areas, a concrete support is required. Concrete supports shall be to the established line and grade.
- D. Meter boxes shall be set flush with the finished grade if in sidewalks, or flush with the top of the ground if out of sidewalk areas.
- E. All bends in copper tubing shall be made with an approved type tube bender to the satisfaction of the Department. Flattened, out of round or kinked tubing will not be permitted.
- E. One inch service connections shall be one of the following:
 - 1. Short Single - Consisting of a short run of HDPE or copper tubing from the main on the same side of the street as the proposed meter, to the meter installation approximately 2 ½ feet from property line. Single meter box installation included.
 - 2. Long Single - Same as above but from a main on the opposite side of the street from the proposed meter.
 - 3. Short Dual - Consisting of a short run of HDPE or copper tubing from the main on the same side of the street as the proposed meter to the meter installation, approximately 2 ½ feet from the property line and branched off to serve an additional customer. Dual meter box installation included.
 - 4. Long Dual - Same as above but from a main on the opposite side of the street from the proposed.
- F. If PVC or black steel casing pipe for services crossing existing pavement is required, the pipe may be driven from the side of the street which affords the most room for the driving trench, thus resulting in the least number of couplings in the casing. Extra care shall be used in leveling and heading the first length of casing in the proper direction. One method of driving casing, known to work in this area and offered here as a suggestion, is to use an ordinary coupling screwed on the leading end of the casing as a cutting edge, and driving against a coupling screwed on the tailing end with a special tool in a pneumatic hammer, while maintaining a steady pull forward on the hammer with a small winch. Each length of casing as driven shall be cleaned out with compressed air introduced through a one-half-inch pipe at least as long as the casing. The purpose of driving casing pipe is to make it unnecessary to repair paving over one-inch service cuts. Should the Contractor elect to open-trench any one-inch service line across pavement, he will be required to repair the paving.

- G. The Contractor shall install the meter box, 1-inch branch assembly, 30 inch tailpieces and perforated spacers.
- H. When installing services the Contractor shall temporarily plug the ends of the tail pieces for protection against dirt.
- I. Pipe bedding and the backfill material to at least 6 inches above the crown of the copper tubing shall be clean white masonry sand. Backfilling and compaction of material lying above a point 6 inches above the crown of the tubing and below the surface of the ground shall be as specified in Section 02315, "Trenching and Backfilling for Piping Systems".
- J. Department forces will install the meters into the boxes installed by the Contractor.

END OF SECTION

SECTION UC-080**METER BOXES, SECTIONAL PLATES AND VAULTS FOR WATER SERVICE****PART 1 - GENERAL****1.01 SCOPE OF WORK**

- A. The Contractor shall furnish and install all concrete meter boxes, lids, sectional plates and precast vaults required for a complete installation.
- B. All concrete meter boxes, sectional plates and vaults shall be in accordance with the Department's Standard Details and as specified herein.

PART 2 - PRODUCTS**2.01 GENERAL**

All materials used in the production of the concrete meter boxes, lids sectional plates and vaults shall be new and or recent manufacture. Aggregates shall not originate in salt or brackish water areas and no calcium chloride containing admixtures shall be used.

2.02 FINE AGGREGATE

Fine aggregate for concrete mixes shall consist of sand or stone screening, composed of hard durable grains, free of foreign matter such as loam, clay, dirt, organic matter or other impurities. Fine aggregate shall conform to the following gradation requirements:

<u>Size Sieve</u>	<u>Percent Passing</u>
3/8"	100
No. 4	90 to 100
No. 8	70 to 95
No. 16	50 to 85
No. 30	30 to 70
No. 50	10 to 45
No. 100	0 to 10

2.03 COARSE AGGREGATE

- A. Coarse aggregate for concrete mixes shall consist of gravel, broken stone or local limerock.
- B. Coarse aggregate shall be hard, durable and free of foreign matter such as loam, clay, dirt, organic matter or other impurities. It shall be free of adherent coatings. Coarse aggregate shall conform to the following gradation requirements:

1. Meter Boxes, Lids and Sectional Plates

<u>Size Sieve</u>	<u>Percent Passing</u>
3/4"	100
1/2"	90 to 100
3/8"	40 to 70
No. 4	0 to 15
No. 8	0 to 5

2. Vaults

<u>Size Sieve</u>	<u>Percent Passing</u>
1-1/2"	100
1"	95 to 100
1/2"	25 to 60
No. 4	0 to 10
No. 8	0 to 6

2.04 CEMENT

- A. Cement shall be a standard brand of Portland cement meeting the requirements of ASTM C150-86, "Portland Cement", Type I.
- B. Different brands of cement, even if tested and approved, shall not be mixed during use.

2.05 REINFORCING STEEL

- A. General: All reinforcing steel shall be free of rust, grease, dirt or mortar and shall be thoroughly cleaned of any such foreign matter or loose mill scale before being placed in position.
- B. Wire reinforcement shall conform to ASTM A82, "Steel Wire, Plain, for Concrete Reinforcement".
- C. Wire mesh reinforcement shall conform to ASTM A185, "Steel Welded Wire, Fabric, Plain for Concrete Reinforcement".
- D. Bar reinforcement shall conform to ASTM A615-7a, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement", Grade 60, deformed, except that steel manufactured by the Bessemer process will not be accepted.

2.06 WATER

Water used in mixing concrete that is not in the form of surface moisture on the aggregate shall be from the Department's water supply or other approved source. (See "Water Used in Construction" of Section 01100)

PART 3 - EXECUTION**3.01 MANUFACTURE****A. General**

All concrete meter boxes, lids, sectional plates and vaults shall be manufactured in accordance with the applicable provisions of ASTM C858, "Underground Precast Concrete Utility Structures", as modified herein.

B. Forms

1. The Forms shall be made from of a non-porous material with smooth surfaces and shall be accurate and strong enough to maintain the structure's dimensions within one half of the allowable tolerances given in Section 3.4 of ASTM C858
2. The precast sections for 4' x 4' vaults shall be constructed with a threaded metal insert in accordance with Standard Detail No. WS 2.20, Sheet 1 of 2, contained herein. Also, each section shall be furnished with a corner bolt.

C. Cleaning and Oiling: Forms shall be cleaned before each use, and shall be free of paint or other protective coatings that might cling to the surface of the concrete. Releasing agents applied to the form to aid in breaking the bond shall not be injurious to the concrete.**D. Reinforcement:** Steel reinforcing shall be securely positioned in the form to maintain the concrete cover shown on the Standard Details.**E. Mixture**

1. The aggregates shall be sized, graded, proportioned and thoroughly mixed in a batch mixer with proportions of cement and water that will produce a homogeneous concrete having a compressive strength of 3500 psi at 28 days of age for the boxes and plates and 3000 psi for the vaults after the same curing period.
2. Batched concrete shall be made in standard concrete mixers only, and not in mortar boxes, wheelbarrows or similar equipment.
3. Mixers shall be standard mechanical (power-driven) rotary type for concrete. Mixers normally used for mortar or plaster mixing will not be permitted.

F. Concrete Placement

1. Concrete shall be placed either by gravity into the form at a rate such that the concrete is plastic at all times and flows readily into all parts of the form and around all reinforcement steel without segregation of materials, or by highspeed pneumatic rammer resulting in dense, evenly compacted concrete without disturbing the reinforcement. The surfaces from top to bottom shall show uniform compaction.

2. The top surface of the molded items shall be flat and finished smooth while in the mold. Capping will not be permitted. Where required by the Department, corners shall be rounded.
- G. Curing: Curing shall be by any method or combination of methods that will develop the required compressive strength within 28 days or less.
- H. Repairs: The precast units may not be repaired without specific approval by the Department.
- I. Inspection: The quality of materials, manufacturing process, and the finished units shall be subject to inspection at any time by the Department, and the supplier shall afford access for this purpose, if so required.

3.02 CERTIFICATION

Prior to installation of any of the above mentioned units, the Contractor shall furnish the Engineer, upon his request, with a statement giving the following information:

- A. Name of manufacturer.
- B. The source and type of cement.
- C. The source and specific gravities of the aggregates.
- D. The concrete mix proportions, and strength at 28 days.
- E. Name of admixtures, if any.
- F. Mill certificates for the reinforcement steel.
- G. Source of water.

3.03 REJECTION

The Precast units shall be subject to reject, either at the manufacturing plant or at delivery, upon failure to conform to any of the specified requirements herein. The following imperfections shall also be cause for rejection:

- A. Defects that indicate any imperfect concrete mixing and molding.
- B. Surface defects such as honey-combed or open textured and damaged area which would affect the structural adequacy.
- C. Repaired areas or capping.
- D. Improper radius at corners or improper tolerances.

END OF SECTION

SECTION UC-085**WATER METER VALVES****PART 1 - GENERAL****1.01 SCOPE**

This Contractor shall furnish meter valve and accessories for cold water displacement meters (to be furnished and installed by the Department) and shall supply all labor, material and equipment necessary for a satisfactory installation.

1.02 RELATED SECTION

Section UC-080 - Meter Boxes, Sectional Plates and Vaults for Water Service

PART 2 - PRODUCTS**2.01 METER VALVE ASSEMBLY**

- A. Meter valves (inlet side of meter) for single meter box installations, including single meter boxes for multi-story buildings, shall be the lock wing type with coupling nut drilled for wire seal. The inlet end of the valve shall be for 1-inch copper tubing as specified herein, and the outlet end (coupling nut) shall connect to a 1-inch meter. The valves shall be as manufactured by the following or an approved equal:

Ford Meter Box. - Angle Inverted Key Meter Valves, No. KV23-444W

or

Mueller Co. - Angle Meter Stop, No. H-14255

- B. Meter valves (outlet side of meter) for single meter boxes (multi-story building) shall be the plain type with coupling nut drilled for wire seal. The inlet end of the valves (coupling nut) shall be for 1-inch copper tubing as specified herein, and the outlet end shall connect to a 1-inch meter. The valves shall be as manufactured by the following or approved equal:

Ford Meter Box. - Straight Inverted Key Meter Valves, No. KV23-444W

or

Mueller Co. - Straight Inverted Key Meter Valves, No. H-14348

- C. Meter branch valve assemblies (inlet side of meter) with standard 7-1/2 inch spacing for dual meter boxes (two 5/8-inch water meters) shall be lock-wing types with coupling nuts drilled for wire seal. The inlet side of the branch valve assembly shall be for 1-inch copper tubing as specified herein, and the outlet side (coupling nut) shall connect to a 5/8-inch by 3/4-inch meter. The branch valve assembly shall be as manufactured by the following or an approved equal:

Ford Meter Box. - Branch Valve Assemblies, No. UV23-42WW

or

Mueller Co. - "U" branch connection No. H-15362 with 7-1/2 inch spacing, 3/4 I.P. male thread (outlet) and inlet for 1-inch copper tubing

and

Angle meter stops No. H-14265 with 3/4-inch I.P. female thread (inlet), and coupling nut (outlet) for 5/8-inch by 3/4-inch meter and drilled for wire seal.

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION UC-170**CLEANING AND TESTING OF MAIN****PART 1 - GENERAL****1.01 SCOPE OF WORK**

- A. The Contractor shall furnish all material, labor and equipment necessary to clean and test force main and/or water main.
- B. The material herein specifies cleaning and testing of mains 24-inches in diameter and less unless otherwise allowed by the MD-WASD.

1.02 RELATED SECTION

Section UC-175 - Disinfection of Main

Section UC-370 - Cleaning and Testing Gravity Sewers

1.03 QUALITY ASSURANCE

- A. Testing shall be in accordance with ANSI/AWWA Standard C-600, latest edition, as modified herein.
- B. Cleaning and testing shall be performed in strict accordance with these specifications.
- C. The Contractor is cautioned that Miami-Dade County or other governing body having jurisdiction over the work location may have regulatory rules and ordinances prohibiting or limiting the discharge of water from any excavation into sanitary and storm sewer systems, or to canals and drainage ditches. The Contractor shall comply with all regulations of all governing agencies.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION**3.01 GENERAL**

- A. As soon as the installation of each run of main is completed, including valves sufficient for control and anchored sufficiently to withstand any test pressure, the run shall be thoroughly cleaned by pigging (or, if required by the MD-WASD, flushing), discharging the water through a riser into the pipe trench, unless some other method of disposal is approved by the MD-WASD. Note that in some circumstances it may be necessary to install valves after the line segment has been pigged. In such an instance, permission to use this sequence of operations must be approved in writing by the MD-WASD.

- B. THE Contractor shall clean the inside of the main in intervals during its installation. The Contractor shall utilize pigging to clean the main unless otherwise specified herein or instructed by the MD-WASD. A Bare Swab No. 5, density 1 lb./ft.³ by Knapp Polly Pig, Inc. 1209 Hardy Street, Houston, Texas 77020, 1-800-231-7205, or approved equal, shall be utilized for this work. Any damage to the pipe lining caused by pigging shall be repaired or replaced to the satisfaction of the MD-WASD at the Contractor's sole expense. The Contractor shall furnish all materials and equipment necessary to clean the mains.
- C. Volume flushing, if required, shall be of sufficient velocity to produce a scouring action in the main meeting the approval the MD-WASD.
- D. The Contractor shall furnish and install all piping necessary to dispose of the flushing water and shall exercise care to prevent any damage to the surrounding area and adjoining and adjacent properties.
- E. Water Main: Mains shall be tested as a whole or in sections between line valves, unless otherwise specified or approved by the MDWASD. Unless otherwise approved by the MDWASD, the total length of pipe for any single test shall not exceed 2,000 feet. Where a segment is being tested which includes more than one line valve to line valve section the maximum allowable leakage, defined below, shall be based on the length of the small segment being tested. All offset connections, fire hydrants, fire hydrant branch mains, and services between line valves shall be tested with the water main.
- F. Force Main: The force main shall be tested in a manner identical to the water main test specified above. Offset connections and blow offs will be tested along with the main. Corporation stops shall be installed prior to testing and shall be included in the test with no leak permitted.

3.02 WATER FOR CLEANING AND TESTING

- A. Water for cleaning and testing shall be furnished as specified in "Water Used in Construction" of Section 01100. The Contractor shall furnish and install all necessary pumps, piping and fittings, including the corporation stop(s), to connect the section under test to the source of water. The test pump shall be a centrifugal or gear pump producing a steady pressure free of pulsation. The MD-WASD may furnish a suitable meter or container for measuring the flow of water into the line, if available and requested by the Contractor in a timely manner, but will not be considered as obliged to do so. If the meter is not furnished by the MD-WASD, a meter or container, calibrated to the satisfaction of the MD-WASD shall be provided by the Contractor. A Contractor-supplied meter or container must be approved in writing by the MD-WASD. The test pressure shall be 100 psi and, as specified in AWWA C600, Section 5.2 "Hydrostatic Testing", shall not vary more than ± 5 psi for the duration of the testing.

3.03 LEAKAGE TESTING

- A. Force Main: All corporation stops and blow offs in the section being tested shall be opened and left open until water comes out of them, in order that as much air as possible may be removed from the line.

- B. Water Main: All fire hydrants, corporation stops, air release valves and meter valves in the section being tested shall be opened and left open until water comes out of them, in order that as much air as possible may be removed from the line.
- C. Water shall be pumped into the line from a MD-WASD approved calibrated container or through a MD-WASD approved meter up to the required pressure, and pumping shall be continued to maintain that pressure for a minimum period of 2 hours, or such longer period as the Inspector requires to inspect the line for leaks. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any isolated section thereof, to maintain the specified leakage test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.
- D. The inspector will record the amount of water supplied to the pipeline at the end of the first hour of the test and at each hour thereafter for the full duration of the test. Should the amount of leakage (ie water supplied to the pipe) recorded for any hour exceed the amount recorded for any previous hour, even if the amount of leakage is less than the allowable amount, the test shall continue for additional one-hour periods until the leakage stabilizes or decreases.
- E. The maximum allowable leakage for ductile iron mains shall be determined by the following formula from the ANSI/AWWA Standard C600-05 "Installation of Ductile-Iron Water Mains and Their Appurtenances", latest edition:

$$L = \frac{SD \text{ times the square root of } P}{148,000}$$

where: L is the allowable leakage in gallons per hour; S is the length of pipeline tested in feet; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test, in pounds per square inch gage.

Note: For force mains, also see "Tightness Standards" in Section UC-370, as applicable.

- E. No pipe installation will be accepted if the leakage is greater than that determined by the above requirements.
- F. The Contractor shall locate and repair all leaks until the leakage is reduced to the limits specified. The Contractor may use the leak detector belonging to the MD-WASD but shall reimburse the MD-WASD for the actual cost of the operation of the instrument by MD-WASD personnel. Any observed leaks or any obviously defective joints or pipes shall be repaired or replaced as directed by the MD-WASD, even though the total leakage is below that specified above. The tests and repairs shall be continued or repeated until the Engineer is assured that the leakage from the section of line under test is less than the amount specified.

END OF SECTION

SECTION UC-175
DISINFECTION OF WATER MAIN

PART 1 - GENERAL

1.01 SCOPE OF WORK

The Contractor shall furnish the necessary labor, equipment, and material to disinfect sections of water main and fittings as applicable to this project.

1.02 RELATED SECTION

Section UC-170 - Cleaning and Testing of Main

1.03 QUALITY ASSURANCE

- A. Disinfection shall be performed in strict accordance with these specifications and with AWWA Standard C651, "Disinfection of Water Mains", latest edition, except as otherwise modified herein.

PART 2 - PRODUCTS

2.01 Liquid Chlorine, available from local sources.

2.02 Calcium hypochlorite, HTH, Perchloron, or approved equal.

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall clean, flush and disinfect every piece of pipe, fitting and valve in accordance with these specifications and to the satisfaction of the Department.
- B. Liquid chlorine is available locally and shall be purchased by the Contractor.

3.02 DISINFECTION

- A. The pipelines shall be disinfected after they have been pressure tested and while still full of water, as specified in Section UC-170.
- B. A suitable chlorinator shall be used to inject chlorine into the lines. All connections required for the introduction of chlorine into the water lines shall be made by the Contractor. Chlorine and water shall be introduced at one end and shall be allowed to flow slowly through the lines to the other end where it shall be removed and disposed of at the Contractor's expense. Several points of introduction and removal of chlorine solution may have to be employed to get an even distribution through the entire section being disinfected.

- C. The quantity of chlorine introduced shall be such as to insure a concentration of at least 50 parts per million in the water flowing from the line.
- D. The chlorine solution shall be allowed to stand in the line for at least 24 hours or longer, if required, to destroy all harmful bacteria. At the end of the required time, the concentration of chlorine in all parts of the section shall be at least 25 ppm.
- E. All valves and appurtenances in the section shall be operated at least once during the above period. After the required period, the treated water shall be thoroughly flushed from the section and the system filled with potable water.
- F. The Contractor shall be responsible for coordination with Dade County Department of Health, who shall collect and test samples from main. The Contractor shall provide assistance to the Dept. of Health for the collection of samples. The samples shall be taken from each main or section of main to be placed in service where designated by the Dept. of Health. The samples must be approved by the Department of Health before the main is placed in service.
- G. The Contractor shall be responsible for any rechlorination and retesting that may be required until the Department of Health's approval is obtained. The Contractor shall be responsible for the disposal of all water flushed from the system and shall safeguard all adjoining properties from damage from flooding. The Contractor shall exercise due care in the protection of private property from water damage due to his operations. In addition, the Contractor shall assume complete liability for any damage which was directly or in-directly caused by his operations.
- H. All of the connections shall be disinfected by the Contractor.
- I. The inside of each pipe and fitting laid by the Contractor in connecting to existing mains which are isolated from the main line by valves shall be swabbed with calcium hypochlorite, HTH, Perchloron, or approved equal, mixed in solution with water. The quantity of hypochlorite shall in all cases be subject to the approval of the Department, whose representative shall be present at all times while this phase of the work is in progress.
- J. Wherever practicable, water from the existing mains flowing through the disinfected connections shall be used in disinfecting the main line in order that the hypochlorite may be removed to the greatest extent possible. In other cases, the water from the disinfected connections shall be removed by allowing it to flow into the main line as it is being drained.

END OF SECTION

SECTION 15060**PIPING AND FITTINGS****PART 1 - GENERAL****1.01 SCOPE:**

- A. This section describes materials, testing, and installation of ductile-iron pipe and fittings for water mains, Cast Iron Soil Pipe, and Vitrified Clay Pipe for sanitary Sewer Service, and small diameter Poly Vinyl Chloride Pipe (PVC) with threaded, flanged and solvent cemented joints; Copper Pipe and Fittings, and High Density Polyethylene Pipe for water services. The work included in this section consists of furnishing all material, equipment, craft labor and performing all operations necessary for the supply, installation, and commissioning of all piping, fittings and accessories within the limits of work, as shown on the drawings and specified herein.
- B. Where references are made to other standards or codes, unless specific date references are indicated the latest edition of said standard or code shall govern.

1.02 WORK NOT INCLUDED UNDER THIS SECTION:

Piping installation for various types of piping systems is specified other sections herein that constitute MDWASD's Design Standards and Construction Details. Installations specified in this section are supplementary to those sections and in the case of conflict the more stringent condition shall prevail. For type PSM SDR-35 PVC and AWWA C900 PVC sewer pipe and fittings see Section UC-250, "Gravity Sewer Systems".

1.03 RELATED SECTIONS:

- A. Section 15010 - Basic Mechanical Requirements
- B. Section 15065 - Miscellaneous Materials
- C. Section 15070 - Jacking and Boring
- D. Section 15075 - Aerial Crossings
- E. Section UC-250 - Gravity Sewer Systems
- F. All sections specifying various types of valves.

1.04 PIPING LAYOUT AND DESIGN CRITERIA:

- A. Field verify dimensions prior to preparation of layout and shop drawings. Obtain the following information from the drawings and specifications:
 - 1. Elevation of the pipe centerline and of the completed ground.
 - 2. Alignment of the pipeline.
 - 3. Field test hydraulic gradient elevation (HGL).
 - 4. Nominal internal diameter, ID.
 - 5. Design internal pressure class or HGL

6. Joint types.

- B. Obtain shop drawing approval prior to fabrication of piping. All items not specifically mentioned in the Specifications or noted on the approved Plans, but which are reasonably necessary to for a complete, functional, and satisfactory installation shall be included.

1.05 SUBMITTALS

- A. Submit shop drawings in accordance with the General Provisions.
- B. Provide an affidavit of compliance with standards referenced in this specification, e.g., AWWA C151, AWWA C153, etc.
- C. Submit copy of report of pressure tests for qualifying the designs of all sizes and types of pipe and fittings that are being used in the project. The pressure test shall demonstrate that the minimum safety factor described in relevant standard is met.
- D. Submit piping layout profile drawings showing location and dimensions of pipe and fittings; submit after equipment and valve submittals have been reviewed and marked "**Resubmittal not required.**" Include laying lengths of valves, meters, in-line pumps, and other equipment determining piping dimensions. Label or number each fitting or piece of pipe. Piping having identical design pressure class, laying lengths, and bell-and-spigot dimensions that is to be placed in long straight reaches of alignment may have the same identifying label or number.
- E. Provide the following information:
1. Mortar lining thickness.
 2. Wall thickness.
 3. Material test data for this project.
 4. Show deflections at push-on and mechanical joints.
 5. Submit joint and fitting details and manufacturer's data sheets.
- F. Fully detailed drawings of all fittings proposed shall be supplied by the manufacturer with his bid. The tabulated nominal weight of each size and type of fitting shall also be supplied by the manufacturer for all items proposed. This weight shall be that of the bare casting prior to application of any lining or coating.
- G. Submit calculations and test data proving that the proposed restrained joint arrangement for restrained joint pipe can transmit the required forces with a minimum safety factor of 1.5.
- H. Submit copy of manufacturer's quality control check of pipe material and production. Include hydrostatic test records and acceptance test records. For each acceptance test, submit a stress-strain diagram showing yield strength, yield point, tensile strength, elongation, and reduction in area. Provide specimen test section dimensions and speed and method used to determine speed of testing, method used for rounding of test results, and reasons for replacement specimens, if any. Submit ring-bending test of pipe of the same diameter and pressure class as the pipe required for this project to prove ring-bending stress at 48 ksi results in a factor of safety of 2.0.

- I. For Ductile Iron Pipe and fittings, submit certificate that cement for mortar lining complies with ASTM C150, designating type.
- J. Submit test report on physical properties of rubber compound used in the gaskets.
- K. Submit test reports and certifications for ceramic epoxy lining as specified herein. Submit applicators qualifications. Submit manufacturer's written recommendations for application and repair of coating.
- L. Submit drawing or manufacturer's data sheet showing flange facing, including design of facing serrations.
- M. Submit weld procedure specification, procedure qualification record, and welder's qualifications prior to any welding to ductile-iron pipe or fittings.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. During shipping, delivery and installation of pipe and accessories, handle in a manner that is in compliance with the manufacturer's recommendations, and employ procedures that ensure delivery of an undamaged operable product
- B. Exercise particular care not to damage coatings by limiting exposure or physical contact with other materials, objects, or the environment.

1.07 INSPECTION

The Owner's Representative will inspect materials, production, and testing of pipes, fittings, and special pieces at manufacturer's plant.

1.08 QUALITY ASSURANCE

All pipe, fittings and other materials supplied under this contract shall be subject to inspection while still on the delivery truck. It is the sole responsibility of the vendor and supplier to make prior contact with the Storekeeper or the Construction Management section and provide a minimum of 48-hours prior notice of delivery. When so notified, the Department will make arrangements for inspection of the material upon arrival or within a reasonable time thereafter. Material shall not be unloaded without inspections taking place either prior to or, if necessary for examination, during the unloading procedure. The Department will not be responsible for any delays or additional costs created by non-compliance with the requirement for prior notification or the requirement for thorough inspection.

Materials shall be delivered in complete compliance with the AWWA Standards as modified herein, without damage, and shall match or exceed the quality of any samples supplied. The Department absolutely reserves the right to require samples of any material supplied and to perform whatever tests considered by the Engineer, whose decision shall be final, to be in the Department's best interest on said samples. Where such tests are of a destructive nature, the sample, if it passes the test will be paid for (at cost as shown by invoice) by the Department. Samples failing will be immediately replaced with suitable material at the supplier's/contractor's expense. Samples required prior to order as a condition for purchase or as a materials submittal for approval will be at the supplier's/contractor's expense but, if approved and not used for destructive tests, may be used in the work with permission from

the Engineer.

Materials found to be defective, not in strict compliance with the quality standards of samples supplied or these specifications shall be immediately returned to the vendor at his expense. If defects are discovered at a later time, the vendor shall be required to remove said items and shall bare all costs for so doing together with any replacement costs. Rejection of items may subject the vendor to liquidated and/or actual damages as specified elsewhere herein.

Foundries supplying materials shall maintain their metallurgical records for a minimum period of two years after fabrication and firms not doing so may be found in default.

Flaws which provide cause for rejection include;

1. Incorrect metallurgy or metallurgy which cannot be verified to the complete satisfaction of the Engineer;
2. Foundry identification/location, size, pressure and material identification information lost, removed, non-existent, or not visible when assembled;
3. Not in complete compliance with all applicable AWWA Standards as modified herein and/or these specifications;
4. Not in compliance with NSF;
5. Not in compliance with approved shop drawings;
6. Out of roundness in excess of AWWA requirements;
7. Dimensional differences in excess of AWWA requirements;
8. Rough exterior coating;
9. Chipped, cracked, scratched or otherwise damaged interior or exterior coatings or linings;
10. Interior or exterior coatings which are too thin;
11. Coatings too thick to allow proper assembly; coatings too thick to allow proper grip by restraining gaskets or other restraining elements;
12. Pin holes or honey combing of pipe;
13. Weld spatter or excess metal in gasket grooves or the whole of the bell area;
14. Bell areas which are distorted or otherwise improperly cast;
15. Spigots which are out of round, not of proper dimension, or not beveled to an extent that will allow easy assembly of the pipe joint;
16. Gaskets which are defective or of the wrong material;
17. Lack of joint materials;

18. Improper or defective joint materials;
19. Bolting of the wrong material or size;
20. Electro galvanizing or other exterior plating when hot-dip galvanizing is required;
21. Incorrect, flawed or damaged interior coating or lining;
22. Lack or non-submittal of all required certifications;
23. Non-timely submission of certifications; incorrect/incomplete certifications or certifications lacking the signature, date and seal of a professional engineer when so required;
24. Flanges which are too thin, not a right angles to the pipe centerline, or otherwise distorted;
25. The above listed items together with all other flaws or defects which in the opinion of the Engineer, whose decision shall be final, adversely affect the assembly and/or function of the piping system as intended.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS: DUCTILE IRON

A. GENERAL

As used herein, "ANSI" denotes the American National Standards Institute, "AWWA" denotes the American Water Works Association, and "ASTM" denotes the American Society for Testing and Materials.

All pipe and fittings to be furnished hereunder shall conform to the referenced ANSI and/or AWWA Standard as modified herein, as appearing in the following sections.

All markings required on pipe and fittings, shall be permanent and clearly legible and located such that they will not be hidden or destroyed when assembled into the intended system. Plainly mark each length of straight pipe and each fitting at the bell end to identify the design pressure class, the wall thickness, and the date of manufacture, and the proper location of the pipe item by reference to the layout schedule. Mark the spigot end of restrained joint pipe to show clearly the required depth of insertion into the bell.

B. DUCTILE IRON PIPE

All pipes shall be ductile iron pipe conforming to ANSI/AWWA Standard C151/A21.51-09, "Ductile-Iron Pipe, Centrifugally Cast, for Water". All pipe and fittings for water applications shall be in full compliance with ANSI/NSF 61, "Drinking Water System Components-Health Effects". Manufacturers shall maintain their NSF certification for the duration of the Contract and any extensions thereof.

The pipe thickness and outside diameter of pipe for sanitary sewer and water usage shall

conform to Tables 1 and 2 (for push-on and mechanical joint pipe, respectively) of ANSI/AWWA Standard C151/A21.51-09 for the following sizes. The pressure class specified is the minimum permitted:

Size	Pressure Class
4-inch through 12-inch	350
14-inch through 20-inch	250
24-inch	200
30-inch through 54-inch	150

For restrained joint pipe, the thickness of the pipe barrel remaining after grooves are cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained joint pipe as shown above.

Minimum wall thickness for pipe having threaded flanges shall be Special Class 53 or Pressure Class 350.

Minimum pipe wall thickness required for corporation stops and tapped outlets shall be in accordance with Table A.1 of ANSI/AWWA C151/A21.51-09 for three full threads for design pressures up to 250 psi and four full threads for design pressures over 250 to 350 psi.

For flanged ductile-iron pipe with integrally cast flanges or threaded flanges, the nominal wall thickness of the pipe barrel shall be as specified in Section 3.3, "Joints and Accessories" under "Flanged Joints", herein below.

Minimum wall thicknesses for pipe having grooved-end joints shall be as shown in the following table:

DI Pipe and Fitting Sizes (inches)	Grooved End Joint Wall Thickness*
16 and smaller	Special Class 53
18	Special Class 54
20	Special Class 55
24 to 36	Special Class 56
42 and larger	Special Class 53 or Pressure Class 350
*Special Class and Pressure Class per AWWA C151-09.	

Each piece of pipe shall be marked as required in Subsection 4.7 of AWWA C151-09. Letters and numerals on pipe sizes 12-inch and smaller shall be not less than 3/8-inch.

The Water and Sewer Department absolutely reserves the right to require the use of "thickness" class pipe or higher pressure class pipe in applications where in the opinion of the Engineer (i.e. the Chief, Engineering Division, M-D WASD or his representative) such use is in the best interest of the Department. The Engineer's decision in this regard shall be final.

A sufficient quantity of non-toxic vegetable soap lubricant shall be supplied with each shipment of pipe. The soap lubricant shall be suitable for use in subaqueous trench

conditions.

Single gasket push-on pipe shall be shipped in standard 18-foot or 20-foot lengths, but not both. Restrained single-gasket push-on joint pipe shall be shipped in standard 18 or 20-foot lengths as specified above or fabricated lengths as noted in each order. At least two lengths of each size of single gasket push-on pipe furnished under each order shall be tested with circumferential gauges to ensure that the pipe may be cut at any point along its length and have an outside diameter which will be within the manufacturer's standard design dimensions and tolerances for plain pipe. These lengths shall be identified with an easily distinguished, painted marking, longitudinally along the full length of the pipe.

C. FITTINGS

Fittings Conforming to ANSI/AWWA C110/A21.11-12 (Water & Sewer Use)

Restrained push-on joint fittings shall be cast ductile iron for use with ductile-iron pipe as specified above. Standard mechanical joint, push-on joint and flanged joint fittings shall also be ductile iron for use with ductile-iron pipe as specified above. Cast ductile-iron fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi, minimum; (except flange-joint fittings shall be rated at 250 psi, minimum); and in the 30-inch through 54-inch size range shall be pressure rated at 250 psi, minimum. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C110/A21.10-12, "Ductile-Iron and Gray-Iron Fittings ". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-12, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings".

The weight of fittings shall be as given in ANSI/AWWA C110/A21.11-12 for ductile-iron fittings. The weight of mechanical joint fittings shall be as established in Tables 4 through 13. The weight of flanged joint fittings shall as established in Tables 14 through 21.

Fittings Conforming to ANSI/AWWA C153/A21.53-11 (Water & Sewer Use)

All fittings shall be cast ductile-iron for use with ductile-iron pipe as specified above. Fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi, minimum; 30-inch through 48-inch size range shall be pressure rated at 250 psi, minimum; and in the 54-inch through 64-inch size range shall be pressure rated at 150 psi, minimum (except for those fittings such as plugs, caps, and sleeves which are normally rated at a higher pressure). No flanged fittings or mixtures of flanged with other end type fittings will be allowed in the range of 3-inch through 48-inch. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C153/A21.53-11, "Ductile-Iron Compact Fittings ". In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-12, "Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings" except as otherwise allowed in C153. Mechanical joint glands shall be ductile-iron only.

The weight of a fitting supplied under the contract shall not be less than ninety-five (95) percent of the tabulated nominal weight supplied by the manufacturer's catalog literature for that fitting. Further, the weight of fittings supplied shall not be more than five (5) percent above the same tabulated nominal weight.

D. JOINTS AND ACCESSORIES

Joints in below-ground piping shall be flexible push-on or Mechanical joints, except where

flanged joints are required to connect to valves, meters, and other equipment. Provide unrestrained buried joints except where restrained joints are specifically shown in the drawings. Joints in aboveground or submerged piping or piping located in vaults and structures shall be grooved end or flanged.

Restrained joints for piping 6 inches and larger shall be American Cast Iron Pipe "Lok-Ring" or "Flex-Ring," U.S. Pipe "TR-Flex," or equal. Weldments for restrained joints shall be tested by the liquid penetrant method per ASTM E165. Restrained joints for field closures shall be "Megalug" by EBAA Iron.

Push-On Type Joints (Single Gasket and Single Gasket with Gasket Restraint)

Push-on joints shall conform to ANSI/AWWA Standard C111/A21.11-12, except that the gaskets for pipe and fittings shall be neoprene unless otherwise specified.

The required number of gaskets for each push-on joint pipe plus one extra for every 50 joints or fraction thereof, shall be furnished with each order. The gaskets shall be shipped in suitable protective containers. All single gasket pipe shall be as manufactured by United States Pipe and Foundry Company (Tyton), by the American Cast Iron Pipe Company (Amarillo Fastite), by McWane, Inc. (Mix of Tyton and Fastite), Tyler/Union (Tyton) or approved equal.

Push-on joints together with both their regular and gasket-restraint gaskets shall be of the design, dimensions and tolerances of either those provided by American Cast Iron Pipe Company (Amarillo Fastite/Fast-Grip) or those provided by United States Pipe and Foundry Company (Tyton/Field Lok). No other designs will be acceptable.

The pressure rating shall be stamped on the restrained gasket. The restrained gasket and joint restraining system shall conform to ANSI/AWWA Standard C111/A21.11-12 (with neoprene required for sewer) rated at the following:

Size	Pressure Rating (Min.)
4-inch through 12-inch	350
14-inch through 20-inch	250
24-inch	200
30-inch and above	150

The restrained gasket shall be manufactured a color other than black to allow for visual inspection of the pipeline. The restrained gasket color shall be consistent throughout the system and shall be inherent within the rubber, not painted.

Mechanical Joints

Mechanical joints for fittings shall conform to ANSI/AWWA Standard C111/A21.11-12, except that the gaskets for each fitting under Groups D and D1 shall be neoprene. Bolt holes for mechanical joints shall be equally spaced, and shall straddle the vertical centerline. Tee head bolts and hexagonal nuts for all mechanical joints in fittings shall be of high strength low-alloy steel with composition, dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-12. Glands shall be of ductile-iron construction for ductile iron fittings, and cast gray iron or ductile iron for cast gray-iron fittings.

The proper number of gaskets, glands, bolts and nuts, all conforming to ANSI/AWWA Standard C111/A21.11-12, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protective containers. Follower glands held in place with set screws will not be acceptable. Segmented glands will not be acceptable.

Mechanical Joint Megalug-Type Restraining Systems

In any mechanical joint or push on joint underground piping system restrained glands may be utilized for underground pipeline. The ASTM A536 ductile iron casting of the restrained gland shall be bonded powder coated. The wedge and wedge assembly shall have a bonded liquid polymer coating applied for corrosion protection. The gland shall utilize torque limiting twist off wedge actuation screws.

Foreign and domestic manufactured restrained glands are allowed for pipelines 24-inches and below unless otherwise required by the Department due to Federal or State funded projects which require domestic manufacture. In sizes 30, 36, 42 and 48-inch the prior written permission of the Engineer is required to use non-domestic manufactured restraining glands. The country of origin shall be clearly identified on the restraining gland and shop drawing.

The Department absolutely reserves the right to require other forms of restraint where in the opinion of the Engineer the use of this form of restraint is not in the best interest of the Department and his decision shall be final. Use of this type of restraint is restricted to underground mechanical joint or push-on joint applications and in general may not be used above grade or as a substitute for flanged joints.

The Megalug restraint systems manufactured by EBAA Iron Sales, Eastland Texas, will be considered the standard of quality for comparison purposes and if the Department has any doubts as to the durability, quality or ability to restrain of a proffered substitute, the entity offering the substitute shall bear the entire burden of proving this equality to the complete satisfaction of the Engineer. Other manufacturers producing this type of restraint system shall submit data with their shop drawings showing that their restraint system has been in the marketplace for a minimum of three years in this country.

Each thrust-resistant mechanical joint or push on joint made up with this type of restraint and the pipe and fitting of which it is a part, shall be designed to withstand an axial thrust from an internal pipeline pressure of at least 150 psi at bulkhead conditions without reduction because of its position in the pipeline nor for support from external thrust blocks.

This type of joint restraint shall not be used above grade except as previously specified nor shall it be used as a carrier pipe within a casing. This type of restraint shall not be used with tape wrapped pipe or with too great a coating thickness on the exterior of the pipe.

Restrained Push-on Joints (Single Gasket Non-Gasket Restrained)

Restrained joints in pipe and fittings shall be of the single gasket push-on type, and shall conform to all applicable provisions of ANSI/AWWA Standard C111/A21.11-12, except that gaskets for pipe and fittings shall be neoprene, where so specified, and the following requirements:

Thickness of the pipe barrel remaining at grooves cut, if required in the design of restrained end joints, shall not be less than the nominal wall thickness of equal sized non-restrained pipe

as specified in Section 3.1 above.

Restrained joints using field welding, set screws, or gaskets with expanding metal inserts are not acceptable.

The restraining components, when not cast integrally with the pipe and fittings, shall be ductile iron or a high strength non-corrosive alloy steel.

Tee head bolts and hexagonal nuts for all restrained joints in pipe and fittings shall be of high strength low-alloy steel with composition, dimensions and threading as specified in ANSI/AWWA Standard C111/A21.11-12, except that the length of the bolts shall meet the requirements for the restrained joint design.

The proper number of gaskets, bolts, nuts and all necessary joint material, plus one extra gasket for every 10 joints or fraction thereof, shall be furnished with each order. The gaskets and joint accessories shall be shipped in suitable protection containers.

Each thrust-resistant joint and the pipe and fitting of which it is a part, shall be designed to withstand the axial thrust from an internal pipeline pressure of at least 150 psi at bulkhead conditions without reduction because of its position in the pipeline nor for support from external thrust blocks.

Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly. During deflection, all components in the restrained system shall be in contact to provide an equal force on all contact areas.

When restrained spigot ends are ordered for items of Group A, the corresponding bell ends of the pipe to be restrained (also within Group A), shall be furnished with the required matching restraining features at no additional cost other than the price bid per foot of pipe.

Flanged Joints

Connecting pieces with one end flanged and the other end either plain-end or mechanical joint, shall conform to ANSI/AWWA Standard C110/A21.10-12. Joint material for both the flanged end and the mechanical joint accessories for connecting pieces with a mechanical joint end shall be furnished as specified.

Other types of flanged fittings, and flanged pipe, shall conform to the following requirements unless otherwise stated in the order:

Flanged fittings shall conform to ANSI/AWWA Standard C110/A21.10-12, as specified hereinabove.

Flanged ductile-iron pipe with integrally cast flanges shall be manufactured in accordance with ANSI/AWWA Standard C151/A21.51-09, and with provisions contained hereinabove for centrifugally cast ductile iron pipe, and shall be furnished with ANSI Standard Class 125 flanges, plain faced and drilled, conforming to ANSI Standard B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", latest revision. Hollow back flanges are not acceptable.

Flanged ductile-iron pipe with threaded flanges shall be manufactured in accordance with ANSI/AWWA Standard C115/A21.15-11, "Flanged Ductile-Iron Pipe With Ductile-Iron or Grey-Iron Threaded Flanges", and shall be rated for a working pressure of 250 psi, minimum. The

nominal thickness of flanged ductile-iron pipe, 6-inch and larger, shall not be less than those shown in Table 1 of ANSI/AWWA Standard C115/A21.15-11. The nominal thickness of 4-inch flanged ductile-iron pipe shall be Class 54 (min.) conforming to Tables 3 and 4 of ANSI/Standard C151/A21.51-09. Flanges shall be solid-back.

The pipe shall be furnished with ANSI Standard Class 125 flanges, plain faced and drilled, conforming to ANSI Standard B16.1, latest revision. Hollow back flanges and grey-iron flanges shall not be acceptable for use as threaded flanges. Threaded flanges shall be individually fitted and machine tightened on the threaded pipe by the manufacturer, and shall not be interchangeable in the field.

Flanges shall be back-faced parallel to the face of flange. Prior to assembly of the flange onto the pipe, apply a thread compound to the threads to provide a leak-free connection. There shall be zero leakage through the threads at a hydrostatic test pressure of 250 psi without the use of the gasket. Pipe lengths shall be as ordered. Removal of flanges, cutting and re-threading the pipe, and re-installing the flanges will not be permitted in any case. Where a raised face flange connects to a flat-faced flange, remove the raised face of the flange.

All flanges on ductile-iron pipe and fittings shall be of ductile iron, class 70-50-5 in accordance with ANSI/AWWA C110/A21.10. All joint materials for flanged pipe and fittings, shall be supplied with all pipe or fittings ordered. Bolts and nuts shall comply with all requirements of Appendix Section A.1 of ANSI/AWWA Standard C115/A21.15-11 except that both shall be stainless steel. Bolts shall be of sufficient length to fully engage all threads in the nut. Unless ring gaskets are specified, gaskets shall be full-faced, and gaskets shall be of 1/8-inch thickness. Gaskets shall fully conform to the requirements of ANSI/AWWA Standard C115/A21.15-11 Appendix Section A.2 except that gaskets shall be SBR for water and neoprene for sewer usages.

Grooved-end Fittings and Couplings

Grooved-end fittings shall conform to ANSI/AWWA C110/A21.10-12 with grooved ends conforming to ANSI/AWWA C606-11, radius cut rigid joints. Fitting material shall conform to ASTM A48, Class 30; ASTM A126, Class B; or ASTM A536, Grade 65-42-10. Wall thickness of ductile-iron (ASTM A536) fittings shall conform to AWWA C110 or C153; wall thickness of cast-iron fittings shall conform to AWWA C110. Fittings and couplings shall be furnished by the same manufacturer.

Grooved-end pipe couplings shall be ductile iron, ASTM A536 (Grade 65-45-12). Gaskets shall be Buna-N and shall conform to ASTM D2000. Bolts in exposed service shall conform to ASTM A183, 110,000-psi tensile strength. Bolts in buried or submerged service shall be ASTM A193, Grade B8, and Class 2.

Couplings for pipe 24 inches and smaller shall conform to AWWA C606 for flexible radius ductile-iron pipe, except where rigid radius couplings are required to connect to fittings. Couplings for pipe sizes 30 and 36 inches shall be in accordance with the coupling manufacturer's published literature for tolerances and dimensions for flexible and rigid radius cut joints. Couplings shall be Victaulic Style 31, Gustin-Bacon No. 500, or equal.

Couplings for pipe larger than 36 inches shall conform to AWWA C606 for shouldered end pipe. Couplings shall be Victaulic Style 44 or equal.

Grooved-end adapter flanges for piping 24 inches and smaller having an operating pressure of 150 psi and less shall be Victaulic Style 341 or 342 or equal. Flange dimensions shall conform to ASME B16.1, Class 125.

Grooved-end transition couplings for connecting ductile-iron pipe 12 inches and smaller to steel pipe shall be Victaulic Style 307 or equal.

Outlets and Nozzles

Provide outlets three quarters of an inch and smaller by direct tapping Ductile Iron Pipe in accordance with AWWA C600-10, Section 4.8. Provide outlets larger than three quarters of an inch up to 2 inches by tapping the pipe and attaching a service clamp. or use a threaded welded-on boss. Use stainless steel clamps for exposed piping. For outlets larger than 2 inches, use a tee with a flanged outlet. For outlets larger than 2 inches in buried piping, use a tee with a restrained joint outlet.

Ductile-Iron Pipe Weldments

All welding to ductile-iron pipe, such as for bosses, joint restraint, and joint bond cables, shall be done at the place of manufacture of the pipe. Perform welding by skilled welders experienced in the method and materials to be used. Welders shall be qualified under the standard qualification procedures of the ASME Boiler and Pressure Vessel Code, Section IX, Welding Qualifications.

Welds shall be of uniform composition, neat, smooth, full strength, and ductile. Completely grind out porosity and cracks, trapped welding flux, and other defects in the welds in such a manner that will permit proper and complete repair by welding.

Material for fittings with welded-on bosses shall have a Charpy notch impact value of minimum 10 ft-lbs under the conditions defined in ANSI/AWWA C151/A21.51-09. Test completed welds by the liquid penetrant method per ASTM E165.

Completed welds shall be inspected at the place of manufacture by the liquid penetrant method. Conform to the requirements specified in ASTM E165, Method A, Type I or Type II. The materials used shall be water washable and nonflammable.

E. LININGS AND COATINGS

Polyethylene Encasement

For non-submerged applications, all Ductile Iron Pipe and fittings shall be wrapped with V-Bio Polyethylene Enhanced Encasement in accordance with AWWA C600 and ANSI/AWWA C105/A21.5-, Standard for Polyethylene Encasement of Ductile-Iron Pipe Systems. . Film low-density, polyethylene film and shall be 8 mils thick. Color shall be Blue for Potable Water, Purple for Recycled water, and green for sanitary sewage service. Alternatively, or if specified, polyethylene encasement for use with ductile iron pipe systems shall consist of three layers of co-extruded linear low density polyethylene (LLDPE), fused into a single thickness of not less than eight mils. The inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be infused with a blend of antimicrobial biocide to mitigate microbiologically influenced corrosion and a volatile corrosion inhibitor to control galvanic corrosion. Product: V-

Bio or equal.

Polyethylene encasement for ductile-iron pipe shall be supplied as a flat tube meeting the dimensions of Table 1 in AWWA C105 and shall be supplied by the ductile-iron pipe manufacturer.

Plastic adhesive tape shall consist of polyolefin backing and adhesive which bonds to common pipeline coatings including polyethylene. Products: Canusa Wrapid Tape; Tapecoat 35; Polyken 934; AA Thread Seal Tape, Inc.; or equal.

Install the polyethylene to completely encase the pipe and fittings to provide a watertight corrosion barrier. Continuously secure overlaps and ends of sheet and tube with polyethylene tape. Make circumferential seams with two or more complete wraps, with no exposed edges. Tape longitudinal seams and longitudinal overlaps, extending tape beyond and beneath circumferential seams. Wrap bell-spigot interfaces, restrained joint components, and other irregular surfaces with wax tape or moldable sealant prior to placing polyethylene encasement. Minimize voids beneath polyethylene.

Place circumferential or spiral wraps of polyethylene tape at 2-foot intervals along the barrel of the pipe to minimize the space between the pipe and the polyethylene. Overlap adjoining polyethylene tube coatings a minimum of 1 foot and wrap prior to placing concrete anchors, collars, supports, or thrust blocks. Hand-wrap the polyethylene sheet, apply two complete wraps with no exposed edges to provide a watertight corrosion barrier, and secure in place with 2-inch-wide plastic adhesive tape. Repair polyethylene material that is damaged during installation. Use polyethylene sheet, place over damaged or torn area, and secure in place with 2-inch-wide plastic adhesive tape.

Repair polyethylene encasement at all service connections in accordance with AWWA C600-10, Section 4.8.

Asphaltic Coating

All Ductile Iron pipe and fittings shall be outside-coated with an asphaltic material applied by means of the airless spray method. The exterior coating shall comply with ANSI/AWWA C151/A21.51-09 for this type of coating, shall be smooth without pinholes, thin, bare or overly thick areas. Smoothness shall be such that when hand rubbed, no "sand paper" feeling will be experienced and such that the spigot area will readily slide through the gasket without pulling, tearing, rolling or otherwise disturbing the sealing capabilities of the gasket. Spigot ends shall be beveled prior to coating to an extent that will permit ready insertion of the spigot through the gasket area.

Cement-Mortar Lining

Ductile Iron Pipe and fittings unless otherwise specified shall be double-thickness cement-lined and seal-coated in accordance with ANSI/AWWA Standard C104/A21.4-14, "Cement-Mortar Lining for Ductile-Iron Pipe and Fittings".

Ceramic Epoxy Lining

Ductile Iron Pipe and fittings where so specified shall be lined with ceramic epoxy

Ceramic epoxy shall contain pigmentation to resist ultraviolet exposure under the same

conditions.

All ductile iron pipe and fittings for which ceramic epoxy lining is to be applied shall be delivered to the application facility without asphalt, cement lining or other lining on the interior surface or the first 6 inches on the spigot end of the pipe exterior.

Ceramic epoxy material shall be a high-build multi-component Amine cured Novalac epoxy, Protecto 401, by Vulcan Painters, Inc. of Bessemer, AL 35021 or Department-approved equal.

Ceramic epoxy material shall meet the following criteria and shall be accompanied by certification of the following test results:

- A. A permeability rating of 0.00 when tested according to Method A of ASTM E96-00 "Test Method for Water Vapor Transmission of Materials", Procedure A with a test duration of 30 days.
- B. The following test must be run on coupons from factory lined ductile iron pipe:
 - 1. ASTM B117 Salt Spray (scribed panel) - Results to equal no more than 0.5mm undercutting after one year.
 - 2. ASTM G95 Cathodic Disbondment 1.5 volts @ 77 degrees F. Results to equal no more than 0.5mm undercutting after 30 days.
 - 3. Immersion Testing rating using ASTM D714-87 (1994).
 - a. 20% Sulfuric Acid - No effect after one year.
 - b. 25% Sodium Hydroxide - No effect after one year.
 - c. 160° F. Distilled Water - No effect after one year.
 - d. 120° F. Tap Water (scribed panel) - 0.0 undercutting after one year with no effect.
- C. A statement from the manufacturer attesting to the fact that at least 20% of the volume of the lining contains ceramic quartz pigment.
- D. A statement concerning recoat ability and repair to the lining.

Ceramic Epoxy Application

- a. The lining shall be applied by a competent firm with a successful history of applying linings to the interior of ductile iron pipe and fittings.
- b. Surface Preparation

Prior to abrasive blasting, the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Any areas where oil, grease or any substance is present which can be removed by solvent shall be solvent cleaned using the guidelines outlined in SSPC-1 Solvent Cleaning. After the surface has been made free of grease, oil or other substances, all areas to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering annealing oxide may be left on the surface. Any area where rust reappears before coating must be re-blasted to remove all rust.
- c. Lining Application

After the surface preparation and within 8 hours of surface preparation, apply to the interior of pipe and fittings a minimum forty (40) mils dry film thickness of the protective lining. No lining shall take place when the substrate or ambient temperature is below 40 degrees Fahrenheit. The surface also shall be dry and dust free. If flange ends are included in the Project, the linings shall not be used on the face of the flange; however, full face gaskets must be used to protect the ends of the pipe. The 40-mil system shall not be applied in the gasket grooves.

d. Coating of Gasket and Spigot Ends

Coat the gasket area and exterior of the spigot end for 6 inches back from the end of the spigot with six (6) mils minimum, ten (10) mils maximum of Protecto Joint Compound. This coating shall be applied by brush to ensure complete coverage. Care shall be taken that the coating is smooth without excess buildup in the gasket groove or on the spigot end. All material for the gasket groove and spigot end shall be applied after the application of the lining as specified in the preceding paragraph.

e. Number of Coats

The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The time between coats shall never exceed that time recommended by the lining material manufacturer. No material shall be used for lining which is not indefinitely recoated able with itself without roughening the surface.

f. Touch-Up and Repair

Protecto Joint Compound shall be used for touch-up or repair. Procedures shall be in accordance with manufacturer's recommendations.

F. INSPECTION AND CERTIFICATION

a. Inspection

1. All ceramic epoxy lined ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PC-2 Film Thickness Rating. Re-line any pipe whose lining is below the specified minimum thickness.
2. The interior lining of all pipe and fittings shall be tested for pinholes with a nondestructive 2,500 volt test. Re-line any pipe not passing the test.
3. Each pipe joint and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on the date.

Procedures for Sealing Cut Ends and Repairing Field Damaged Areas

1. Remove burrs caused by field cutting of ends or handling damage and smooth out the edge of the lining if rough.
2. Remove all traces of oil, grease, asphalt, dust, dirt, etc.
3. Areas of loose or damaged lining associated with field cutting the pipe shall be repaired, if approved by the Engineer, as recommended by the pipe manufacturer. The damaged area shall be stripped back by chiseling or scraping about 1 to 2 inches into the well-adhered

lining before patching.

The exposed metal and the 1 to 2-inch lining overlap shall be roughened with a coarse grade of emery cloth (#40 grit), rasp or small chisel. Avoid wire brushing or similar buffing which would make the surface too smooth for good adhesion.

4. With the area to be sealed or repaired absolutely, clean and suitably roughened, apply a coat of Protecto Joint Compound by brush in accordance with the manufacturer's recommendations.

2.02 PIPE AND FITTINGS: CAST IRON SOIL

- A. Cast iron soil pipe and fittings shall be cast gray iron, extra heavy, conforming to the requirements of ASTM Standard A74 "Cast Iron Soil, Pipe and Fittings".
- B. Joints in soil pipe and fittings shall be made with neoprene rubber, compression type gaskets conforming to ASTM Standard C564, "Rubber Gaskets for Cast Iron Soil Pipe and Fittings".
- C. Hubless EHCl with stainless steel and neoprene "Band-Aid" connections is only approved for use in size 2-inches. All EHCl of larger diameter shall be hub pipe.

2.03 PIPE AND FITTINGS: POLY VINYL CHLORIDE (PVC)

- A. Poly (vinyl chloride (PVC) pipe and fittings specified herein are small diameter PVC with threaded, flanged and solvent cemented joints.
- B. All poly (vinyl chloride) (PVC) pipe and fittings shall be made from high impact, rigid poly (vinyl chloride) compounds. Pipe and fittings shall be marked indicating size, type and schedule, ASTM Designation, manufacturer or trade mark, and shall bear the NSF (National Sanitation Foundation) seal of approval. Wherever the abbreviation PVC is used in these Specifications in relation to pipe and fittings, it shall mean poly (vinyl chloride) plastic pipe and fittings as specified herein.
- C. PVC pipe shall be Schedule 80 unless Schedule 120 pipe is called for on the Plans or by the Engineer, Type I, Grade I, or Class 12454B with socket ends, and shall comply with ASTM Standard D1785, "Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120". Products intended for contact with potable water shall be evaluated, tested, and certified for conformance with ANSI/NSF Standard No. 61 or the health effects portion of NSF Standard No. 14 by an acceptable certifying organization when required by the regulatory authority having jurisdiction.
- D. Schedule 80 Socket-type fittings shall comply with ASTM Standard D2467, "Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80" and D2464 "Specification for Threaded Poly Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80, for threaded fittings.
- E. Joining cement for PVC pipe and fittings shall comply with ASTM Standard D2564, "Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings". Cemented joints shall be made in accordance with ASTM Standard D-2855, "Recommended Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings".
- F. Flanges: One piece molded hub type flat face flanges, 125 pound standard as specified under fittings hereinbefore.
- G. Gaskets: Full faced, 1/8-inch thick, neoprene (for sewer) or SBR (for water).

- H. AISI Type 316 stainless steel, ASTM A193, Grade B8M hex bolts and ASTM A 194 Grade E8 hex head nuts. Bolts shall be fabricated in accordance with ANSI B 1812 and provided with washers of the same materials as the bolts.

2.04 PIPE AND FITTINGS: COPPER

- A. Pipe: Copper pipe shall be Type K for interior piping and Type K Soft Temper for exterior piping, both conforming to ASTM B88, seamless, round, drawn tubing.
- B. Fittings: Solder joint fittings shall be wrought copper and bronze fittings conforming to ANSI B16.22 or cast brass fittings conforming to ANSI Standard B16.18. Fittings for use with copper tubing shall be one of the following:
 - 1. Cast Bronze Solder-Joint Fittings: Solder joint fittings of this type shall be cast bronze fittings conforming to ANSI B16.18, "Cast Brass Solder-Joint Fittings", and ASTM Standard B62, "Composition Bronze or Ounce Metal Castings", as manufactured by Chase Brass and Copper Co., Stanley G. Flagg & Co., Inc., or Department-approved equal.
 - 2. Wrought Copper Solder-Joint Fittings: Solder joint fittings of this type shall be wrought copper fittings in accordance with ANSI B16.22, "Wrought Copper and Bronze Solder-Joint Pressure Fittings".
- C. Solder: Solder shall consist of 95 percent tin and 5 percent antimony. Soldering shall be in conformance with Section 3 of the Copper and Brass Research Association Copper Tube Handbook.
- D. Connection of copper pipe or fittings with galvanized pipe or fittings shall be made with dielectric fittings. Connect copper pipe to direct-taps to Ductile Iron Pipe with an insulating union. Wrap the copper pipe with polyethylene tape at least two feet in length beyond the point of connection.

2.05 PIPE AND FITTINGS: VITRIFIED CLAY

Vitrified clay pipe and fittings for gravity sewers shall be extra-strength, non-perforated. Pipe and fittings shall conform to the latest edition of ASTM Standard C700, "Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated", and the following requirements.

- A. Any fracture or crack passing through the socket of the pipe bell and exceeding a length of one-half (½) inch in any direction shall be cause for rejection of the pipe. This requirement supersedes the portion of the ASTM Specifications cited above in conflict herewith.
- B. Only factory bonded joints will be permitted for all vitrified clay pipe. The joints shall have rubber "O" ring type compression seals conforming to "Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings", ASTM C425, latest edition. Department approved pipe joints are Polyester Ring-Type joints as manufactured by Logan Clay Products Company under the trade name of "Logan-O-Ring", Can-Tex Industries under the trade name of "Can-O-Lock," or approved equal.
- C. Where cast iron soil pipe or ductile iron pipe laterals are used with vitrified clay mains, the wye or tee shall be vitrified clay. For the joint between the vitrified clay wye or tee and the lateral

pipe use FERNCO "Donut" No. 6-10-601 with E.H.C.I. soil pipe and "Donut" No. 6-08-607 with ductile iron laterals, or approved equals. When using E.H.C.I. soil pipe with ductile iron tees or wyes, use transition gasket by Romac or approved equal.

2.06 HIGH DENSITY POLYETHYLENE (HDPE) PIPE FOR USE IN POTABLE WATER SERVICES

- A. Smooth wall high density polyethylene pipe for use in potable water services 3.5-inch nominal outside diameter and less shall meet ASTM D3350, and shall be PE 335434C. Pipe shall meet the standards of ASTM F714, as modified herein, including the "Government/Military Procurement" sections. Minimum hydrostatic design basis shall be 1600 psi. In all cases, hydrostatic design basis and pressure rating shall be as determined using the methods of ASTM F714. Pipe of this type shall be butt-fusion welded at joints. All welding of joints shall be in strict conformity with the recommendations of the pipe manufacturer and by a firm or individual recommended to the Engineer of Record in writing by the manufacturer.
- B. As a part of the shop drawing submittals, submit the following signed by a Florida Registered Engineer, all calculations to determine, the pipe thickness, SDR rating, allowable stresses, in accordance with ASME B31.8 -1992, Table A842.22 as required by the pipe manufacturer.
- C. All mechanical fittings utilized with HDPE pipe and tubing services, shall conform with ANSI/AWWA C800-01 "Underground Service Line Valves and Fittings" as modified herein, shall utilize AWWA Standard (Mueller) threads on tapped pipe and tapping saddles; shall be; designed and manufactured to withstand a sustained working pressure of 150 psi and to restrain the pipe against pull out under loading beyond that causing tensile yield in the HDPE pipe or tubing connected. The manufacturer shall supply certification of these capabilities and fittings shall not be accepted or installed without said certification. If fittings are being supplied to the Department the certification shall ship with the fittings and payment will not be made without this certification. At the discretion of the Engineer, this certification may be required to be signed and sealed by a professional engineer licensed to practice in the state where the supplying firm is located or in the State of Florida. His decision in this regard shall be final.
- D. In all cases, fittings shall be installed in strict accordance with the manufacturer's instructions.
 - 1. HDPE PIPE FOR WATER SERVICES:

All 2-inch high density polyethylene pipe used for services shall be IPS-O.D. controlled with Standard Outside Dimension Ratio (SODR) of 9, pressure rating of 200 psi at a Factor of Safety of 2.5 or greater, nominal outside diameter of 2.375-inches, minimum wall thickness of 0.264-inches, PE 3408, all in conformance with ASTM D3035-95 "Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter". Pipe shall comply with ANSI/AWWA C901-96 "Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service" as modified herein. Pipe shall have a (natural) inner core with a blue colored outer shell.

Pipe shall have footage marks at a maximum interval of every two feet. Polyethylene material shall have a minimum cell classification in accordance with ASTM D3350-14 "Polyethylene Plastics Pipe and Fitting Materials" of 345444D for the core, which shall be 100% virgin material, and 345444E for the outer shell. Note that both of these materials are UV stabilized as signified by the "D" for natural colored and "E" for the colored shell. Pipe shall comply with NSF 61 or 14.

Submit manufacturer's certification of compliance with all of the above requirements. Certification shall ship with the pipe on material sold to the Department and shall always be

submitted with shop drawings and catalogue cuts. Certification shall be signed and sealed by a professional engineer licensed to practice in the State of Florida.

2. HDPE TUBING FOR WATER SERVICES:

All 1-inch high density polyethylene tubing used for services shall be CTS-O.D. Controlled with Standard Outside Dimension Ratio (SODR) of 9, pressure rating of 200 psi, nominal outside diameter of 1.125-inches, minimum wall thickness of 0.125-inches, PE 3608, all in conformance with ASTM D2737-12 "Polyethylene (PE) Plastic Tubing". Tubing shall comply with ANSI/AWWA C901-08 "Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm), for Water Service" as modified herein. Tubing shall have a (natural) inner core with a blue colored outer shell.

Tubing shall have footage marks at a maximum interval of every two feet. Polyethylene material shall have a minimum cell classification in accordance with ASTM D3350-14 "Polyethylene Plastics Pipe and Fitting Materials" of 345444D for the core, which shall be 100% virgin material, and 345444E for the outer shell. Note that both of these materials are UV stabilized as signified by the "D" for natural colored and "E" for the colored shell.

Tubing shall comply with NSF 61 or 14. Submit Manufacturer' shall supply certification of compliance with all of the above requirements. Certification shall ship with the tubing on material sold to the Department and shall always be submitted with shop drawings and catalogue cuts. When required by the Chief, Engineering Division, Miami-Dade Water and Sewer Department or his designee, certification shall be signed and sealed by a professional engineer licensed to practice in the State of Florida.

2.07 WALL SLEEVES, PIPES AND CASTINGS

- A. Wall Sleeves: Wall sleeves shall be of cast iron, ductile iron or carbon steel with steel galvanized after fabrication as specified in Section 15065, Miscellaneous Materials, under wall pipe. Sleeves shall be provided with seals and shall be oversized as required for the installation of seals. Sleeves shall terminate flush with finished surfaces of walls and ceilings, and shall extend 2-inches above the finished floor. Escutcheons shall be provided at walls and floor to completely conceal the sleeves smaller than 3-inches. Escutcheons shall be brass or cast iron, nickel plated split-type.
- B. Interior: Wall sleeves shall be installed for all piping passing through interior walls and floors, except where noted on the Drawings. Sleeves shall be of sufficient size to pass the pipe without binding.
- C. Wall Sleeve Seals: Wall sleeve seals shall be modular mechanical type consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and wall sleeve. Links shall be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and nut. After the seal assembly is positioned in the sleeve, tightening of the bolts shall cause the rubber sealing elements to expand and provide an absolutely water-tight seal between the pipe and wall sleeve. The synthetic rubber shall be suitable for exposure to treated sewage effluent and groundwater. Bolts, nuts and hardware shall be 18-8 stainless steel. The seals shall be Link Seal as manufactured by Thunderline Corporation or Department-approved equal, and the wall sleeve and seal shall be sized as recommended by the seal manufacturer.
- D. All piping passing through exterior walls and base slabs shall be provided with wall pipes. All

wall pipes shall be of ductile iron and shall have an intermediate flange or waterstop located in the center of the wall. Each wall pipe shall be of the same grade, thickness and interior coating as the piping to which it is joined. Those portions of the wall pipes that are buried shall have a coal tar outside coating.

2.08 STEEL CASING (JACKING AND BORING)

See Section 15070, "Jacking and Boring"

2.09 STEEL PIPE (AERIAL CROSSING)

See Section 15075, "Aerial Crossings"

PART 3 - EXECUTION

3.01 General:

- A. Furnish and maintain all barricades and flashing warning lights necessary to warn of the construction throughout the Project.
- B. Pipe and fittings shall at all times be handled with great care to avoid damage. Exercise particular care not to injure pipe coatings. In loading and unloading, they shall be lifted with cranes or hoists or slid or rolled on skidways in such manner as to avoid shock. Under no circumstances shall this material be dropped or allowed to roll or slide against obstructions.
- C. All work shall be performed by skilled workmen experienced in pipeline construction.
- D. All pipe and fittings shall be adequately supported by clamps, brackets, straps, concrete supports, rollers or other devices as shown and/or specified. Supports or hangers shall be spaced so that maximum deflection between supports or hangers shall not exceed 0.050 inch for pipe filled with liquid, but shall not be further than 6 feet apart, whichever is closer, unless otherwise shown. All pipe supports shall be secured to structures by approved inserts or expansion shields and bolts.
- E. All pipe shall be thoroughly cleaned internally before being installed. All pipes, except oxygen service, air and gas, shall be flushed with water and swabbed to assure removal of all foreign matter before installation. Air and gas piping shall be tapped with a hammer to loosen scale or other foreign matter that might be within the pipe, and then thoroughly blown with a high pressure air hose. Furnish and maintain suitable air compressor.
- F. Whenever possible, the pipe shall be installed with minimum 48-inches of cover. Deviations shall not be installed without written approval by the Owner.
- G. At all horizontal or vertical pipe deviation, install both restrained pipe and thrust blocks. Joints may only be opened to adjust alignment by half of the AWWA or manufacturer's recommended opening (which is smaller).
- H. Pipe Sleeves and Wall Casings: Pipe sleeves and wall casings shall be provided at the locations called for on the Drawings and specified herein. These units shall be as detailed and of the material as noted on the Drawings and specified herein. They shall be accurately set in the concrete or masonry to the elevations shown. All wall sleeves and castings required in the walls shall be in place when the walls are poured. Ends of all wall casings and wall sleeves

shall be of a type consistent with the piping to be connected to them.

- I. Tie Rods: Unless otherwise indicated on the Drawings, the size and number of tie rods for a joint or installation shall be as recommended by the manufacturer's design chart for a working pressure of 150 psi. Tie rods shall be installed as recommended by the manufacturer.

3.02 EXCAVATION FOR PIPING

- A. Make all excavation necessary for the construction of the pipelines, connections, valves and appurtenances, to the lines and grades shown on the Plans.
- B. Excavate the trench at least 6 inches below pipe laying grade as shown on the Plans. Install sheeting and shoring for the protection of workers in trenches, and where it is necessary for pipe installation and property protection or required by the Trench Safety Act. The cost of dewatering any excavation shall be at the Contractor's expense. The disposal of water removed from an excavation shall be in a manner which will not create a hazard, or be detrimental to the public health or to public or private property.
- C. Obtain all necessary permits approving the location and proposed method of disposal before discharging water from any excavation into any portion of the public right-of-way or into any existing drainage structure or facility. Furnish and maintain all construction signs required.

3.03 INSTALLATION OF PIPE, FITTINGS AND VALVES

A. General:

1. The design Drawings are in some cases diagrammatic. They may not show every bend, off-set, elbow or other fitting which may be required in the piping for installation in the space allotted. . Install gravity lines at uniform grade to low point after field verification of low point invert.
2. The centerline of the pipe shall not vary by more than 2 inches from the location shown on the Plans and the top of the pipe shall not vary by more than 2 inches from the established grade, except at points where this tolerance must be changed to clear obstructions, or make connections.
3. Limit onsite pipe storage to a maximum of one week. Use unloading and installation procedures that avoid cracking of the lining. If necessary, use plastic sheet bulkheads to close pipe ends and keep cement-mortar lining moist. Deliver the pipe alongside the pipe laying access road over which the pipe trailer-tractors can travel under their own power. Place the pipe in the order in which it is to be installed and secure it from rolling. Sandbags may be used to support the pipe in the ditch but no pipe shall be laid on blocks, except by the written permission of the Engineer of Record. Do not move pipe by inserting any devices or pieces of equipment into the pipe barrel. Field repair linings damaged by unloading or installation procedures. Flanged joints, mechanical joints and push-on joints in cast iron pipe and fittings may be made under water.

B. Installation of Ductile Iron Pipe

1. Install Ductile Iron Pipe in accordance with ANSI/AWWA C600-10 "Installation of Ductile-iron Mains and Their Appurtenances", and the following. For potable water pipelines, comply with NSF/ANSI 61 "Drinking Water System Components – Health Effects. All bends,

tees, and plugs, unless otherwise specified, shall be backed with concrete to undisturbed ground. Provision shall be made to prevent concrete from adhering to plugs or bolts by wrapping in polyethylene sheet complying with ANSI/AWWA C105/A21.5-05.

2. Bolts, nuts and rubber gaskets for use in flanged and mechanical joints shall be stored under cover. During laying operations, do not place tools, clothing, or other materials in the pipe. Gaskets shall not be exposed to heat, light or any petroleum products, shall be kept clean and shall not be handled with greasy or dirty hands. When pipe laying is not in progress, close the ends of the installed pipe by a child- and vermin-proof plug.
3. Assemble Flanged joints in accordance with the written recommendations of the pipe manufacturer. Before making up flanged joints in cast iron pipe and fittings, the back of each flange under the bolt heads, and the face of each flange shall have all lumps, blisters and excess bituminous coating removed and shall be wire brushed and wiped clean and dry. Cut the bore of the gaskets such that the gaskets do not protrude into the pipe when the flange bolts are tightened.
4. Before laying the ductile iron pipe, all lumps, blisters and excess asphaltic coating shall be removed from the bell and spigot ends of each pipe and the outside of the spigot and the inside of the bell wire brushed and wiped clean and dry. The entire gasket groove area shall be free of bumps or any foreign matter which might displace the gasket. The cleaned spigot and gasket shall not be allowed to touch the trench walls or trench bottom at any time. Vegetable soap lubricant shall be applied in accordance with the pipe manufacturer's recommendations, to aid in making the joint. Exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Deflections shall be made only after the joint has been assembled.
5. Cutting of ductile iron pipe for inserting valves, fittings, etc., shall be done with a mechanical pipe saw in a neat and workmanlike manner without damage to the pipe, the lining, or the coating.
6. Unless otherwise directed, ductile iron pipe shall be laid with the bell ends facing in the direction of laying; and for lines on an appreciable slope, the bells shall, at the discretion of the Engineer, face upgrade. Small angular changes (less than 2.5 degrees) in horizontal alignment defined in the drawings by a point of inflection (PI) with no accompanying curve data shall be approximated as a curve by deflecting an equal amount of equal length pipe segments to create a curve equally distributed on both sides of the given PI. Accomplish a larger (greater than or equal to 2.5 degrees) change in horizontal alignment where a curve is not called for in the drawings through the use of an elbow placed at the station of the PI shown in the drawings. Small angular changes (less than 2.5 degrees) in vertical alignment may be accomplished by the use of pulled joints. For larger vertical deflections, place an elbow at the station and elevation of the vertical PI shown in the drawings.
7. Push-on and mechanical joints in ductile iron pipe and fittings shall be made in accordance with the manufacturer's written recommendations except as otherwise specified herein. Joints between push-on and mechanical joint pipe and/or fittings shall be made in accordance with AWWA Standard Specifications, "Installation of Ductile Iron Water Mains and Appurtenances," C600-10, except that deflection at joints shall not exceed one-half of the manufacturer's recommended allowable deflection, or one-half of the allowable deflection specified in AWWA C600-10, whichever is the lesser amount.
8. Flanged joints shall be used only where indicated on the Plans. Before making up flanged

joints in the pipeline, the back of each flange under the bolt heads and the face of each flange shall have all lumps, blisters and excess bituminous coating removed and shall be wire brushed and wiped clean and dry. Flange faces shall be kept clean and dry when making up the joint, and the workmen shall exercise caution to prevent damage to the gasket or the adherence of grease or particles of sand or dirt. Bolts and nuts shall be tightened by opposites in order to keep flange faces square with each other, and to insure that bolt stresses are evenly distributed.

9. Bolts and nuts in flanged and mechanical joints shall be tightened in accordance with the written recommendations of the pipe manufacturer for a leak-free joint. Exercise caution to prevent overstress. Torque wrenches shall be used until, in the opinion of the Engineer, the workmen have become accustomed to the proper amount of pressure to apply on standard wrenches.

C. Installation of PVC Pipe:

1. In the installation of glue joint PVC pipe, the pipe shall first be cut square and smooth. Wipe all surfaces to be connected with a cloth moistened with an appropriate solvent and remove any foreign matter from socket of fitting. Using an ordinary paint brush of width about equal to the nominal pipe size, apply a generous coat of cement to inside and shoulder of socket, flowing on but not brushing out. A similar coat shall then be applied to the end of the pipe for at least the same distance on the pipe as the depth of socket, and to the cut end. Pipe and fittings shall then be pressed firmly together and the pipe turned a quarter to a half turn to evenly distribute the cement. The cementing and joining operation must not exceed one minute. Allow 24 hours set-up time before applying pressure. Sand shall be used as backfill material around pipe installed underground.
2. Thread Sealant: Teflon tape.
3. All rigid PVC pipe shall be cut, made up, and installed in accordance with the pipe manufacturer's recommendations. Plastic pipe shall be laid by snaking the pipe from one side of the trench to the other. Offset shall be as recommended by the manufacturer for the maximum temperature variation between time of solvent welding and during operation.
4. Schedule 80 pipe shall not be threaded. Use Schedule 80 threaded nipple where necessary to connect to threaded valve or fitting.
5. Only strap wrenches shall be used for tightening threaded plastic joints, and care shall be taken not to over tighten these fittings.
6. Provide adequate ventilation when working with pipe joint solvent cement.
7. Testing: All lines shall be hydrostatically tested at the pressures specified elsewhere herein or at the design pressures.
8. Supports And Hangers: In accordance with the manufacturer's recommendations.

D. Installation of Copper Pipe:

1. Tubing above ground shall, whenever possible, be run in full lengths between fittings, valves and connections and joints shall be kept to a minimum. All connections shall be made without sharp bends or kinks in the tubing. Above ground tubing shall be supported at short intervals to prevent sagging and vibration.

2. All copper pipe shall be reamed to full diameter before joining. The ends of pipe and the inside of fittings shall be cleaned and flux applied to the entire area of pipe to be soldered.

E. Joint Pipe:

1. Threaded Pipe: Ream all pipe after cutting and before threading. Use non-hardening pipe compound "Tite-Seal" or approved equal, on male threads only.
2. Provide nipples of same material and weight as pipe used. Provide extra strong nipples when length of unthreaded part of nipple is less than 1-1/2".
3. Provide reducing fittings rather than bushings where changes in pipe sizes occur.
4. Provide dielectric unions or flanges between copper and steel piping and between brass-ware and steel. Do not use steel and copper piping in the same system without such isolation.

F. Unions: Provide unions or flanges in all domestic water service lines at each piece of equipment, specialty valves or at other locations required for ready disconnect.

G. Pipe Protection:

1. Paint all un-insulated metal (ductile iron or steel) piping underground with two coats of asphaltic paint.
2. Wrap soil pipe that touches metal or is exposed to masonry with a layer of 6 mil polyethylene.
3. Spirally wrap all pipe lines embedded in concrete with two layers of 30 lb. felt prior to placing the concrete.
4. Coat all exposed threads on galvanized steel pipe after assembly with two coats of zinc chromate.

H. Cleaning and Testing: All of the piping installed under this project shall be tested as follows and as directed by the Engineer.

1. With exceptions as noted below, all ductile iron piping installed under this Contract shall be cleaned and tested according to Paragraph I hereinbelow in this Section:
 - a) Only potable water piping shall be disinfected.
 - b) No leakage shall be permitted for flanged piping.
 - c) No leakage shall be permitted for any type of above ground piping.
2. Unless otherwise specified elsewhere herein, all PVC pressure system bushings and galvanized steel piping shall be tested at 100 psig. No leakage will be permitted.

I. Installation of Aboveground and Exposed Piping

1. Aboveground and exposed pipe fittings, valves and accessories shall be installed as shown or indicated on the Drawings.

2. Piping shall be cut accurately to measurements established at the job site and shall be worked into place without springing or forcing, properly clearing all equipment access areas and openings. Changes in sizes shall be made with appropriate reducing fittings rather than bushings. Pipe connections shall be made in accordance with the details shown and manufacturer's recommendations. Open ends of pipe lines shall be properly capped or plugged during installation to keep dirt and other foreign material out of the system. Pipe supports and hangers shall be provided where indicated and as required to insure adequate support of the piping.
3. Welded connections shall be made in conformity with the requirements of AWWA Standard C 206 and shall be done only by qualified welders. The Engineer may, at his option, require certificates that welders employed on the work are qualified in conformity with the requirements of this standard and/or sample welds to verify the qualifications of the welders. Before testing, field welded joints shall be coated with the same material as used for coating its pipe in accordance with the requirements of AWWA.
4. Flanged joints shall be made up by installing the gasket between the flanges. The threads of the bolts and the faces of the gaskets shall be coated with a suitable lubricant immediately before installation.
5. Joints using Dresser couplings shall be made up as recommended by the manufacturer.
6. Use of perforated band iron (plumber's strap), wire or chain as pipe hangers will not be acceptable. Supports for pipe less than 1-1/2 inches nominal size shall not be more than 8-feet on centers and pipe 2-inches nominal size and larger shall be supported at not more than 10-feet on centers, unless otherwise indicated. Supports for PVC pipe shall be spaced one-half the distance specified above unless otherwise indicated. Any noticeable sagging shall be corrected by the addition of extra supports at the Contractor's expense.

J. INSTALLATION OF HDPE SERVICES

Furnish and install a 10 gauge stranded copper blue tracer wire above all HDPE services.

3.04 FIELD QUALITY CONTROL

- A. All water mains shall be flushed to remove all sand, debris, rock and other foreign matter. Dispose of the flushing water without causing a nuisance or property damage.
- B. Pressure and Leakage Testing: Hydrostatically test all pressure pipe. Test Ductile Iron Pipe mains in accordance with ANSI/AWWA C600-10 once all backfill is in place and fully compacted, and after all thrust blocks have cured to their design strength. Do not test against closed valves. All pumps, piping and gauges shall be furnished, installed and operated by the Contractor and all such equipment and devices and their installation shall be approved by the Engineer. Pump shall be of a non-pulsating type suitable for this application and gauge accuracy certification may be required at the Engineer of Record's discretion. All pressure and leakage testing shall be done in the presence of a representative of the Department as a condition precedent to the approval and acceptance of the system.
- C. Disinfection:

Disinfect in accordance with ANSI/AWWA C651-14 – Disinfecting Water Mains. During the period that the chlorine solution or slug is in the section of pipeline, open and close valves to obtain a chlorine residual at hydrants and other pipeline appurtenances. Swab exposed faces of valves and blind flanges prior to bolting flanges in place with a 1% sodium hypochlorite solution. Disinfect isolation valves, pipe, and appurtenances per AWWA C651, Section 4.7.

Flush with potable water until discolored water, mud, and debris are eliminated. Swab interior of pipe and fittings with a 1% sodium hypochlorite solution. After disinfection, flush with potable water again until water is free of chlorine odor. After confirming the chlorine residual, flush the excess chlorine solution from the pipeline until the chlorine concentration in the water leaving the pipe is either within 0.5 mg/L of the replacement water or no higher than that generally prevailing in the distribution system.

Discharge of chlorinated water into watercourses or surface waters is regulated by the National Pollutant Discharge Elimination System (NPDES). Disposal of the chlorinated disinfection water and the flushing water is the Contractor's responsibility. Schedule the rate of flow and locations of discharges in advance to permit review and coordination with Owner and cognizant regulatory authorities. For measuring chlorine concentration, supply and use a medium range, drop count, DPD drop dilution method kit per AWWA C651, Appendix A.1. Maintain kits in good working order available for immediate test of residuals at point of sampling.

D. Tests for Drain and Gravity Sewer Lines:

1. Drain and gravity sewer lines shall be tested for infiltration and exfiltration.
2. The allowable limits of infiltration or exfiltration or leakage for the drain or sewer lines, or any portion thereof shall not exceed a rate of 100 gallons per inch of internal pipe diameter per mile of pipe per 24 hours with no allowance for laterals or manholes. Duration of test shall be a minimum of two hours.
3. Any part or all of the system may be tested for infiltration or exfiltration, as directed by the Engineer. Prior to testing for infiltration, the system shall be pumped out so that normal infiltration conditions exist at the time of testing. The amounts of infiltration or exfiltration shall be determined by pumping into or out of calibrated drums, or by other approved methods.
4. The exfiltration test will be conducted by filling the portion of the system being tested with water to a level which will provide a minimum head of 2-feet in a lateral connected to the test portion, or, in the event there are no laterals in the test portion, a minimum difference in elevation of 5-feet between the crown of the highest portion of the drain or sewer and the test level.
5. Where infiltration or exfiltration exceeds the allowable limits specified herein, the defective pipe, joints, or other faulty construction shall be located and repaired by the Contractor.
6. Furnish all labor, equipment and materials and shall conduct all testing required, under the direction of the Engineer of Record. No separate payment will be made for this work and the cost for this work shall be included in the prices quoted in the Proposal.
7. Locate and repair all leaks until the leakage is reduced to the limits specified. Any observed leaks or obviously defective joints or pipes shall be repaired or replaced as directed by the Engineer of Record, even though the total leakage is below that specified above.

END OF SECTION

SECTION 15100**VALVES, GENERAL****PART 1 - GENERAL****1.01 SCOPE**

- A. The Contractor shall provide all tools, supplies, materials, equipment, and labor necessary for furnishing, installing, adjusting, and testing of all valves and appurtenant work, complete and operable. For buried valves, the Contractor shall furnish and install valve boxes to grade, with covers, extensions, and position indicators.
- B. The provisions of this Section shall apply to all valves and valve operators called out in the various Sections of these Specifications except where otherwise specified. Valves and operators in particular locations may require a combination of units, sensors, limit switches, and controls specified in other sections of these Specifications.
- C. All valves specified herein shall be furnished with an affidavit from the manufacturer(s) certifying that the valves furnished comply with the applicable provisions of the AWWA specifications, as modified herein. That they were factory tested in accordance with the AWWA Standard Leakage and Hydrostatic Tests as modified herein, with a certified test report furnished to the Department for each valve.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Piping, General
- B. Painting
- C. Equipment General Provisions
- D. Electrical
- E. Valve (by type) Specification Sections

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Codes: All codes, as referenced herein, are specified in Section entitled "Reference Standards." As used herein, "ANSI" denotes the American National Standards Institute; "AWWA", the American Water Works Association; and "ASTM", the American Society for Testing and Materials.
- B. Commercial Standards:

ANSI B16.1

Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.

ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys.
ANSI/ASME B1.20.1	General Purpose Pipe Threads (Inch).
ANSI/ASME B31.1	Power Piping.
ASTM A 36	Specification for Structural Steel.
ASTM A 48	Specification for Gray Iron Castings.
ASTM A 126	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
ASTM A 536	Specification for Ductile Iron Castings.
ASTM B 61	Specification for Steam or Valve Bronze Castings.
ASTM B 62	Specification for Composition Bronze or Ounce Metal Castings.
ASTM B 148	Specification for Aluminum-Bronze Castings.
ASTM B 584	Specification for Copper Alloy Sand Castings for General Applications.
ANSI/AWWA C500	Gate Valves for Water and Sewerage Systems.
AWWA C550	Protective Interior Coatings for Valves and Hydrants.

1.04 MANUFACTURER

All valves shall be the product of domestic manufacturing firms which have been engaged in the production of valves for not less than five (5) years.

1.05 QUALITY ASSURANCE

- A. Valve Testing: The Contractor is advised that he is required to furnish all labor, materials and equipment necessary to pressure test each valve furnished by himself or the Department, bi-directionally, prior to installation, to the satisfaction of the Engineer of Record. If the valves are available, the tests shall be performed prior to the start of construction. Otherwise, the tests shall be performed as soon as the valves are available to afford the maximum time for any corrective work required. The Contractor shall include all costs for this requirement under the appropriate Proposal Item(s), no other compensation will be provided.
- B. Bronze Parts: Unless otherwise specified, all interior bronze parts of valves shall conform to the requirements of ASTM B 62.
- C. Provide valves that have the manufacturer's name and valve rating cast in body.

1.06 SUBMITTALS

- A. Shop Drawing: Shop drawings of all valves and operators including associated wiring diagrams and electrical data.
- B. Approved Drawings: The Engineer of Record's drawings, which constitute an integral part of this Contract, indicate the general layout of the complete system. Field verification of scale dimensions on plans is directed since actual locations, distances and levels will be governed by actual field conditions. The Contractor shall also review architectural, structural, and mechanical plans and shall adjust his work to conform to all conditions indicated thereon. Discrepancies shown on different plans, or between plans and actual field conditions, or between plans and specifications, shall promptly be brought to the attention of the Engineer of Record, for a decision. All items not specifically mentioned in the specifications or noted on the drawings, but which can be reasonably assumed as necessary to make a complete working installation shall be included.

PART 2 - PRODUCTS

2.01 VALVES

- A. General: The Contractor shall furnish all valves, gates, valve operating units, stem extensions, operators and other accessories as shown or specified. All valves and gates shall be new and of current manufacture. All non-buried valves, 6-inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes, covers and valve extensions. Valves mounted higher than 6-feet above working level shall be provided with chain operators. All valves shall have a minimum design pressure rating of 150 psi unless otherwise specified elsewhere herein.
- B. Cast iron parts of valves shall meet the requirements of ASTM A126, "Standard Specifications for Gray Iron Castings for Valves, Flanges and Pipe Fittings, Class 'B'." Flanged ends shall be flat-faced and have bolt circle and bolt patterns conforming to ANSI B16.1 Class 125.
- C. All castings shall be clean and sound, without defects of any kind and no plugging, welding or repairing of defects will be permitted. All bolt heads and nuts shall be hexagonal conforming to ANSI B18.2. Gaskets shall be full-face and made of synthetic elastomers in conformance with ANSI B16.21 suitable for the service characteristics, especially chemical compatibility and temperature. Non-ferrous alloys of various types shall be used for parts of valves as specified. Where no definite specification is given, the material shall be the recognized acceptable standard for that particular application.
- D. All buried valves shall be provided with cast-iron valve boxes unless otherwise indicated. The boxes shall conform with Department Standards and be installed perpendicularly, centered around and covering the upper portions of the valve operator. The top of each valve box shall be placed flush with finish grade unless otherwise indicated on the Drawings. Valve boxes shall be as specified elsewhere in this Section.

- E. All buried valves and other valves located below a concrete operating deck or level, specified or noted to be key operated, shall have an operator to finish grade or deck level, non-rising stem, a 2-inch square AWWA nut with skirt, and cover or box and cover, as may be required.
- F. Valve Flanges: The flanges of valves shall be in accordance with Section 15060, "Piping and Fittings."
- G. Gate Valve Stems: Gate valve stems shall be of bronze in accordance with AWWA C515, containing not more than 5 percent of zinc nor more than 2 percent of aluminum.
- H. Protective Coating: Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, in the fluid passages of all valves 4-inch and larger shall receive an epoxy coating in accordance with AWWA C550. Flange faces of valves shall not be epoxy coated. The valve manufacturer, shall certify in writing that such coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with these Specifications. Exterior coating shall be asphalt varnish conforming to Federal Specification TT-C-494A.
- I. Valve Labeling: A label shall be provided on all shut-off valves exclusive of hose bibs and chlorine cylinder valves. The label shall be of 1/16-inch brass or stainless steel, minimum 2 inches by 4 inches in size, and shall be permanently attached to the valve or on the wall adjacent to the valve or as indicated by the Department.

2.02 VALVE OPERATORS

A. General

- 1. All butterfly valves, plug valves over 8-inch size and gate valves installed horizontally shall be furnished with geared operators, provided by the manufacturer. All valves of a particular size and pressure rating by a given manufacturer shall be supplied with the same operator. No variation will be permitted during the contract. All valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the manufacturing plant. Operator orientation shall be verified with the Department prior to fabrication. If this requirement is not met, changes to orientation shall be made at no cost the Department.
- 2. All operators shall turn counter-clockwise to open. Operators shall have the open direction clearly and permanently marked. Field adjustment and testing of the operators and valves to ensure proper installation and operation shall be the responsibility of the Contractor.

B. Manual Operators

- 1. All manual operators shall be equipped with AWWA square nuts, handwheels or chain drives as appropriate. Some small (6-inch or less) valves may be lever operated if so specified elsewhere herein. Where buried, the valves shall have extensions with square nuts or floor stands as indicated on the Drawings. Valves mounted higher than 6 feet above floor or operating level shall have chain operators with chain terminating 4 feet above operating level.

2. Operation of valves and gates shall be designed so that the effort required to operate the handwheel, lever or chain shall not exceed 40 pounds applied at the extremity of the wheel or lever. The handwheels on valves 14 inches and smaller shall not be less than 8 inches in diameter, and on valves larger than 14 inches the handwheel shall not be less than 12 inches in diameter.
3. Chainwheel operator shall be fabricated of malleable iron with pocketed type chainwheels with chain guards and guides. Chainwheel operators shall be marked with an arrow and the word "open" indicating direction to open. The operators shall have galvanized smooth welded link type chain. Chain that is crimped or has links with exposed ends is not acceptable.

2.03 TORQUE LIMITING DEVICE

Each butterfly valve shall be provided with a torque limiting device designed to protect the actuator and valve parts. The device shall consist of an overtorque protection mechanism enclosed in a hermetically sealed cast iron housing. The mechanism shall be permanently lubricated and factory set to trip between 200 and 220 ft. lbs. of applied torque. The housing shall have integrally cast, 2-inch AWWA operating nut and matching socket to operate and to fit over the actuator or extension shaft nuts, respectively. The socket shall be provided with a set screw to fit the device. The direction of rotation shall be permanently shown with word and arrow next to the operating nut. The entire device shall be coated inside and out with a 2-part epoxy. The torque limiting device shall be as manufactured by Annspace Controls Company of St. Louis, Missouri, or approved equal.

2.04 FLOOR STANDS

Floor stands shall be cast iron, non-rising stem type with lockable hand wheel operator, valve position indicator and stainless steel or bronze extension stem. Hand wheel shall be lockable in the full open and full closed positions. The floor stand shall be furnished with an armored padlock and six keys. Lock shall be as manufactured by Master, Schlage or equal. Floor stand shall be standard pattern type as manufactured by Clow Corporation, or equal.

2.05 VALVE BOXES

Cast iron valve boxes shall be provided for all valves installed underground. All valves boxes shall be No. 2 or 3 (for water) and No. 52 or 53 (for sewer) in accordance with Department Standards.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: All work shall be performed by skilled workmen experienced in similar installations. All valves shall be adequately supported by clamps, brackets, straps, concrete supports or other devices as shown or specified. All supports shall be secured to structures by approved inserts or expansion shields and bolts.

- B. All valves shall be thoroughly cleaned internally before being installed. Installation of valves shall be done in accordance with construction methods specified in "Pipes and Fittings" Section of these Specifications.
- C. Install valves as recommended by manufacturer.
- D. Install valves so that they are easily accessible for operation, visual inspection and preventive maintenance.
- E. Location of valves and chain operators: Install valves so as to be accessible for operation and free from interferences when operated. Position so that leakage will not contact any electrical equipment that may be located below.
- F. The installation of all underground valves shall include a valve box and riser in accordance with the Details shown on the Plans or in the Standard Details for the various sizes and types of valves to be installed. Riser pipes and valve boxes shall be carefully centered and set flush with the finished grade if in paving, or with the top of the ground if out of paved areas. All valve boxes shall be held in position with concrete as shown on the Plans or in the Standard Details.
- G. Upon completion of the Project, but prior to final acceptance, the Contractor in the presence of the Engineer, shall fully open each valve installed by him, except at connections to existing Department mains. For valves 16-inch and larger, the Contractor, shall count the number of turns required to operate each valve from a completely closed to a fully opened position, and shall paint the number on the bottom of the valve box lid or manhole cover. Valves at connections to existing Department mains shall only be operated by Department forces.

END OF SECTION


1. ALL MATERIALS AND LABOR UNDER THIS PROJECT SHALL BE IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE MIAMI-DADE WATER AND SEWER DEPARTMENT AND SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS AVAILABLE AND ON FILE WITH THE DEPARTMENT. SUBMIT SHOP DRAWINGS FOR ALL MATERIALS.
2. COVER OVER WATER OR SEWER FORCE MAINS SHALL BE 4'-0" MIN.
3. ALL MAIN LINE VALVES SHALL BE INSTALLED COMPLETE WITH 10" RISER PIPES AND NO. 3 OR 53 VALVE BOXES FIRE HYDRANTS AND SERVICE VALVES SHALL BE INSTALLED COMPLETE WITH 6" RISER PIPES AND NO. 2 VALVE BOXES.
4. ALL FORCE MAIN SERVICE CONNECTIONS INTO PRESSURE TRANSMISSION MAINS SHALL HAVE A SHUT OFF VALVE AND CHECK VALVE AT THE POINT OF ENTRY.
5. ALL GRAVITY SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DEPARTMENT STANDARDS.
6. ALL WATER METERS WILL BE INSTALLED BY THE MIAMI-DADE WATER AND SEWER DEPARTMENT PROVIDING THE APPROPRIATE CHARGES HAVE BEEN PREPAID.
7. FIRE HYDRANT REQUIREMENTS (NUMBER AND LOCATION) SHALL BE AS REQUIRED BY THE MIAMI-DADE COUNTY FIRE DEPARTMENT OR THE APPROPRIATE FIRE AGENCY WITH INSTALLATION IN ACCORDANCE WITH DEPARTMENT STANDARDS.
8. CONTRACTOR MUST CALL M-DWASD INSPECTION DIVISION TO ARRANGE FOR A PRECONSTRUCTION MEETING 2 FULL BUSINESS DAYS PRIOR TO PROPOSED START OF CONSTRUCTION. CONTACT ONE CALL CENTER 48 HRS PRIOR TO EXCAVATION.
9. CONTRACT INSPECTOR WILL INSPECT ANY FACILITIES APPROVED BY THE DEPARTMENT. ALL OTHER REQUIREMENTS OF THE PERMITTING AGENCY SHALL BE IN ACCORDANCE WITH THEIR STANDARDS AND REQUIREMENTS.
10. WORK PERFORMED UNDER THIS PROJECT WILL NOT BE CONSIDERED AS COMPLETE UNTIL FINAL ACCEPTANCE OF THE SYSTEM BY THE DEPARTMENT AND UNTIL THE FOLLOWING DOCUMENTS ARE RECEIVED AND APPROVED BY THE DEPARTMENT.
 - a. EASEMENTS, IF REQUIRED.
 - b. CONTRACTOR'S WAIVER AND RELEASE OF LIEN.
 - c. ABSOLUTE BILL OF SALE.
 - d. i. CONTRACTOR'S LETTER OF WARRANTY (I.E., LETTER AGREEMENT).
ii. DEVELOPER'S CONTRACT BOND (I.E., CONTRACT AGREEMENT).
 - e. "AS-BUILT" PRINTS 24"x36" SHOWING SPECIFIC LOCATIONS, DEPTH, ETC. OF ALL WATER AND SEWER FACILITIES AS LOCATED BY A LICENSED FLORIDA SURVEYOR, ALONG WITH PRINTS OF "AS-BUILT" WHICH HAVE BEEN SIGNED AND SEALED BY A REGISTERED SURVEYOR. (No. OF PRINTS: 3-FOR WATER, 4-FOR GRAVITY SEWER AND 5-FOR FORCE MAIN OR PUMP STATION PROJECTS). THE DEPARTMENT RESERVES THE RIGHT TO REQUIRE SUBMITTAL ON ELECTRONIC MEDIA IN ACCORDANCE WITH SEC. 01775 "MAGNETIC MEDIA SUBMITTAL".
 - f. H.R.S. LETTER OF RELEASE REQUIRED FOR ALL WATER PROJECTS.
 - g. BILL OF SALE SKETCH (8½"x11") FOR WATER AND SEWER, SEPARATELY.
11. ALL NEW CONNECTIONS FROM EXISTING DEPARTMENT MAINS TO BE MADE BY DEPARTMENT FORCES ONLY. THE CONTRACTOR TO EXCAVATE AT REQUIRED LOCATIONS, PROVIDE AND INSTALL MATERIAL WITH FITTINGS, PRIOR TO TAP.
12. AN APPROVED PAVING AND DRAINAGE PLAN MUST BE SUBMITTED TO MDWASD FOR ALL NEW SUBDIVISIONS PRIOR TO APPROVAL OF WATER AND SEWER PERMIT PLANS, UPON REQUEST.
13. UNLESS OTHERWISE SPECIFIED, ALL TAPS 20 INCHES AND SMALLER FOR CONNECTIONS TO EXISTING MAINS WILL BE DONE BY DEPARTMENT FORCES. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE PERMITTED TO TAP EXISTING MAINS IN THE SIZE RANGE SPECIFIED ABOVE. THE TAPPING SLEEVE AND TAPPING VALVE ARE FURNISHED AND INSTALLED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE INSPECTOR.

I T E M	CROSS REF.	SPEC. REF.

1. AT THE COMPLETION OF ANY WATER AND SEWER JOB, EITHER DONATION OR CONTRACT, THE CONTRACTOR SHALL SUBMIT:
 - a. AS-BUILT PRINTS WHICH HAVE BEEN SIGNED AND SEALED BY A FLORIDA LICENSED PROFESSIONAL SURVEYOR AND MAPPER. (QTY. OF PRINTS, AS REQUIRED BY THE DEPARTMENT.)
2. "AS-BUILT" FORMAT:
 - a. 24"x36" PRINTS
 - b. LOCATION MAP SCALE SHOULD BE 1"=300' AND SECTION-TOWNSHIP-RANGE SHOULD BE SHOWN.
 - c. THE WORD "AS-BUILT" IN LARGE LETTERS.
 - d. TITLE BLOCK WITH DEPARTMENT DS, DW OR ER NUMBER AND PERTINENT INFORMATION.
 - e. PREFERRED SCALE TO BE 1"= 40' HORIZONTALLY AND 1"= 4' VERTICALLY*.
 - f. STREET NOMENCLATURE.
 - g. SEPARATE AS-BUILTS FOR WATER AND SEWER.
 - h. SEPARATE WATER AND SEWER PROFILE.
 - i. STATIONING STARTING WITH 0+00 AT PERMANENT REFERENCE POINT (I.E., \odot , \otimes , ETC.) OR AS SHOWN ON DESIGN PERMIT PLANS, AND TO RUN CONTINUOUSLY TO END OF MAIN.
 - j. EASEMENTS, IF ANY, TIED TO PERMANENT REFERENCE POINT.
 - k. IDENTIFY ALL CONTROL LINES (I.E. BLDG. LINE, PROPERTY LINE, R/W, ETC).
 - l. ALL "PROPOSED" INFORMATION TO BE REMOVED FROM PRINTS, LEAVING ONLY "AS-BUILT" INFORMATION REFLECTED IN DRAWINGS.
3. WATER "AS-BUILTS" MUST INCLUDE:
 - a. PLANS SHOWING PIPE SIZE, MATERIAL AND OFFSET OF MAIN, DEFLECTIONS (IF ANY), STATION OF SERVICES, HYDRANTS AND FITTINGS AT THE MAINLINE (IF PERPENDICULAR TO IT), AND AT MAIN AND END OF SERVICES IF ANY, OTHER ANGLE, AND DEFLECTION OF PIPE, IF ANY.
 - b. PROFILE SHOWING TOP OF GROUND AND TOP OF PIPE ELEVATIONS AT EVERY 100' STATION AND AT ANY CHANGE IN GRADE (WITH CORRESPONDING STATION), PIPE SIZE AND PIPE MATERIALS REFERENCED TO PLAN.
4. SEWER "AS-BUILTS" MUST INCLUDE:
 - a. PLAN SHOWING MANHOLE NUMBER, PIPE SIZE AND PIPE MATERIAL OF PIPE, DEFLECTION, IF ANY (FORCE MAIN ONLY), AND LOCATION OF LATERALS WITH REFERENCE TO MANHOLE.
 - b. PROFILE SHOWING MANHOLE NUMBER (AS PER PLAN), RIM AND INVERT ELEVATIONS (IF MORE THAN ONE INVERT, LABEL NORTH, SOUTH , ETC), AND STATION STARTING AT EACH 0+00 AT DOWNSTREAM MANHOLE.
5. FORCE MAIN "AS-BUILT" SAME AS WATER MAIN ABOVE.
6. EACH AS-BUILT SHALL SHOW THE FLORIDA STATE PLANE COORDINATES (CURRENT READJUSTMENT) OF ALL THE MANHOLES AND VALVES AND OF AT LEAST TWO HORIZONTAL CONTROL POINTS PROPERLY IDENTIFIED AND LOCATED WITHIN THE PROJECT.

* OTHER SCALE MAY BE PERMITTED, BUT MUST BE APPROVED BY THE DEPARTMENT OF DRAWINGS.

I T E M	CROSS REF.	SPEC. REF.

 MIAMI-DADE COUNTY <i>Delivering Excellence Every Day</i> WATER & SEWER DEPARTMENT	ISSUE DATE	APPROVED BY	STANDARD DETAIL "AS-BUILT" REQUIREMENTS	GS 0.5 SHEET 2 OF 2
	03/11/2009	V.F.C.		

MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED

(SOURCES: DIPRA RESTRAINT LENGTH CALCULATION PROGRAM FOR DUCTILE IRON PIPE , RELEASE 3.2)

NOTES:

1. THE DATA IN TABLES ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
SOIL TYPE-SILT 2 (OR, SOIL WITH EQUIVALENT PROPERTIES)
TEST PRESSURE-100 PSI TRENCH TYPE-4 SAFETY FACTOR-1.5
MINIMUM PIPE LENGTH ALONG TEE RUN-20'
2. RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPES.
3. ALL JOINTS BETWEEN BENDS AT ALL HORIZONTAL & VERTICAL OFFSETS SHALL BE RESTRAINED.
4. DUCTILE IRON FITTINGS UP TO 20-INCHES IN DIAMETER SHALL BE RESTRAINED BY MECHANICAL MEANS, I.E. RESTRAINING JOINTS, MEGALUGS OR APPROVED EQUAL, FIELD-LOK GASKETS OR APPROVED EQUAL.
5. 24-INCH AND ABOVE DIAMETER DUCTILE IRON FITTINGS SHALL BE RESTRAINED BY MECHANICAL MEANS, I.E. RESTRAINING JOINTS, MEGALUGS OR APPROVED EQUAL, FIELD-LOK GASKETS OR APPROVED EQUAL, ETC., WITH THRUST BLOCKS AND CONCRETE ANCHORS BEING OPTIONAL AT THE DISCRETION OF THE ENGINEER OF RECORD.
6. ANY THRUST BLOCKS AND ANCHORS ARE TO BE DESIGNED BY THE ENGINEER OF RECORD. SIGNED AND SEALED CALCULATIONS SHALL BE SUBMITTED TO MDWASD FOR APPROVAL PRIOR TO INSTALLATION.
7. THRUST BLOCKS CONSISTING OF POURED-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI AFTER 28 DAYS CURING AGE.
8. TABLES SHOWN ON SHEETS 1 OF 5 THRU 5 OF 5 SHALL SERVE AS A GENERAL DESIGN AND CONSTRUCTION GUIDE ONLY. IT IS THE SOLE RESPONSIBILITY OF THE ENGINEER-OF-RECORD TO JUSTIFY AND DOCUMENT ANY DEVIATIONS FROM THE PIPE LENGTHS SPECIFIED IN SAID TABLES BASED ON THE INSTALLATION & FIELD CONDITIONS.
9. AT TIMES ON THE PLANS, DIMENSIONAL ARROWS BETWEEN LOCATOR LINES WHICH ARE EVEN WITH PARTICULAR PIPE JOINTS ARE UTILIZED TO SHOW THE EXTENT OF RESTRAINED LENGTHS OF PIPE AND FITTINGS. IN THESE INSTANCES THE JOINT(S) AT THE LOCATOR LINES SHALL BE CONSIDERED AS A RESTRAINED JOINT. HENCE, THE LENGTH OF PIPE BEYOND THE LOCATOR LINE IS RESTRAINED.



THUS, IN THE SCHEMATIC ABOVE, FOUR LENGTHS OF PIPE ARE BETWEEN THE LOCATOR LINES BUT ALL SIX LENGTHS ARE RESTRAINED.

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I T E M	CROSS REF.	SPEC. REF.


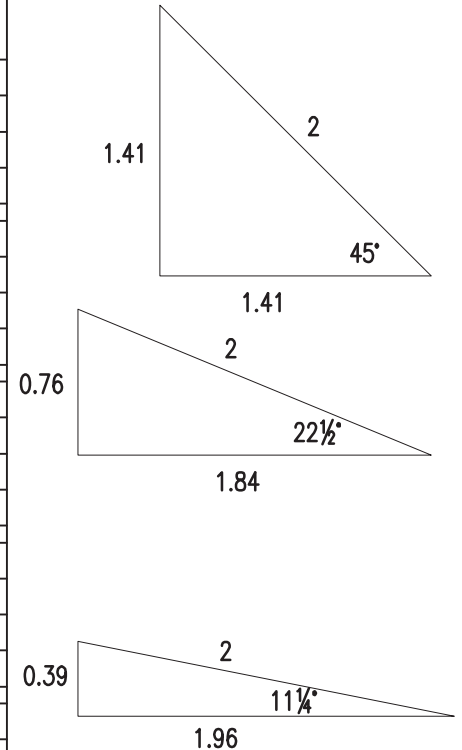
	ISSUE DATE	APPROVED BY	STANDARD DETAIL STANDARD REQUIREMENTS FOR WATER AND SEWER MECHANICAL THRUST RESTRAINT	GS 2.0 SHEET 1 OF 5
	4/10/2014	J. F.		

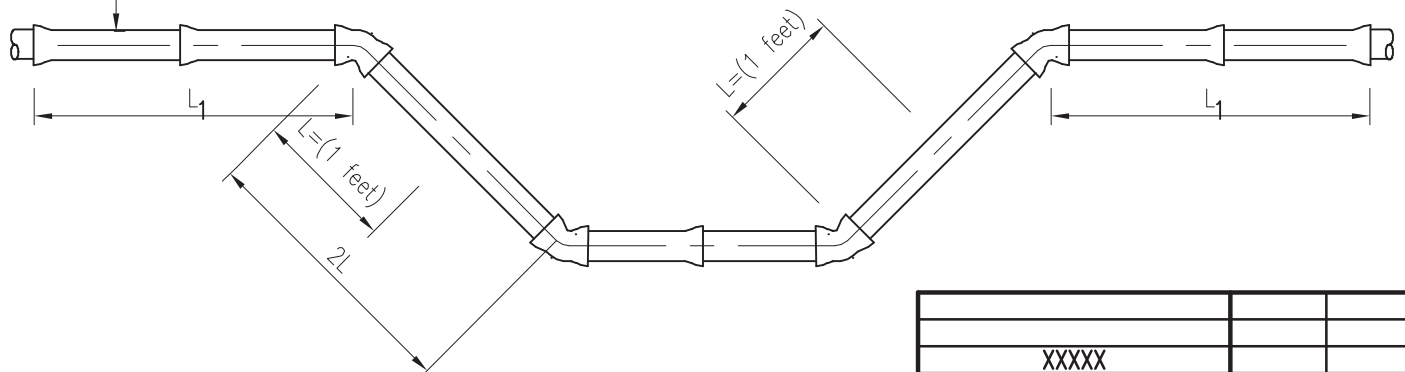
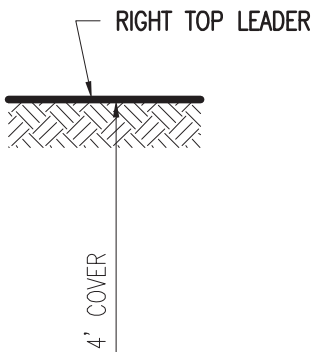
TABLE No.1
(Combined Vertical Offset Under Object/other utility)
MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED
100 psi pressure, Soil Designation: Silt 2

L= 1 Feet (Minimum or Maximum) H= Depth of cover (ft.)
 ϕ = Bend angle in degrees D= Nominal diameter (in.)

H	D	ϕ	L ₁ Bare Pipe	L ₁ Polywrapped Pipe
4'	6"	90	62	89
		45	25	36
		22½	12	17
		11¼	5	8
	8"	90	81	116
		45	33	47
		22½	15	22
		11¼	7	11
	10"	90	98	141
		45	40	58
		22½	19	27
		11¼	9	13
	12"	90	115	165
		45	47	68
		22½	22	32
		11¼	10	15
	* 16"	90	148	212
		45	61	87
		22½	28	41
		11¼	13	20
	* 20"	90	180	257
		45	74	106
		22½	35	50
		11¼	16	24



* 16" ϕ L=1.4'
 * 20" ϕ L=1.5'



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ITEM	CROSS REF.	SPEC. REF.

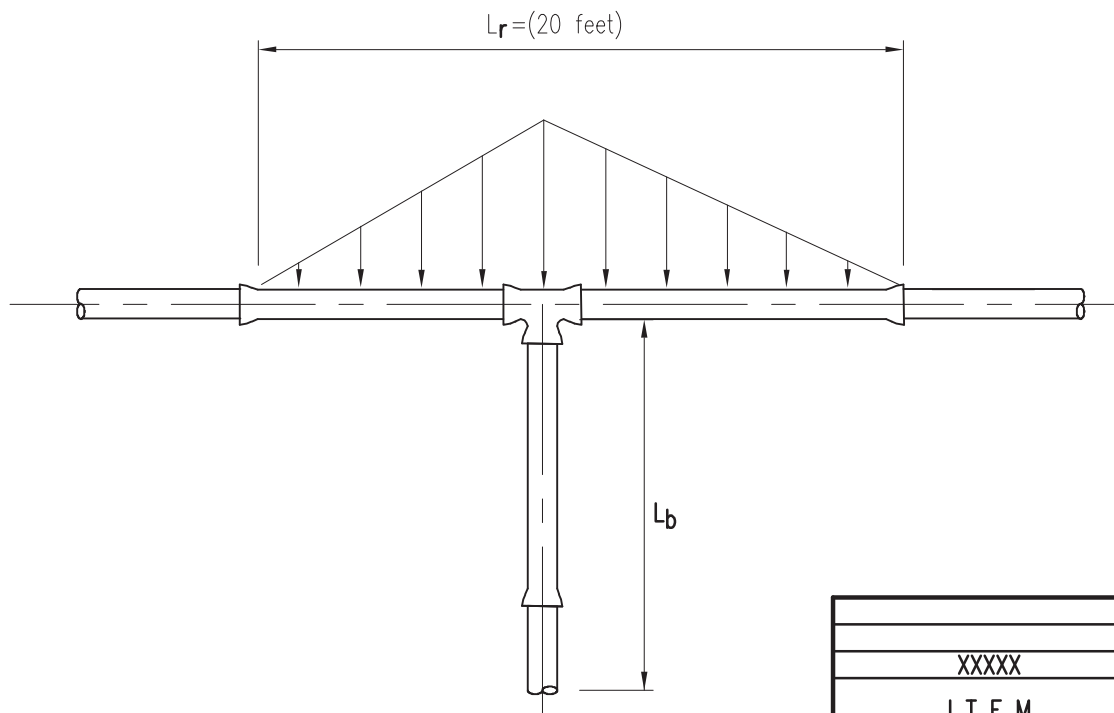
TABLE No.2 (Tee)
MIN. LENGTH OF PIPE (L_b in Feet) TO BE RESTRAINED

100 psi pressure, Soil Designation: Silt 2

H= Depth of cover (ft.)

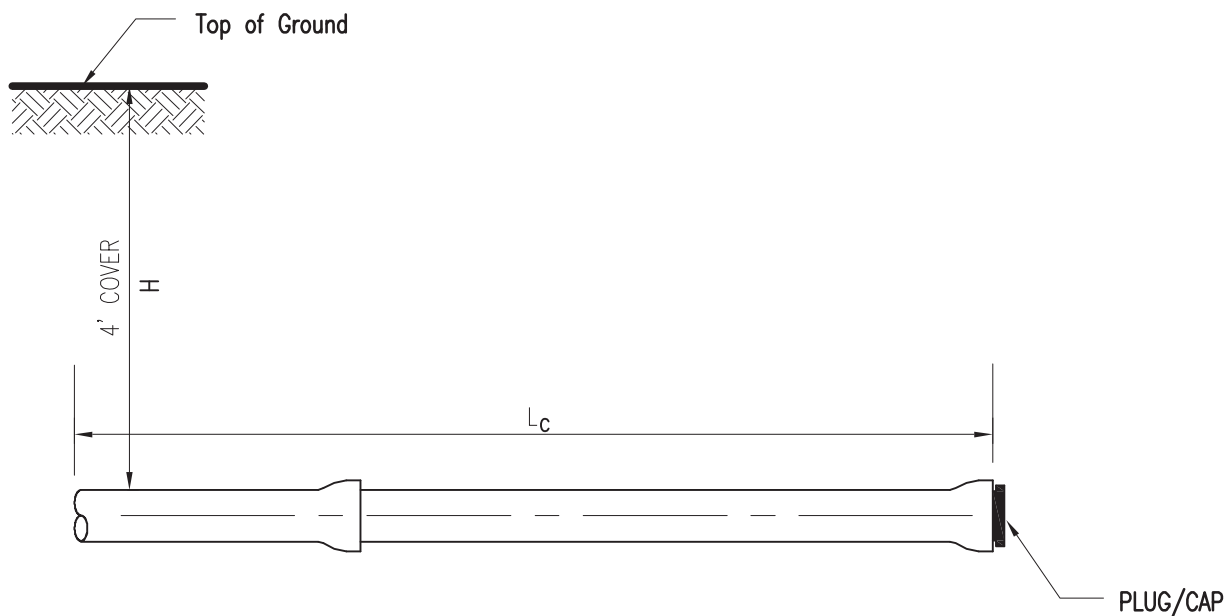
D= Nominal diameter (in.)

D	H=4 Bare Pipe	H=4 Polywrapped Pipe
	L_b	L_b
8" x 8"	10	14
8" x 6"	0	0
10" x 10"	19	26
10" x 8"	2	3
12" x 12"	27	38
12" x 10"	12	17
12" x 8"	0	0
16" x 16"	43	62
16" x 12"	15	22
16" x 10"	0	0
20" x 20"	59	84
20" x 16"	34	49
20" x 12"	3	4
20" x 10"	0	0



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ITEM	CROSS REF.	SPEC. REF.

TABLE No.3 (Dead Ends) MIN. LENGTH OF PIPE (L_c (in feet)) TO BE RESTRAINED 100 psi pressure, Soil Designation: Silt 2 H= Depth of cover (ft.) D= Nominal diameter (in.)			
H	D	DEAD END Bare Pipe	DEAD END Polywrapped Pipe
4'		L_c	L_c
	6"	32	45
	8"	41	58
	10"	50	71
	12"	58	83
	16"	75	107
	20"	91	127



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ITEM	CROSS REF.	SPEC. REF.


	ISSUE DATE	APPROVED BY	STANDARD DETAIL THRUST RESTRAINT DESIGN DUCTILE IRON/PVC PIPE (Dead Ends)	GS 2.0 SHEET 4 OF 5
	11/01/2006	V. E. F.		

TABLE No.4 (Horizontal Bends)

MIN. LENGTH OF PIPE (L_d in feet) TO BE RESTRAINED

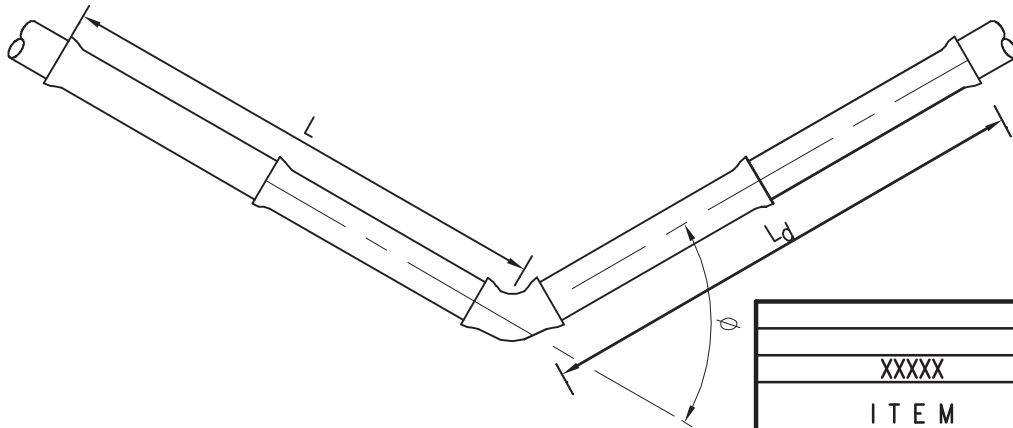
100 psi pressure, Soil Designation: Silt 2

 ϕ = Bend angle in degrees

H = Depth of cover (ft.)

D = Nominal diameter (in.)

		H = 2.5		H = 4		H = 6	
D	ϕ	Bare Pipe	Polywrapped Pipe	Bare Pipe	Polywrapped Pipe	Bare Pipe	Polywrapped Pipe
6"	90	19	22	12	14	9	10
	45	8	9	5	6	4	4
	22½	4	4	2	3	2	2
	11¼	2	2	1	1	1	1
8"	90	25	28	16	18	11	13
	45	10	12	7	8	5	5
	22½	5	6	3	4	2	2
	11¼	2	3	2	2	1	1
10"	90	29	33	19	22	13	15
	45	12	14	8	9	6	6
	22½	6	7	4	4	3	3
	11¼	3	3	2	2	1	1
12"	90	34	38	23	26	16	18
	45	14	16	9	11	7	7
	22½	7	8	5	5	3	4
	11¼	3	4	2	3	2	2
16"	90	43	48	29	33	20	23
	45	18	20	12	14	8	10
	22½	8	10	6	7	4	5
	11¼	4	5	3	3	2	2
20"	90	51	57	35	39	25	28
	45	21	24	14	16	10	12
	22½	10	11	7	8	5	6
	11¼	5	6	3	4	2	3




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ITEM	CROSS REF.	SPEC. REF.

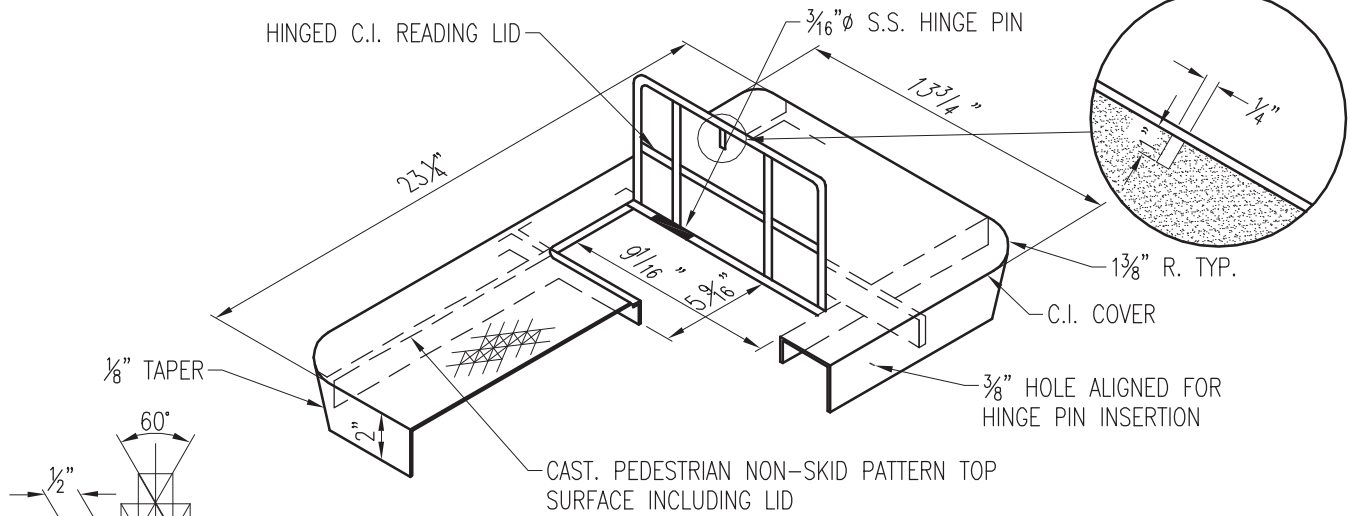
THE FOLLOWING REQUIREMENTS SHALL APPLY TO ALL CASTINGS
(OR FABRICATED MATERIALS) CONTAINED HEREIN:

1. SUB-COMPONENTS OF ALL CASTINGS FROM THE SAME SUPPLIER SHALL BE INTERCHANGEABLE.
2. MATING SURFACES OF ALL CASTINGS SHALL BE MACHINED, WITH NO ROCKING PERMITTED.
3. ALL CASTINGS SHALL BE IN ACCORDANCE WITH ASTM-A48, AS MODIFIED HEREIN:
 - A. ARTICLE 10.1.3.1. SHALL NOT APPLY, TIME LIMIT IS 4 HRS. MAXIMUM.
 - B. NOTIFICATION TIME LIMIT IN ARTICLE 16.2 SHALL NOT APPLY.
 - C. SUPPLIER SHALL PROVIDE CERTIFIED TEST RESULTS WITH EACH LOT OF CASTING SHIPPED. CERTIFICATION SHALL IDENTIFY LOT.
 - D. SIGNATURE IN ARTICLE 17.2 SHALL BE REQUIRED. CERTIFICATION SHALL BE SIGNED BY LICENSED PROFESSIONAL ENGINEER, OR EQUIVALENT WHEN IN FOREIGN COUNTRY.
 - E. SUPPLIER SHALL PROVIDE CAST TEST BAR, SUITABLE FOR MACHINING, FOR EACH FOUNDRY LOT OF CASTINGS SHIPPED. TEST BAR SHALL IDENTIFY LOT AND SHALL BE SUITABLE FOR CLASS NO. 35B SPECIMEN.
4. MANUFACTURER'S NAME AND LOCATION (I.E. FOUNDRY AND COUNTRY OF ORIGIN) SHALL BE PERMANENTLY CAST ON THE BOTTOM OF ALL CAST COVERS AND LIDS.
5. SUPPLIER OF FABRICATED ITEMS (I.E. NON-CAST ITEMS) SHALL PERMANENTLY MARK HIS NAME AND DATE OF MANUFACTURE ON MATERIAL, BY WELDING, STAMPING OR OTHER METHOD APPROVED BY THE DEPARTMENT.

ITEM	CROSS REF.	SPEC. REF.

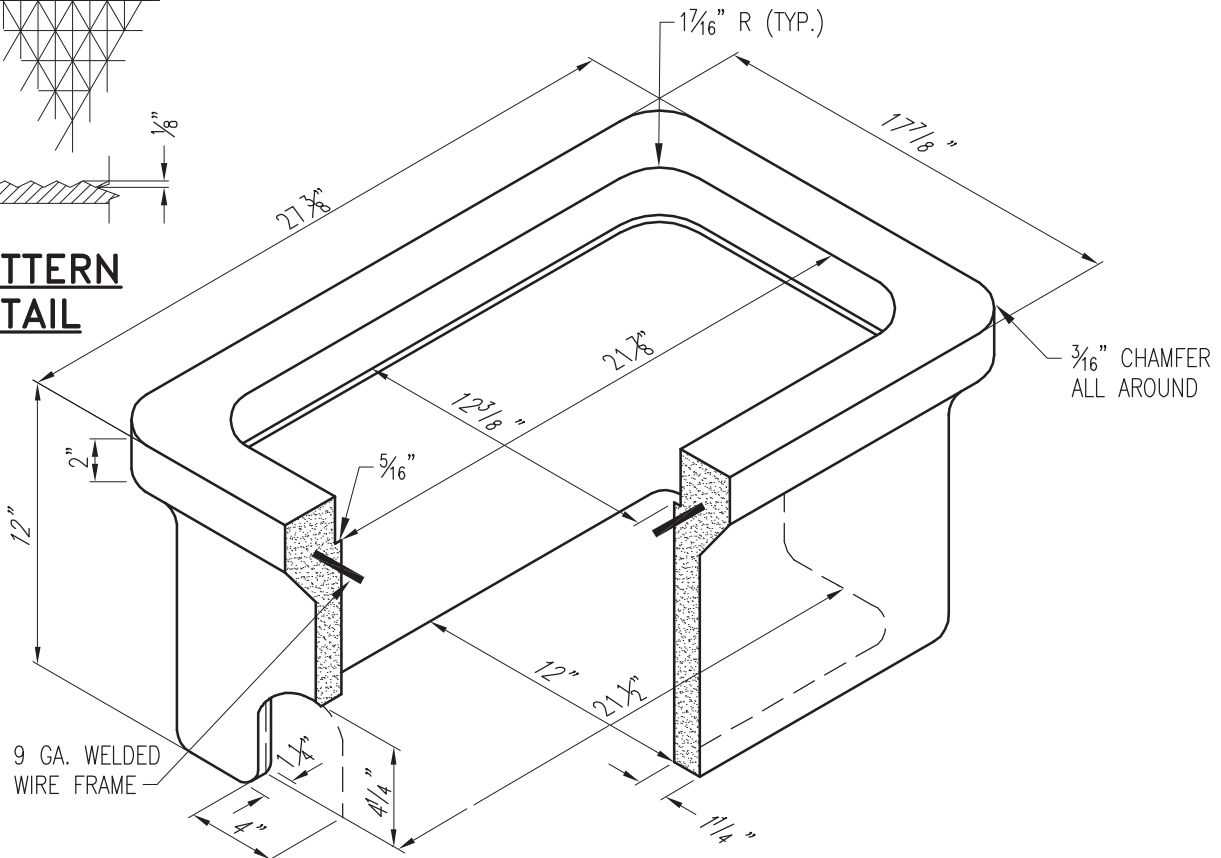
	ISSUE DATE	APPROVED BY	STANDARD DETAIL	WS 2.05 SHEET 1 OF 1
	6/01/2015	J.F.		
CASTING STANDARDS				

PICKHOLE DETAIL



C.I. COVER WITH HINGER LID

PATTERN DETAIL



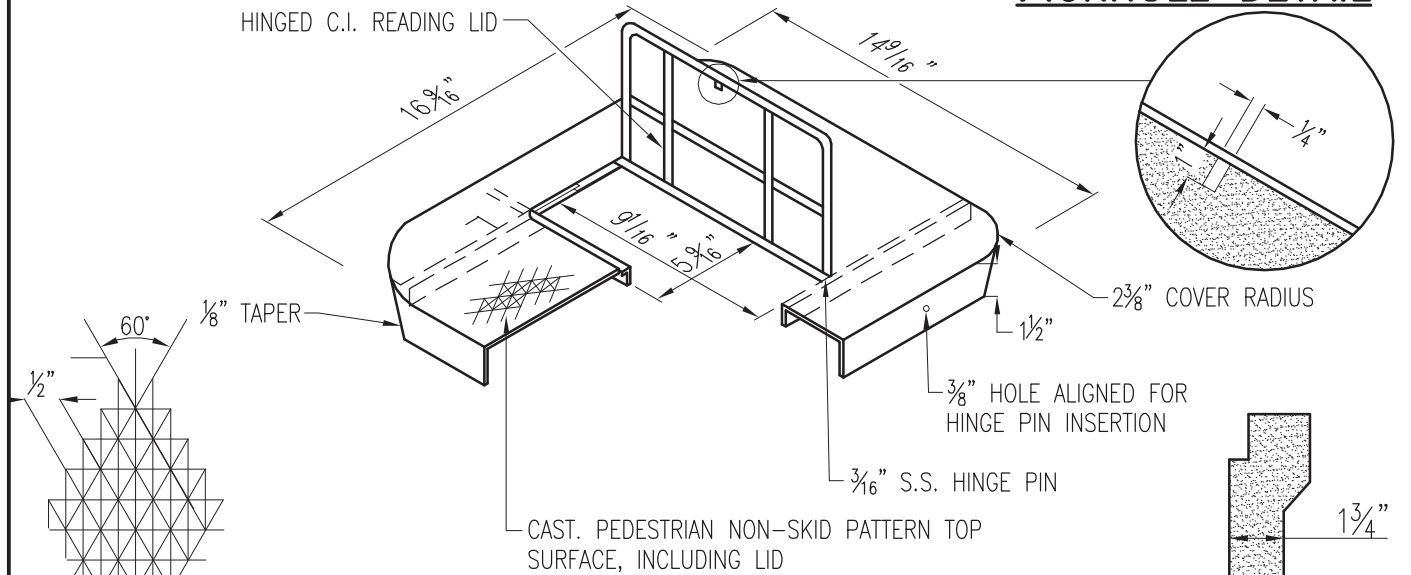
CONCRETE BODY

NOTES:

- SOME DIMENSIONS MAY VARY WITH DEPARTMENT APPROVAL.
LID W.T.= MAX. 53 LBS., MIN. 42 LBS.
- METERS WILL NOT BE INSTALLED IF THE METER BOX IS IN A DRIVING SURFACE.

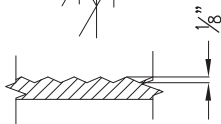
1" SERVICE CONNECTION	WS 4.11	
TYPICAL SERVICE PLAN	WS 4.10	
ITEM	CROSS REF.	SPEC. REF.

PICKHOLE DETAIL

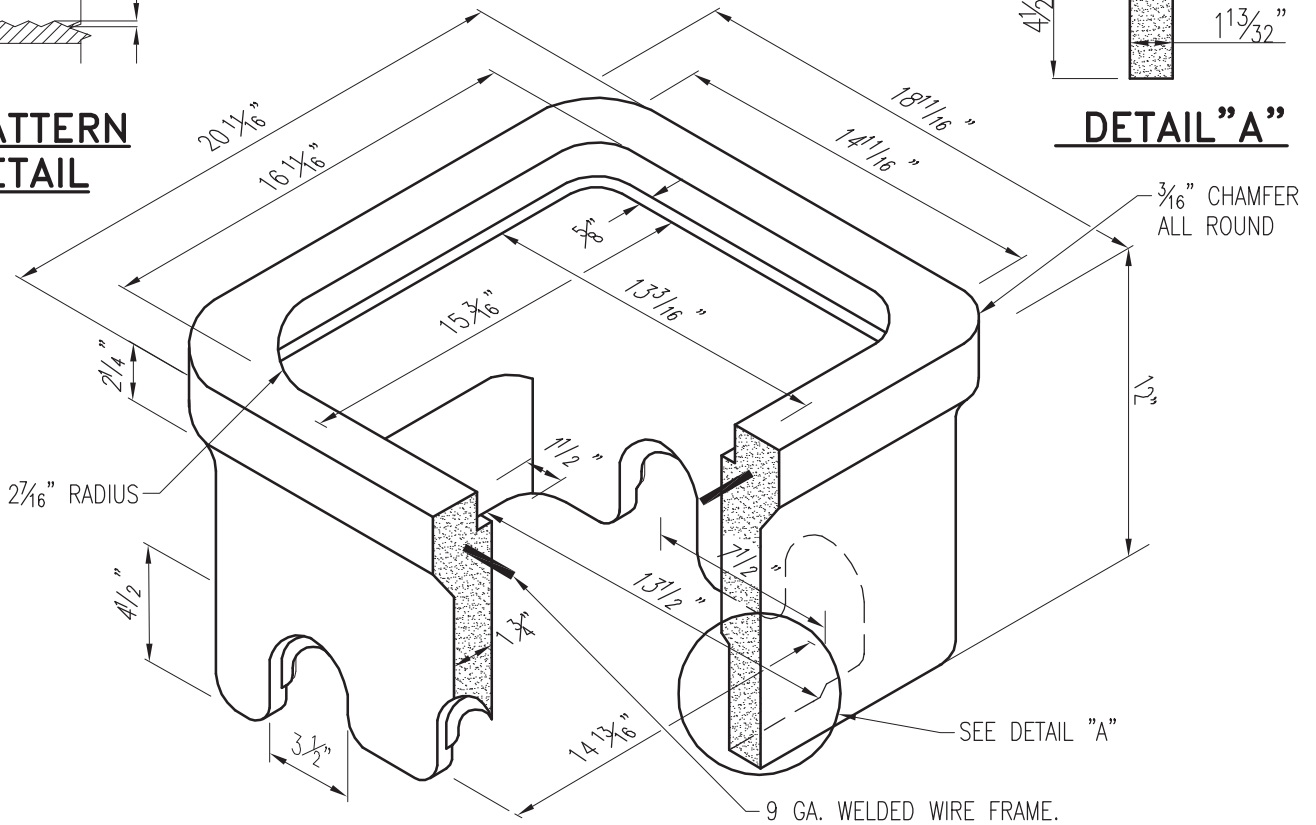


C.I. COVER WITH HINGED LID

PATTERN DETAIL



DETAIL "A"



NOTE:

1. SOME DIMENSIONS MAY VARY WITH DEPARTMENT APPROVAL.
LID W.T.= MAX. 33 LBS., MIN. 26 LBS.
2. METERS WILL NOT BE INSTALLED IF THE METER BOX IS IN A DRIVING SURFACE.

CONCRETE BODY

ITEM	CROSS REF.	SPEC. REF.



WATER & SEWER DEPARTMENT

ISSUE DATE

11/01/2006

APPROVED BY

V.F.C.

STANDARD DETAIL

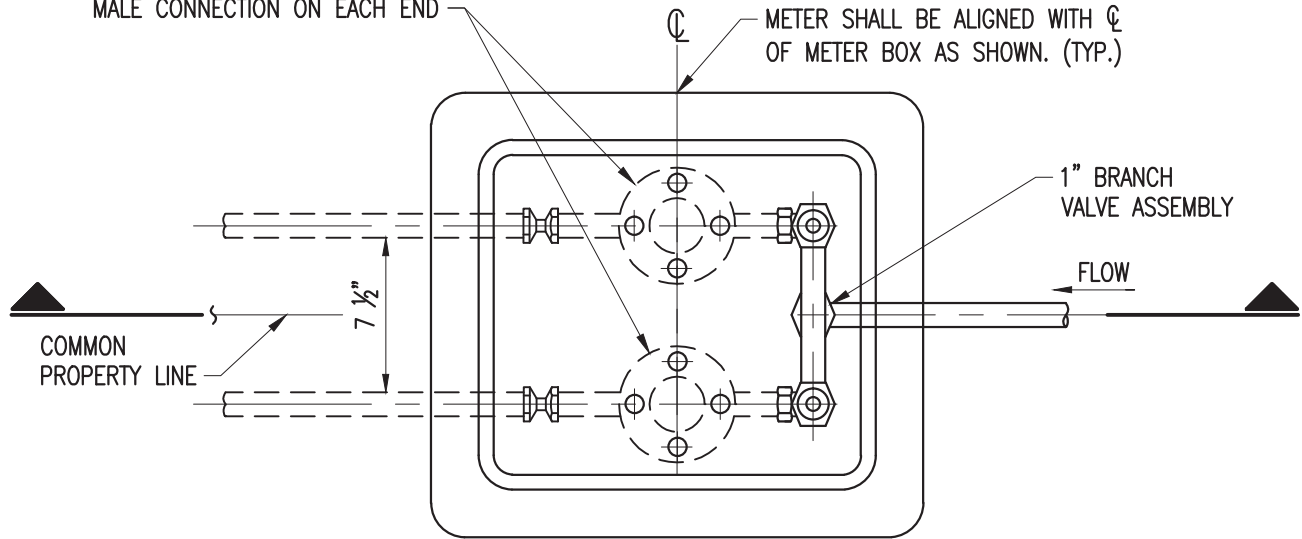
DUAL METER BOX
INSTALLATION

WS

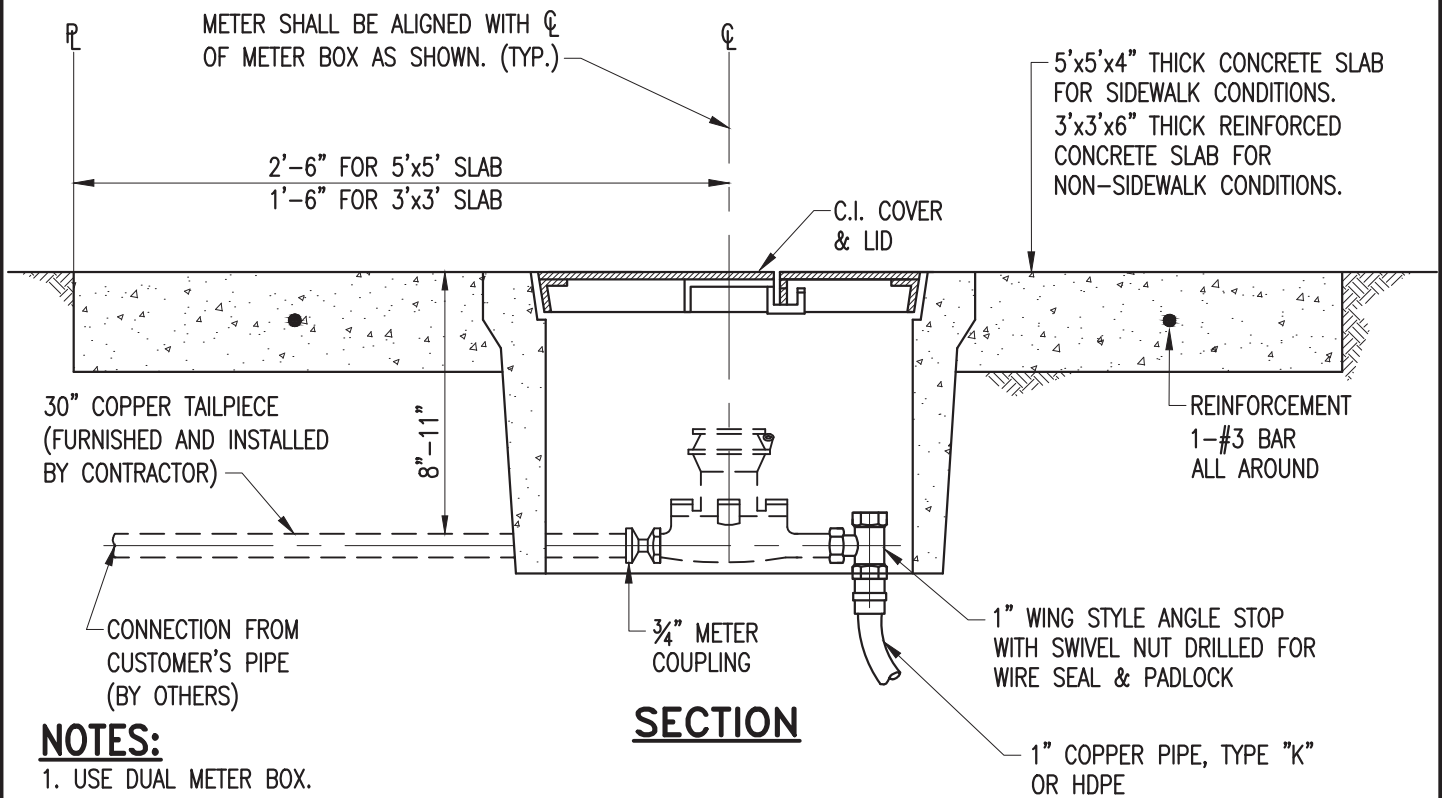
2.12

SHEET 1 OF 2

(2) $\frac{5}{8}$ " x $\frac{3}{4}$ " WATER METERS (BY DEPARTMENT) WITH $\frac{3}{4}$ " A.S.T. MALE CONNECTION ON EACH END



PLAN

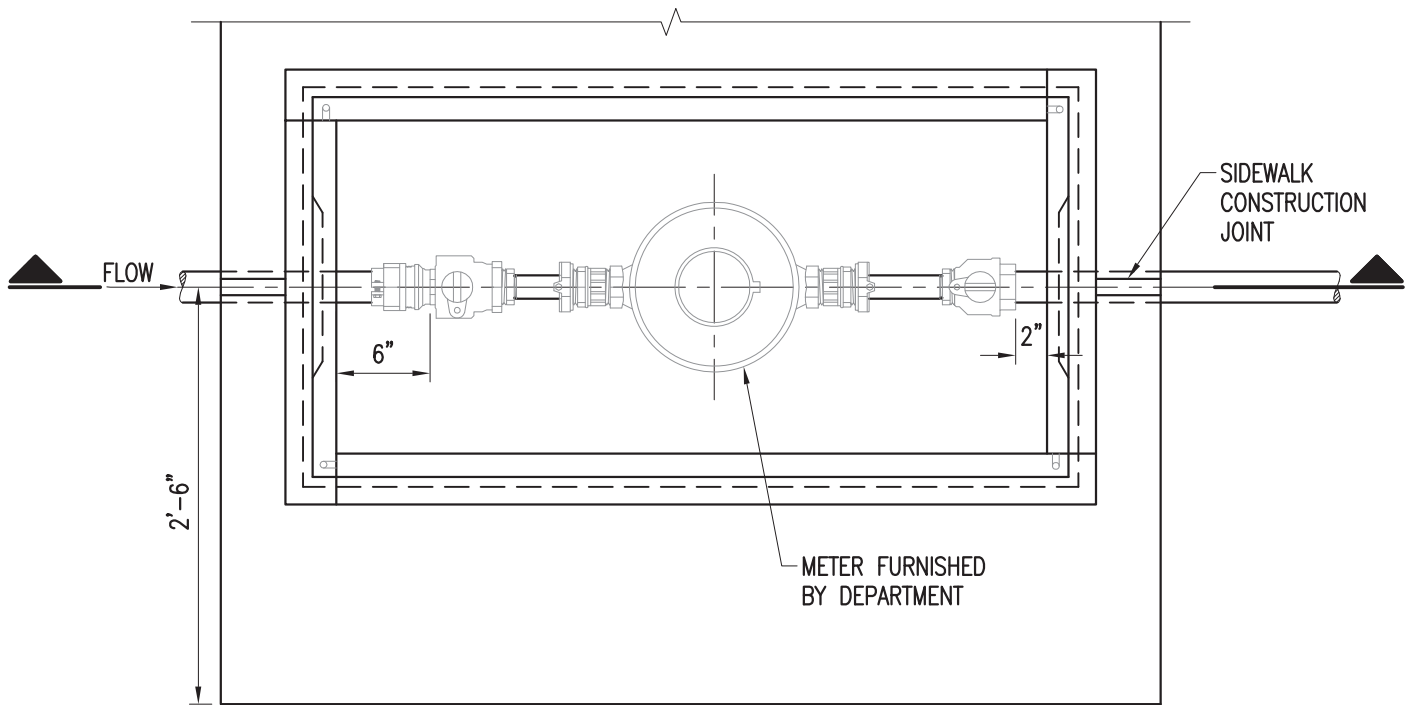


NOTES:

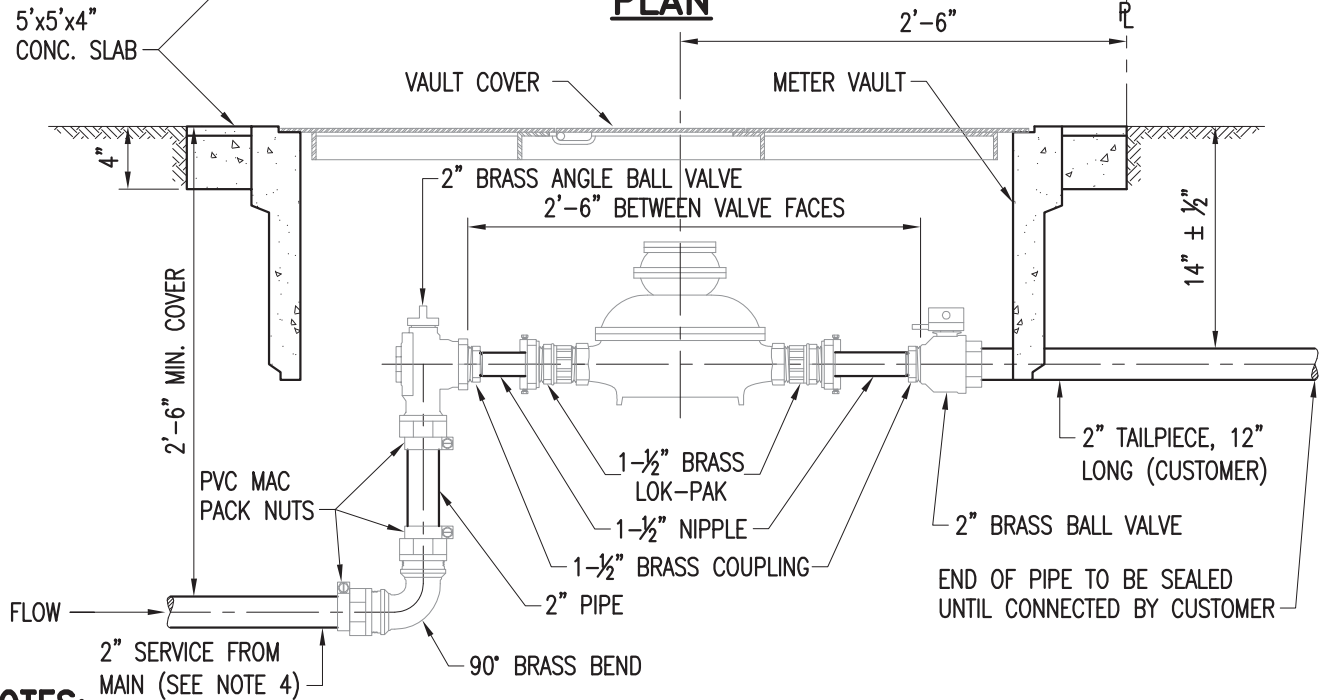
1. USE DUAL METER BOX.
2. CONCRETE SLAB REINFORCEMENT SHALL BE ONE No. 3 BAR ALL ROUND.
3. FOR SIDEWALK CONDITIONS, METER BOX SHALL BE INSTALLED IN A SINGLE CONCRETE SIDEWALK FLAG.
4. METERS WILL NOT BE INSTALLED IF THE METER BOX IS IN A DRIVING SURFACE.
5. REPAIRS TO CONCRETE SLAB AND METER BOX ARE PROHIBITED.
6. ALL SPACER TUBES AND TAILPIECES SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR.

1" SERVICE CONNECTION	WS 4.11	
TYPICAL SERVICE PLAN	WS 4.10	
ITEM	CROSS REF.	SPEC. REF.

ISSUE DATE	APPROVED BY
10/29/2010	V.F.C.



PLAN

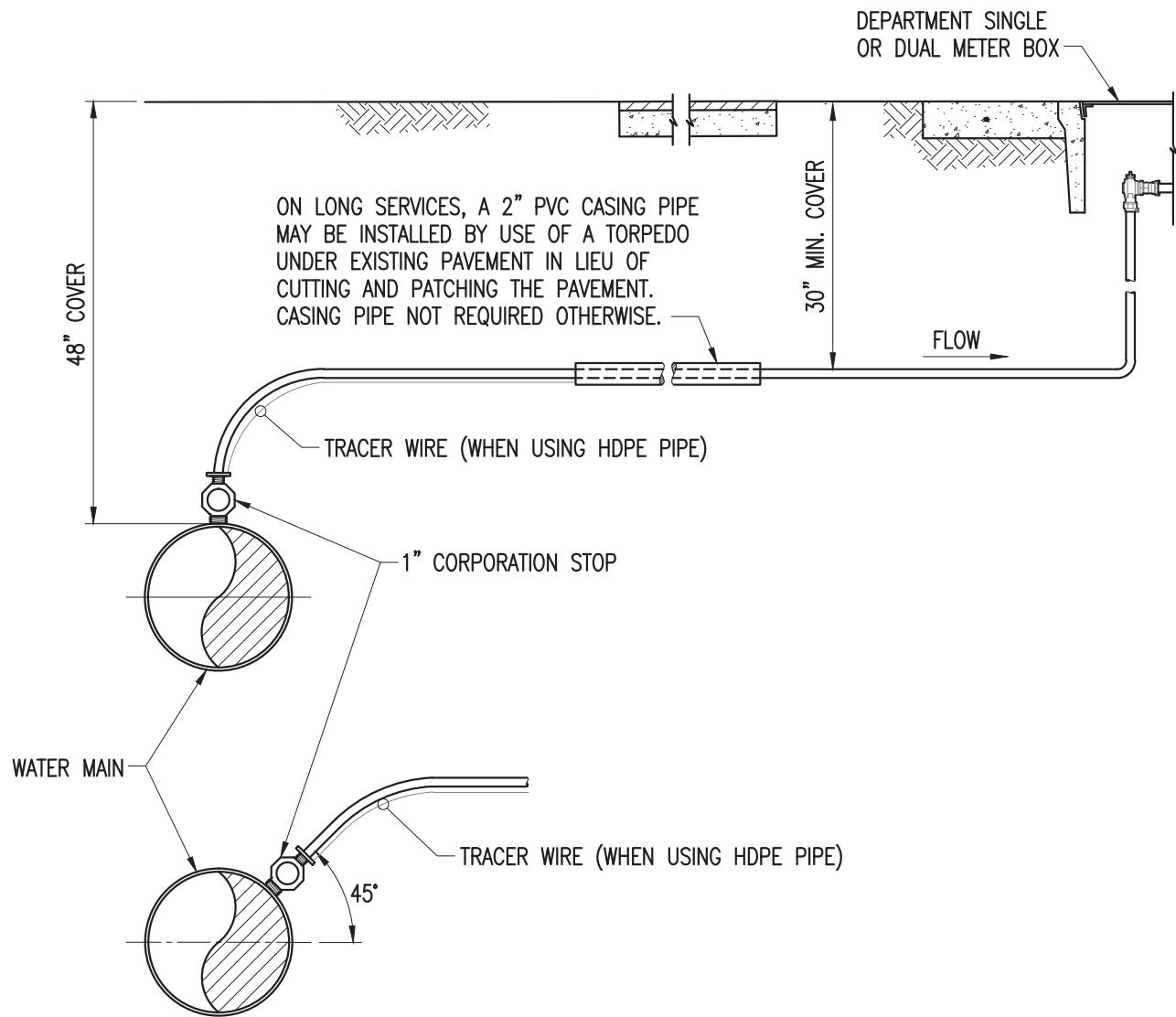


NOTES:

1. USE 2'x4' METER VAULT.
2. METER BOX TO BE IN 5'x5'x4" THICK CONCRETE SLAB WITH 6x6-W1.4xW1.4 W.W.M.
3. A TEN GAUGE DIRECT BURY STRANDED COPPER TRACER WIRE TO BE TAPED CONTINUOUSLY WITH POLY OR DUCT TAPE TO THE SERVICE FOR LOCATION PURPOSES. WIRE MUST BE ATTACHED TO RECLAIMED WATER MAIN AND EXTEND INTO THE METER BOX.
4. USE 2" BLUE COLOR HDPE FOR POTABLE WATER SERVICE. USE 2" PURPLE COLOR HDPE FOR RECLAIMED WATER SERVICE.
5. METERS WILL NOT BE INSTALLED IF THE METER BOX IS IN A DRIVING SURFACE.
6. FOR SIDEWALK CONDITIONS, METER BOX SHALL BE INSTALLED IN A SINGLE CONCRETE SIDEWALK FLAG.
7. ALL BRASS COMPONENTS SHALL BE MARKED "NL" MEETING THE S3874 AMENDMENT TO THE SAFE DRINKING WATER ACT.

SECTION

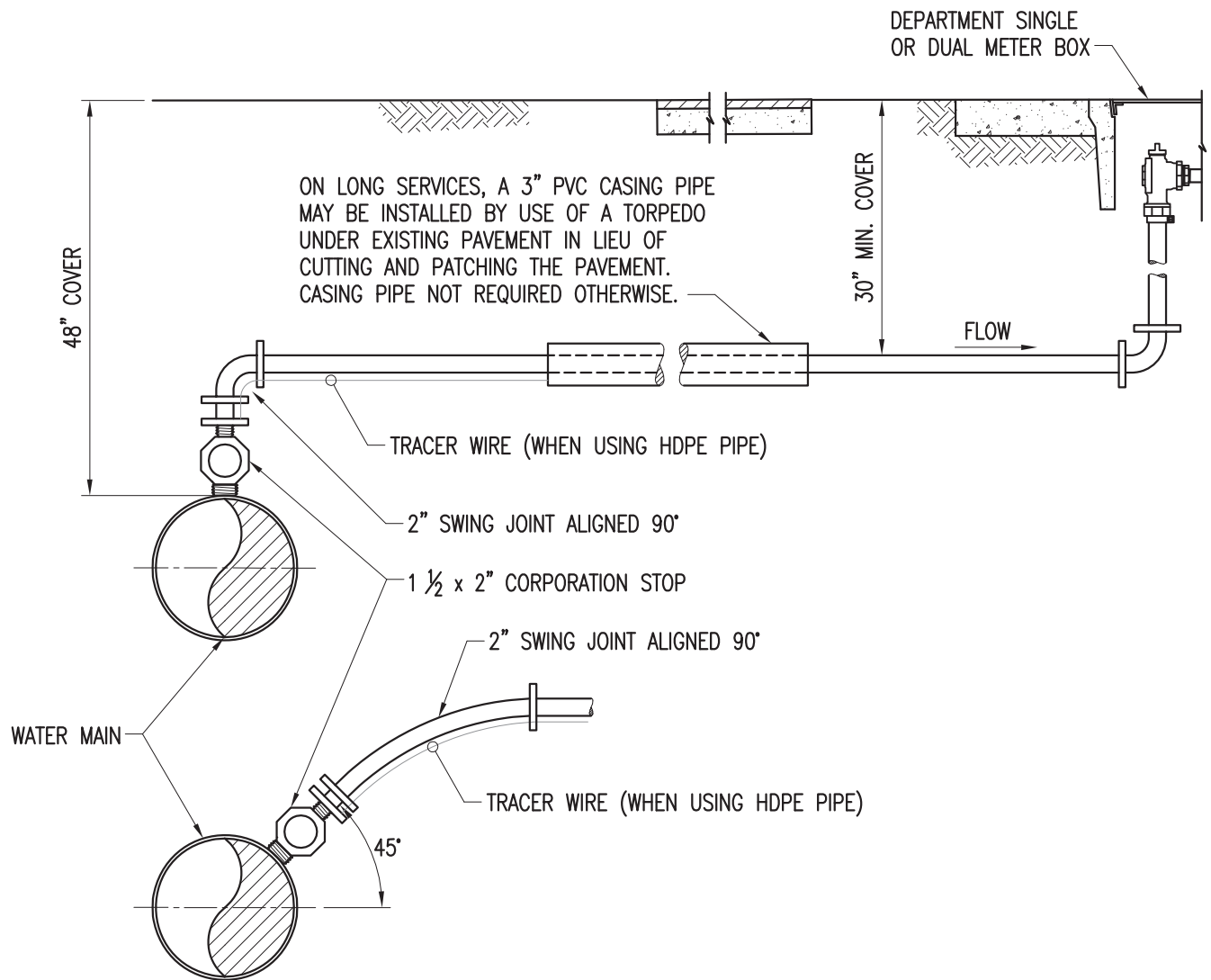
TYPICAL SERVICE PLAN	WS4.10	
2'x4' METER VAULT	WS2.17	
ITEM	CROSS REF.	SPEC. REF.



NOTES:

1. CONTRACTOR HAS THE OPTION OF TAPPING AT 45°.
2. METERS WILL NOT BE INSTALLED IF THE METER BOX IS LOCATED ON A DRIVING SURFACE.
3. PROVIDE 36" MIN. COVER FOR SERVICES INSTALLED WITHIN ARTERIAL ROADS (INCLUDING ALL SECTION LINE AND HALF-SECTION LINE ROADS).
4. INSTALL TAPPING SADDLE FOR: THICKNESS CLASS D.I. MAINS 4" & SMALLER, PRESSURE CLASS D.I. WATER MAINS 6" & SMALLER, OR WHEN MAIN IS PVC, HDPE OR AC PIPE.
5. WHEN MAIN IS SHALLOWER THAN 48", A $\frac{1}{8}$ " OR $\frac{1}{4}$ " BEND MUST BE USED.
6. WHEN USING HDPE SERVICE PIPE, A TEN GAUGE BLUE TRACER WIRE TO BE TAPED TO THE PIPE EVERY 2 FT. WITH POLY OR DUCT TAPE. TRACER WIRE TO BE MECHANICALLY FASTENED TO THE MAIN WHEN A METAL WATER MAIN IS USED.
7. USE SERVICE SADDLE AND TAPPING SLEEVE FOR PVC RECLAIMED WATER MAIN.

TYPICAL SERVICE PLAN	WS. 4.10	
ITEM	CROSS REF.	SPEC. REF.



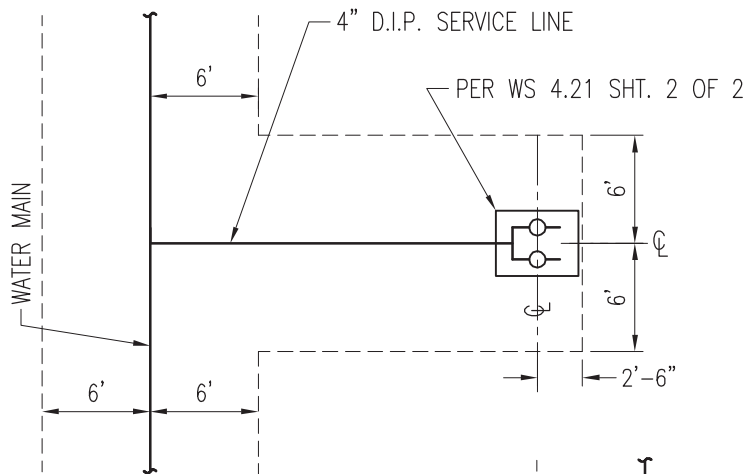
NOTES:

1. CONTRACTOR HAS THE OPTION OF TAPPING AT 45°.
2. METERS WILL NOT BE INSTALLED IF THE METER BOX IS LOCATED ON A DRIVING SURFACE.
3. PROVIDE 36" MIN. COVER FOR SERVICES INSTALLED WITHIN ARTERIAL ROADS (INCLUDING ALL SECTION LINE AND HALF-SECTION LINE ROADS).
4. INSTALL TAPPING SADDLE FOR: THICKNESS CLASS D.I. MAINS 4" & SMALLER, PRESSURE CLASS D.I. WATER MAINS 8" & SMALLER, OR WHEN MAIN IS PVC, HDPE OR AC PIPE.
5. WHEN MAIN IS SHALLOWER THAN 48", A $\frac{1}{8}$ OR $\frac{1}{4}$ BEND MUST BE USED.
6. WHEN USING HDPE SERVICE PIPE, A TEN GAUGE BLUE TRACER WIRE TO BE TAPED TO THE PIPE EVERY 2 FT. WITH POLY OR DUCT TAPE. TRACER WIRE TO BE MECHANICALLY FASTENED TO THE MAIN WHEN A METAL WATER MAIN IS USED.
7. USE SERVICE SADDLE AND TAPPING SLEEVE FOR PVC RECLAIMED WATER MAIN.

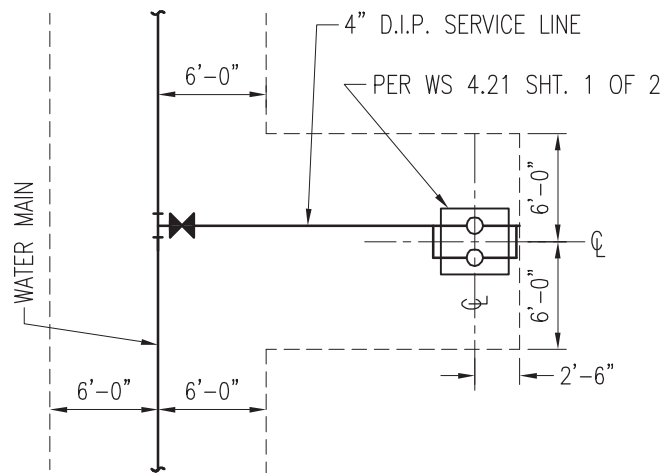
DUAL METER BOX	WS 2.12	
SINGLE METER BOX	WS 2.10	3.02
ITEM	CROSS REF.	SPEC. REF.

ISSUE DATE	APPROVED BY
12/16/2009	V.F.C.

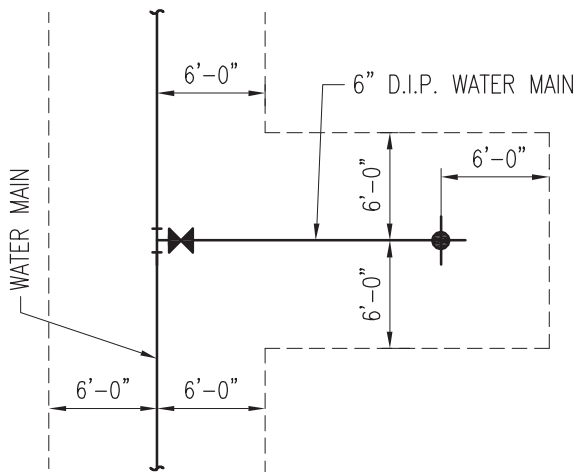
1"-2" & 4"
WATER SERVICE



4" WATER SERVICE



FIRE HYDRANT
F.H. PER WS 4.5



LEGEND:

----- LIMITS OF WASD EASEMENT

ITEM	CROSS REF.	SPEC. REF.



WATER & SEWER DEPARTMENT

ISSUE DATE

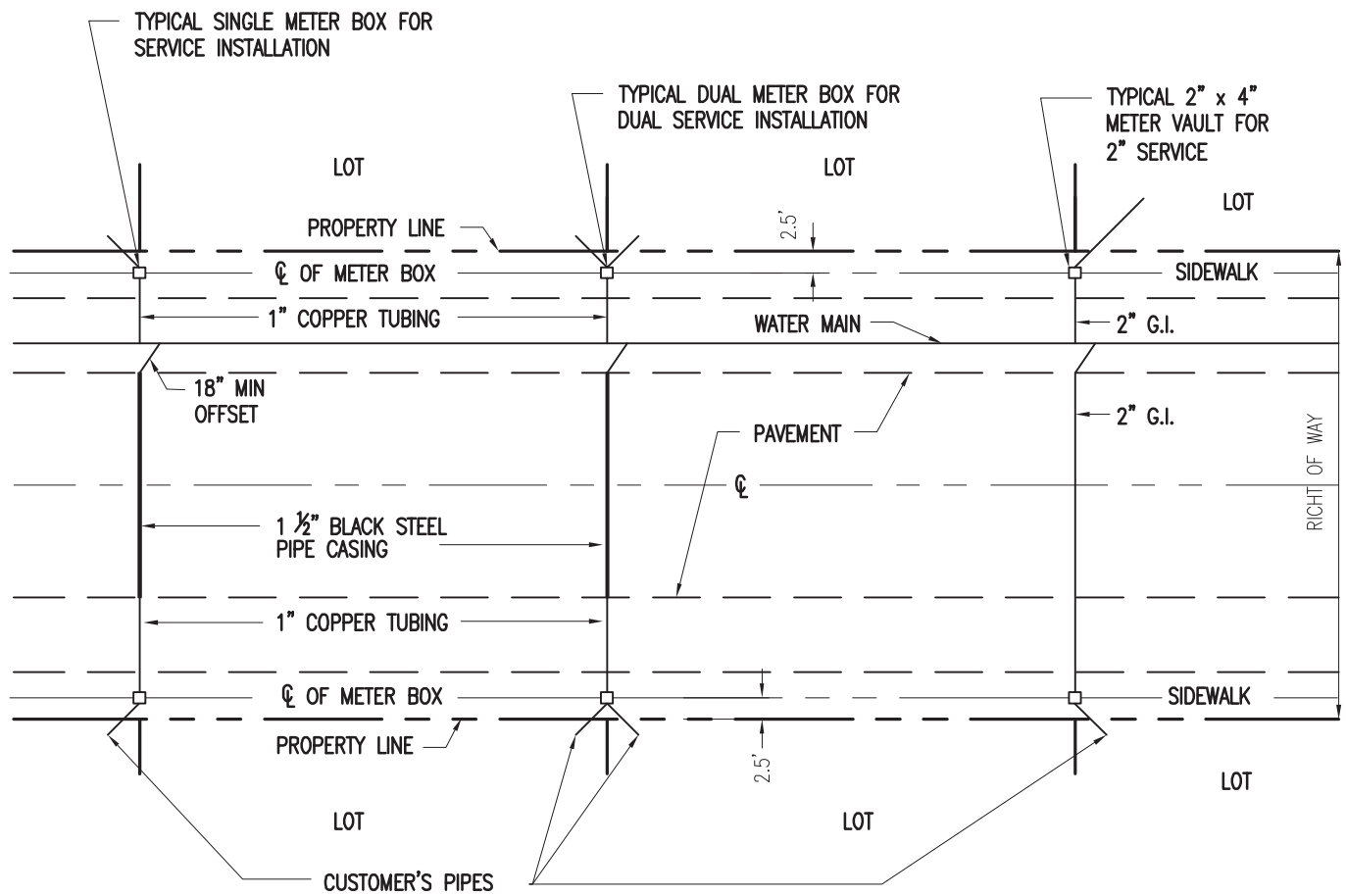
10/05/2009

APPROVED BY

V.F.C.

STANDARD DETAIL
EASEMENT REQUIREMENTS
FOR SERVICE & FIRE HYDRANT

WS
2.21
SHEET 1 OF 3



PLAN

NOTE: METERS WILL NOT BE INSTALLED IF THE METER BOX IS IN A DRIVING SURFACE.

ITEM	CROSS REF.	SPEC. REF.

STANDARD DETAIL

TYPICAL SERVICE PLAN

WS
4.10
SHEET 1 OF 1

ISSUE DATE

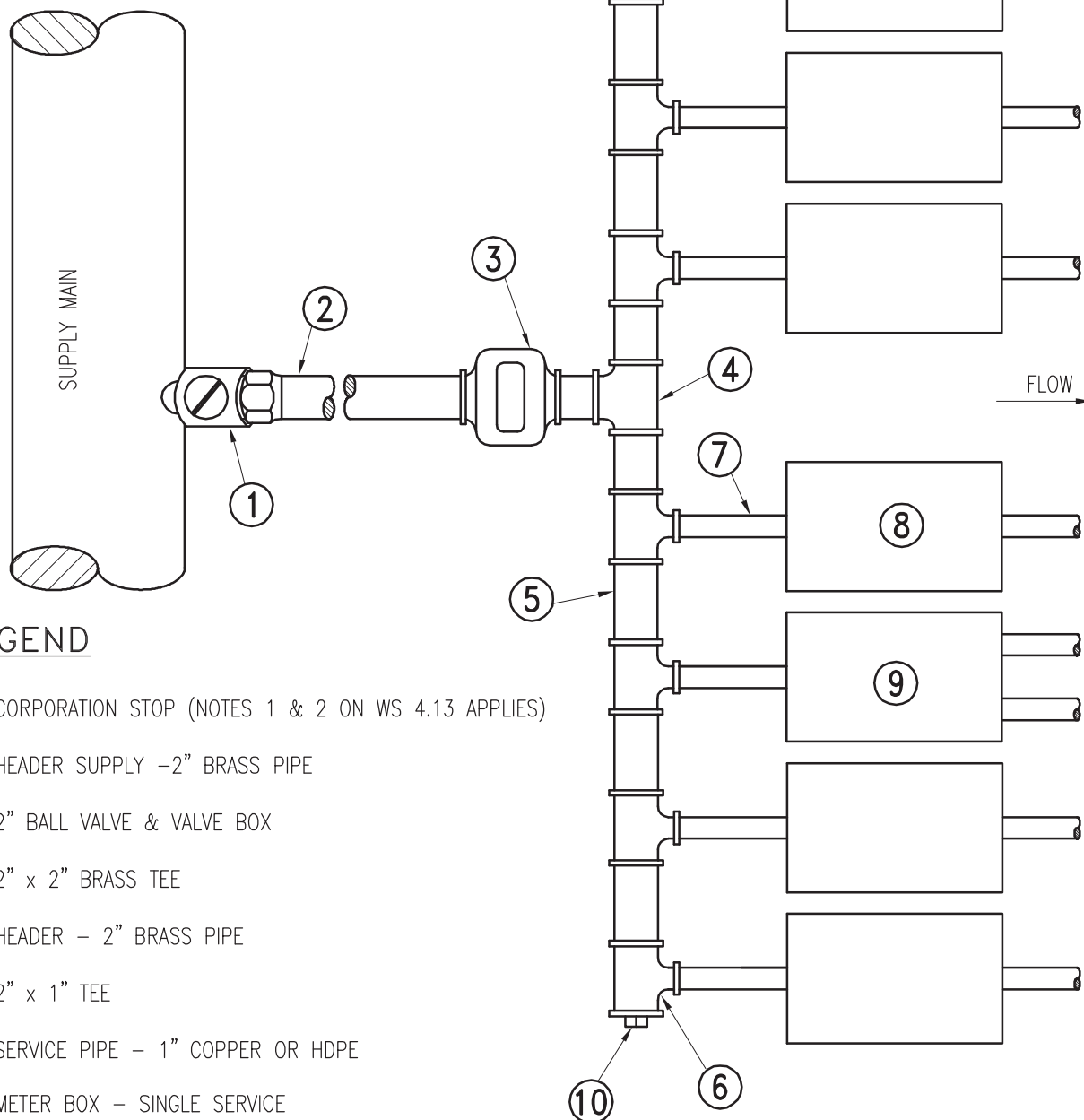
11/01/2006

APPROVED BY

V.E.F.

NOTES:

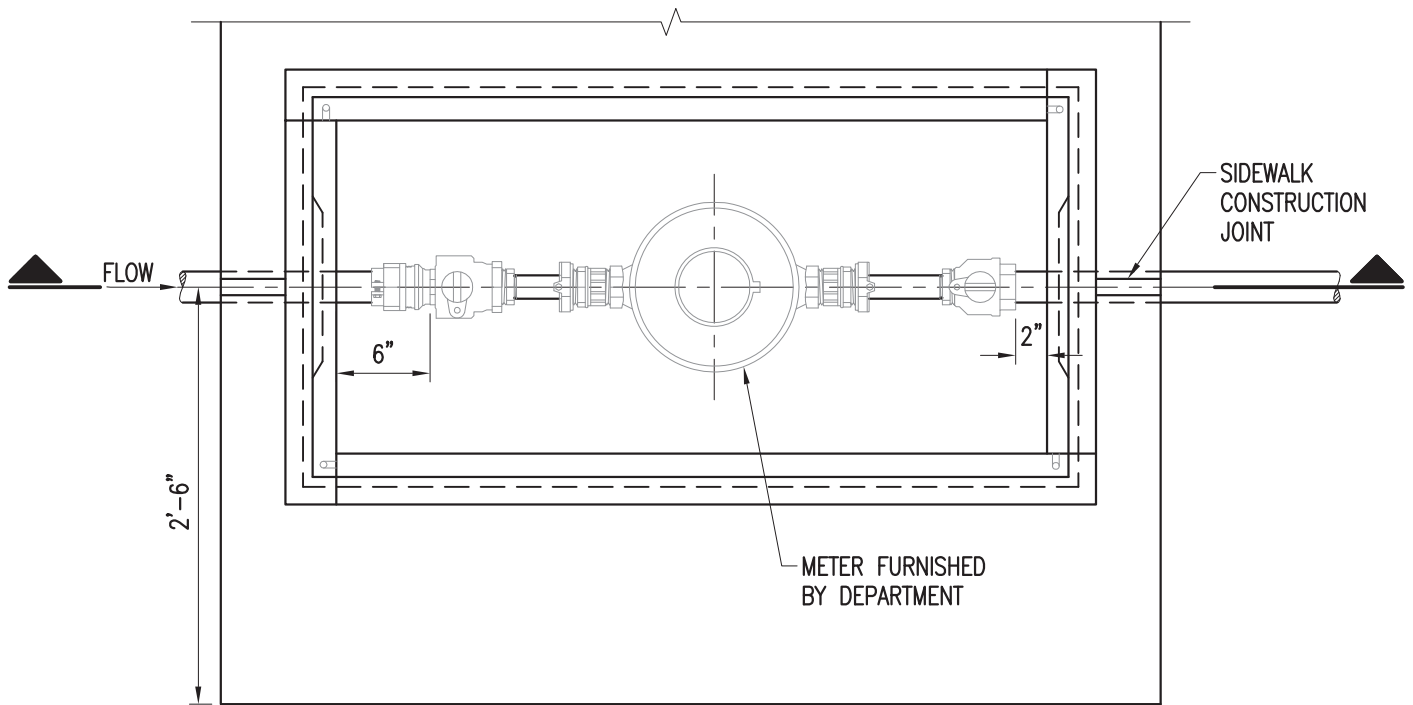
1. MAXIMUM OF 10- $\frac{5}{8}$ " METERS OR 5-1" METERS.
2. FOR LARGER DEMAND SEE WS 4.16 SHEET 2 OF 2.
3. METERS WILL NOT BE INSTALLED IF THE METER BOXES ARE IN A DRIVING SURFACE.



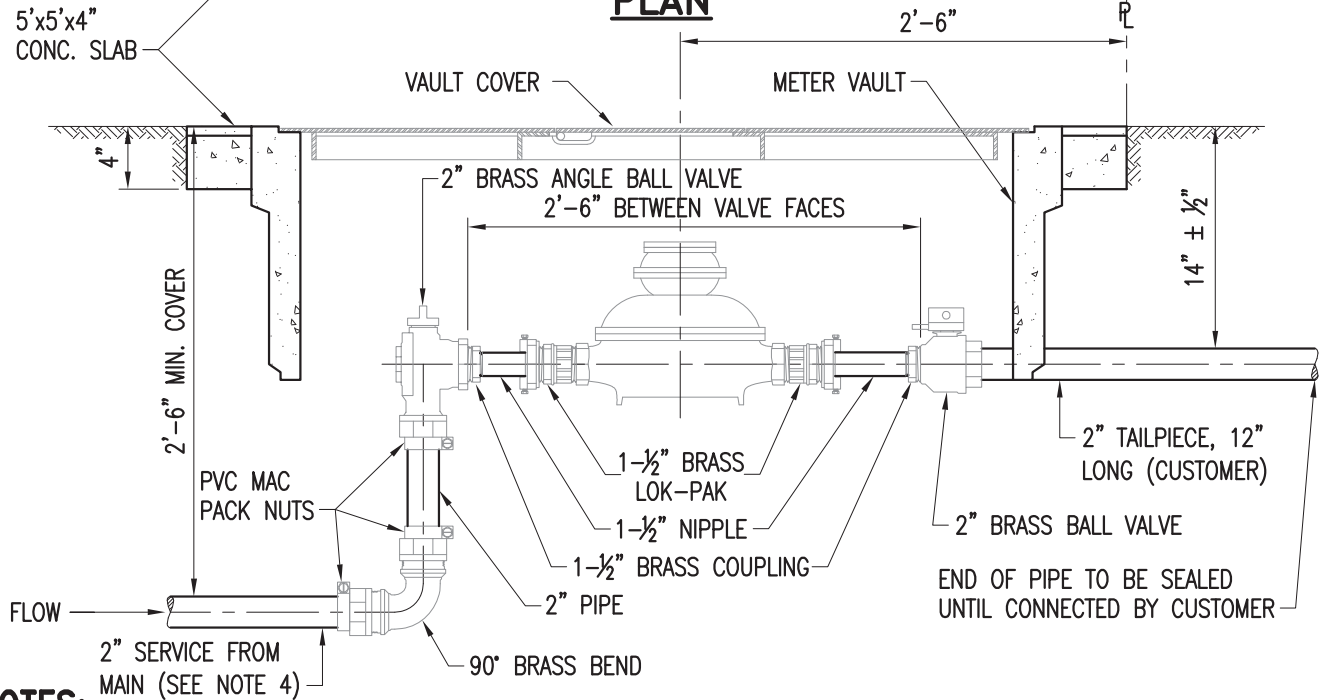
LEGEND

- ① CORPORATION STOP (NOTES 1 & 2 ON WS 4.13 APPLIES)
- ② HEADER SUPPLY - 2" BRASS PIPE
- ③ 2" BALL VALVE & VALVE BOX
- ④ 2" x 2" BRASS TEE
- ⑤ HEADER - 2" BRASS PIPE
- ⑥ 2" x 1" TEE
- ⑦ SERVICE PIPE - 1" COPPER OR HDPE
- ⑧ METER BOX - SINGLE SERVICE
- ⑨ METER BOX - DUAL SERVICE
- ⑩ 2" BRASS PLUG

DUAL METER BOX	WS 2.12	
SINGLE METER BOX	WS 2.10	
TYP. GATE VALVE	WS 1.0	
ITEM	CROSS REF.	SPEC. REF.



PLAN



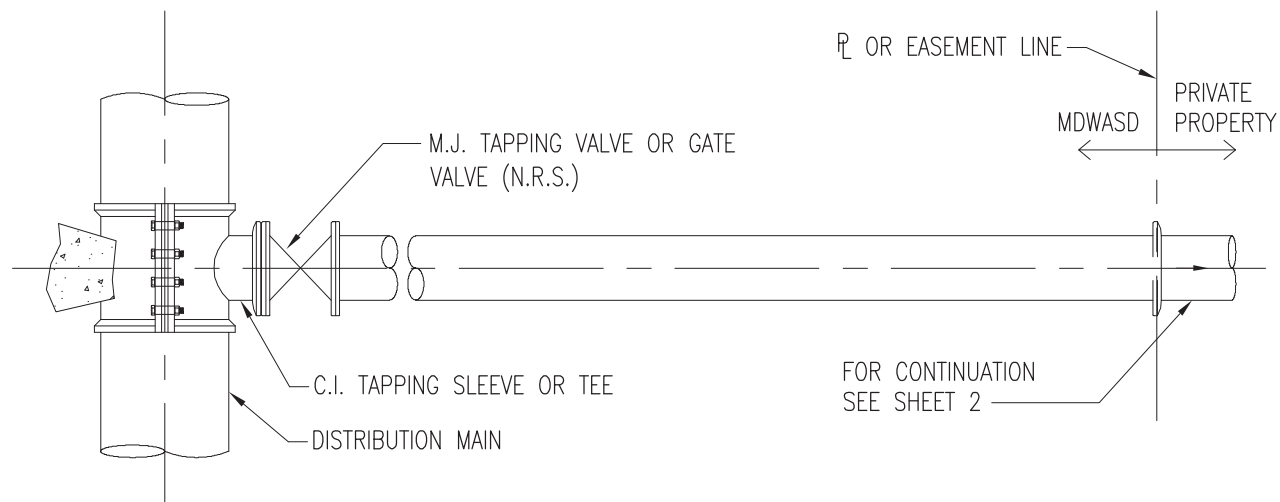
SECTION

NOTES:

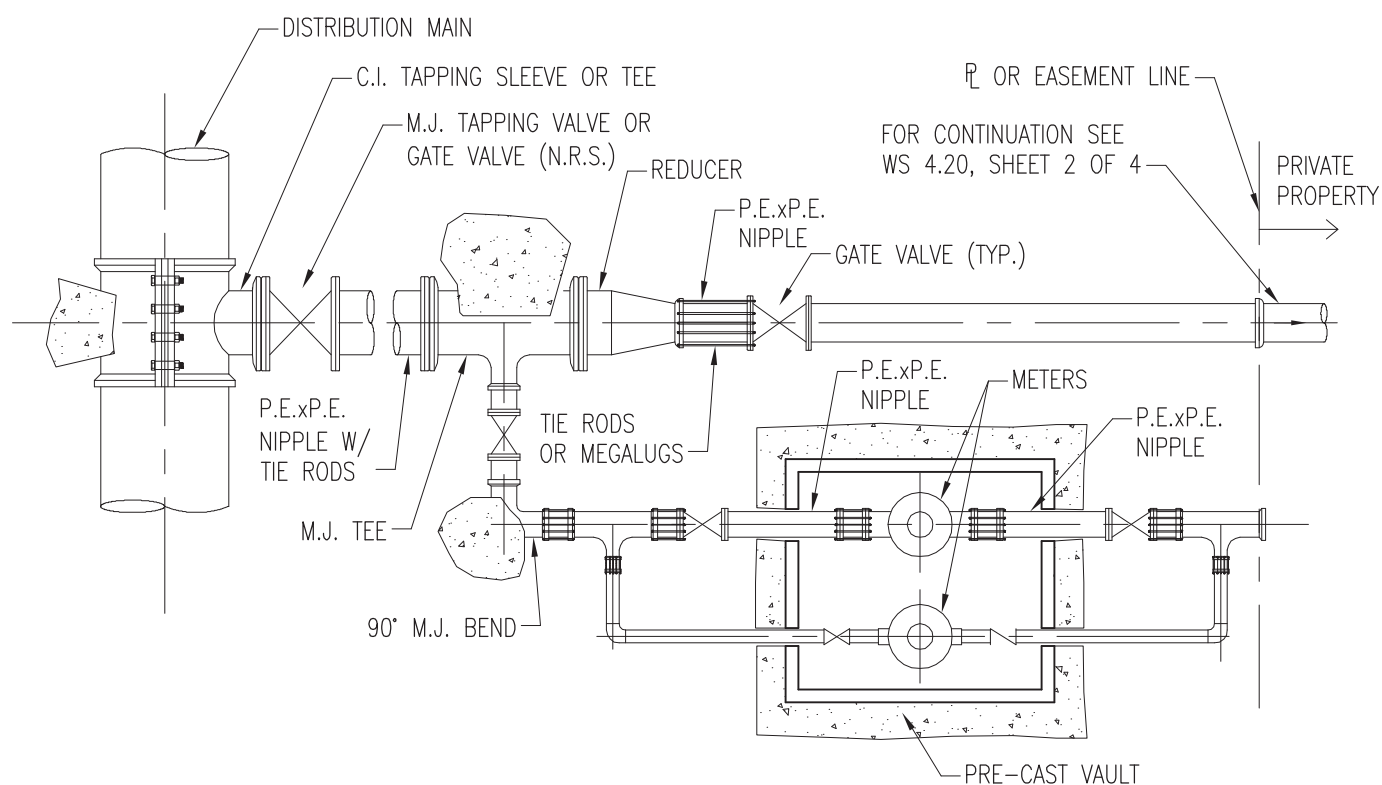
1. USE 2'x4' METER VAULT.
2. METER BOX TO BE IN 5'x5'x4" THICK CONCRETE SLAB WITH 6x6-W1.4xW1.4 W.W.M.
3. A TEN GAUGE DIRECT BURY STRANDED COPPER TRACER WIRE TO BE TAPED CONTINUOUSLY WITH POLY OR DUCT TAPE TO THE SERVICE FOR LOCATION PURPOSES. WIRE MUST BE ATTACHED TO RECLAIMED WATER MAIN AND EXTEND INTO THE METER BOX.
4. USE 2" BLUE COLOR HDPE FOR POTABLE WATER SERVICE. USE 2" PURPLE COLOR HDPE FOR RECLAIMED WATER SERVICE.
5. METERS WILL NOT BE INSTALLED IF THE METER BOX IS IN A DRIVING SURFACE.
6. FOR SIDEWALK CONDITIONS, METER BOX SHALL BE INSTALLED IN A SINGLE CONCRETE SIDEWALK FLAG.
7. ALL BRASS COMPONENTS SHALL BE MARKED "NL" MEETING THE S3874 AMENDMENT TO THE SAFE DRINKING WATER ACT.

TYPICAL SERVICE PLAN	WS4.10	
2'x4' METER VAULT	WS2.17	
ITEM	CROSS REF.	SPEC. REF.

ISSUE DATE	APPROVED BY
5/31/2013	E.A.V.



TYPICAL FIRE SERVICE CONNECTION TO MAIN



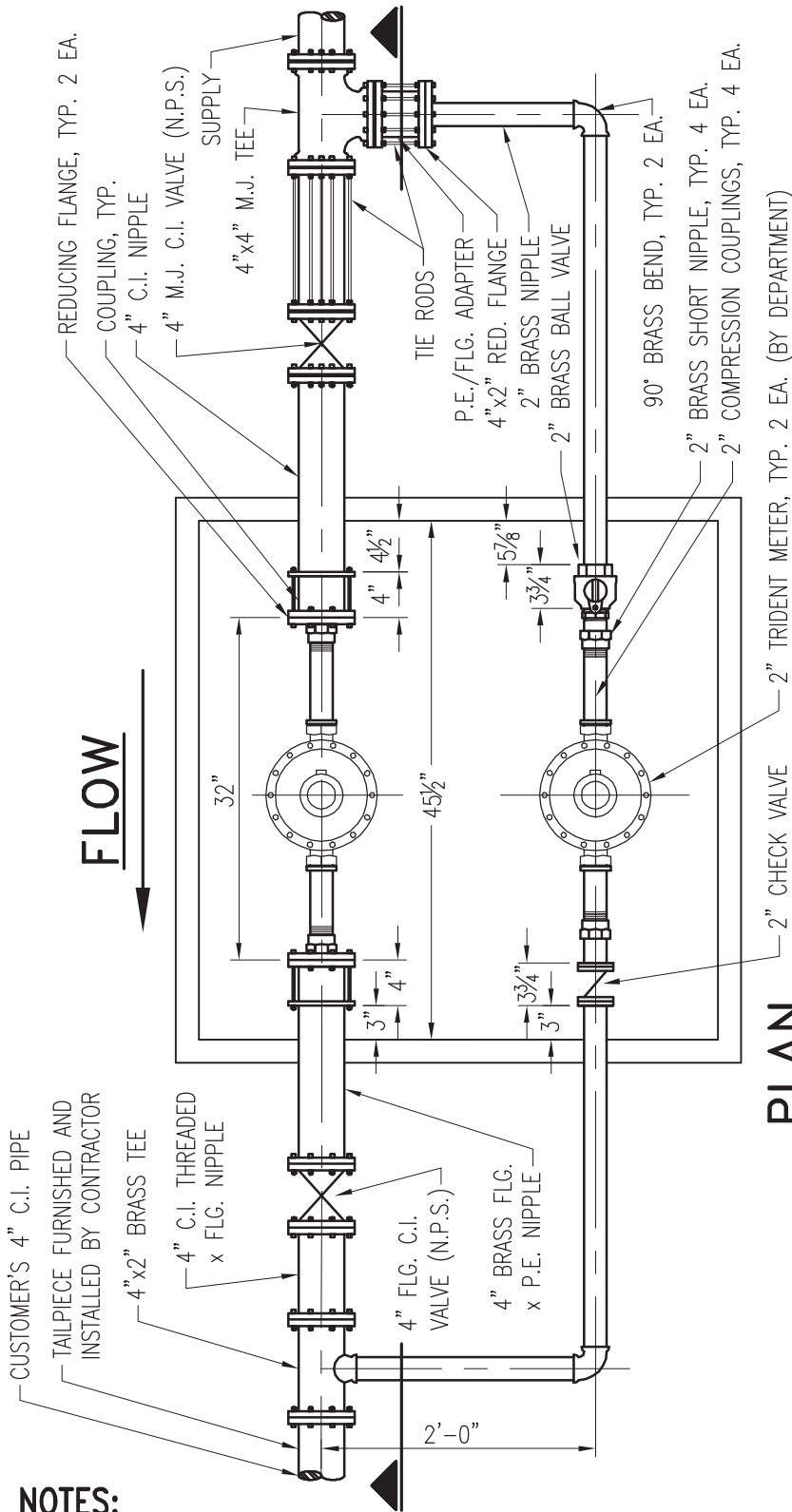
TYPICAL FIRE & DOMESTIC WATER CONNECTION TO MAIN

NOTES:

1. ALL EXPOSED METALLIC THREADS ARE TO BE COATED WITH BITUMASTIC PAINT AFTER INSTALLATION.
2. CONCRETE SLAB REQUIRED FOR SECTIONAL VAULTS ONLY.
3. FOR DETAILS OF TIE RODS, SEE DETAIL WS 1.10.
4. DOMESTIC SERVICES 1", 2" & 4" (PER WS 4.21).

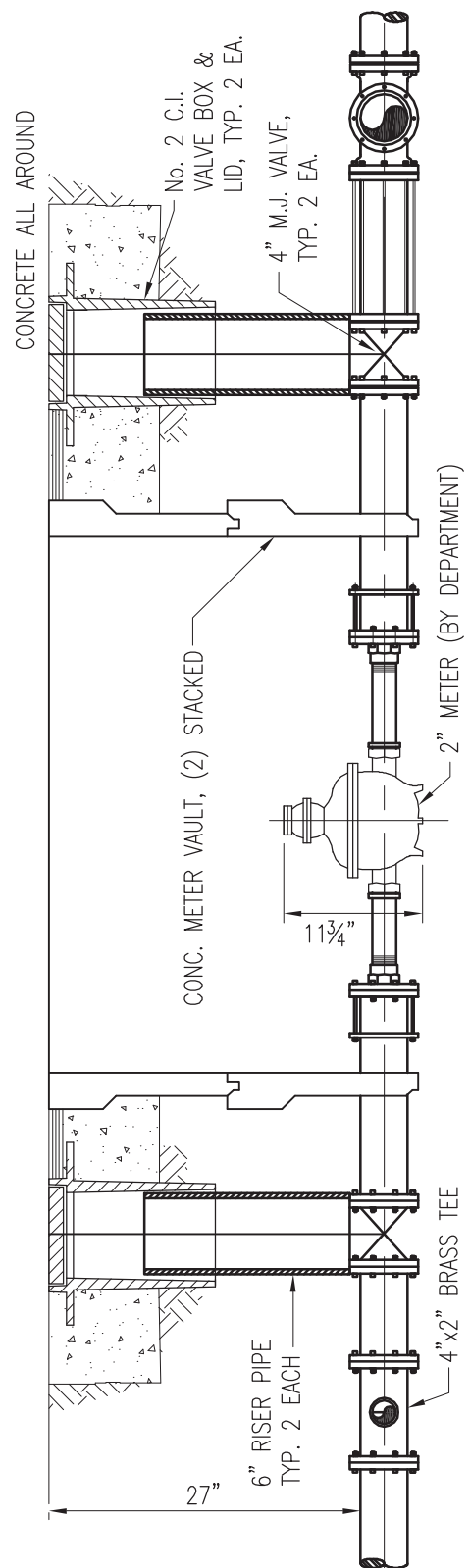
4" x 4" VAULT	WS 2.20	
No. 2 & No. 3 VALVE BOX	WS 3.11	
CONC. ANCHORS	GS 1.1	
ITEM	CROSS REF.	SPEC. REF.

FLOW



NOTES:

1. ALL EXPOSED METALLIC THREADS ARE TO BE COATED WITH BITUMASTIC PAINT AFTER INSTALLATION.
2. USE 4' x 4' VAULT.
3. METERS WILL NOT BE INSTALLED IF THE METER BOX IS LOCATED ON A DRIVING SURFACE.
4. ALL SPACER TUBES AND TAILPIECES SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR.



SECTION

No. 2 VALVE BOX & LID	WS 3.10	
TIE RODS	GS 1.0	
CONC. ANCHORS	GS 1.1	
ITEM	CROSS REF.	SPEC. REF.

ISSUE DATE

10/05/2009

APPROVED BY

V.F.C.

STANDARD DETAIL

DUAL 2" METER INSTALLATION
 FOR TYPICAL 4" DOMESTIC
 SERVICE LINES

WS

4.21

SHEET 1 OF 2

**WATER METER REPLACEMENT PROGRAM
NORTH BAY VILLAGE**

BID NO. NBV 2017-001

Appendix C

1. Florida Department of Environmental Protection State Revolving Fund Program Supplementary Conditions. The Contactor is required to comply with these Supplementary Conditions and include all costs associated with complying with these Supplemental Conditions in the overall cost of the Total Bid Amount.
2. Wage Rates, FL168 – Heavy Construction Projects
3. American Iron and Steel Guidance for State Revolving Fund Projects

SUPPLEMENTARY CONDITIONS (CONSTRUCTION)

Florida Department of Environmental Protection
State Revolving Fund Program
Supplementary Conditions
for

Formally Advertised
Construction Procurement

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ENVIRONMENTAL PROTECTION
SUPPLEMENTARY CONDITIONS**

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2	PRIVITY OF AGREEMENT/CONTRACT	FDEP-2
3	PROCUREMENT REQUIREMENTS	FDEP-2
4	RESOLUTION OF PROTESTS AND CLAIMS/DISPUTES	FDEP-2
5	CHANGES TO THE BIDDING AND CONTRACT DOCUMENTS	FDEP-3
6	BONDS AND INSURANCE	FDEP-3
7	AWARD OF AGREEMENT/CONTRACT	FDEP-4
8	ITEMIZED CONSTRUCTION COST BREAKDOWN; CONSTRUCTION AND PAYMENT SCHEDULES	FDEP-4
9	FDEP/USEPA ACCESS TO RECORDS AND PROJECT SITE	FDEP-4
10	DISADVANTAGED BUSINESS ENTERPRISES	FDEP-4
11	DEBARMENT AND SUSPENSION (EXECUTIVE ORDER 12549)	FDEP-5
12	EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)	FDEP-6
13	IMMIGRATION REFORM AND CONTROL ACT OF 1986 STATE OF FLORIDA EXECUTIVE ORDER 11-116)	FDEP-12
14	ENVIRONMENTAL COMPLIANCE	FDEP-12
15	FEDERAL LABOR STANDARDS PROVISION	FDEP-12
16	AMERICAN IRON AND STEEL PROVISION	FDEP-12
17	PROHIBITED LOCAL GOVERNMENT CONSTRUCTION PREFERENCES	FDEP-12

Appendix	Title	Page
A	CERTIFICATION OF COMPLIANCE WITH THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS	FDEP-13
B	GOALS AND TIMETABLES FOR MINORITIES AND FEMALES	FDEP-14
C	FEDERAL LABOR STANDARDS PROVISION	FDEP-15
D	AMERICAN IRON AND STEEL PROVISION	FDEP-23

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS

The intent of the Florida Department of Environmental Protection (FDEP) Supplementary Conditions is to complement and supplement other provisions of the Bidding Documents. However, if there is any conflict between the FDEP Supplementary Conditions and other provisions of the Bidding Documents, the FDEP Supplementary Conditions shall take precedence over the other provisions except when the other provisions are similar to, but more stringent than, the FDEP Supplementary Conditions. When other provisions of the Bidding Documents are similar to, but more stringent than, the FDEP Supplementary Conditions, the more stringent provisions shall apply.

ARTICLE 1 - DEFINITIONS

Wherever used in these Supplementary Conditions (except in the appendices to these Supplementary Conditions), the following terms have the meanings indicated, which are applicable to both the singular and plural thereof.

- 1.1 Addendum - A written or graphic instrument that is issued prior to the opening of bids and that clarifies, corrects, or changes the Bidding Documents.
- 1.2 Agreement or Contract - The written agreement between the Owner and the Contractor covering the Work to be performed and furnished; these Supplementary Conditions and other Contract Documents are attached to the Agreement/Contract and made a part thereof as provided therein.
- 1.3 Bid - The offer or proposal of a bidder submitted on the prescribed form and setting forth the price(s) for the Work to be performed and furnished.
- 1.4 Bidder - Any person, firm, or corporation that submits a bid directly to the Owner.
- 1.5 Bidding Documents - The Advertisement for Bids or the Invitation to Bid, the Instructions to Bidders or the Information for Bidders, the Bid Form, the proposed Contract Documents, and all addenda.
- 1.6 Bond - An instrument of security.
- 1.7 Change Order - A document that is recommended by the Engineer and signed by the Contractor and the Owner; that authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Time; and that is issued on or after the Effective Date of the Agreement/Contract.
- 1.8 Contract Documents - The Agreement/Contract; the Contractor's Bid when attached as an exhibit to the Agreement/Contract; the Performance and Payment Bond(s); the General Conditions; the Supplementary Conditions (including these Supplementary Conditions); the Specifications (written technical descriptions of material, equipment, construction systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto); the Drawings (drawings that show the character and scope of the Work to be performed and furnished); all addenda that pertain to the Contract Documents; and all change orders.
- 1.9 Contract Time - The number of days or the date stated in the Contract Documents for completion of the Work.
- 1.10 Contractor - The person, firm, or corporation with whom or which the Owner enters into the Agreement/Contract.
- 1.11 Effective Date of the Agreement/Contract - The date indicated in the Agreement/Contract on which the Agreement/Contract becomes effective, or if no such date is indicated in the Agreement/Contract, the date on which the Agreement/Contract is signed and delivered by the last of the two parties to sign and deliver the Agreement/Contract.
- 1.12 Engineer - The person, firm, or corporation named as such in the Contract Documents.
- 1.13 Minority Business Enterprise (MBE) - A historically Black college or university or a business that is (a) certified as socially and economically disadvantaged by the Small Business Administration, (b) certified as an MBE by a state or federal agency, or (c) an independent business concern which is at least 51-percent owned and controlled by minority group members. (A minority group member is an individual who is a citizen of the United States and one of the following: [i] Black American; [ii] Hispanic American [with origins from Puerto Rico, Mexico, Cuba, or South or Central America]; [iii] Native American [American Indian, Eskimo, Aleut, or native Hawaiian]; or [iv] Asian-Pacific American

[with origins from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the U.S. Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia, Taiwan, or the Indian Subcontinent].)

1.14 Notice to Proceed -The written notice given by the Owner to the Contractor fixing the date on which the Contract Time will commence to run and on which the Contractor shall start to perform its obligations under the Contract Documents.

1.15 Owner - The local government (municipality, county, district, or authority; or any agency thereof; or a combination of two or more of the foregoing acting jointly) with which the Florida Department of Environmental Protection (FDEP) may execute, or has executed, a State Revolving Fund loan agreement and for which the Work is to be provided.

1.16 Project - The total construction or facilities described in a State Revolving Fund loan agreement between the FDEP and the Owner, of which the Work to be provided under the Contract Documents may be the whole or a part.

1.17 Sponsor – The recipient of the State Revolving Fund loan agreement that provides funds for the project.

1.18 Subcontract - A direct contract between a subcontractor and the Contractor, or any other subcontractor at any tier, for the furnishing of goods (material and equipment) or the performance of services (including construction) necessary to complete the Work.

1.19 Subcontractor - A person, firm, or corporation having a direct contract with the Contractor, or any other subcontractor at any tier, for the furnishing of goods (material and equipment) or the performance of services (including construction) necessary to complete the Work.

1.20 Successful Bidder - The lowest responsive, responsible bidder to whom or which the Owner intends to award the Agreement/Contract.

1.21 Women's Business Enterprise (WBE) - A business that is (a) certified as a WBE by a state or federal agency or (b) an independent business concern which is at least 51-percent owned and controlled/operated by women. (Determination of whether a business is at least 51-percent owned by women shall be made without regard to community property laws [e.g., an otherwise qualified WBE that is 51-percent owned by a married woman in a community property state will not be disqualified because the married woman's husband has a 50-percent interest in the married woman's share of the business; similarly, a business that is 51-percent owned by a married man and 49-percent owned by women will not become a qualified WBE by virtue of the married man's wife having a 50-percent interest in the married man's share of the business].)

1.22 Work - The entire completed construction or the various separately identifiable parts thereof required to be performed and furnished under the Contract Documents; Work is the result of performing services, furnishing labor, furnishing material and equipment, and incorporating material and equipment into the construction as required by the Contract Documents.

ARTICLE 2 - PRIVACY OF AGREEMENT/CONTRACT

2.1. The Owner expects to finance this Agreement/Contract with assistance from the FDEP, which administers a State Revolving Fund loan program supported in part with funds directly made available by grants from the United States Environmental Protection Agency (USEPA). Neither the State of Florida nor the United States (nor any of their departments, agencies, or employees) will be a party to this Agreement/Contract or any lower-tier subcontract.

ARTICLE 3 - PROCUREMENT REQUIREMENTS

3.1. This Agreement/Contract and the Owner's solicitation and award of this Agreement/Contract are subject to requirements contained in Chapter 62-503 (Revolving Loan Program) and/or Chapter 62-552, Florida Administrative Code as applicable.

ARTICLE 4 - RESOLUTION OF PROTESTS AND CLAIMS/DISPUTES

Resolution of Protests Concerning the Owner's Solicitation and/or Award of this Agreement/Contract:

4.1. Protests concerning the Owner's solicitation and/or award of this Agreement/Contract must be filed in writing with the Owner to be considered.

4.2. All timely written protests concerning the Owner's solicitation and/or award of this Agreement/Contract are to be resolved in accordance with the Owner's dispute resolution process. A copy of the ordinance(s), resolution(s), or written policy (policies) that set forth the Owner's dispute resolution process is included elsewhere in the Bidding Documents or is to be made available by the Owner upon request.

4.3. Neither the (FDEP) nor the USEPA will become a party to, or have any role in resolving, protests concerning the Owner's solicitation and/or award of this Agreement/Contract. Protest decisions made by the Owner cannot be appealed to the FDEP or the USEPA.

Resolution of Claims and Disputes Between the Owner and the Contractor:

4.4. Unless otherwise provided in the Contract Documents, all claims and disputes between the Owner and the Contractor arising out of, or relating to, the Contract Documents or the breach thereof are to be decided by arbitration (if the Owner and the Contractor mutually agree) or in a court of competent jurisdiction within the State of Florida.

4.5. Neither the FDEP nor the USEPA will become a party to, or have any role in resolving, claims and disputes between the Owner and the Contractor.

ARTICLE 5 - CHANGES TO THE BIDDING AND CONTRACT DOCUMENTS

5.1. All changes to the Bidding Documents made subsequent to the FDEP's acceptance of the Bidding Documents and prior to the opening of bids are to be documented via addendum (addenda) to the Bidding Documents; all changes to the Contract Documents made after the opening of bids are to be documented by change order(s) to the Contract Documents. The Owner shall submit all addenda and change orders to the FDEP.

ARTICLE 6 - BONDS AND INSURANCE

Bid Guarantees:

6.1. Each bidder's bid is to be accompanied by a bid guarantee made payable to the Owner in an amount at least equal to five percent of the bidder's maximum bid price and in the form of a certified check or bid bond.

Performance and Payment Bond(s):

6.2. The Contractor shall furnish a combined performance and payment bond in an amount at least equal to 100 percent of the Contract Price (or, if required elsewhere in the Contract Documents, the Contractor shall furnish separate performance and payment bonds, each in an amount at least equal to 100 percent of the Contract Price) as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. This(these) bond(s) are to be delivered to the Owner by the Contractor along with the executed Agreement/Contract. The Owner shall forward a copy of this (these) bond(s) to the FDEP.

Insurance:

6.3. The Owner and/or the Contractor (as required elsewhere in the Contract Documents) shall purchase and maintain, during the period of construction, such liability insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims that may arise out of, or result from, the Contractor's performance and furnishing of the Work (whether the Work is to be performed or furnished by the Contractor or any subcontractor at the Work site) and the Contractor's other obligations under the Contract Documents. This insurance is to include workers' compensation insurance, comprehensive general liability insurance, comprehensive automobile liability insurance, and contractual liability insurance applicable to the Contractor's indemnification obligations and is to be written for not less than the limits of liability and coverages determined by the Owner or required by law, whichever is greater.

6.4. The Owner and/or the Contractor (as required elsewhere in the Contract Documents) shall purchase and maintain, during the period of construction, property insurance upon the Work at the Work site in an amount equal to the full replacement cost of the Work or the full insurable value of the Work. This insurance is to include the interests of the Owner, the Contractor, and all subcontractors at the Work site (all of whom are to be listed as insured or additional insured parties); is to insure against the perils of fire and extended coverage; and is to include "all-risk" insurance for physical loss or damage due to theft, vandalism and malicious mischief, collapse, water damage, and/or all other risks against which coverage is obtainable.

6.5. Before any Work at the Work site is started, the Contractor shall deliver to the Owner certificates of insurance that the Contractor is required to purchase and maintain in accordance with Paragraphs 6.3 and 6.4 of this Article and other provisions of the Contract Documents, and the Owner shall deliver to the Contractor certificates of insurance that the Owner is required to purchase and maintain in accordance with Paragraphs 6.3 and 6.4 of this Article and other provisions of the Contract Documents.

ARTICLE 7 - AWARD OF AGREEMENT/CONTRACT

7.1. If this Agreement/Contract is awarded, it is to be awarded to the lowest responsive, responsible bidder. A fixed price (lump sum or unit price or both) agreement/contract is to be used. A clear explanation of the method of evaluating bids and the basis for awarding this Agreement/Contract are included elsewhere in the Bidding Documents. All bids may be rejected when in the best interest of the Owner. After the contract has been awarded, the Owner shall give the Contractor a notice to proceed fixing the date on which the Contract Time will commence to run. The Owner shall forward a copy of this notice to proceed to the FDEP.

ARTICLE 8 - ITEMIZED CONSTRUCTION COST BREAKDOWN; CONSTRUCTION AND PAYMENT SCHEDULES

8.1. The Contractor shall submit to the Owner, within ten calendar days after the Effective Date of this Agreement/Contract, an itemized construction cost breakdown and construction and payment schedules.

8.1.1. The itemized construction cost breakdown, or schedule of values, is to include quantities and prices of items aggregating the Contract Price and is to subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices are to include an appropriate amount of overhead and profit applicable to each item of Work.

8.1.2. The construction, or progress, schedule is to indicate the Contractor's estimated starting and completion dates for the various stages of the Work and is to show both the projected cost of Work completed and the projected percentage of Work completed versus Contract Time.

8.1.3. The payment schedule is to show the Contractor's projected payments cumulatively by month.

ARTICLE 9 – FDEP/USEPA ACCESS TO RECORDS AND PROJECT SITE

9.1. Authorized representatives of the Owner, the FDEP, and the USEPA shall have access to, for the purpose of inspection, the Work site(s), any books, documents, papers, and records of the Contractor that are pertinent to this Agreement/Contract at any reasonable time. The Contractor shall retain all books, documents, papers, and records pertinent to this Agreement/Contract for a period of five years after receiving and accepting final payment under this Agreement/Contract.

NOTE: ARTICLE 10 ONLY APPLIES TO FEDERAL CAP GRANT PROJECTS

ARTICLE 10 - DISADVANTAGED BUSINESS ENTERPRISES

10.1 A goal of five percent of the Contract Price is established for Minority Business Enterprise (MBE) participation in the Work, and a goal of five percent of the Contract Price is established for Women's Business Enterprise (WBE) participation in the Work. If bidders or prospective contractors (including the Contractor) intend to let any lower-tier goods

or services (including construction) subcontracts for any portion of the Work, they shall physically include these percentage goals for MBE and WBE participation in all solicitations for subcontracts and shall take good faith efforts to assure that MBEs and WBEs are utilized, when possible, as sources of goods and services. Good faith efforts are to include the following:

10.1.1. Require Disadvantaged Business Enterprises (DBEs) are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.

10.1.2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

10.1.3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

10.1.4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.

10.1.5. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

10.1.6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs 10.1.1 through 10.1.5 of this section.

10.2. Within ten calendar days after being notified of being the apparent Successful Bidder, the apparent Successful Bidder shall submit to the Owner documentation of the affirmative steps it has taken to utilize Minority and Women's Business Enterprises (MBEs and WBEs) in the Work and documentation of its intended use of MBEs and WBEs in the Work. The Owner shall keep this documentation on file and shall forward to the FDEP a copy of the apparent Successful Bidder's documentation concerning its intended use of MBEs and WBEs in the Work.

ARTICLE 11 - DEBARMENT AND SUSPENSION (EXECUTIVE ORDER 12549)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

11.1. The bidder certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

11.2. Where the bidder is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

11.3. The bidder also certifies that it and its principals:

11.3.1. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

11.3.2. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph 11.3.1 of this certification; and

11.3.3. Have not within a three-year period preceding this proposal had one or more public transactions (federal, state or local) terminated for cause or default. Where the bidder is unable to certify to any of the above, such owner shall attach an explanation to this proposal.

11.3.4. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the federal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

11.3.5. The bidder shall incorporate the foregoing requirements 11.1 through 11.3 in all subcontracts.

ARTICLE 12 - EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

12.1. Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246). (Applicable to contracts/subcontracts exceeding \$10,000)

12.1.1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

12.1.2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in Florida, are as follows:

Goal for female participation: 6.9 percent statewide

Goal for minority participation: (See Appendix B at FDEP-20 for goals for each county)

These goals are applicable to all the Contractor's construction work (whether or not it is federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

12.1.3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

12.1.4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is the State of Florida.

12.1.5. Contractors shall incorporate the foregoing requirements in all subcontracts.

12.2. Equal Opportunity Clause (Applicable to contracts/subcontracts exceeding \$10,000)

During the performance of this contract, the contractor agrees as follows:

12.2.1. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The 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 action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

12.2.2. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. The notice can be obtained online at http://www.eeoc.gov/employers/upload/eeoc_self_print_poster.pdf. The Contractor shall state that all qualified applicants be considered without regard to race, color, religion, sex or national origin.

12.2.3. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

12.2.4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

12.2.5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

12.2.6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

12.2.7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

12.2.8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs 12.2.1 through 12.2.8 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

12.3. The Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

12.3.1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
- d. "Minority" includes:
 - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

12.3.2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

12.3.3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

12.3.4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction Contractors performing construction work in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the FEDERAL REGISTER in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

12.3.5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

12.3.6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

12.3.7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 12.3.7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

- n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

12.3.8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (12.3.7a through 12.3.7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

12.3.9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

12.3.10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

12.3.11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12.3.12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

12.3.13. The Contractor, in fulfilling its obligation under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

12.3.14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

12.3.15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

12.4. Pursuant to 41 CFR 60-1.7, if the price of this bid exceeds \$10,000, the bidder, by signing and submitting this proposal, certifies the following:

- 12.4.1. Affirmative action programs pursuant to 41 CFR 60-2 have been developed and are on file;
- 12.4.2. Documentation of a previous contract or subcontract subject to the equal opportunity clause is available;
- 12.4.3. All reports due under the applicable filing requirements have been filed with the Joint Reporting Committee, the Deputy Assistant Secretary or the Equal Employment Opportunity Commission; and
- 12.4.4. Each prospective construction subcontractor that may be awarded a lower-tier construction subcontract with a price exceeding \$10,000 shall meet the above requirements 12.4.1 through 12.4.3.

12.5. Pursuant to 41 CFR 60-1.8, if the price of this bid exceeds \$10,000, the bidder, by signing and submitting this proposal, certifies the following:

- 12.5.1. That he/she does not maintain or provide for his/her employees any segregated facility at any of his/her establishments;
- 12.5.2. That he/she does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained;
- 12.5.3. That he/she will not maintain or provide for employees any segregated facilities at any of his/her establishments;
- 12.5.4. That he/she will not permit employees to perform their services at any location under his/her control where segregated facilities are maintained;
- 12.5.5. That a breach of this certification is violation of the Equal Opportunity Clause of this contract; and
- 12.5.6. That he/she will obtain identical certifications from proposed Subcontractors prior to the award of Subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his/her files.

As used in this certification, the term “segregated facilities” means any waiting rooms, work eating areas, time clocks, locker rooms, and other storage or dressing areas, transportation and housing facilities provided for employees which are in fact segregated on the basis of race, color, religion, or otherwise.

12.6. If the price of this Agreement/Contract exceeds \$10,000, the Owner shall give written notice to the Director of the Office of Federal Contract Compliance Programs within ten working days of award of this Agreement/Contract. The notice is to include the name, address, and telephone number of the Contractor; the employer identification number of the Contractor; the dollar amount of this Agreement/Contract; the estimated starting and completion dates of this Agreement/Contract; the number of this Agreement/Contract; and the geographical area in which the Work is to be performed.

12.7. If the price of this Agreement/Contract equals or exceeds \$50,000 and if the Contractor has 50 or more employees, the Contractor shall electronically file Standard Form 100 (EEO-1) online at <https://egov.eeoc.gov/eeo1/eeo1.jsp> within 30 calendar days after the award of this Agreement/Contract, unless the Contractor has submitted such a report within 12 months preceding the date of award of this Agreement/Contract. In addition, the Contractor shall ensure that each construction subcontractor having 50 or more employees and a lower-tier construction subcontract with a price equaling or exceeding \$50,000 also electronically files this form within 30 calendar days after the award to it of the lower-tier construction subcontract, unless the construction subcontractor has submitted such a report within 12 months preceding the date of award of the lower-tier construction subcontract.

ARTICLE 13 - IMMIGRATION REFORM AND CONTROL ACT OF 1986 (STATE OF FLORIDA EXECUTIVE ORDER 11-116)

The Immigration Reform and Control Act of 1986 prohibits employers from knowingly hiring illegal workers. The Contractor shall only employ individuals who may legally work in the United States – either U.S. citizens or foreign citizens who are authorized to work in the U.S. The Contractor shall use the U.S. Department of Homeland Security's E-Verify Employment Eligibility Verification system (<http://www.uscis.gov/portal/site/uscis>) to verify the employment eligibility of:

- all new employees, during the term of this Agreement, to perform employment duties within Florida; and,
- all new employees (including subcontractors and subrecipients) assigned by the Contractor to perform work pursuant to this Agreement.

The Contractor shall include this provision in all subcontracts/subgrants it enters into for the performance of work under this Agreement.

ARTICLE 14 – ENVIRONMENTAL COMPLIANCE

The Contractor, and all subcontractors at any tier, shall comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857[h]), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738 (Administration of the Clean Air Act and the Federal Water Pollution Control Act with Respect to Federal Contracts, Grants, or Loans), and 40 CFR Part 15.

ARTICLE 15 – FEDERAL LABOR STANDARDS PROVISION

Contracts being constructed with assistance from the State Revolving Fund Program are currently required to comply with the Federal Labor Standards Provisions as provided in Appendix C. Signing Appendix A certifies compliance with these provisions.

ARTICLE 16 – AMERICAN IRON AND STEEL PROVISION

Contracts being constructed with assistance from the State Revolving Fund Program are currently required to comply with The American Iron and Steel Provision as provided in Appendix D. Signing Appendix A certifies compliance with these provisions.

ARTICLE 17 - PROHIBITED LOCAL GOVERNMENT CONSTRUCTION PREFERENCES

- A. Pursuant to Section 255.0991, F.S., for a competitive solicitation for construction services in which 50 percent or more of the cost will be paid from state-appropriated funds which have been appropriated at the time of the competitive solicitation, a state, college, county, municipality, school district, or other political subdivision of the state may not use a local ordinance or regulation that provides a preference based upon:
1. The contractor's maintaining an office or place of business within a particular local jurisdiction;
 2. The contractor's hiring employees or subcontractors from within a particular local jurisdiction; or
 3. The contractor's prior payment of local taxes, assessments, or duties within a particular local jurisdiction.
- B. For any competitive solicitation that meets the criteria in Paragraph A., a state college, county, municipality, school district, or other political subdivision of the state shall disclose in the solicitation document that any applicable local ordinance or regulation does not include any preference that is prohibited by Paragraph A.

**APPENDIX A TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUPPLEMENTARY CONDITIONS**

**CERTIFICATION OF COMPLIANCE WITH THE FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS**

This certification relates to a construction contract proposed by _____,
(insert the name of the Owner)

which expects to finance the proposed construction contract with assistance from the Florida Department of Environmental Protection (which administers a State Revolving Fund loan program supported in part with funds directly made available by grants from the United States Environmental Protection Agency). I am the undersigned prospective construction contractor or subcontractor.

I certify that I have read the Florida Department of Environmental Supplementary Conditions and agree to incorporate the following articles into the bid and/or contract:

- ARTICLE 11 DEBARMENT AND SUSPENSION (EXECUTIVE ORDER 12549)
- ARTICLE 12 EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)
- ARTICLE 13 IMMIGRATION REFORM AND CONTROL ACT OF (STATE OF FLORIDA EXECUTIVE ORDER 11-116)
- ARTICLE 14 ENVIRONMENTAL COMPLIANCE
- ARTICLE 15 FEDERAL LABOR STANDARDS PROVISION
- ARTICLE 16 AMERICAN IRON AND STEEL PROVISION

I agree that I will obtain identical certifications from prospective lower-tier construction subcontractors prior to the award of any lower-tier construction subcontracts with a price exceeding \$10,000. I also agree that I will retain such certifications in my files.

(Signature of Authorized Official)

(Date)

(Name and Title of Authorized Official [Print or Type])

(Name of Prospective Construction Contractor or Subcontractor [Print or Type])

(Address and Telephone Number of Prospective Construction Contractor or Subcontractor [Print or Type])

(Employer Identification Number of Prospective Construction Contractor or Subcontractor)

APPENDIX B TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS

GOALS AND TIMETABLES FOR MINORITIES AND FEMALES

[Note: These goals and timetables are the goals and timetables referred to in Paragraph 2 of the "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)"; these goals and timetables are to be included in all FDEP assisted construction contracts and subcontracts with a price exceeding \$10,000 and in all solicitations for such contracts and subcontracts.]

The following goals and timetables for female utilization shall be included in all federal and federally assisted construction contracts and subcontracts in excess of \$10,000. The goals are applicable to the contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a federal or federally assisted construction contract or subcontract.

Area covered: Goals for Women apply nationwide.

Goals and Timetables

Timetable	Goals (percent)
Indefinite	6.9

Goals for minority utilization can be found in the Department of Labor's Technical Assistance Guide for Federal Construction Contractors (May 2009), available on the internet at

<http://www.dol.gov/ofccp/TAguides/consttag.pdf>. These goals shall be included for each craft and trade in all federal or federally assisted construction contracts and subcontracts in excess of \$10,000 to be performed in the respective geographical areas. The goals are applicable to each nonexempt contractor's total onsite construction workforce, regardless of whether or not part of that workforce is performing work on a federal, federally assisted or non-federally related project, contract or subcontract.

Construction contractors which are participating in an approved Hometown Plan (see 41 CFR 60-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA or EA goal contained in this Appendix.

APPENDIX C
TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
SUPPLEMENTARY CONDITIONS

Davis-Bacon Requirements

FEDERAL LABOR STANDARDS PROVISIONS

(Davis-Bacon Act, Copeland Act, and Contract Works Hours & Safety Standards Act)

The Project to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such federal assistance.

1 Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act, 29 CFR Part 3, the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR Part 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) (a) The sponsor, on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The FDEP shall approve a request for an additional classification and wage rate and fringe benefits; therefore, only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sponsor(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the sponsor to the FDEP. The FDEP will transmit the request to the Administrator of the Wage and Hour Division, employment Standards Administration, U. S. Department of Labor. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional

classification action within 30 days of receipt and so advise the FDEP or will notify FEDP within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event that the Contractor, the laborers or mechanics to be employed in the Classification or their representatives, and the sponsor do not agree on the proposed classification and wage rate (including the amount designed for fringe benefits, where appropriate), the FDEP shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of FDEP, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account, assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. Withholding.

The sponsor shall, upon written request of the EPA or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, EPA may, after written notice to the contractor, sponsor, applicant, or owners, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017).

(ii) (a) The contractor shall submit weekly for each week in which any contract work is performed, a copy of all payrolls to the sponsor. Such documentation shall be available upon request by FDEP. As to each payroll copy received, the sponsor shall provide a certification that the project is in compliance with the requirements of 29 CFR 5.5(a)(1) with each disbursement request. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5(a)(3)(I), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead, the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site <http://www.dol.gov/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current addresses of each covered worker, and shall provide them upon request to the sponsor for transmission to the FDEP or EPA if requested by EPA, the FDEP, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsor. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149).

(b) Each payroll submitted shall be accompanied by a Statement of Compliance, signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR Part 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR Part 5.5 (a)(3)(I), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Option Form WH-347 shall satisfy the requirement for submission of the Statement of Compliance required by paragraph A. 3(ii)(b) of this section.

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3(I) of this section available for inspection, copying, or transcription by authorized representatives of the FDEP or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FDEP may, after written notice to the contractor, or sponsor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U. S. Department of Labor, the Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio

of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program, shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with the determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U. S. Department of Labor, the Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program the contract will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. Subcontracts.

The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination, Debarment.

A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3 and 5 are herein incorporated by referenced in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the sponsor, FDEP, EPA, the U. S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded EPA contracts or participate in EPA programs pursuant to Executive Order 12549.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded EPA contracts or participate in EPA programs pursuant to Executive Order 12549.

(iii) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U. S. C. 1001. Additionally, U. S. Criminal Code, Section 1010, Title 18, U. S. C., Federal Housing Administration transactions, provides in part "Whoever, for the purpose of . . . influencing in any way the action of such Administration . . . makes, utters or publishes any statement, knowing the same to be false . . . shall be fined not more than \$5,000 or imprisoned not more than two years, or both".

11. Complaints, Proceedings, or Testimony by Employees.

A. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this contract are applicable shall be discharged or in any other manner discriminated against by the contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this contract to his employer.

B. Contract Work Hours and Safety Standards Act. The sponsor shall insert the following clauses set forth in paragraphs B.(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by item 3 above or 29 CFR 4.6. As used in the paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. The sponsor, upon written request of the FDEP or an authorized representative of the Department of Labor, may withhold or cause to be withheld, from any moneys payable on

account of work performed by the contractor or subcontractor under any such contract or any other federal contract with the same prime contract, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety

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

(2) The contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly part 1518) and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54.83 State 96).

(3) The contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

12. Guidance to Contractor for Compliance with Labor Standards Provisions

a) Contracts with Two Wage Decisions

If the contract includes two wage decisions, the contractor, and each subcontractor who works on the site, must submit either two separate payrolls (one for each wage decision) or one payroll which identifies each worker twice and the hours worked under each wage decision. One single payroll, reflecting each worker once, may be submitted provided the Contractor uses the higher rate in the wage decisions for each identical job classification. However, where a job classification is not listed in a wage decision and is needed for that portion of the work, the classification **must** be added to the wage decision. A worker may not be paid at the rate for a classification using the hourly rate for that same classification in another wage decision. After the additional classification is approved, the contractor may pay the higher of the two rates and submit one payroll, if desired.

b) Complying with Minimum Hourly Amounts

1) The minimum hourly amount due to a worker in each classification is the total of the amounts in the Rates and Fringe Benefits (if any) columns of the applicable wage decision.

2) The contractor may satisfy this minimum hourly amount by any combination of cash and bona fide fringe benefits, regardless of the individual amounts reflected in the Rates and Fringe Benefits columns.

3) A contractor payment for a worker which is required by law is not a fringe benefit in meeting the minimum hourly amount due under the applicable wage decision. For example, contractor payments for FICA or unemployment insurance are not a fringe benefit; however, contractor payments for health insurance or retirement are a fringe benefit. Generally, a fringe benefit is bona fide if (a) it is available to most workers and (b) involves payments to a third party.

4) The hourly value of the fringe benefit is calculated by dividing the contractor's annual cost (excluding any amount contributed by the worker) for the fringe benefit by 2080. Therefore, for workers with overtime, an additional payment may be required to meet the minimum hourly wages since generally fringe benefits have no value for any time worked over 40 hours weekly. (If a worker is paid more than the minimum rates required by the wage decision, this should not be a problem. As long as the total wages received by a worker for straight time equals the hours worked times the minimum hourly rate in the wage decision, the requirement of the Davis-Bacon and Related Acts has been satisfied.)

c) Overtime

For any project work over 40 hours weekly, a worker generally must be paid 150% of the actual hourly cash rate received, not the minimum required by the wage decision. (The Davis-Bacon and Related Acts only establishes minimum rates and does not address overtime. The Contract Work Hours Act contains the overtime requirement and uses basic rate of pay as the base for calculation, not the minimum rates established by the Davis-Bacon and Related Acts.)

d) Deductions

Workers who have deductions, not required by law, from their pay must authorize these deductions in writing. The authorization must identify the purpose of each deduction and the amount, which may be a specific dollar amount or a percentage. A copy of the authorization must be submitted with the first payroll containing the deduction. If deducted amounts increase, another authorization must be submitted. If deducted amounts decrease, no revision to the original authorization is needed. Court-ordered deductions, such as child support, may be identified by the responsible payroll person in a separate document. This document should identify the worker, the amount deducted and the purpose. A copy of the court order should be submitted.

e) Classifications Not Included in the Wage Decision

If a classification not in the wage decision is required, please advise the owner's representative in writing and identify the job classification(s) required. In some instances, the state agency may allow the use of a similar classification in the wage decision.

Otherwise, the contractor and affected workers must agree on a minimum rate, which cannot be lower than the lowest rate for any trade in the wage decision. Laborers (including any subcategory of the laborer classification) and truck drivers are not considered a trade for this purpose. If the classification involves a power equipment operator, the minimum cannot be lower than the lowest rate for any power equipment operator in the wage decision. The owner will provide forms to document agreement on the minimum rate by the affected workers and contractor.

The U.S. Department of Labor (USDOL) must approve the proposed classification and rate. The contractor may pay the proposed rate until the USDOL makes a determination. Should the USDOL require a higher rate, the contractor must make wage restitution to the affected worker(s) for all hours worked under the proposed rate.

f) Supervisory Personnel

Foremen and other supervisory personnel who spend at least 80% of their time supervising workers are not covered by the Davis-Bacon and Related Acts. Therefore, a wage decision will not include such supervisory classifications and their wages are not subject to any minimums under the Davis-Bacon and Related Act or overtime payments under the Contract Work Hours and Safety Standards Act. However, foremen and other supervisory personnel who spend less than 80% of their time engaged in supervisory activities are considered workers/mechanics for the time spent engaged in manual labor and must be paid at least the minimum in the wage decision for the appropriate classification(s) based on the work performed.

g) Sole Proprietorships / Independent Contractors / Leased Workers

The nature of the relationship between a prime contractor and a worker does not affect the requirement to comply with the labor standards provisions of this contract. The applicability of the labor standards provisions is based on the nature of the work performed.

If the work performed is primarily manual in nature, the worker is subject to the labor standards provisions in this contract. For example, if John Smith is the owner of ABC Plumbing and performs all plumbing work himself, then Mr. Smith is subject to the labor standards provisions, including minimum wages and overtime. His status as owner is irrelevant for labor standards purposes.

If a worker meets the IRS standards for being an independent contractor, and is employed as such, this means that the worker must submit a separate payroll as a subcontractor rather than be included on some other payroll. The worker is still subject to the labor standards provisions in this contract, including minimum wages and overtime.

If a contractor or subcontractor leases its workers, they are subject to the labor standards provisions in this contract, including minimum wages and overtime. The leasing firm must submit payrolls and these payrolls must reflect information required to determine compliance with the labor standards provisions of this contract, including a classification for each worker based on the nature of the work performed, number of regular hours worked, and number of overtime hours worked.

h) Apprentices / Helpers

A worker may be classified as an apprentice **only if participating in a federal or state program**. Documentation of participation must be submitted. Generally, the apprentice program specifies that the apprentice will be compensated at a percentage of journeyman rate. For Davis-Bacon Act purposes, the hourly rate cannot be lower than the percentage of the hourly rate for the classification in the applicable wage decision.

If the worker does not participate in a federal or state apprentice program, then the worker must be classified according to duties performed. This procedure may require classification in the trade depending on tools used, or as a laborer if specialized tools of the trade are not used. The contractor may want to consult with the Wage and Hour Division of the U.S. Department of Labor located in most large cities regarding the appropriate classification.

Presently, no worker may be classified as a helper. As with apprentices not participating in a formal apprentice program, the worker must be classified according to duties performed and tools used.

APPENDIX D TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION SUPPLEMENTARY CONDITIONS

American Iron and Steel Requirement

The Contractor acknowledges to and for the benefit of the _____ ("Owner") and the State of Florida (the "State") that it understands that iron and steel products to be installed as a part of this contract must be in compliance with the requirements in H.R. 3547, "Consolidated Appropriations Act, 2014," (Appropriations Act). H.R. 3547 includes the following language in Division G, Title IV, Sec. 436, under the heading, "Use of American Iron and Steel,":

(a) (1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term "iron and steel products" means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the "Administrator") finds that--

- (1) applying subsection (a) would be inconsistent with the public interest;
- (2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
- (3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

For waivers to these requirements based on (2)(b) above, contact Sheryl Parsons at USEPA Region IV. She can be reached by phone at (404) 562-9337.

General Decision Number: FL170168 01/06/2017 FL168

Superseded General Decision Number: FL20160168

State: Florida

Construction Type: Heavy

County: Miami-Dade County in Florida.

HEAVY CONSTRUCTION PROJECTS (Including Sewer and Water Lines)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.20 for calendar year 2017 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/06/2017

* ELEC0349-007 09/05/2016

	Rates	Fringes
ELECTRICIAN.....	\$ 31.61	11.58

ENGI0487-017 07/01/2013		

	Rates	Fringes
OPERATOR: Backhoe (Except Loader Combo).....	\$ 28.32	8.80
OPERATOR: Crane		
All Tower Cranes (Must have 2 operators) Mobile, Rail, Climbers, Static- Mount; All Cranes with Boom Length 150 Feet & Over (With or without jib) Friction, Hydro, Electric or Otherwise; Cranes 150 Tons & Over (Must have 2 operators); Cranes with 3 Drums (When 3rd drum is rigged for work); Gantry & Overhead Cranes; Hydro Cranes Over 25 Tons but not more than 50 Tons (Without		

Oiler/Apprentice); Hydro/Friction Cranes without Oiler/Apprentices when Approved by Union; & All Type of Flying Cranes; Boom Truck.....\$ 29.05 8.80 Cranes with Boom Length Less than 150 Feet (With or without jib); Hydro Cranes 25 Tons & Under, & Over 50 Tons (With Oiler/Apprentice); Boom Truck.....\$ 28.32 8.80 OPERATOR: Drill.....\$ 25.80 8.80 OPERATOR: Loader.....\$ 25.64 8.80 OPERATOR: Oiler.....\$ 22.99 8.80		

IRON0272-005 10/01/2015		
	Rates	Fringes
IRONWORKER, STRUCTURAL.....\$ 24.21		8.28

LABO1652-004 06/01/2013		
	Rates	Fringes
LABORER: Grade Checker.....\$ 14.50		4.92

PAIN0365-007 08/01/2014		
	Rates	Fringes
PAINTER: Brush, Roller and Spray.....\$ 19.50		8.83

SUFL2009-164 06/24/2009		
	Rates	Fringes
CARPENTER, Includes Form Work....\$ 17.00		2.51
CEMENT MASON/CONCRETE FINISHER...\$ 16.61		5.52
LABORER: Common or General.....\$ 13.09		1.26
LABORER: Landscape.....\$ 7.25		0.00
LABORER: Power Tool Operator (Hand Held Drills/Saws, Jackhammer and Power Saws Only).....\$ 10.63		2.20
OPERATOR: Asphalt Paver.....\$ 11.59		0.00
OPERATOR: Backhoe Loader Combo.....\$ 16.10		2.44
OPERATOR: Bulldozer.....\$ 14.95		0.81

OPERATOR: Excavator.....	\$ 21.16	1.67
OPERATOR: Grader/Blade.....	\$ 16.00	2.84
OPERATOR: Mechanic.....	\$ 14.32	0.00
OPERATOR: Roller.....	\$ 10.95	0.00
OPERATOR: Scraper.....	\$ 11.00	1.74
OPERATOR: Trackhoe.....	\$ 20.92	5.50
OPERATOR: Tractor.....	\$ 10.54	0.00
TRUCK DRIVER, Includes Dump Truck.....	\$ 9.60	0.00
TRUCK DRIVER: Lowboy Truck.....	\$ 12.73	0.00
TRUCK DRIVER: Off the Road Truck.....	\$ 12.21	1.97

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular

rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

AMERICAN IRON AND STEEL GUIDANCE FOR STATE REVOLVING FUND PROJECTS

Florida State Revolving Fund Programs

November 2016

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which the Environmental Protection Agency (EPA) may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the requirement. The guidance will be in the form questions and answers that address AIS, the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance.

Implementation

1) What is American Iron and Steel?

The "American Iron and Steel (AIS)" provision requires State Revolving Fund (SRF) projects to use iron and steel products that are produced in the United States. AIS *IS NOT* "Buy American" from the Stimulus of 2009 or "Buy American" that is used by agencies such as the Florida Department of Transportation.

2) What projects need to comply with AIS?

All projects funded with a SRF agreement need to comply with AIS. AIS compliance applies to the entirety of the project, regardless when the construction begins or ends. One dollar in SRF funds requires AIS compliance on the entire project. AIS compliance applies to all parts of the project, regardless of the source of funding.

3) What is an iron or steel product?

The term "iron or steel products" means the following products made primarily of iron or steel:

- Lined or unlined pipes or fittings
- Manhole Covers
- Municipal Castings
- Hydrants
- Tanks
- Flanges
- Pipe clamps and restraints
- Valves
- Structural steel
- Reinforced precast concrete
- Construction materials

4) What is the definition of "primarily iron or steel"?

A product that is primarily iron or steel is a product that is made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs. If a product is not listed in the AIS provision but is composed of more than 50% iron or steel, it does not have to be produced in the United States.

5) What is an iron or steel product?

An iron or steel product is one that is primarily made of iron or steel that is permanently incorporated. Equipment which are eventually removed from the project upon completion are not required to comply with AIS.

6) What does "produced in the United States" mean?

Produced in the United States means that all manufacturing processes, including application of coatings, must take place in the United States, except for metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and

coating. Raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement. Non-iron or steel components of an iron and steel product may come from non-US sources.

7) What components are not covered by AIS?

Mechanical and electrical components, equipment and systems do not have to comply with AIS. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

8) What are some examples of components not covered by AIS?

Examples of components that do not need to comply with AIS include: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

9) What are the steps to document AIS compliance?

- Contract language - the specific contract language given in the FDEP Supplementary Conditions, Appendix D, must be included in each contract, including purchase agreements.
- Step Certification Process – each handler (supplier, fabricator, manufacturer, processor, etc.) of the iron and steel products certifies that their step in the process was performed domestically.
- Paper Trail – including the originating purchase order, the delivery of service via a bill of lading, and invoice from the manufacturer.

10) What does the certification letter need to contain?

The certification letter should identify:

- What the product is - The letter should list the specific product(s) delivered to the project site.
- Where it was made - The letter should include the manufacturing location of the product(s).
- To whom it was delivered - The letter should include the name of the project and jurisdiction where the project was delivered.

- Signature of a representative who has the authority to speak on behalf of the company.

11) What is the waiver process?

The EPA has the ability to issue waivers when the following can be documented:

- That applying the AIS requirements would be inconsistent with the public interest;
- OR
- Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality;
- OR
- Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25%.

12) What are the steps to request a waiver?

- The waiver request is emailed to the SRF program.
- After review, the SRF program will forward the application to the EPA Headquarters.
- After evaluation and review of public comments, EPA Headquarters will either approve or disapprove the waiver request.
- EPA Headquarters will send notification to the SRF program and the decision will be posted online.

13) What are national waivers?

The EPA has the authority to issue national waivers. The national waivers that have been approved to date include:

- De minimis waiver – allows a small percentage of incidental products of unknown or non-domestic origin to be incorporated. Users of the de minimis waiver should maintain documentation of all the de minimis items in a project.
- Plans and Specifications Waiver – exempts projects with plans and specifications approved by a state agency prior to January 17, 2014 and between and including January 17 and April 15, 2014 (the date the waiver was signed).
- Product waiver for pig iron and direct reduced iron –permits the use of pig iron and direct reduced iron manufactured outside the US to be used in the manufacturing process for iron and steel products.
- Short-term waiver for stainless steel nuts and bolts used in pipe couplings, restraints, joints, flanges, and saddles.

14) What are the penalties for not complying with AIS?

Failure to comply with the AIS requirements may delay, limit, or prevent the disbursement of SRF funds. The SRF program will require corrective actions by the

Contractor as a result of violations of AIS compliance, including the replacement of the deficient products, compensation for costs, and other damages that may result. Violations may subject the Owners, the Contractors, and suppliers to enforcement actions from the EPA and other federal agencies.

15) Where can further information be obtained about AIS?

The EPA has a website to address questions and concerns about AIS and can be found at

http://water.epa.gov/grants_funding/aisrequirement.cfm

Appendix: Sample Certification

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative