



# Request for Proposal

---

HANNAH'S REST WATERLINE REHABILITATION PROJECT

## PR-18-22

St. Croix, U. S. Virgin Islands

Prepared by St. Croix Water Distribution in February 2021

# Table of Contents

<b>I. INTRODUCTION .....</b>	<b>4</b>
<b>II. REQUEST FOR PROPOSAL .....</b>	<b>4</b>
<b>III. INSTRUCTION TO OFFERORS.....</b>	<b>5</b>
1. PROJECT LOCATION .....	6
2. PRE-PROPOSAL MEETING- INSPECTION OF JOBSITE .....	6
3. COMMUNICATION.....	6
4. SUBMITTAL .....	6
5. PROPOSAL WITHDRAWAL .....	7
6. PROJECT SCHEDULE .....	7
7. PRICING .....	7
8. PROPOSAL EVALUATION .....	8
9. OWNER'S RIGHTS .....	8
10. GENERAL CONTRACT TERMS.....	8
11. TAXES.....	9
12. PERFORMANCE BOND/LETTER OF CREDIT .....	9
13. BUSINESS LICENSE .....	10
14. LIQUIDATED DAMAGES .....	10
15. INSURANCE.....	10
16. ENVIRONMENTAL RESPONSIBILITY .....	12
17. EMPLOYMENT OF U.S. VIRGIN ISLANDS RESIDENTS .....	12
18. FEDERALLY FUNDED PROJECTS .....	13
19. CONFLICT OF INTEREST .....	13
20. DRUG AND ALCOHOL TESTING FOR CONTRACTOR EMPLOYEES .....	14
21. COMMUNICATION WITH AUTHORITY BOARD MEMBERS/EMPLOYEES/EVALUATION COMMITTEE MEMBERS .....	15
22. CONFIDENTIALITY.....	15
23. CONTRACT EXECUTION .....	15
24. NOTICE TO PROCEED .....	15
25. UTILIZATION OF SMALL, MINORITY, AND WOMEN'S OWNED ENTERPRISES.....	16
26. COVID-19 REQUIREMENTS .....	16
<b>IV. SPECIAL PROVISIONS.....</b>	<b>166</b>
1. SCOPE OF THE SECTION.....	166
2. ORDER OF WORK.....	166
3. COOPERATION WITH OTHERS .....	166
4. PRE-CONSTRUCTION CONFERENCE.....	167
5. SPECIFICATIONS.....	167
6. PROJECT MANAGER.....	177
7. DRAWINGS .....	178
9. GENERAL QUALITY OF MATERIAL AND WORKMANSHIP .....	178
10. MATERIAL SUPPLIED BY CONTRACT .....	188
11. QUALITY IN ABSENCE OF DETAILED SPECIFICATIONS.....	188
12. SUBCONTRACTORS .....	188
13. PROOF OF COMPETENCY OF OFFERORS .....	188
14. GUARANTEE.....	189

15.	AS-BUILT DRAWINGS .....	189
16.	REPORTS .....	199
17.	PROGRESS MEETINGS .....	199
18.	TIME AND EQUIPMENT RATES .....	199
19.	ACCEPTANCE OF WORK .....	199
20.	WORKMANSHIP .....	199
21.	ADDITIONAL REQUIREMENTS.....	199
22.	SECURITY .....	199
23.	SAFETY .....	20
24.	MATERIAL SAFETY DATA SHEETS.....	20
25.	TEMPORARY CONTROLS .....	21
26.	INCLEMENT WEATHER .....	21
27.	HARD HAT, SAFETY SHOES AND OTHER SAFETY EQUIPMENT POLICY .....	21
28.	SITE CLEAN-UP.....	21
29.	BUSINESS LICENSE .....	21
30.	CONFLICT OF INTEREST .....	21
31.	PAYMENT FOR CHANGES.....	21
<b>V.</b>	<b>SCOPE OF WORK .....</b>	<b>22</b>
A.	GENERAL DESCRIPTION .....	22
B.	FURNISHED BY CONTRACTOR.....	23
	<b>PROPOSAL FORM .....</b>	<b>25</b>
	PROPOSAL SCHEDULE.....	266
	<b>Technical Specifications.....</b>	<b>53</b>

## **I. INTRODUCTION**

The Virgin Islands Water and Power Authority (“VIWAPA”, the “Authority” or the “Owner”) is an autonomous government agency with a Governing Board. The primary objective of VIWAPA is to produce and distribute clean, safe, reliable, and affordable potable water and electrical power to residents and businesses in the U.S. Virgin Islands.

VIWAPA currently operates six (6) electric generating units and six (6) Reverse Osmosis plants at its Richmond, St. Croix facility. The VIWAPA water distribution system on St. Croix has approximately 200 miles of distribution pipeline of varying sizes, 5 pump stations, and 10 storage tanks with a total storage capacity of approximately 20 million gallons.

The Authority is seeking a qualified and licensed contracting firm to supply and install approximately +/- 10,400 LF of 6” C-900 PVC water main in Hannah’s Rest, St. Croix to include all materials, equipment, and labor. The Contractor will be responsible for complying with all specifications and drawings provided with this Request for Proposal.

## **II. REQUEST FOR PROPOSAL**

Your firm is invited by the Authority to submit a proposal on a project to supply and install approximately +/- 10,400 LF of 6” C-900 PVC water main in Hannah’s Rest, St. Croix to include all materials, equipment, and labor for a complete job in place.

Proposals shall be submitted to [contractservices@viwapa.vi](mailto:contractservices@viwapa.vi). A cover letter must be included with your response and addressed to the following individual:

Nicole Aubain  
Manager, Contract Administration  
Virgin Islands Water & Power Authority  
Sunny Isle Administrative Office  
93B Estate Diamond  
Christiansted, St. Croix 00820

Responses received after specified date and time will not be considered. Submit your offer on the Proposal Form provided. Offerors may supplement this form as appropriate. Your offer will be required to be submitted under a condition of irrevocability for a period of 90 days after submission. Refer to other proposal requirements described in the Instructions to Offerors. The Owner reserves the right to accept or reject any or all offers.

### III. INSTRUCTION TO OFFERORS

1. ALL RESPONSES SHALL ADHERE TO THE REQUIREMENTS OF THE AUTHORITY'S PROPOSAL REQUEST AND THE AUTHORITY'S GENERAL CONTRACT TERMS. THOSE REQUIREMENTS IN THE RFP PERTAINING TO THE OFFEROR'S RESPONSIBILITY FOR TAXES, PLACEMENT OF A PERFORMANCE BOND, PROPOSAL BOND, INSURANCE, HIRING OF LOCAL WORKERS AND THE APPLICATION OF LIQUIDATED DAMAGES, ARE OF PARAMOUNT IMPORTANCE TO THE AUTHORITY AND SHALL APPLY, UNLESS EXPRESSLY WAIVED BY THE AUTHORITY.

THE OFFEROR'S RESPONSE MUST EXPRESSLY STATE THE TERMS AND CONDITIONS OF THE AUTHORITY'S GENERAL CONTRACT TERMS TO WHICH THE OFFEROR TAKES EXCEPTION. UNLESS EXPRESSLY ACCEPTED BY THE AUTHORITY IN WRITING, NO EXCEPTION SHALL BE DEEMED ACCEPTED. THE AUTHORITY RESERVES THE RIGHT DEPENDING ON THE STATED EXCEPTION TO CONSIDER ANY PROPOSAL NON-RESPONSIVE AND NOT SUBJECT TO FURTHER CONSIDERATION.

ALL QUESTIONS AND INQUIRIES REGARDING ANY MATTER AFFECTING THE PROPOSAL OR RESPONSE MUST EXCLUSIVELY BE DIRECTED, IN WRITING, TO THE AUTHORITY'S MANAGER OF CONTRACT ADMINISTRATION, MS. NICOLE AUBAIN.

2. ALL RFP's IN THEIR ENTIRETY ARE QUALIFIED BY THE FOLLOWING GENERAL REQUIREMENTS:

ALL COSTS AND EXPENSES ASSOCIATED WITH DEVELOPING AND/OR SUBMITTING A PROPOSAL IN RESPONSE TO AN RFP AND/OR ANY RELATED ACTIVITY FOLLOWING THE SUBMISSION OF ANY SUCH PROPOSAL SHALL BE BORNE BY THE OFFEROR. WHILE WAPA HAS ENDEAVORED TO SUPPLY USEFUL INFORMATION IN AN RFP, WAPA MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, AS TO THE ACCURACY OR COMPLETENESS OF ANY INFORMATION CONTAINED HEREIN OR OTHERWISE PROVIDED TO ANY OFFEROR BY, OR ON BEHALF OF WAPA. WAPA SHALL HAVE NO LIABILITY RELATING TO OR ARISING FROM ANY SUCH INFORMATION OR THE USE THEREOF. OFFERORS ARE ENCOURAGED TO CONDUCT THEIR OWN INVESTIGATION AND ANALYSIS OF ANY AND ALL INFORMATION CONTAINED HEREIN OR OTHERWISE PROVIDED BY OR ON BEHALF OF WAPA. THE RFP IS NOT AN OFFER OR COMMITMENT AND IS NOT CAPABLE OF BEING ACCEPTED TO FORM A BINDING AGREEMENT. WAPA RESERVES THE RIGHT, IN ITS SOLE DISCRETION, TO WITHDRAW OR MODIFY THE RFP AT ANY TIME, TO ACCEPT OR REJECT ANY OR ALL PROPOSALS FOR ANY REASON, TO WAIVE ANY IRREGULARITIES OR INFORMALITIES IN THE PROPOSAL PROCESS OR ANY NONCONFORMANCE WITH THE REQUIREMENTS OF THE RFP, AND TO ENTER INTO FURTHER DISCUSSION OR INTERVIEWS WITH ANY ONE OR MORE OFFERORS.

## **1. PROJECT LOCATION**

The project will take place at the following location:

Hannah's Rest, St. Croix U.S.V.I.

## **2. PRE-PROPOSAL MEETING- INSPECTION OF JOBSITE**

A mandatory Pre-Proposal Conference will be scheduled for all prospective Offerors prior to the Proposal Opening. Representatives of the Virgin Islands Water and Power Authority will be in attendance. Proposals will only be accepted from Offerors attending the pre-proposal meeting. Information relevant to the Proposal Documents will be recorded in an addendum issued to all Offerors attending the Pre-Proposal Conference. A site visit will be arranged for all Offerors in attendance at Pre-Proposal Conference. Each Offeror is required to conduct a site inspection at his own cost to familiarize himself/herself with the project site, the work area, and to ask any questions before submitting a proposal. Following the project site visit, each Offeror shall carefully examine the Proposal Documents. Any conflict that exists between the Proposal Documents and project inspection shall be brought to the Owner for resolution.

Each Offeror shall fully inform himself prior to proposing of all existing conditions and limitations under which the project will be performed and shall include in his proposal a sum to cover all costs of all items necessary to perform the work as set forth in the Proposal Documents. No allowance will be made to any Offeror for claims arising from the existing condition, which could have been ascertained by an examination of the project site and the review of the Project documents.

## **3. COMMUNICATION**

All correspondence shall be identified by the Request for Proposal number and Title, and addressed to:

Nicole Aubain, Manager, Contract Administration  
Virgin Islands Water & Power Authority  
Sunny Isle Administrative Office  
93B Estate Diamond  
Christiansted, St. Croix 00820  
Email: [contractservices@viwapa.vi](mailto:contractservices@viwapa.vi)

Offerors shall inform the Authority of the proper email address to which correspondence to the Offeror should be directed.

## **4. SUBMITTAL**

All proposals must be electronically submitted, and a signed cover letter must be submitted with your response and addressed to the following address and emails:

Nicole Aubain, Contract Administration Manager  
Virgin Islands Water & Power Authority  
Sunny Isle Administrative Office

The Offeror shall submit proposal documents which shall include the following:

- A. A technical description of the pipeline rehabilitation in Hannah's Rest, Hannah's Rest Rehabilitation, with a clear statement as to what items shall be included in the proposal.
- B. The Proposal Form, included with this proposal, properly executed and with all items filled out. Do not change the wording and do not add wording to the Proposal Form.
- C. The Questionnaire (List of at least three (3) similar projects with the company address along with the contact's name and phone number)
- D. Any exceptions or clarification to the requirements stated in this Request for Proposal, including exceptions to the General Contract Terms, shall be listed, and explained in the proposal.
- E. Indicate inspection of jobsite and required lay down area.
- F. A proposed Payment Schedule.
- G. A proposed Project Schedule.
- H. A list of proposed subcontractors.
- I. The applicable rates for labor, services, and equipment with add on percentage to cover profit and material handling charges in the case of additional work not in the Scope of Work.
- J. Description on how the Scope of Work will be accomplished.
- K. Offeror shall be solely responsible for the delivery of their proposal in the manner and time prescribed. Each Proposal shall be addressed to the Authority and shall be emailed to the Owner at the address given in the Request for Proposal on or before the set date and time. Each proposal shall have a cover letter clearly bearing the title of the Project, the name of the Offeror, and the date and hour of the proposal opening.
- L. No misdirected proposals will be considered.
- M. No late proposals received after the time specified for receiving them will be considered.

## **5. PROPOSAL WITHDRAWAL**

Any Offeror may withdraw his/her proposal by written request, at any time prior to the scheduled time for proposal opening. No Offeror may withdraw his/her proposal for a period of ninety (90) days after the date set for opening thereof, and all proposals shall be subject to acceptance by the Owner during this period.

## **6. PROJECT SCHEDULE**

The Offeror shall submit, with his/her proposal, a preliminary project schedule. This schedule shall detail the following planning steps: (a) the project phases; (b) the breakdown of phases into tasks; (c) the time estimate for each task; and (d) the critical path of the schedule.

## **7. PRICING**

Prices should be submitted on a firm basis without escalation. Payment of invoices shall be subject to satisfactory performance and acceptance of work by Owner. A proposed payment schedule shall be submitted by the Offeror.

## 8. PROPOSAL EVALUATION

Proposals will be evaluated on basis of:

Evaluation Criteria	Weight 100 pts	Evaluator 1	Evaluator 2	Evaluator 3
1. Experience/Ability to Perform Work	20			
2. Compliance with Contract Drawings & Specifications	20			
3. Time for Performance/Delivery	15			
4. Cost	25			
5. Financial Strength	10			
6. Reputation of Company	10			
<b>Total</b>	100			

## 9. OWNER'S RIGHTS

The Owner has a right to reject any or all proposals and to waive informality and irregularity in the proposals.

## 10. GENERAL CONTRACT REQUIREMENTS

The Authority's General Contract Terms with Federal Requirements shall be applicable to all Contracts with the Offerors, attached as Appendix A. The Offeror's response must expressly state those provisions of the Authority's General Contract Terms with which the Offeror does not agree. The Authority reserves the right to reject any exceptions, or consider any exceptions taken to the General Terms and Conditions to be unresponsive and not subject to further consideration.

## 11. TAXES

The Price proposed by Offeror shall be the total consideration, inclusive of taxes, if applicable. The Offeror, if awarded the Contract, may be subject to gross receipt taxes; excise taxes, import taxes or custom duty, depending on the nature of the scope of work. All taxes are the responsibility of the Offeror unless exempt by law. The Offeror is advised to contact the Virgin Islands Bureau of Internal Revenue ("IRB"), (340) 715-1040, for information on their tax obligations. Neither the Authority, nor its employees or representatives, shall be responsible or liable due to any inquiries or representations regarding the Offeror/Contractor's tax liability. **To the extent a Offeror claims an exemption from any applicable Virgin Islands Tax or custom duty, Offeror must, upon contract execution, present the Authority documented evidence from IRB or other Virgin Islands Government Department establishing that the Offeror is not responsible for taxes.**

Pursuant to 33 V.I.C. § 44(a)(b) of the Virgin Islands Code as amended, the Government of the Virgin Islands and its instrumentalities, agencies and public corporations are required, when making a payment to any

person, partnership, firm corporation of other business association that is subject to the payment of gross receipt taxes under the law, to deduct and withhold from such payment, gross receipt taxes as required by law at 33 V.I.C § 43 (a).

Payment for the purposes of withholding is defined by law as:

1. any single payment of at least \$30,000;
2. any payment pursuant to a contract providing for a total expenditure of \$225,000 or more.

In Contracts where the Offeror/Contractor will provide to the Authority, equipment, supplies, materials or parts (the “Materials”) which are to become the property of the Authority and where such Materials are subject to custom duties and/or excise taxes (“Taxes”), those Taxes related to importation of the Materials will not apply if : (i) the Materials are consigned to the Authority at a port other than the Virgin Islands, (ii) such consignment provides that the Offeror/Contractor retains the risk of loss for the Materials until the scope of work of the contract is completed; (iii) the Offeror/Contractor provides insurance against loss or damage to the Materials in the amount of 100% of the value of the Materials provided for the benefit of the Authority.

Attached, Appendix B, please find further direction from the Virgin Islands Bureau of Internal Revenue regarding tax obligations for contractors working in the Virgin Islands.

## **12. PERFORMANCE BOND/LETTER OF CREDIT**

Offeror shall obtain from a surety authorized to conduct business in the United States Virgin Islands, a performance bond commitment letter, which letter must be submitted with the proposal response. The Commitment letter shall contain a guarantee from the surety that it will, prior to execution of a contract, provide a bond in an amount as indicated in Paragraph 22 of the Authority's General Contract Terms, unless different terms are agreed to by the Authority. The Bond shall remain in effect throughout the entire duration of the Contract and for a period of not less than one (1) year after the Authority has accepted the Work. Any change to the Scope of Work resulting in an increase in the contract consideration will require the amount of the performance bond to be increased in accordance with the table at Clause 22 of the General Contract terms.

A copy of the performance bond, the format of which will be provided by the Authority, must be presented to the Contracting Officer of the Authority prior to or upon execution of the Contract. Failure by Offeror to present its performance bond shall be grounds to rescind the Contract award.

Any bond provided must provide for the coverage of any and all changes to the contract that adds to the scope of work. Businesses owned and managed by Virgin Islands residents may, in lieu of a performance bond, allow the Authority to retain 35% of the total contract consideration until final acceptance of the Work by the Contracting Officer. Such exception may only be exercised by companies when the Contract considered is \$500,000.00 or less. The request for this option must be noted in the proposal response.

In addition to the above, a Contractor may, in lieu of a performance bond, be allowed to provide a letter of credit upon the express written permission of the Authority’s Contracting Officer. The request for this option must be contained in the proposal document. The amount of the letter of credit must correspond with the amount required for the performance bond. The terms of the letter of credit must adhere strictly to the Authority’s sample letter of credit, which will be furnished upon request. Any variations from the terms of the proposed letter, without the consent of the Authority’s Contracting Office may, at the Authority’s option, result in rejection of the letter of credit, and the Offeror shall be required to post a performance bond to secure performance.

## **13. BUSINESS LICENSE**

Offeror must comply with the licensing laws of the Virgin Islands and obtain all licenses required for the performance of the project. The Offeror is advised to contact the Department of Licensing and Consumer Affairs (“DLCA”) at (340)774-3130 for information on the requirements for obtaining a business license, information on whether their operation requires or does not require a business license, or to obtain a waiver of the business license requirement. Should offeror wish to claim that the scope of the services being provided do not require it to obtain a business license, Offeror must present to the Authority documented evidence from DLCA that the Offeror is not required to obtain a business license.

Copies of all necessary and applicable license(s) or copy of a business license waiver shall be obtained by the Offeror and copies presented to the Contracting Officer concurrent with the execution of the Contract. Additionally, Offeror must supply the Authority with its taxpayer identification number. Failure by Offeror to present its license(s) prior to execution of the contract or within such other reasonable time as agreed to by the parties may be grounds for the Authority to rescind the Contract.

**At contract execution any offeror that does not possess the following:**

- a) a business license, or**
- b) a waiver letter from DLCA that a business license is not required, or**
- c) evidence, subject to verification, that an application for a business license has been submitted to DLCA for processing**

**may, at the Authority's sole discretion, have the contract award rescinded.**

#### **14. LIQUIDATED DAMAGES**

The Authority shall assess liquidated damages solely for delay in achieving contract completion. For each day that the project extends beyond the specified contract completion date, for any cause other than excusable causes as defined in Paragraph 13a of the attached General Contract Terms, the Offeror and its sureties shall be liable to the Authority and shall be assessed a liquidated damage in the amount of \$2,500 per day subject to a maximum of liquidated damages not greater than 10 % of the total contract price.

The Authority reserves the right under this clause to forego its claim for liquidated damages for delays and to sue for actual damages incurred as a result of such delays.

#### **15. INSURANCE**

The Offeror is required to obtain and maintain in effect insurance coverage pursuant to Exhibit A, Clause 20 of the General Contract Terms with Federal Requirements. In addition, the Offeror shall submit proof of insurance coverage to the Manager of Contract Administration upon award of the Contract. Failure to provide the required insurance as requested shall be grounds to rescind the Contract.

#### **16. ENVIRONMENTAL RESPONSIBILITY**

The Offeror shall, in the performance of the Scope of Work, be responsible for complying with any federal or local laws and any Rules, Regulations and Guidelines issued by the U.S. Environmental Protection Agency (EPA), V.I. Department of Planning and Natural Resources (DPNR), and any other Federal or local regulatory agencies regarding the discharge or spilling of prohibited contaminants prohibited by law during the performance of the Contract.

Offeror shall become familiar with and adhere to the policies and practices of the Authority regarding the discharge or spilling of oil, petroleum products, and any other policies applicable to the work as determined by the Authority.

In addition, Offeror shall be responsible, at its expense, for the clean-up of any and all substances, regulated or not, which it spills or causes to be spilled on the Authority's premises or work sites.

The Offeror shall indemnify the Authority for any and all fines and penalties, assessed to the Authority as a result of Offeror's failure to adhere to EPA, OSHA and DPNR regulations and directives, and shall further pay all the Authority's costs, expenses and attorney's fees, in connection therewith. Additionally, the Offeror shall indemnify the Authority for the cost of cleaning up all spills and discharges if the Authority has performed such work on Offeror's behalf.

## **17. EMPLOYMENT OF U.S. VIRGIN ISLANDS RESIDENTS**

For work involving "public works projects" (i.e. construction, improvement, alteration, or repair of any building, water system, sewer system, road, highway or bridge), contractors and subcontractors must comply with the requirements of 31 V.I.C. §§ 271 and 272 which mandates that all public works projects let by the Government of the Virgin Islands (to include its agencies and instrumentalities), excluding those contracts that use federal funds, shall hire only United States Virgin Islands residents. Residents for the purposes of the statute is defined at 31 V.I.C. § 270 (b) (1) (A) (B) as a person who:

- A. is a citizen of the United States and or other person legally admitted as a permanent resident to the United States; and
- B. has been a bona fide resident of the United State Virgin Islands for a period of at least one (1) year.

Contractors and subcontractors on any public works project, before employing any person not a resident of the Virgin Islands, shall notify the Virgin Islands Employment Services. Offerors are urged to obtain and review the requirements of this law and shall ensure that all subcontracts include language containing this requirement.

In addition, 24 V.I.C. § 126 requires the following preference for resident workers (i.e. any person capable of performing services or labor and who is a citizen of the United States or an immigrant alien admitted to the United States for permanent residence under the provision of the Immigration and Nationality Act as amended): Resident workers shall be given preference in employment in the Virgin Islands in any industry or occupation for which such workers are qualified and available. Nonresident workers shall be employed only to supplement the labor force of available and qualified workers. No resident workers shall suffer any reduction in workweek below 40 hours a week by reason of an employer employing a non-resident worker. No employer shall employ a non-resident worker except in strict accordance with the provisions of this chapter and regulations hereunder. Nothing contained herein shall be construed to interfere with the policy of the Employment Services in canvassing of affiliated state employment services to obtain workers before issuing clearance certification for alien workers.

Further, in accordance with 27 V.I.C. § 303b any individual or company, having a business license in the Territory, is required to notify the Employment Security Agency, Virgin Islands Department of Labor of its

intent to fill an existing position, now vacant, or soon to become vacant, or a new previously unfilled position. Contractors and its subcontractors are required to comply with this requirement and are urged to obtain and review the requirements of this law. Contractors shall ensure that all subcontracts include language containing this requirement.

Information or guidance on the legal requirements referenced herein can be obtained from the Virgin Islands Department of Labor, which can be contacted at 340-776-3700.

A finding by the Department of Labor that a Contractor or its Subcontractor(s) has not complied with the legal requirements contained herein may be grounds for termination of the contract. Further, said finding shall be a consideration in the award of future contracts with the Virgin Islands Water and Power Authority.

## **18. FEDERALLY FUNDED PROJECTS**

A. The Federal Law requires that all contractors performing work on projects involving federal funds must be vetted to determine if they have been suspended or debarred from proposing on Federal Government Projects. Before you can propose on federal funded projects, you need to obtain a Dun & Bradstreet, or D-U-N-S, Number, a unique nine-digit identification number for each physical location of your business. D-U-N-S Number assignment is free for all businesses required to register with the federal government for contracts or grants. When proposing, Offerors must provide their Data Universal Numbering Systems Number (DUNS) at the time of submission of their proposal or upon contract execution.

Where federal funds are used for payment of contract services, contractors that are serving an active suspension, or are currently debarred by the Federal Government from the federal procurement process will not, absent compliance reasons, be allowed to participate in the Authority's procurement process. Any proposal submitted by an excluded contractor shall not be eligible for consideration, nor shall a debarred or suspended contractor be allowed to serve as an individual surety. Further, the Authority shall not, absent compelling reasons, award a contract to a contractor that subcontracts any portion of the Authority's work to any firm, company, individual or corporation that is serving an active suspension or is currently debarred by the Federal Government. During the procurement process, the Authority will check the System Award Management ("SAM"), a Federal Government owned and operated free website that consolidates the capabilities in Central Contractor Registration (CCR)/FedReg, Online Representations and Certifications Applications (ORCA) and the Excluded Parties List System (EPLS) to determine if contractors or any of its subcontractors have been debarred or suspended.

The Authority will make semi-annual checks on SAM to verify that all contractors that are performing work on federally funded projects of the Authority are in good standing and have not been suspended or debarred. All verification attempts shall be documented. If after contract award or during the performance of any contract, it is found that a contractor has been debarred or suspended, any active contract(s) of an excluded contractor will remain in effect unless such contract(s) is terminated for default or for convenience under separate provisions of the contract.

**B.** In instances where Federal funds are utilized for the payment of the Scope of Work, the Contractor shall comply with the Davis Bacon and Related Acts (DBRA). These regulations can be found in-part from the Code of Federal Regulations (Title 29 CFR, parts 1,3,5,6 and 7), attached as Appendix C.

The Davis-Bacon Act requires that all contractors and subcontractors performing work on federal contracts (and contractors or subcontractors performing on federally assisted contracts under the related Acts) in excess of

\$2,000 pay their laborers and mechanics not less than the prevailing wage rates and fringe benefits listed in the Davis-Bacon Wage Rate Determination for corresponding classes of laborers and mechanics employed on similar projects in the area. Davis-Bacon labor standards clauses must be included in covered contracts.

Prevailing wages are computed by the Department of Labor (DOL) and are issued in the form of a Federal Wage Decision. This decision includes a Wage Rate Determination for each work classification listed by construction type, for each county where work is performed. Each contractor and subcontractor hired must sign a contract which includes the Federal Wage Decision listing and a Wage Determination for its employees by worker classification.

## **19. CONFLICT OF INTEREST**

An Offeror submitting a proposal must certify that it has familiarized itself with the provisions of title 3, chapter 37 of the Virgin Islands Code pertaining to conflicts of interest and has no interest and will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its obligations, if awarded a contract under this RFP. An Offeror submitting a proposal must certify the following:

- 1) No officer, agent, or employees of the Virgin Islands Water and Power Authority or any member of the Authority's Governing Boards has a pecuniary interest in the proposal;
- 2) The proposal is made in good faith without fraud, collusion or connection of any kind with any other Offeror for the same request for proposals;
- 3) The Offeror is competing solely on its own behalf without connection with or obligation to any undisclosed person or firm.

The Offeror must also describe any contractual or other business relationship with the Virgin Islands Water and Power Authority or any of its employees, officers or members of the board, including the value of the contract or business relationship, entered into during the last five (5) calendar years.

Offeror, and any of their contractors, shall notify VIWAPA as soon as possible if the proposed scope of work or any aspect related to the anticipated work raises an actual or potential conflict of interest (as defined at 2 C.F.R. Part 215 and 24 C.F.R. § 85.36 (or 84.42, if applicable)). Offeror and its subcontractors shall explain the actual or potential conflict in writing in sufficient detail so that VIWAPA is able to assess such actual or potential conflict. Offeror and any of its subcontractors shall provide VIWAPA any additional information necessary for VIWAPA to fully assess and address such actual or potential conflict of interest. Offeror and its subcontractors shall accept any reasonable conflict mitigation strategy employed by VIWAPA including but not limited to the use of an independent subcontractor(s) to perform the portion of work that gives rise to the actual or potential conflict. A violation of this requirement may result in the rescinding of a contract award or termination of the contract.

## **20. DRUG AND ALCOHOL TESTING FOR CONTRACTOR EMPLOYEES:**

The use of drugs, alcohol, and unauthorized substances are prohibited on all the Virgin Islands Water and Power Authority's (hereinafter the "Authority" or "WAPA") business locations, power generating, transmission and distribution, and potable water facilities, workplaces, worksites, and parking areas (hereinafter "Premises").

- Drugs are any drug or controlled substance which is not legally obtainable under both local and/or federal law, including but not limited to marijuana, opiates, PCP (phencyclidine), cocaine, heroin, amphetamines, barbiturates, benzodiazepines, narcotics, hallucinogens, inhalants, designer drugs, and/or any substances and/or paraphernalia that are prohibited by federal or local law.

- Unauthorized substances are over-the-counter or prescription drugs that are used, possessed, purchased, transferred, dispensed, or distributed in the manner outlined below:

- a. prescription drugs that are not prescribed and/or prescribed on an invalid prescription;
  - b. prescription drugs that are prescribed at non-therapeutic levels or used in a manner or quantity other than as set forth in the prescription;
  - c. over-the-counter drugs in a manner or quantity other than set forth in the directions;
- or
- d. over-the-counter or prescription drugs in a manner that contradicts the direction or instructions for use.

- Alcohol is defined as a colorless volatile flammable liquid that is produced by the natural fermentation of sugars and is the intoxicating constituent of wine, beer, spirits, and other drinks.

**All Contractors (and their subcontractors or agents) that furnish temporary employees that work alongside VIWAPA employees or that are assigned to work at any VIWAPA worksite must have a Drug, Alcohol, and Unauthorized Substance Testing Policy for their respective employees, which policy shall include reasonable suspicion and post-accident testing.** In the event a Contractor, its agent or subcontractor do not have a Drug, Alcohol, or Unauthorized Substance Testing Policy, the Contractor, its agent or its subcontractor shall apply the Authority's Drug, Alcohol, and Unauthorized Substance Policy, approved April 26, 2016, and shall confirm in writing, to the Authority's Project Manager, within ten (10) work days after the effective date of the contract that its employees and employees of its agents or subcontractors have been notified of and instructed on the Authority's Policy requirements. Failure by the Contractor, or its agent, or subcontractor to have a Drug, Alcohol, or Unauthorized Substance Testing Policy and to present evidence of such upon contract execution, or to agree to use the Authority's policy in the event they do not have a policy of their own; or to verify in writing their employees have been trained on the Authority's policy may be grounds to rescind the contract award or terminate the contract.

The Authority reserves the right to notify the Contractor if the Authority suspects that the Contractor's employee, agent, or subcontractor employee is in violation of the Contract or the Authority's Drug, Alcohol, and Unauthorized Substance Policy. If notified, the Contractor shall immediately invoke reasonable suspicion or post-accident testing. The Contractor shall provide the Authority with a written report advising of the results of the testing, its investigation into the Authority's complaint and the status of the employee involved in the investigation. Any Contractor employee, or employee of a subcontractor, or agent that fails a drug, alcohol, or substance abuse test shall not be allowed to return to the Authority's Premises until the Contractor provides written verification to the Authority that the employee has passed a subsequent test and is appropriately rehabilitated. Provided however, the Authority may require the removal from the jobsite any employee of a Contractor or subcontractor or agent if in the judgment of the Contracting Officer such removal is necessary to protect the interest of the Authority.

A copy of the Contractor, Subcontractor or Agent's Drug, Alcohol, and Unauthorized Substance Policy must be presented upon contract execution.

## **21. COMMUNICATION WITH AUTHORITY BOARD MEMBERS / EMPLOYEES / EVALUATION COMMITTEE MEMBERS**

To preserve the integrity of the procurement process, and unless otherwise instructed, all communication, written or oral, regarding any RFP, must be submitted through the Authority's Contract Services Manager. Any direct contact made by an Offeror with the Authority's Board Members, Officers, Directors, employees, or the

members of the Authority's Evaluation Committee concerning the procurement in an attempt to influence the procurement is prohibited and may be grounds for disqualification.

## **22. CONFIDENTIALITY**

Offerors are advised that any and all materials, information and documentation in any proposal submitted in connection with an RFP or an IFB may become a record of the Authority and may be subject to the provisions of Title 3 V.I.C. § 881, et seq. (Public Records Act). The Public Records Act requires disclosure of public documents upon request of any citizen unless the public document is deemed to be confidential or otherwise exempted by law. To date no court of law has ruled on the application of this law to independent instrumentalities such as the Authority. "Confidential Information" includes all technical business, personnel, taxpayer, or other information including customer or client information and details of customer accounts, however, communicated or disclosed to the receiving party or its employees, relating to past, present, and future research, development and business activities of the disclosing party and that has been identified as "confidential". Both parties agree: (i) that the receiving party and its employees may disclose Confidential Information to others if required by law or with the prior written consent of the disclosing party; (ii) not to make use of Confidential Information other than for the performance of this Agreement; and (iii) that it will not use such information for its own advantage to the detriment of the disclosing party or its customers. Confidential information shall not include information which: (i) becomes generally available to the public (other than by the acts or omissions of the receiving party or its employees); (ii) was known prior to the date of this Agreement by "or becomes known to" the receiving party or its employees and was not obtained from any person under any obligation of confidentiality to the disclosing party, (iii) is independently developed by the receiving party; or (iv) is required to be disclosed pursuant to legal process or regulation.

## **23. CONTRACT EXECUTION**

The final contract sent to the Offeror for execution must be executed and returned to the Division of Contract Administration within seven (7) business days of receipt. Failure by the Offeror to return the executed contract within the stated time may result in the contract award being rescinded. It is the responsibility of the Offeror to advise in a timely fashion the Authority of any issues affecting contract execution so that the parties may discuss additional time for execution.

## **24. NOTICE TO PROCEED**

The Notice to Proceed contains the commencement date of the contract work. The Notice to Proceed form must be executed and a copy presented to the Manager of Contract Administration prior to the final execution of the contract by the Authority's Contracting Officer.

## **25. UTILIZATION OF SMALL, MINORITY, and WOMEN's OWNED ENTERPRISES**

Contractor shall, to the greatest extent feasible, comply with Section 3 of the Housing and Urban Development Act of 1968, in the procurement of subcontractors, and/or other third-party entities for any project or objective outlined in this Agreement, and ensure compliance to utilize small businesses, minority-owned firms, and women's business enterprises whenever possible, to the extent feasible and report results as required. For work performed in the Virgin Islands, Contractor shall utilize in the procurement of subcontract for goods and services, the attached listing of DBE/SBA business. Contractor shall also ensure similar requirements to small businesses, minority-owned firms, and women's business enterprises are provided in its contracts or subcontracts etc.

## **26. COVID-19 REQUIREMENTS**

The Contractor shall, during the pendency of this Contract develop a plan to ensure the health and safety of its workforce during the COVID-19 Pandemic. The Authority recommends the Contractor utilize the CDC referenced guidance documents in the preparation of its plan. At execution of this Contract, the Contractor shall present the Authority with a copy of its COVID-19 plan.

The Contractor's employees performing work for the Authority are required to adhere to the attached Contractor COVID-19 Protocols, a copy of which is attached hereto and made a part of this agreement as Appendix D. Each employee of the Contractor performing work for the Authority who has traveled within the past three (3) months or has recently arrived in the Territory must fill out Appendix D form, which form must be submitted to the Authority's Human Resources Department.

The Contractor, with no exception, will be responsible for ensuring compliance with all the requirements stated herein.

## **IV. SPECIAL PROVISIONS**

### **1. SCOPE OF THE SECTION**

The special provisions are intended as supplements or modifications to the Instruction to Offerors, General Contract Terms, or the Scope of Work sections. In the event that the special provisions conflict with any previous section of this RFP, , the provisions of this section shall govern.

### **2. ORDER OF WORK**

The Work referred to in this RFP is divided into different items related but not required to be performed in the stated order.

### **3. COOPERATION WITH OTHERS**

The Contractor shall coordinate with the Project Coordinator regarding all of the work during the project execution. Contractor shall coordinate his/her work with other contractors on-site in order to complete the work in an orderly and timely manner. All work shall be performed or executed without interfering with the normal operations of the Authority's system and equipment. If at any time during the course of the project, any portion of the work cannot be performed without shutting down the Authority's system or equipment, the Contractor shall discuss this phase of the work with the Project Coordinator in order to determine when such shutdown should occur and its duration. No valves shall be operated under any circumstances by the Contractor. Request for opening or closing of any valves shall be submitted in writing to the Project Coordinator one day in advance to ensure proper coordination with plant operation personnel.

### **4. PRE-CONSTRUCTION CONFERENCE**

Upon award of the Contract, the Authority will schedule a pre-construction conference. This conference must be attended by the Contractor(s), Subcontractor(s), and the Authority's representatives. The purpose of the pre-construction conference is to review the project scope, determine the project schedule, and discuss problems that may be encountered.

### **5. SPECIFICATIONS**

Codes and Standards: The Work shall be performed in accordance with all current applicable OSHA standards and with all the federal and local Codes and standards as they are deemed applicable to the Project. The Codes

and Standards utilized shall be the latest edition in effect on the date of preparing the Project Proposal. The listing of Codes and Standards is in Appendix 1.

## **ASTM Standards**

ASTM C 150 Portland Cement

ASTM C 33 Aggregate, uniformly graded from a single source

ACI 301 Specifications for Structural Concrete

ACI 117 Specifications for Tolerances for Concrete Construction and Materials

Manufacturer's Specifications: All manufactured materials, and/or equipment offered by the Offeror and its vendors shall be in accordance with the design criteria and shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the manufacturer's specifications and instructions, unless herein specified otherwise.

## **6. PROJECT MANAGER**

The Offeror shall provide the Authority with the name and resume of the project manager who shall be the main contact during execution of the project.

## **7. DRAWINGS**

Drawings attached to the RFP Document are as follows:

Hannah's Rest Rehabilitation Drawing Set  
P00 Overall Site Plan/Legend Sheet/General Notes  
P01 Hannah's Rest Soil Map  
P02 Proposed Water Service Line Layout  
P03-05 Plan and Profile Stoney Ground A  
P06-08 Plan and Profile Stoney Ground B  
P09-10 Plan and Profile Stoney Ground C  
P11-12 Plan and Profile Stoney Ground D  
P13-14 Plan and Profile Stoney Ground F  
P15-16 Plan and Profile Stoney Ground E  
P17-23 Plan and Profile Hannah's Rest  
D01-08 Details  
T01 Traffic Control Plan  
T02 Traffic Control Details

## **8. GENERAL QUALITY OF MATERIAL AND WORKMANSHIP**

Unless otherwise specifically stated, the Contractor shall provide and pay for materials, labor, tools, equipment, transportation, supervision and temporary construction of any nature, and other services and facilities of any nature, whatsoever necessary, to execute, complete and deliver the work within the specified time. All material and equipment shall be new and of quality specified. In the absence of any specification, the best available grade and quality shall be proposed.

## **8. MATERIAL SUPPLIED BY CONTRACT**

When material or equipment is specified by the brand name it is for the purpose of standardization and the Contractor may offer material or equipment of equal or better quality and performance in substitution for those specified which he considers would be in the Authority's interest to accept. The changes shall be proposed and stated at the time of proposing along with the associated cost and shown on the Proposal Form under the PROPOSED CHANGES.

## **10. QUALITY IN ABSENCE OF DETAILED SPECIFICATIONS**

Where the project requires that materials or equipment be provided or that construction work be performed, and a detailed specification of such materials, equipment or construction work are not set forth, the Contractor shall perform the Work using materials and equipment of the best grade in quality and workmanship obtainable in the market, from firms with established good reputations, and shall follow standard practices in the performance or construction work. The work performed shall be in conformity and harmony with the intent to secure the standard of construction and equipment of work as a whole and in part.

## **11. SUBCONTRACTORS**

The Offeror shall list in its Proposal suggested subcontractors for the principal parts of the work and a brief description of the work to be performed by them. The Authority reserves the right to approve or reject all subcontractors. Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the Authority. The selected Offeror shall assume the responsibility to bind every subcontractor by the terms of the contract and to the Drawings and Specifications applicable to his work. Offeror shall submit at contract execution copies of the business licenses for all subcontractors performing work in the Virgin Islands.

## **12. PROOF OF COMPETENCY OF OFFEROR**

Offeror is required to fill and return the attached Questionnaire in order to furnish satisfactory evidence of sufficient means and experiences in the areas of work called for to assure completion of Project in the satisfactory manner.

## **13. GUARANTEE**

The Contractor shall guarantee the Work against any defect in material or workmanship including protective coating for a period of at least one (1) year from the date of Work acceptance. In case any such defects shall appear and is reported in writing to the Contractor during the guarantee period, the Contractor shall be liable for all expenses incurred in making the necessary repairs.

## **14. AS-BUILT DRAWINGS**

The Contractor shall submit a set of drawings, which depicts the actual as-built conditions of the completed construction that provides the Authority with a permanent record of each project feature and all changes and clarifications to the project design. The contractor shall prepare and maintain a set of working as-built drawings during the course of construction that must be reviewed by the Authority's representative on a monthly basis. Within 60 days of the project's completion and final approval of the working as-built drawings the contractor shall submit the CADD system drawings in electronic and hard copy format.

## **15. REPORTS**

The Contractor shall submit daily/weekly job progress reports detailing activities. Completion percentages, major problems and actions taken to resolve them, and injury reports shall be included.

## **16. PROGRESS MEETINGS**

The Contractor shall also have weekly meetings with the Authority's representative. Said meeting may occur less frequently upon the consent of the Authority.

## **17. TIME AND EQUIPMENT RATES**

In the event that the Authority requires additional services over and above the contractual scope specified herein, proposals shall include applicable rates for labor and services.

## **18. ACCEPTANCE OF WORK**

Acceptance shall be made through Authority's assigned personnel.

## **19. WORKMANSHIP**

All Work is to be accomplished in a good workmanlike manner and with first class workmanship. All work shall be free of defects or faults and meet or exceed the Authority's requirements.

## **20. ADDITIONAL REQUIREMENTS**

Upon award of Contract, the Contractor shall be responsible for obtaining all licenses necessary to perform the work in the U.S. Virgin Islands in compliance with established laws, regulations and standards and for the completion of the scope of work identified in Contract Documents. The Authority will be responsible for obtaining permits for this project.

## **21. SECURITY**

The Contractor is responsible for always maintaining security at the project site. All stored material and equipment must be secured against unauthorized use. Obtaining an area to store materials, equipment and soil is the responsibility of the Contractor and any materials, equipment and soil stored on any property without authorization shall be resolved solely by the Contractor.

## **22. SAFETY**

The Contractor shall provide copies of their Safety Program and OSHA 200 Log dating back five (5) years. The Contractor shall follow safe working practices and procedures which he has developed according to the guidelines given in AWWA standards and Safe Water Drinking Act and regulations of the U.S Environmental agency. The Contractor shall take all necessary precautions and provide all necessary safeguards to prevent personal injury and property damage. The Contractor shall provide protection for all persons including but not limited to his employees and employees of other contractors or subcontractors; members of the public; and employees, agents, and representatives of the Owner, and regulatory agencies that may be on or about the Work.

The Contractor shall provide and maintain all necessary safety equipment such as barriers, signs, lights, walkways, guards and fire prevention and firefighting equipment and shall take such other action as is required to fulfill his obligation.

The Contractor shall comply with all applicable Federal and Local laws, ordinances, rules and regulations and lawful orders of all authorities having jurisdiction for the safety of persons and protection of property.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This responsible person shall have the authority to take immediate action to correct unsafe or hazardous conditions and to enforce safety precautions and programs.

### **23. MATERIAL SAFETY DATA SHEETS**

The Contractor shall be responsible for supplying Material Safety Data Sheets (M.S.D.S.) for all material brought on site. A copy of all M.S.D.S. sheets shall be provided to WAPA's Project Coordinator prior to bringing the materials on site.

### **24. TEMPORARY CONTROLS**

#### **A. NOISE CONTROL**

The Contractor shall provide adequate protection against objectionable noise levels caused by the operation of construction equipment at all times.

#### **B. DUST CONTROL**

The Contractor shall provide adequate protection against raising objectionable dust clouds caused by moving construction equipment, high winds, or any other cause.

#### **C. TRAFFIC CONTROL**

The Contractor shall prepare and submit a traffic control plan to the Department of Public Safety and the Authority for review and approval.

#### **D. OVERALL PROTECTION**

The Contractor shall provide for the necessary and proper protection of existing facilities, and the work area to prevent nuisance or damage to adjacent property and vehicular traffic from abrasive debris, paint overspray, etc. and shall be solely responsible for any damage resulting there from.

#### **E. ENVIRONMENTAL**

The Contractor shall evaluate and assess the impact of any adverse effects on the natural environment which may result from construction operation and shall operate to minimize pollution of air, ground or surface water and vegetation, and afford the neighboring community the maximum protection during and upon completion of the project work.

All chemicals or chemical residues present in the work area must be handled during the work execution and disposed of according to the latest EPA regulations. All the chemicals used during construction or furnished for project completion must show approval of either EPA or USDA. Use of all such chemicals and disposal of chemical residues shall be in strict conformance with instructions and EPA requirements.

## **25. INCLEMENT WEATHER**

Within ten (10) days of the date of the Notice to Proceed, the Contractor shall submit to the Owner a Plan which outlines necessary measures which the Contractor proposes to perform at no additional cost to the Owner in case of inclement weather.

The Contractor will, and will cause Subcontractors too, take every practicable precaution to minimize danger to persons, to the Work, the work site and to adjacent property and protect carefully the work and materials against damage or injury to personnel from the weather. These precautions shall include closing all openings, removing or securing all loose materials, tools and/or equipment from exposed locations.

If, in the opinion of the Owner, any portion of work or materials have been damaged or personnel injured by reason of failure on the part of the Contractor or any Subcontractors to so protect the work and the work site such work and material shall be removed and replaced at the expense of the Contractor. This requirement shall apply to all inclement weather be they normal, unusual or otherwise.

## **26. HARD HAT, SAFETY SHOES AND OTHER SAFETY EQUIPMENT POLICY**

Hard hats, safety shoes and other safety equipment shall be worn at the work site by all personnel at all times. The Owners Project Coordinator is authorized to halt the work if this requirement is not met.

## **27. SITE CLEAN-UP**

Upon completion of his work each day, the Contractor shall remove from the site all rubbish and excess material resulting from his work. At the completion of the project, the Contractor shall perform a comprehensive clean-up of the entire project site.

## **28. BUSINESS LICENSE**

Required Virgin Island Licenses must be in place at contract execution, not necessarily at the time of proposal. Response in the Proposal Form should reflect the status of the license, if license number is not available.

## **29. CONFLICT OF INTEREST**

No member of the governing body of the Authority or other unit of government and no other officer, employee, or agent of the Authority or other unit of government who exercises any functions or responsibilities in connection with the carrying out of the project shall have any personal interest, direct or indirect, in the Contract.

## **30. PAYMENT FOR CHANGES**

The Authority reserves the right to remove or add any proposal item at its exact value noted on the Proposal Schedule throughout the course of the work. Additional work which results from changes made in accordance with the provisions set forth under "Changes" in the General Contract Terms will be paid for:

- (1) On a fixed price basis offered by the Contractor and accepted by the Authority, or
- (2) On applicable rates for labor, services and equipment included with the original Proposal.
- (3) On applicable unit price cost noted in the original proposal.

## V. SCOPE OF WORK

### A. GENERAL DESCRIPTION

The scope of the work for this project includes the supply and installation of 10,500 LF of 6-inch C-900 PVC DR-14 water main for the completion of the Hannah's Rest Waterline Rehabilitation Project to include all materials, equipment, and labor. All of the work must comply with applicable federal, territorial, local laws, codes, orders and regulations. The contractor/offeror shall supply all the manpower, materials, tools, equipment, safety devices, knowledge, experience, and supervision to complete the project as shown on proposal drawing and noted in specifications but not limited necessarily to the following description:

#### A. Verification of Existing Utilities

Representations of existing utilities, facilities, and structures in the Contract Documents are based upon the best available information. The Owner and the Engineer will not be responsible for the completeness or accuracy thereof nor for any deductions, interpretations, or conclusions drawn there from. The Contractor shall verify to his own satisfaction by test pit, line tracing, or other means, the actual location of existing utilities prior to construction in their vicinity.

The Contractor shall identify all existing Service connections, tees, valves, and other appurtenances in the project area. The Contractor shall verify the actual location of the existing waterline and fittings.

#### B. Water Main Installation

- I. Supply and install +/- 10,500 LF of 6" AWWA C-900, DR-14 PVC Water Main pipes according to the specifications in the drawings to include excavation, backfill, compaction, base, fittings, testing, etc. and all labor, equipment, and material for a complete job in place.
- II. Supply and install twelve (12) 6-inch AVK Gate Valve to include Valves, Resilient seat & valve risers to complete in place as specified and/or shown on the drawing, including excavation, compaction, restraining devices (as required), Base, paving, valve box, and cover, etc. and all labor, equipment, and material for a complete job in place.
- III. Supply and install one hundred and forty-one (141) 6-inch x 1 inch and four (4) 6-inch x 2 inch Service Connections furnished and install as specified and/or shown on the drawings, including corporation stops, curb stops, to include gate and check valve for existing customers, excavation, and compaction. Also including all minor materials, road resurfacing, curb replacement, repair concrete driveway pressure/leakage testing, and flushing. All labor, equipment, and material for a complete job in place. If there are more than three meters the service connections will be 6-inch x 2 inch.
  - a. One hundred and forty-one (141) 6-inch x 1 inch and four (4) 6-inch x 2 inch and Supply and replacement for all the meter boxes for existing 5/8" x 3/4" to include customer gate and check valve including the excavation and sidewalk repair. As shown in the drawings.
  - b. Supply and install four (4) air release valves as shown on the in the drawings and outlined in the specifications.
- IV. Supply and install seven (7) tie ins at the crossroads as specified and/or shown on the drawings, including excavation, bedding, backfill, compaction, base, fittings, testing, capping of existing waterline to be abandoned, and all labor, equipment, and material for a complete job in place.

- V. Supply and install new flushing fire hydrant assembly along with associated appurtenances and as shown on the drawings including removal of old hydrants, excavation, compaction, base, fittings, testing, etc. and all labor, equipment, and material for a complete job in place.
  - a. Supply and install nine (9) 6" gate valves and **Fire Hydrant Assembly** to new water main according to the specifications.
  - b. Supply and install two (2) automatic flush points.
- VI. Supply and install two (2) new 2-inch service line(s) with new sample station(s) with all the details that specified in the drawings including excavation, compaction, base, fittings, testing, etc. and all labor, equipment, and material for a complete job in place.
- VII. Repair all asphalt (asphalt the trench and any areas will be damaged by the work), driveways, curbs and sidewalks including bedding, backfill, compaction, testing, and all labor, equipment, and material for a complete job in place.
- VIII. Cut existing water mains and laterals and install end caps as shown on the project drawings. Abandon Pipes in place unless they need to be removed to allow for installation of the new pipes. Remove the old valves covers (entire project). For the whole entire proposed project area.
- IX. Detailed permanent record of each project feature and all changes and clarifications to the project design (whole entire project). To include As Built and GIS Records.

## **B. FURNISHED BY CONTRACTOR**

- 1. The Contractor shall meet with a representative of VIWAPA once a week or as often necessary, and as determined by the Authority, to inspect the progress of Work.
- 2. The Contractor shall be responsible for all dewatering at project site(s).
- 3. The Contractor shall be responsible for traffic control.
- 4. The Contractor shall furnish supervision and give adequate advance notice if assistance is required while working around VIWAPA's system at the project site.
- 5. The Contractor shall be held responsible for complete repair and/or replacement for any damage to all property directly attributable to Offeror.
- 6. Damages to utilities and property caused by the Contractor shall be immediately repaired by the Contractor's own expense.
- 7. The Contractor shall provide specifications data sheets, covering all materials, devices and appurtenances to be incorporated in the project for the review and approval of the Authority.
- 8. The Contractor shall complete all work with minimum disruption or inconvenience to the individuals utilizing the project area.

9. The Contractor shall restore the project areas to their preconstruction condition and clean them of all construction debris. Construction debris shall be disposed of in an environmentally acceptable manner unless VIWAPA requests it for use.
10. The Contractor shall coordinate work with Public Works Department, Planning and Natural Resources, Police Department, and other local government agencies with jurisdiction over the area being impacted.
11. The Contractor shall furnish adequate technical and supervisory personnel, materials, tools and all necessary equipment to complete the project described in these specifications with the time specified. Safety devices and signs shall be furnished by the Contractor at each job site.
12. Acceptance of the work shall be made through VIWAPA's assigned personnel.
13. The Contractor will be responsible for and pay the cost of replacing or resetting valve boxes, meter boxes, fire hydrants, service connections and any other devices damaged, disturbed, or removed by the Contractor in the course of the project.
14. The Contractor shall be responsible for initiating, maintaining and supervising safety precautions and programs in connection with the work.

## PROPOSAL FORM

### OFFER

Name of the Offeror: \_\_\_\_\_  
(Individual, Partnership, or Corporation, as case may be)

Date of Offer: \_\_\_\_\_

To: **The Virgin Islands Water & Power Authority**

Pursuant to and in compliance with the Request for Proposal and other Contract Documents relating to the following:

### **HANNAH'S REST WATERLINE REHABILITATION PROJECT**

The undersigned, having carefully read, examined and having become familiar with the proposed project, scope of work, and local conditions affecting the performance and cost of the work at the proposed work-site; hereby, proposes and agrees to fully perform the work in accordance with the proposed contract documents. This includes furnishing all labor, materials, tools, supervision, equipment, and insurance necessary to complete said project in accordance with the contract documents.

The above-named Offeror affirms and declares that:

1. The Offeror is of lawful age and that no other person, firm, or corporation has any interest in this Proposal or in the Contract proposed to be entered into. This Proposal is made without any understanding, agreement or connection with any other person, firm, or corporation making a Proposal for the same purposes and is in all respects fair and without collusion or fraud.
  - a. The Offeror is not in arrears to the Virgin Islands Water & Power Authority, upon debt or contract, and is not a defaulter, as surety or otherwise, upon any obligation to the Virgin Islands Water & Power Authority.
2. No officer, employee or person whose salary is payable in whole or in part from the Virgin Islands Water & Power Authority currently is, shall be, or will become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise, in this Proposal, in the performance of the Contract, in the supplies, materials, equipment, work, or labor to which it relates, or in any portion of the profits thereof.
3. The Offeror has carefully examined the site of the work and, from his own investigations, has satisfied himself as to the nature and location of the work; the character, quality, and quantity of materials; the kind and extent of equipment and other facilities needed for the performance of the work; the general and local condition and all difficulties to be encountered; and all other items which may, in any way, affect the work or its performance.
4. All proposals shall remain firm for a period of ninety (90) days following the proposal submittal date.
5. The undersigned, as Offeror, also declares that he has carefully examined and fully understands all the component parts of these Contract Documents and agrees that he will execute the Contract and furnish the required Performance Bond and will completely perform the work in strict accordance with the terms of the Contract and the Contract Documents therein referred to for the following prices, to wit:

## **PROPOSAL SCHEDULE**

(Note: Offeror must indicate pricing for each item listed. All entries entered on the proposal schedule must be made carefully and in ink; proposal prices must be written in numerical figures for each line item. Failure to follow this guideline is cause for immediate disqualification from this RFP.)

### **Proposal Form 1 – Hannah’s Rest:**

<b>ITEM NO.</b>	<b>ESTIMATED QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST (\$)</b>	<b>DESCRIPTION</b>	<b>TOTAL COST (\$)</b>
<b>1. WATER MAIN</b>				Water main installed as specified and/or shown on the drawings, including excavation, backfill, compaction, base, fittings, testing, etc. and all labor, equipment, and material for a complete job in place.	
1a.	+/- 10,363	L.F.		6-inch AWWA C-900, DR-14, PVC Water Main	
<b>2. VALVES</b>				Valves, Resilient seat complete in place as specified and/or shown on the drawing, including excavation, compaction, restraining devices (as required), Base, paving, valve box, and cover, etc. and all labor, equipment, and material for a complete job in place.	
2a.	21	EA		6-inch AVK Gate Valve (Total valves shown in the drawings)	
<b>3. SERVICE CONNECTIONS</b>				Service connections furnished and installed as specified and/or shown on the drawings, including corporation stops, curb stops, to include gate and check valve for existing customers, excavation, and compaction. Also including all minor materials, road resurfacing, curb replacement, repair concrete driveway pressure/leakage testing, and flushing. All labor, equipment, and material for a complete job in place. More than 3 meters the service connections will be 6-inch x 2- inch	
3a.	141	EA		6-inch x 1-inch service connections	
3b.	4	EA		6-inch x 2-inch service connections	

ITEM NO.	ESTIMATED QUANTITY	UNIT	UNIT COST (\$)	DESCRIPTION	TOTAL COST (\$)
3c.	189	EA		Supply and replacement of meter boxes for existing 5/8" x 3/4"to include customer gate and check valve	
3d.	4	EA		Air release valves as shown on the in the drawings and outlined in the specifications	
<b>4. TIE-INS</b>				Supply and install as specified and/or shown on the drawings, including excavation, bedding, backfill, compaction, base, fittings, testing, capping of existing waterline to be abandoned, and all labor, equipment, and material for a complete job in place.	
4a.	7	EA		Tie-ins at cross streets	
<b>5. HYDRANT &amp; FLUSHING POINT</b>				Tie in to flushing hydrant assembly along with associated appurtenances and as shown on the drawings, including excavation, compaction, base, fittings, testing, etc. and all labor, equipment, and material for a complete job in place.	
5a.	9	EA		Complete installation new Fire Hydrants 6" gate valve and <b>Fire Hydrant Assembly</b> to new water main.	
5b.	2	EA		Complete installation new Automatic flush out as shown in the drawing	
<b>6. SAMPLE STATION</b>					
6a.	2	EA		Install new 2' service line with new sample station with all the details that specified in the drawings	
<b>7. ROAD REPAIR</b>				Repair all asphalt (asphalt the trench and any areas will be damaged by the work), driveways, curbs and sidewalks including bedding, backfill, compaction, testing, and all labor, equipment, and material for a complete job in place.	
7a.	1	LS		Asphalt Installation and Curb/Sidewalk Repair (asphalt the trench and any area damaged by the work).	

ITEM NO.	ESTIMATED QUANTITY	UNIT	UNIT COST (\$)	DESCRIPTION	TOTAL COST (\$)
<b>9. Rock Excavation</b>				Removal and disposal of rock encountered during construction. Rock removal shall conform to Specification Section 02316 Rock Removal.	
8a.	1500	CY		Removal and disposal of rock (entire project).	
<b>10. Contingency</b>				Such as: leaks could happen in the existing lines from the construction work in the area, isolating some main lines and after that figure out that some customers out of service ...etc	
9a.	10%	LS			
<b>11. CUT, CAP, &amp; ABANDON IN PLACE</b>				Cut existing water mains and laterals and install end caps as shown on the project drawings. Abandon Pipes in place unless they need to be removed to allow for installation of the new pipes. Remove the old valves covers (entire project). For the whole entire proposed project area.	
10a.	7	EA		End Caps	
<b>11. AS-BUILTS AND GIS</b>				Detailed permanent record of each project feature and all changes and clarifications to the project design (entire project).	
11a.	1	LS		As-Built	
11b.	1	LS		GIS Records	
<b>TOTAL</b>					

**PLEASE SUBMIT THE FOLLOWING INFORMATION WITH YOUR PROPOSAL**

**Total Lump Sum Proposal Price:**

\$ \_\_\_\_\_

(Offeror must fill in the amount in words)

\$ \_\_\_\_\_

(Offeror must fill in the amount in figures)

**ADDENDA**

The following Addenda have been received. The modifications to the Proposal Documents noted below have been considered and all costs are included in the Proposal Price.

Addendum No. \_\_\_\_\_ Addendum No. \_\_\_\_\_

Addendum No. \_\_\_\_\_ Addendum No. \_\_\_\_\_

(Insert addendum(a) numbers and initial)

**Acceptance**

This offer shall be open to acceptance for ninety (90) days from the date of proposal opening.

**Contract Duration**

If this Proposal is accepted, we will complete the Work in \_\_\_\_\_ (\_\_\_\_\_) calendar days from Notice to Proceed.

**Principals Involved**

(If Offeror is a partnership, fill in the following blanks)

Name of Partners

Residence of Partners

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(If Offeror is a corporation, fill in the following blanks)

Organized under the laws of the State of \_\_\_\_\_

Name and address of President \_\_\_\_\_

\_\_\_\_\_

Name and address of Vice-President \_\_\_\_\_

\_\_\_\_\_

Name and address of Secretary \_\_\_\_\_

Name and address of Treasurer \_\_\_\_\_

**Proposal Form Signature(s):**

\_\_\_\_\_

(Name of Offeror)

\_\_\_\_\_

Dated

\_\_\_\_\_

(Address of Offeror)

\_\_\_\_\_

(City, State, Zip)

\_\_\_\_\_

(Telephone)

BY: \_\_\_\_\_

(Signature)

\_\_\_\_\_

(Title)

Where Offeror is a corporation:

Attest: \_\_\_\_\_

(Secretary)

AFFIX CORPORATE SEAL

**QUESTIONNAIRE**

(Mandatory)

The undersigned guarantees the truth and accuracy of all statements and answers herein contained. Include additional sheets if necessary.

1. How many years has your organization been in business as a General Contractor, Sub-Contractor? (circle one). \_\_\_\_\_ Years
2. Within the past five years, how many Construction projects equal to or greater than this project has your organization completed? \_\_\_\_\_
3. Have you ever failed to complete work per Contract Specifications or within the time limits of a Contract awarded to you, if so, where and why?  
\_\_\_\_\_  
\_\_\_\_\_
4. Name three individuals or corporations for which you have performed related work and to which you refer.  
\_\_\_\_\_  
\_\_\_\_\_
5. Have you personally inspected the site of the proposed work? \_\_\_\_\_ Describe any anticipated problems with the site and your proposed solutions.  
\_\_\_\_\_  
\_\_\_\_\_
6. Will you sublet any part of this work? \_\_\_\_\_ If so, give details.  
\_\_\_\_\_  
\_\_\_\_\_
7. What equipment do you own that is available for the work?  
\_\_\_\_\_  
\_\_\_\_\_
8. What equipment will you purchase for the proposed work?  
\_\_\_\_\_  
\_\_\_\_\_
9. What equipment will you rent for the proposed work?  
\_\_\_\_\_  
\_\_\_\_\_
10. Have you included any exceptions with your proposal? \_\_\_\_\_
11. Have you included a Preliminary Project Schedule with your proposal? \_\_\_\_\_
12. Have you included the professional resume of your intended Project Manager with your proposal?  
\_\_\_\_\_
13. State the true, exact, correct, and complete name of the partnership, corporation or trade name under which you do business, and the address of the place of business. (If a corporation, state the name of the President and Secretary. If a partnership, state the names of all partners. If trade name, state the names of the individuals

who do business under the trade name. It is absolutely necessary that this information be furnished.)

\_\_\_\_\_

(Correct Name of Offeror)

The business is a Sole Proprietorship, Partnership, or Corporation? (circle one)

- a) The address of principle place of business is \_\_\_\_\_
- b) The names of the corporate officers, or partners, or individuals doing business under a trade name are as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

(Offeror's Signature)

**END OF PROPOSAL FORM**

## **Table of Contents**

### **Section 01000 – General Specifications**

1. Definitions
2. Abbreviations
3. Handling and Distribution
4. Materials - Samples - Inspection
5. Contractor's Shop and Working Drawings
6. Occupying Private Land
7. Interference with and Protection of Streets
8. Storage of Materials and Equipment
9. Safety
10. Sanitary regulations
11. Lines, Grades and Measurements
12. Dimensions of Existing Structures
13. Work to Conform
14. Pipe Location
15. Limits of Normal Excavation
16. Computation of Quantities
17. Planning and Progress Schedules
18. Precautions during Adverse Weather
19. Electrical Energy
20. Protection against Electrolysis
21. Record Contract Drawings

### **Section 01005 – Miscellaneous Requirements**

1. General
2. Traffic Control
3. Interference with Existing Works
4. Maintaining Water, Fire, and Sewage Flows
5. Buried Utility Warning and Identification Tape
6. Existing Utilities

### **Section 01150 – Measurement and Payment**

1. General
2. Waterline: 4-inch to 12-inch
3. Valves: 4-inch to 12-inch
4. Service Connections and 2-inch Air / V.R. Valve
5. Fire Hydrants Stub outs /Connections
6. Cleanup and Maintenance
7. Proposal Schedule

### **Section 01500 – Temporary Facilities**

1. General
2. Water Supply
3. Project Sign
4. Contractor's Field Office

#### Section 01568 – Erosion Control, Sedimentation and Containment of Construction Materials

1. General
  - 1.1 Description
  - 1.2 Quality Assurance
  - 1.3 Submittals
2. Products
  - 2.1 Bales
  - 2.2 Wood Stakes
  - 2.3 Plastic Sheeting
3. Execution
  - 3.1 General
  - 3.2 Installation

#### Section 01620 – Transportation and Handling

1. General
2. Transportation
3. Handling

#### Section 01630 – Storage and Protection

1. General
2. Storage
3. Extended Storage

#### Section 01710 – Cleaning Up

#### Section 01730 – Guarantees and Warranties

1. General
2. Start-Up of Operable Components

#### Section 02100 – Site Preparation

#### Section 02210 – Earth Excavation, Backfill, Fill, and Grading

#### Section 02211 – Rock Excavation and Disposal

#### Section 02500 - Paving

#### Section 02501 – Sidewalks, Curbs, and Gutter

#### Section 02615 – Ductile-Iron Pipe and Fittings

1. General
  - 1.1 Description
  - 1.2 References
  - 1.3 Related Work
  - 1.4 Submittals
  - 1.5 Quality Assurance
2. Products
  - 2.1 Pipe
  - 2.2 Fittings
  - 2.3 Nonstandard Fittings
  - 2.4 Joints - Types
  - 2.5 Sleeve Type Couplings
  - 2.6 Fillings Rings
  - 2.7 Connections - Tapped
  - 2.8 Standard Lining and Coating
  - 2.9 Gaskets, Bolts and Nut
3. Execution
  - 3.1 Inspection Before Installation
  - 3.2 Handling and Cutting
  - 3.3 Installation
  - 3.4 Joint and Couplings
  - 3.5 Testing
  - 3.6 Disinfecting and Flushing

#### Section 02623 – PVC Pressure Pipe

1. General
  - 1.1 Description
  - 1.2 Related Work
  - 1.3 Quality Assurance
  - 1.4 References
  - 1.5 Submittals
2. Products
  - 2.1 Pipe, Fittings, and Specials
  - 2.2 Joints
3. Execution
  - 3.1 Inspection
  - 3.2 Handling
  - 3.3 Installation
  - 3.4 Testing
  - 3.5 Disinfecting and Flushing

#### Section 02713 – Water Service Connections

1. General
  - 1.1 Description
  - 1.2 Related Work
  - 1.3 References

- 1.4 Submittals
- 1.5 Quality Assurance
- 1.6 Safety
- 2. Products
  - 2.1 Service Tubing
  - 2.2 Corporation Stops
  - 2.3 Pipe Saddles
  - 2.4 Check Valve, Meter and Meter Box
  - 2.5 Branch Connections
  - 2.6 Curb Stops
- 3. Execution
  - 3.1 Service Piping
  - 3.2 Corporation Stops, Curb Stops, Saddle, Meter and Meter Box
  - 3.3 Branch Connections

#### Section 02951 – Steel and Ductile Iron Casing Pipe

- 1. General
  - 1.1 Scope
  - 1.2 Shop Drawings and Engineering Data
  - 1.3 Storage and Delivery
- 2. Products
  - 2.1 Steel Casing Pipe
  - 2.2 Ductile Iron Casing Pipe
  - 2.3 Seals
- 3. Execution
  - 3.1 General

#### Section 03346 – Cast-In-Place Concrete

#### Section 15101 – Gate Valves, Hydrants, and Appurtenances

- 1. General
  - 1.1 Description
  - 1.2 Related Work
  - 1.3 Quality Assurance
  - 1.4 References
  - 1.5 Submittals
- 2. Products
  - 2.1 Gate Valves 4-in and larger
  - 2.2 Gate Valves 3-in and smaller
  - 2.3 Butterfly Valves - Liquid Service
  - 2.4 Tapping Sleeves & Valves
  - 2.5 Cutting-In Valves
  - 2.6 Air & Vacuum Release Valves
  - 2.7 Fire Hydrants
  - 2.8 Valve Boxes
  - 2.9 T-Handle Operating Wrenches
  - 2.10 Painting

- 3. Execution
  - 3.1 General
  - 3.2 Gate Valves
  - 3.3 Valve Boxes
  - 3.4 Butterfly Valves
  - 3.5 Fire Hydrants

Appendix A – Hydrostatic Testing

Appendix B – Driveway Cut and Patch Specifications

Appendix C - Material/Equipment Specification Sheets

# **SECTION 01000**

## **GENERAL SPECIFICATIONS**

### **1. DEFINITIONS**

Wherever the words defined in this section or pronouns used in their stead occur in the Contract, they shall have the meanings herein given.

#### **1.1 As Directed, as Required, etc.**

Wherever in the Contract, or on the Drawings, the words "as directed," "as ordered," "as requested," "as required," "as permitted," or words of like import are used, it shall be understood that the direction, order, request, requirement, or permission of the Engineer is intended. Similarly, the words "approved," "acceptable," "suitable," "satisfactory," and words of like import shall mean approved by, acceptable to, suitable to, or satisfactory to the Engineer.

#### **1.2 Elevation**

The figures given on the Drawings or in the other Contract after the word "elevation" or abbreviation of it shall mean the distance in feet above the datum adopted by the Engineer.

#### **1.3 Rock**

The word "rock", wherever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding 1 cu. yd. in volume, or solid ledge rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledge, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with a hand pick or power-operated excavator or shovel, or loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed as "rock".

#### **1.4 Earth**

The word "earth", wherever used as the name of an excavated material or material to be excavated, shall mean all kinds of material other than rock as above defined.

### **2. ABBREVIATIONS**

Where any of the following abbreviations are used in the Contract, they shall have the meaning set forth opposite each.

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
FP-14	Federal "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects" 1996, by the Federal Supply Services of the General Services Administration, Washington, D. C.
125-lb. ANSI	American National Standard for Cast-iron
250-lb. ANSI	Pipe Flanges and Flanged Fittings, Designation B16.1-1975, for the appropriate class
AWG	American or Brown and Sharpe Wire Gage
NPT	National Pipe Thread
NSI	National Sanitation Foundation
Stl. WG	U S Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
USS Gage	United States Standard Gage
WOG	Water, Oil, Gas
WSP	Working steam pressure

### **3. HANDLING AND DISTRIBUTION**

The Contractor shall handle, haul, and distribute all materials and all surplus materials from the different portions of the work, as necessary or required; shall provide suitable and adequate storage space for materials and equipment during the progress of the Work, and be responsible for the protection, loss of or damage to materials and equipment furnished by him, until the final completion and acceptance of the Work.

Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

#### **4. MATERIALS - SAMPLES - INSPECTION**

Unless otherwise expressly provided on the Drawings or in any of the other Contract, only new materials and equipment shall be incorporated in the Work. All materials and equipment furnished by the Contractor to be incorporated in the Work shall be subject to the inspection of the Engineer. No material shall be processed or fabricated for the Work or delivered to the Work site without prior concurrence of the Engineer.

As soon as possible after execution of the Contract, the Contractor shall submit to the Engineer the names and addresses of the manufacturers and suppliers of all materials and equipment he proposes to incorporate into the Work. When shop and working drawings are required as specified below, the Contractor shall submit prior to the submission of such drawings, data in sufficient detail to enable the Engineer to determine whether the manufacturer and/or the supplier have the ability to furnish a product meeting the Specifications. As requested, the contractor shall also submit data relating to the materials and equipment he proposes to incorporate into the Work in sufficient detail to enable the Engineer to identify and evaluate the particular product and to determine whether it conforms to the Contract requirements. Such data shall be submitted in a manner similar to that specified for submission of shop and working drawings. Facilities and labor for the storage, handling, and inspection of all materials and equipment shall be furnished by the Contractor. Defective materials and equipment shall be removed immediately from work site.

If the Engineer so requires, either prior to or after commencement of the Work, the Contractor shall submit samples of materials for such special tests as the Engineer deems necessary to demonstrate that they conform to the Specifications. Such samples shall be furnished, taken, stored, packed, and shipped by the Contractor as directed. Except as otherwise expressly specified, the Owner shall make arrangements for, and pay for, the tests.

All samples shall be packed so as to reach their destination in good condition, and shall be labeled to indicate the material represented, the name of the building or work and location for which the material is intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor shall notify the Engineer, by letter that the samples have been shipped and shall properly describe the samples in the letter. The letter of notification shall be sent separate from and should not be enclosed with the samples (properly described in the letter).

The Contractor shall submit data and samples, or place his orders, sufficiently early to permit consideration, inspection and testing before the materials and equipment are needed for incorporation in the Work. The consequences of the Contractor's failure to do so shall be his sole responsibility.

In order to demonstrate the proficiency of workmen, or to facilitate the choice among several textures, types, finishes, surfaces, etc., the Contractor shall provide such samples of workmanship of wall, floor, finish, etc., as may be required.

When required, the Contractor shall furnish to the Engineer triplicate sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials, equipment performance ratings, and concrete data.

After review of the samples, data, etc., the materials and equipment used on the Work shall in all respects conform therewith.

## **5. CONTRACTOR'S SHOP AND WORKING DRAWINGS**

The Contractor shall submit (in reproducible transparency form unless otherwise specified) shop and working drawings of concrete reinforcement, structural details, piping layout, materials fabricated especially for the Contract, and materials and equipment for which such drawings are specifically requested.

Such drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the Contract. As part of the shop drawing submittal, submit a list with the names, identification numbers, and quantities of spare parts, instruments, and equipment to be provided by the Contractor.

When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted in place of shop and working drawings. In such a case, the requirements shall be as specified for shop and working drawings, insofar as applicable, except that the submission shall be in quadruplicate.

The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the Work due to the absence of such drawings. Prior to the submittal of any shop drawings, the Contractor shall submit a schedule of proposed shop drawing transmittals. The schedule shall identify the subject matter of each transmittal, the corresponding specification section number and the proposed date of submission. During the progress of the Work, the schedule shall be revised and resubmitted as necessary.

No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.

Until the necessary review has been made, the Contractor shall not proceed with any portion of the Work or the design of any details, which are dependent upon the design, or details of work, materials, equipment or other features for which review is required.

All shop and working drawings shall be submitted to the Engineer by/or through the Contractor, who shall be responsible for obtaining the shop and working drawings. All shop and working drawings shall be prepared on standard size, 24-inch by 36-inch sheets, except those, which are made by changing existing standard shop or working drawings. All drawings shall be clearly marked with the names of the Owner, contractor, and building, equipment, or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by a Transmittal Form furnished by the Contractor giving a list of the drawing numbers and the names mentioned above.

Only drawings, which have been checked and corrected by the fabricator, should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor

shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings that are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.

If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in the Transmittal Form furnished by the Contractor and provide a description of the deviations in a letter attached to the submittal.

The review of shop and working drawings hereunder will be general only, and nothing contained in this GENERAL SPECIFICATION shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and, in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified hereunder.

The marked-up reproducible of the shop and working drawings or one marked-up copy or catalog cuts will be returned to the Contractor. The Contractor shall furnish additional copies of such drawings or catalog cuts when so required.

## **6. OCCUPYING PRIVATE LAND**

The Contractor shall not (except after written consent from the proper parties) enter or occupy with employees, tools, materials, or equipment, the land outside the rights-of-way without written consent of the property owner. A copy of the written consent shall be given to the Engineer.

## **7. INTERFERENCE WITH AND PROTECTION OF STREETS**

The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefore from the proper authorities. If any street, road or private way shall be rendered unsafe by the contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

Streets, roads, private ways, and walkways not closed shall be maintained passable and safe by the contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefore.

The Contractor shall, at least twenty-four (24) hours in advance, notify the Police (Traffic Division) and Fire Departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. He shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted in order to minimize confusion. The traffic signs shall conform to the Traffic Control Specifications hereafter described.

## **8. STORAGE OF MATERIALS AND EQUIPMENT**

All excavated materials and equipment to be incorporated in the work shall be stored so as not to injure any part of the Work or existing facilities and to ensure free access at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

## **9. SAFETY**

The Contractor shall take all necessary precautions and provide all necessary safeguards to prevent personal injury and property damage. The Contractor shall provide protection for all persons including but not limited to his employees and employees of other contractors or subcontractors; members of the public; and employees, agents, and representatives of the Authority, the Engineer, and regulatory agencies that may be on or about the Work. The Contractor shall provide protection for all public and private property including but not limited to structures, pipes, and utilities, above and below ground.

The Contractor shall provide and maintain all necessary safety equipment such as fences, barriers, signs, lights, walkways, guards and fire prevention and fire-fighting equipment and shall take such other action as is required to fulfill his obligations under this subsection.

The Contractor shall comply with all applicable Federal, State and local laws, ordinances, rules and regulations and lawful orders of all authorities having jurisdiction over the safety of persons and protection of property.

The contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This responsible person shall have the authority to take immediate action to correct unsafe precautions and programs.

## **10. SANITARY REGULATIONS**

The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such locations and in such a manner as may be required.

The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. The Contractor shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the property owner, or on adjacent property.

## **11. LINES, GRADES, AND MEASUREMENTS**

The Contractor shall employ a competent civil engineer, registered within the Virgin Islands as a Professional Engineer or Land Surveyor. The Contractor shall require said engineer to establish all lines, elevations, reference marks, batter boards, etc., needed by the Contractor during the progress of the Work, and from time to time to verify such marks by instrument or other appropriate means.

The Engineer shall be permitted at all times to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor, who shall correct any errors in lines, elevations, reference marks, batter boards, etc., disclosed by such check. Such a check shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire Work.

The Contractor shall make, check, and be responsible for all measurements and dimensions necessary for the miss-fittings in the Work.

## **12. DIMENSIONS OF EXISTING STRUCTURES**

Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

### **13. WORK TO CONFORM**

During its progress and on its completion, the Work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Drawings, Specifications, and other Contract Documents and the directions given from time to time by the Engineer.

### **14. PIPE LOCATION**

Exterior pipelines will be located substantially as indicated on the Drawings, but the right is reserved to the Authority, acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings, etc., are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

Small interior piping is indicated diagrammatically on the Drawings, and the exact location is to be determined in the field. Piping shall be arranged in a neat, compact, and workmanlike manner, with a minimum of crossing and interlacing, so as not to interfere with equipment or access ways, and, in general, without diagonal runs.

### **15. LIMITS OF NORMAL EXCAVATION**

For pipes in trench, the normal width of the trench shall be measured between vertical planes which are a distance apart equal to the sum of 1.0 feet plus the outside diameter of the pipe. The normal depth shall be measured to a distance of 0.5 ft. below the bottom of the pipe.

For concrete placed directly against undisturbed earth, the normal width and depth of the excavation of such concrete shall be measured to the neat lines of the concrete as indicated on the Drawings or as ordered.

For concrete placed against rock surfaces resulting from rock excavation, the normal width and depth of the excavation shall be measured to 4 inches outside the neat lines of the concrete as indicated on the Drawings or as ordered.

For other structures, except manholes as noted below, the normal width shall be measured between vertical planes 1 ft. outside the neat lines of the several parts of the structure, except that the width at any elevation shall be measured as not less than the width at a lower elevation. The normal depth shall be measured to the underside of that part of the structure for which the excavation is made.

No additional width or depth of trench excavation in earth or rock shall be allowed at standard circular manholes.

Wherever bell holes are required for jointing pipe, they shall be provided without additional compensation over and above the resulting from measurements as above described.

## **16. COMPUTATION OF QUANTITIES**

For estimating quantities in which the computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas.

It is further agreed that the computation of the volume of prismoids shall be by the method of average end areas.

## **17. PLANNING AND PROGRESS SCHEDULES**

Before starting the Work and from time to time during its progress, as the Engineer may request, the Contractor shall submit to the Engineer a written description of the methods he plans to use in doing the Work and the various steps he intends to take.

Within fifteen (15) days after the date of formal execution of the Contract, the Contractor shall prepare and submit to the Engineer (a) a written schedule fixing the dates on which additional drawings, if any, will be needed by the Contractor and (b) a written schedule fixing the respective dates for the start and completion of various parts of the Work. Each such schedule shall be subject to review from time to time during the progress of the Work.

## **18. PRECAUTIONS DURING ADVERSE WEATHER**

During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.

## **19. ELECTRICAL ENERGY**

The Contractor shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of the work and during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.

The Contractor shall provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

## **20. PROTECTION AGAINST ELECTROLYSIS**

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

## **21. RECORD CONTRACT DRAWINGS**

Contractor shall keep one (1) record copy of all Contract Documents, reference documents, and all technical submittals at the Site in good order and annotated to show all changes made during the construction process. Record drawings shall be updated and kept current on a daily basis by the Contractor. The record drawings will be reviewed by the Engineer prior to approval of the Contractor's pay requests. At the completion of the Project and before final payment is made, Contractor shall furnish the Engineer with one (1) set of reproducible documents (capable of being reproduced in blueprint), reflecting all changes herein described. Changes to the reproducible drawings shall be drafted in a neat and workmanlike manner. Show horizontal distances from permanent objects and depth to each bend. All valves (gate valves, curb stops, corporation stops), bends, tees and concrete encased pipes shall be located with three distance ties to permanent objects.

END OF SECTION

## **SECTION 01005**

### **MISCELLANEOUS REQUIREMENTS**

#### **1. GENERAL**

The contractor shall conform to all miscellaneous requirements as herein specified.

#### **2. TRAFFIC CONTROL**

The following standards and specifications are considered to be part of the Traffic Control Plan:

- Section 635 of the Standard Specifications, FP-96
- Manual of Uniform Traffic Control Devices, current edition.
- All signs shall be faced with sheeting conforming to Type II-A or Type III. See section 718, FP-14.

In addition to the above standards and specifications, the specific provisions for this project are also set forth as follows:

##### **A. MAINTENANCE OF TRAFFIC**

1. Two-way traffic, one lane each way, will be maintained on weekdays during the peak hours on two-way streets. Work that will interfere with two-way traffic will be conducted on weekends or during off-peak periods. During weekends and off-peak periods, alternating one-way traffic on one lane may be maintained by the use of flaggers to control and maintain traffic. Two-way traffic must be restored by the end of each workday.

2. Existing traffic patterns will be maintained to the maximum extent practicable during construction work. During asphalt overlay operations, traffic will be shifted away from construction operations via lane closures and flagging.

##### **B. GENERAL REQUIREMENTS**

1. Traffic Control Devices shall be furnished by the Contractor and shall be maintained in compliance with the Manual of Uniform Traffic Control Devices (MUTCD), current edition, and latest revision at time of contract. The Contractor shall be responsible for maintaining signs at all times or as directed by the Engineer. Signs, permanent or temporary, that are not current to the traffic pattern will be removed or covered with plywood or other barrier.

2. Suspension of Work. If the Contractor fails to comply with the provision for traffic control as set forth in the plans or with provisions of the MUTCD, the Engineer shall suspend work until the Contractor complies with the necessary requirements.

3. Prior Notice. Ten (10) days prior to implementation of any maintenance of Traffic Phase, the Contractor will provide The Public Works Department, through the Project Engineer, a description of the

type of work to be done. During construction, the Contractor shall inform the Engineer of any changes in traffic patterns within the work zone. Prior to any restriction of traffic, the Contractor and The Public Works Department will issue a news release describing the work and the traffic patterns that will be employed.

4. All work shall be prosecuted in a manner to permit unimpeded traffic flow in conformance with the Traffic Control Plan whenever possible. The interruption of traffic shall not be permitted except as identified unless specifically allowed by the Engineer. Work operation shall be scheduled to minimize disruption at peak traffic periods.

5. Access to the site will be by normal traffic patterns. The Contractor shall identify proposed haul routes and prepare traffic control plans of those routes.

6. Pedestrians. Facilities for pedestrian crossings shall be maintained at all times. Facilities for the safe stopping, loading, and unloading of buses shall be maintained at all times.

7. Driveway Access. Access to driveways and roadways must be maintained at all times, except as provided in the TCP.

8. Trenches and Ditches. Excavation made for pipe, conduit, or utilities resulting in open trenches shall be maintained and protected at all times. No unprotected open trenches will be permitted after suspension of the day's work. Use of metal plates over open trenches is restricted to immediate use after excavation to maintain traffic and shall be backfilled immediately with approved material and paved if traffic must be maintained. The Contractor shall not open more than 400 feet of trench without backfilling. The Contractor shall maintain adequate drainage of traveled roadways during all phases of construction and shall protect against erosion damage.

9. Temporary Pavement Marking shall be applied as directed by the Engineer.

10. Permanent Pavement Markings shall be installed within twenty-four hours of completion of final surfacing on any single approach to either of the intersections.

11. Variations from the Traffic Control Plan. If the Contractor feels he can improve on the Traffic Control Plan, he is encouraged to submit his proposal in writing for consideration and approval by the Engineer.

12. Contractor's Traffic Control Plan. Prior to commencing work, the Contractor shall submit for the Engineer's approval his proposed method of controlling traffic. Any suggestions to improve on traffic control shall be submitted for the Engineer's approval at this time. Prior coordination with the Dept. of Public Works is required to arrive at a mutually agreed upon TCP.

13. The employment or presence of traffic flagmen, special officers, or police shall in no way relieve the Contractor of any responsibility or liability that is his under the terms of this contract.

14. All work conducted within rights-of-way must be prearranged through the Department of Public Safety. A Road Closure Permit must be obtained. All traffic pattern drawings, safety signs and flagmen are the responsibility of the Contractor. Contractor is to make all necessary arrangements with the Department of Public Safety. Work may be performed on Saturdays, Sundays or Holidays to accommodate traffic conditions.

### **3. INTERFERENCE WITH EXISTING WORKS**

The Contractor shall at all times conduct their operations so as to interfere as little as possible with existing works. The Contractor shall develop a program, in cooperation with the Engineer and interested officials, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted. All work of connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time when the demands on the facilities best permit such interference, even though it may be necessary to work outside of normal working hours to meet these requirements. Before starting work which will interfere with the operation of existing facilities, the Contractor shall perform all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand. The Contractor shall make such minor modifications in the work relating to existing structures as may be necessary, without additional compensation.

The Contractor shall have no claim for additional compensation by reason of delay or inconvenience in adapting his operations to meet the above requirements.

### **4. MAINTAINING WATER, FIRE, AND SEWAGE FLOWS**

It is essential to the operation of the existing water, fire, and sewage system that there be no interruption in the flows of water or sewage. To this end, the Contractor shall provide, maintain, and operate all temporary facilities such as dams, pumping equipment, conduits, pipes, and all other labor and equipment necessary to maintain and intercept the water, fire, and sewage flows. The Contractor has the responsibility for repairing leaks of old systems in areas where they work to do this.

### **5. BURIED UTILITY WARNING AND IDENTIFICATION TAPE**

Where PVC pipes are used, provide detectable aluminum foil plastic backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of buried piping.

Tape shall be detectable by an electronic detection instrument. Provide tape in rolls, 3 inches minimum width, color-coded for the utility involved with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be "CAUTION BURIED WATER PIPING BELOW" or similar. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material. Bury tape with the printed side up at a depth of 12 inches below the top surface of earth or the top surface of the subgrade under pavements.

### **6. EXISTING UTILITIES**

#### **A. Verification of the location of the Existing Utilities:**

Representations of existing utilities, facilities, and structures in the Contract Documents are based upon the best available information. The Owner and the Engineer will not be responsible for the completeness or accuracy thereof nor for any deductions, interpretations, or conclusions drawn there from. The Contractor shall verify to his own satisfaction by test pit or other means, the actual location of existing utilities prior to construction in their vicinity.

a. Should the Contractor in the course of his operations encounter any underground utilities the presence of which was not previously known, or a different type than shown, he shall immediately

notify the Engineer and take all necessary precautions to protect the utility and maintain continuance of service until said utilities can be adjusted by the appropriate owners.

b. Contractor will notify all public utility corporations, jurisdictional agencies, or other owners to make all necessary adjustments to public utility fixtures and appurtenances within or adjacent to the limits of construction. Delays and additional cost resulting from a failure of the Contractor to notify the utility or to provide adequate notice to the utility shall be at no additional cost to the Owner, when such facilities are indicated in the Contract Document, and in such case, no extension of time will be granted for delays caused by utility adjustments.

c. Damage caused to utilities either directly or indirectly by the Contractor shall be repaired and the facilities restored to their original condition to the satisfaction of the Engineer and the utility owner, at no additional cost, irrespective whether utilities are shown on the plans.

**B. Working in the Vicinity of Existing Utilities:**

At least three (3) working days prior to starting work in the vicinity of utility structures and appurtenances, Contractor shall notify Engineer and appropriate utility companies and jurisdictional agencies. Contractor shall support and protect all utility structures and appurtenances in accordance with the requirements of the Contract Documents and the utility companies and shall take any other step necessary to protect the structures from disturbance or damage.

**C. Reconnecting Existing Utilities:**

All existing utilities shall be reconnected. Interruption to existing services shall be minimized and any such interruption shall be corrected by end of each workday. Contractor shall verify all water lines (potable and sea) to ensure that no cross-connections to the new potable distribution system and sea water lines occur.

**7. DEVIATION FROM PLANS**

Any deviations from the plans provided that are suggested by the contractor and are approved by the engineer will be the responsibility of the contractor, including but not limited to any extra labor, materials, or cost that is required.

END OF SECTION

# SECTION 01150

## MEASUREMENT AND PAYMENT

### 1. GENERAL

The following subsections describe the measurement of and payment for the work to be done under the items listed in the Proposal.

Each unit or lump sum price stated in the Proposal shall constitute full compensation as herein specified for each item or work completed in accordance with the drawings and specifications.

The prices for those items that involve excavation shall include compensation for disposal of surplus excavated material, handling water, and installation of all necessary sheeting and bracing.

In all items involving excavation, the price shall be based on doing the entire excavation on earth. Where rock is excavated, the price therefore, shall be in addition to the cost of excavating earth, and no deduction will be made in the amount for earth excavation.

The prices for all pipe items (e.g. water mains, valves, bends, hydrants, connections, etc.) shall constitute full compensation for furnishing material not provided, laying, jointing, temporary and permanent plugs, testing, disinfection, earth excavation and backfill, and concrete backup, as indicated on the drawings and as specified. Driveways, curb, and gutter replacement in streets shall be compensated under the proposal items for service connections and water lines.

Unless otherwise specified in the Proposal request or by Offeror on its pricing sheets, payment shall be according to the following payment schedule:

Total to be paid upon mobilization .....	10%
Total to be paid after installation of water lines & valves.....	30%
Total to be paid after installation of meter boxes, fire hydrants & ARV.....	25%
Total to be paid after satisfactory hydro testing & disinfection.....	15%
Total to be paid after removal of debris & clean-up of project site.....	5%
Total to be retained until project is completed & accepted by the Authority.....	15%

### 2. 6-INCH AND 10- INCH WATERLINE

Payment for waterline shall be as detailed in the Proposal Schedule and shall be the length of waterline measured in feet along the centerline of the installed pipe. There will be no deductions for the lengths of fittings or valves. The trench payment limit width shall be as shown on the Contract Drawings.

The payment shall be full compensation for all labor, tools, construction equipment and materials incidental to the installation, testing and disinfection of the water main and appurtenances to include; furnishing all pipe, regardless of the type of material, type of joints, fittings, etc.; all fittings and thrust blocks, where required; making connections to other new waterlines; and for furnishing and placing any sheeting, bracing and shoring that may be required and for all other work and expense incidental to the construction and/or installation of and placing the polyethylene pipe wrapping. This includes excavation

to the depth shown on the plans or as required to avoid utilities or other obstructions, removal and replacement of asphalt and concrete pavement, removal and replacement of sidewalk, curb and gutters incidental to the construction, provision of screened gravel, all rock excavation and disposal, backfilling, and loaming and seeding. This also includes all materials and labor required to maintain proper traffic control during installation and secure any open excavations if left open after working hours. Likewise, included is the abandonment and capping of existing waterlines.

Replacement of asphalt and repair of driveways, curbing, and gutters disturbed during installation of the 6-inch and 10-inch waterlines is included in the prices proposal for items 1a and 1b of the Proposal Schedule and shall not be paid for under a separate item.

### **3. 6-INCH AND 10- INCH GATE VALVES**

The quantities to be paid for under the items described in the Proposal Schedule shall be the number of valves of the size indicated in the Contract Drawings, including the cast iron valve box. The payment shall be full compensation for all labor, tools, construction equipment and materials incidental to the installation, testing and disinfection of the water main and appurtenances to include; furnishing all pipe, regardless of the type of joints, fittings, etc.; All fittings and thrust blocks, where required; making connections to other new waterlines; and for furnishing and placing any sheeting, bracing and shoring that may be required and for all other work and expense incidental to the construction including providing and placing the polyethylene pipe wrapping. This includes excavation to the depth shown on the plans or as required to avoid utilities or other obstructions, removal and replacement of asphalt and concrete pavement, removal and replacement of sidewalk, curb and gutters incidental to the construction, provision of screened gravel, all rock excavation and disposal, backfilling, and loaming and seeding. Likewise, included is the abandonment and capping of existing waterlines. Repair of driveways and curbing disturbed during installation of 6-inch and 10-inch gate valves is included in the price proposals for items 1a and 1b of the Proposal Schedule, as they shall be installed within the waterline trench alignment.

### **4. AIR RELIEF VALVE**

The quantities to be paid for under the items described in the Proposal Schedule shall be the type and number of air relief valves of the size indicated in the Contract Drawings, including incidental fittings and minor materials. The payment shall be full compensation for all labor, tools, construction equipment, and materials incidental to the installation, testing and appurtenances. Repair of road, pavement, sidewalk, curbing, structures, and vegetation disturbed during installation of the air relief valves is included in the price proposal for item 3 of the Proposal Schedule and shall not be paid for under a separate item.

### **5. SERVICE CONNECTIONS**

Payment for Complete Service Connections as detailed in the Proposal Schedule and shall be the number of complete water service connections installed in the locations shown on the plans or as directed by the engineer. The payment shall be full compensation for all labor, tools, construction equipment, and materials incidental to the installation, testing, concrete encasement of meter box and disinfection of the service connections and appurtenances. Repair of road, pavement, sidewalk, curbing, structures, and vegetation disturbed during installation of service connections is included in the price proposal for item 4 of the Proposal Schedule and shall not be paid for under a separate item.

### **6. FIRE HYDRANT CONNECTIONS**

Payment for complete removal of existing and installation of new fire hydrants as detailed in the Proposal Schedule and shall be the number of complete installations in the locations shown on the plans or as directed by the engineer. The payment shall be full compensation for all labor, tools, construction equipment, and materials incidental to the installations and connections. Repair of road, pavement, sidewalk, curbing, structures, and vegetation disturbed during installation of Fire Hydrants is included in the price proposal for item 5 of the Proposal Schedule and shall not be paid for under a separate item.

## **7. CLEAN UP AND MAINTENANCE**

The price for this item shall constitute full compensation for furnishing all labor, tools, material, supervision, and equipment to continuously maintaining the project area in a clean, and dust free manner and in accordance with the provisions of Section 01710. Payment for this item to be pro-rated in accordance with the total job progress; failure to maintain the project site in accordance with the provisions of Section 01710 shall result in a pro-rated reduction in payment for this item.

**HANNAH'S REST WATERLINE REHABILITATION  
VIRGIN ISLANDS WATER AND POWER AUTHORITY  
PROPOSAL SCHEDULE**

**Proposal Form**

<b>ITEM NO.</b>	<b>ESTIMATED QUANTITY</b>	<b>UNIT</b>	<b>UNIT COST (\$)</b>	<b>DESCRIPTION</b>	<b>TOTAL COST (\$)</b>
<b>1. WATER MAIN</b>				Water main installed as specified and/or shown on the drawings, including excavation, backfill, compaction, base, fittings, testing, etc. and all labor, equipment, and material for a complete job in place.	
1a.	+/- 10,363	L.F.		6-inch AWWA C-900, DR-14, PVC Water Main	
<b>2. VALVES</b>				Valves, Resilient seat complete in place as specified and/or shown on the drawing, including excavation, compaction, restraining devices (as required), Base, paving, valve box, and cover, etc. and all labor, equipment, and material for a complete job in place.	
2a.	21	EA		6-inch AVK Gate Valve (Total valves shown in the drawings)	
<b>3. SERVICE CONNECTIONS</b>				Service connections furnished and install as specified and/or shown on the drawings, including corporation stops, curb stops, to include gate and check valve for existing customers, excavation, and compaction. Also including all minor materials, road resurfacing, curb replacement, repair concrete driveway pressure/leakage testing, and flushing. All labor, equipment, and material for a complete job in place. More than 3 meters the service connections will be 6-inch x 2- inch	
3a.	141	EA		6-inch x 1-inch service connections	
3b.	4	EA		6-inch x 2-inch service connections	
3c.	189	EA		Supply and replacement of meter boxes for existing 5/8" x 3/4"to include customer gate and check valve	

3d.	4	EA		Air release valves as shown on the in the drawings and outlined in the specifications	
<b>4. TIE-INS</b>				Supply and Install as specified and/or shown on the drawings, including excavation, bedding, backfill, compaction, base, fittings, testing, capping of existing waterline to be abandoned, and all labor, equipment, and material for a complete job in place.	
4a.	7	EA		Tie-ins at cross streets	
<b>5. HYDRANT &amp; FLUSHING POINT</b>				Tie in to flushing hydrant assembly along with associated appurtenances and as shown on the drawings, including excavation, compaction, base, fittings, testing, etc. and all labor, equipment, and material for a complete job in place.	
5a.	9	EA		Complete installation new Fire Hydrants 6" gate valve and <b>Fire Hydrant Assembly</b> to new water main.	
5b.	2	EA		Complete installation new Automatic flush out as shown in the drawing	
<b>6. SAMPLE STATION</b>					
6a.	2	EA		Install new 2' service line with new sample station with all the details that specified in the drawings	
<b>7. ROAD REPAIR</b>				Repair all asphalt (asphalt the trench and any areas will be damaged by the work), driveways, curbs and sidewalks including bedding, backfill, compaction, testing, and all labor, equipment, and material for a complete job in place.	
7a.	1	LS		Asphalt Installation and Curb/Sidewalk Repair (asphalt the trench and any area damaged by the work).	
<b>1. Rock Excavation</b>				Removal and disposal of rock encountered during construction. Rock removal shall conform to Specification Section 02316 Rock Removal.	
8a.	1500	CY		Removal and disposal of rock (entire project).	

<b>2. Contingency</b>				Such as: leaks could happen in the existing lines from the construction work in the area, isolating some main lines and after that figure out that some customers out of service ...etc	
9a.	10%	LS			
<b>3. CUT, CAP, &amp; ABANDON IN PLACE</b>				Cut existing water mains and laterals and install end caps as shown on the project drawings. Abandon Pipes in place unless they need to be removed to allow for installation of the new pipes. Remove the old valves covers (entire project). For the whole entire proposed project area.	
10a.	7	EA		End Caps	
<b>11. AS-BUILTS AND GIS</b>				Detailed permanent record of each project feature and all changes and clarifications to the project design (entire project).	
11a.	1	LS		As-Built	
11b.	1	LS		GIS Records	
<b>TOTAL</b>					

END OF SECTION  
**SECTION 01500**

**TEMPORARY FACILITIES**

**1. GENERAL**

The Contractor shall provide all temporary facilities necessary for the proper completion of the work, as necessary and as specified.

The Contractor's attention is directed to the requirements of the GENERAL SPECIFICATIONS specified under "Sanitary Regulations", "Precautions During Adverse Weather", and Electrical Energy".

**2. WATER SUPPLY**

Water supply will be available for flushing, pressure testing and disinfection of water lines, where such lines are directly connected to the existing distribution system only. The Contractor shall not contaminate the water supply and shall comply with all applicable regulations and code requirements.

The Owner reserves the right to limit, suspend, or terminate the supplying of water as set forth above should it consider such action to be necessary on account of damage to the distribution system, the necessity of conserving water, or other emergency. In this event, the Contractor shall obtain water from some other approved source, at his own expense.

**3. PROJECT SIGN**

The Contractor shall construct a sign having an area of approximately 32 sq. ft. identifying the project, officials representing the Authority, the Engineers, etc. The sign shall be erected in a location selected by the Authority. The Contractor shall maintain the sign throughout the duration of the project. The sign shall be worded as directed by the Authority.

**4. CONTRACTOR'S FIELD OFFICE**

The Contractor shall maintain a temporary field office near the work for his own use during the period of construction at which readily accessible copies of all contract documents shall be kept. The office shall be located where it will not interfere with the progress of the work. In charge of this office, there shall be a competent superintendent of the Contractor.

END OF SECTION

## **SECTION 01568**

### **EROSION CONTROL, SEDIMENTATION, AND CONTAINMENT OF CONSTRUCTION MATERIALS**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

Provide all work and take all measures necessary to control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials (including excavation and backfill) within protected working area as to prevent damage to any property, stream or wetlands.

##### **1.2 QUALITY ASSURANCE**

- A. All construction procedures as directed by Engineer.
- B. Acceptable procedures, including use of water diversion structures, diversion ditches, settling basins, and sediment traps.
- C. Preventive methods as directed by Engineer.
- D. Operations restricted to areas of work indicated on drawings and area that must be entered for construction of temporary or permanent facilities.
- E. If construction materials are washed away during construction, remove materials from fouled areas as directed by Engineer.
- F. Stabilize diversion outlets by means acceptable to Engineer.
- G. Engineer has authority to limit surface area to erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of temporary mulches, mats, or other control devices or methods as necessary to control erosion.

##### **1.3 SUBMITTALS**

Two weeks prior to the start of the work, submit to Engineer, for review, a plan with detailed sketches showing the proposed methods to be used for controlling erosion during construction.

#### **2. PRODUCTS**

##### **2.1 BALES**

Hay or straw or other suitable material acceptable to Engineer.

## 2.2 WOOD STAKES

2 in. by 2 in. by 3 ft.

## 2.3 PLASTIC SHEETING

Commercially available and sufficient strength to resist tearing, punctures, and deterioration by sunlight exposure.

# 3. EXECUTION

## 3.1 GENERAL

Do not discharge chemicals, fuels, lubricants, bitumen, raw sewage and other harmful waste into or alongside any body of water or into natural or man-made channels.

## 3.2 INSTALLATION

- A. Install baled hay, straw erosion, and/or plastic sheeting checks in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the Engineer.
- B. Install check dams immediately after site is cleared and before trench excavation. Locate check dams around stored material, approximately 6 ft. from material.
- C. Hold bales in place with two 2-inch by 2-inch by 3-ft. stakes so that each bale is butted tightly against adjoining bale hereby precluding short-circuiting of erosion check.
- D. Construct earth berms or diversions to intercept and divert runoff water from critical areas.
- E. Discharge silt-laden water from excavations onto filter fabric mat and /or baled hay, straw, and or plastic sheeting sediment traps to ensure that only sediment-free water is returned to watercourses.
- F. Do not place excavated soil material adjacent to watercourse in manner that will cause it to wash away by high water or runoff.
- H. Prevent damage to vegetation by excessive watering or slit accumulation in the discharge area.
- I. Do not dump soiled material into any streams, wetlands, surface waters, or unspecified locations. All materials shall only be disposed of at approved disposal sites.
- J. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands or surface waters.

- K. Do not pump silt-laden water from trenches or excavations into surface waters, streams, wetlands, or natural or man-made channels leading thereto.
- L. Prevent damage to vegetation adjacent to or outside of construction area limits.
- M. Do not dispose of trees, bush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, wash water from concrete trucks or hydro seeders, or any other pollutant in streams, wetlands, surface waters, or natural or man-made channels leading thereto, or unspecified locations.
- N. Do not alter flow line of any stream unless indicated or specified.

END OF SECTION

## **SECTION 01620**

### **TRANSPORTATION AND HANDLING**

#### **1. GENERAL**

The Contractor shall provide transportation of all equipment, materials and products furnished under these Contract Documents to the site of the work, In addition, the Contractor shall provide preparation for shipment and storage, unloading, handling and re-handling, short-term storage, extended storage, storage facilities, maintenance and protection during storage, preparation for installation, and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the work.

#### **2. TRANSPORTATION**

- A. All equipment shall be suitably boxed, crafted, or otherwise protected during transportation.
- B. All equipment shall be shipped and delivered in the largest assembled sections practical or permitted by carrier regulations to minimize the number of field connections.
- C. The Contractor shall be responsible for ensuring that the equipment is assembled and transported in such a manner so as to clear buildings, power lines, bridges, and similar structures encountered during shipment or delivery to the site of the work.
- D. Where equipment will be installed using existing cranes or hoisting equipment, the Contractor shall ensure that the weights of the assembled sections do not exceed the capacity of the cranes or hoisting equipment.
- E. Small items and appurtenances such as gauges, valves, switches, instruments, and probes, which could be damaged during shipment, shall be removed from the equipment prior to shipment and packaged and shipped separately. All openings shall be plugged or sealed to prevent the entrance of water or dirt.
- F. Temporary shipping braces and supports shall be painted orange or yellow for easy identification.

#### **3. HANDLING**

- A. All equipment, materials, and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation. All equipment, materials, and products damaged during transportation or handling shall be repaired or replaced by the Contractor at no additional cost to the Authority prior to being incorporated into the work.
- B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Eyebolts or lifting lugs furnished on the equipment shall be used in handling the equipment. Shafts and operating mechanisms shall not be used as lifting points. Spreader bars or lifting beams shall be used when the distances between lifting points exceeds that permitted by standard industry

practice. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.

C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground. Tossing of pipes and pipe fittings and accessories is an unacceptable practice. Items tossed shall be inspected by the Engineer and/or Project Manager. If the Engineer or Project Manager determines that the product has been compromised, contractor shall replace product at no additional cost to Authority.

D. Items such as nonmetallic pipe, nonmetallic conduit, flagpoles, and lighting poles shall be handled using nonmetallic slings or straps. Under no circumstance shall chains or steel cables be used to transport or handle non-metallic products.

END OF SECTION

## **SECTION 01630**

### **STORAGE AND PROTECTION**

#### **1. GENERAL**

- A. Equipment shall be received, inspected, unloaded, handled, stored, maintained, and protected by the Contractor in a suitable location on or off site, if necessary, until such time as installation is required.
- B. Storage and protection of Contractor-furnished equipment shall be strict conformance with the requirements of the section entitled "General Equipment Stipulations" of these specifications.

#### **2. STORAGE**

- A. The Contractor shall be responsible for providing satisfactory storage facilities that are acceptable to the Engineer. In the event that satisfactory facilities cannot be provided on site, satisfactory warehouse, acceptable to the Engineer, will be provided by the Contractor for such time until the equipment, materials, and products can be accommodated at the site.
- B. Equipment, materials, and products that are stored in a satisfactory warehouse acceptable to the Engineer will be eligible for progress payments as though they had been delivered to the job site.
- C. The Contractor shall be responsible for the maintenance and protection of all equipment, materials, and products placed in storage and shall bear all costs of storage, preparation for transportation, transportation, rehandling, and preparation for installation.
- D. Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending between supports. Items such as pipe, structural steel, and sheet construction products shall be stored with one end elevated to facilitate drainage.
- E. Unless otherwise permitted in writing by the Engineer, building products and materials such as cement, grout, plaster, gypsum-board, particle-board, resilient flooring, acoustical tile, paneling, finish lumber, insulation, wiring, etc., shall be stored indoors in a dry location. Building products such as rough lumber, plywood, concrete block, and structural tile may be stored outdoors under a properly secured waterproof covering.
- F. Tarpaulins and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarpaulins and covers shall be arranged to prevent ponding of water.
- G. PVC pipe, if stored outside, shall be suitably protected from sunlight (UV) by covering with a tarp. Such covering shall be complete and continual.

#### **3. EXTENDED STORAGE**

In the event that certain items of major equipment such as air compressors, pumps, and mechanical aerators have to be stored for an extended period of time, the Contractor shall provide satisfactory long-term storage facilities that are acceptable to the Engineer. The Contractor shall provide all special packaging, protective coverings, protective coatings, power, nitrogen purge, desiccants, lubricants, and exercising necessary or recommended by the manufacturer to properly maintain and protect the equipment during the period of extended storage.

END OF SECTION

## **SECTION 01710**

### **CLEANING UP**

#### **1. GENERAL**

During its progress, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed, and all damage repaired so that the public and property owners will be inconvenienced as little as possible.

Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, as a result of work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.

On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

Upon completion of the work, the Contractor shall remove from the sites of the subsurface explorations all of his plant, machinery, tools, equipment, temporary work, and surplus materials; shall, unless otherwise directed or permitted in writing, remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

The Contractor shall thoroughly clean all materials and equipment installed by him and his subcontractors, and on completion of the work shall deliver it undamaged and in fresh and new-appearing condition. All mechanical equipment shall be fully charged with lubricant and ready for operation.

The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

All materials, debris, and milled loads created during excavation is the property of VIWAPA, and if requested the contractor will provide this to the Owner for use.

END OF SECTION

## **SECTION 01730**

### **GUARANTEES AND WARRANTIES**

#### **1. GENERAL**

A. The Contractor shall warrant all equipment, materials, products, and workmanship provided by the Contractor under the Contract for a period of twelve (12) months after the date of final acceptance of the work by the Authority.

B. If, during the warranty period (a) any equipment, materials, or products furnished and/or installed by the Contractor are found to be defective in service by reason of the Contractor's faulty process, structural and/or mechanical design or specifications, or (b) any equipment, materials, or products furnished and/or installed by the Contractor are found to be defective by reason of defects in material or workmanship, the Contractor shall, as soon as possible after receipt of written notice from the Authority, repair or cause to be repaired such defective equipment, materials or products, or replace such defective equipment, materials or products.

C. In the event of multiple equipment failures or major consequence prior to the expiration of the one-year warranty described above, the affected equipment shall be disassembled, inspected, and modified or replaced as necessary to prevent further occurrences. All related components that may have been damaged or rendered non-serviceable as a consequence of the equipment failure shall be replaced. A new twelve (12) month warranty against defective or deficient design, workmanship, and materials shall commence on the day that the item of equipment is reassembled and placed back into operation. As used herein, multiple equipment failures shall be interpreted to mean two (2) or more successive failures of the same kind in the same item of equipment or failures of the same kind in two (2) or more items of equipment. Major equipment failures may include, but are not limited to, cracked or broken housings, piping, or vessels, excessive deflections, bent or broken shafts or structural members, broken or chipped gear teeth, overheating, premature bearing failure, excessive wear, or excessive leakage around seals. Equipment failures which are directly and clearly traceable to operator abuse, such as operating the equipment in conflict with published operating procedures, or improper maintenance, such as substitution of unauthorized replacement parts, use of incorrect lubricants or chemicals, flagrant over- or under-lubrication, and using maintenance procedures not conforming with published maintenance instructions, shall be exempted from the scope of the one-year warranty. Should multiple equipment failures occur in a given item or type of equipment, all equipment of the same size and type shall be disassembled, inspected, modified or replaced, as necessary, and re-warranted for one (1) year.

#### **2. START-UP OF OPERABLE COMPONENTS**

A. Because of the need to maintain operation during construction, it will be necessary to accept and start-up operable components of the project at various times prior to the completion and final acceptance of the entire project.

B. A component of the project, as used herein, shall mean a complete process subsystem and shall include all associated structures, equipment, piping, controls, etc.

C. When a component of the project has been completed, checked out, field tested, and made ready for operation, the Contractor shall notify the Engineer in writing that the component is substantially complete and request an inspection for substantial completion. The Engineer will schedule the inspection within 10 days of the Contractor's request. If he concurs in the Contractor's statement, the Engineer will notify the Contractor in writing that the component is accepted as substantially complete. At the same time, the Engineer will submit to the Contractor a list of items that must be completed or corrected before final acceptance can be given.

D. If a component of the project is needed in order to maintain operation during construction and if it has been accepted as substantially complete, the Contractor shall start up the component when directed by the Engineer. Once the component has achieved stable and satisfactory operation (minimum 95 percent availability over a 7-day period), the Contractor shall request beneficial occupancy by the Authority. The Authority, if he concurs in the Contractor's statement, that stable and satisfactory operation has been achieved, will notify the Contractor in writing within 10 days that he is assuming beneficial occupancy of the component.

E. On the date that the Authority assumes beneficial occupancy, the following shall occur:

1. The one-year warranties for the component specified in Part 1.A. of this section will begin;  
and
2. The Authority will assume responsibility for operating  
and maintaining the component.

END OF SECTION

## **SECTION 02100**

### **SITE PREPARATION**

Specification for this section shall comply with Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

No more than 400 LF or the distance between adjacent road intersections, whichever is less, of trench may be left unpaved after the pipeline has been successfully pressure tested. The contractor shall begin the construction of the pavement over the trench no more than ten days after the line have been successfully pressure tested.

END OF SECTION

## **SECTION 02210**

### **EARTH EXCAVATION, BACKFILL, FILL, AND GRADING**

Specifications for this section shall comply with Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

END OF SECTION

## **SECTION 02211**

### **ROCK EXCAVATION AND DISPOSAL**

Specifications for this section shall comply with Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

END OF SECTION

## **SECTION 02500**

### **PAVING**

Specifications for this section shall comply with Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

All water mains must pass the hydrostatic pressure testing specified prior to paving trenches.

END OF SECTION

## **SECTION 02501**

### **SIDEWALKS, CURBS AND GUTTER**

Specifications for this section shall comply with Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

END OF SECTION

## SECTION 02615

### DUCTILE-IRON PIPE AND FITTINGS

- 1. GENERAL
  - 1.1 Description
  - 1.2 References
  - 1.3 Related Work
  - 1.4 Submittals
  - 1.5 Quality Assurance
- 2. PRODUCTS
  - 2.1 Pipe
  - 2.2 Fittings
  - 2.3 Nonstandard Fittings
  - 2.4 Joints - Types
  - 2.5 Sleeve Type Couplings
  - 2.6 Fillings Rings
  - 2.7 Connections - Tapped
  - 2.8 Standard Lining and Coating
  - 2.9 Gaskets, Bolts and Nuts
- 3. EXECUTION
  - 3.1 Inspection Before Installation
  - 3.2 Handling and Cutting
  - 3.3 Installation
  - 3.4 Joint and Couplings
  - 3.5 Testing
  - 3.6 Disinfecting and Flushing

#### **1. GENERAL**

##### **1.1 DESCRIPTION:**

- A. Furnish, install and test ductile-iron pipe and fittings, as indicated and specified.
- B. Options: Not Used.

##### **1.2 REFERENCES:**

- A. American National Standards Institute Standards:
  - 1. A21.4-1985, ANSI Standard for Cement-Mortar Lining for Ductile-Iron and Gray-Iron Pipe and Fittings for Water.

2. A21.10-1982, ANSI Standard for Gray-Iron and Ductile-Iron Fittings, 3 in. through 48 in., for Water and Other Liquids.
3. A21.11-1985, ANI Standard for Rubber-Gasket Joints for Ductile- Iron and Gray-Iron Pressure Pipe Fittings.
4. A21.15-1983, ANSI Standard for Flanged Ductile-Iron and Gray-Iron Pipe with Threaded Flanges.
5. A21.50-1981, (R86) ANSI Standard for Thickness Design of Ductile- Iron Pipe.
6. A21.51-1986, ANSI Standard for Ductile-Iron Pipe, Centrifugally Cast In Metal Molds, or Sand-Lined Molds, for Water or Other Liquids.

B. American Water Works Association:

1. AWWA C651-86, Disinfecting Water Mains.
2. AWWA C606-81, Grooved and Shoulder Type Joints.

C. Manufacturers Standardization Society:

1. MSS-SP-58 Pipe Hangers and Supports, Materials Design and Manufacture.
2. MSS-SP-69 Pipe Hangers and Supports Selection and Application.

### 1.3 RELATED WORK

- A. Section 02210: Earth Excavation, Backfill, Fill and Grading
- B. Section 03346: Cast-in-Place Concrete
- C. Section 15101: Valves, Gates, Hydrants and Appurtenances

### 1.4 SUBMITTALS:

Submit the following in accordance with requirements of Section 01000.

A. Shop and Working Drawings:

1. Location and type of backup block or device to prevent joint separation

B. Certificates: Sworn certificates in duplicate of shop tests showing compliance with appropriate standard.

C. Manufacturer's Literature:

1. Catalog cuts of joints, couplings, harnesses, expansion joints, gaskets, fasteners and

other accessories.

2. Brochures and technical data on coatings and lining's and proposed method of application.

1.5 QUALITY ASSURANCE:

- A. Inspect and test at foundry according to applicable standard specifications.
- B. The Authority Owner reserves the right to inspect and test by independent service at manufacturer's plant or elsewhere at its own expense.
- C. Visual inspection and hammer test before installation.

**2. PRODUCTS**

2.1 PIPE:

- A. Ductile Iron:
  - 1. Design conforming to ANSI A21.50.
  - 2. Manufacture conforming to ANSI A21.15 or ANSI A21.51.
  - 3. Thickness class, unless otherwise indicated or specified: Minimum Thickness Class 52.
  - 4. Epoxy coating for buried pipe.

2.2 FITTINGS:

- A. Fittings conforming to ANSI A21.10 at least Class 150.
- B. Push-on fittings: all bell unless otherwise indicated or specified.
- C. Special Conditions only: Flanged fittings faced and drilled conforming to ANSI A21.10 except special drilling or tapping as necessary for correct alignment and bolting.
- D. Special Conditions Only: Flanged fittings not available under ANSI A21.10 furnished to conform to ANSI B16.1 in 125-lb. pressure class.
- E. Standard base fittings where indicated.
- F. Grooved-end fittings ductile-iron conforming to ANSI A21.10 (AWWA C110) except:
  - 1. Grooved-ends conforming to AWWA C606 for flexible joints

2.3 NONSTANDARD FITTINGS:

- A. Acceptable designs.
- B. Same diameter and thickness as standard fittings.
- C. Manufactured to meet requirements of same specifications as standard fittings except for laying length and types of ends.

## 2.4 JOINTS-TYPES

A. Provide push-on joint pipe with necessary accessories, conforming to ANSI/AWWA A21.11/C111.

- 1. Provide gasket composition suitable for exposure to potable water.

B. Provide pipe flanges and accessories conforming to ANSI A21.15.

C. Provide epoxy coated hydrant tees consisting of mechanical joint fittings on the run and a plain end branch with a ductile iron rotatable MJ gland integrally attached to the tee. Use U.S. Pipe hydrant tee U-592 or equal.

## 2.5 SLEEVE TYPE COUPLINGS:

A. Furnished by pipe supplier.

B. Pressure rating at least equal to that of related pipeline.

C. Manufactured by Dresser MFG. Div., Bradford, PA; Rockwell International, Municipal & Utility Div., Pittsburgh, PA; R. H. Baker & Co., Inc., Los Angeles, CA, or acceptable equivalent product.

D. Couplings for buried pipe: Cast Iron sleeve or steel sleeve and retainer with fusion bonded epoxy coating, Dresser Style 53 or 153, Rockwell Style 431, Baker Series 228, or acceptable equivalent products. Provide couplings with Type 304 or 316 stainless steel bolts and nuts.

E. Couplings for exposed pipe: Steel; Dresser Style 38, Rockwell Style 411, Baker Series 200, or acceptable equivalent products. Provide couplings with steel bolts and nuts.

F. Furnish with pipe stop removed.

G. Provide with gaskets of composition suitable for exposure to liquid within pipe.

## 2.6 FILLING RINGS:

A. Provide where necessary.

B. Materials, workmanship, facing, and drilling, conforming to 125-lb. ANS Standard.

C. Suitable length with nonparallel faces and corresponding drilling, if necessary, for correct assembly of adjoining piping or equipment.

## 2.7 CONNECTIONS - TAPPED:

- A. Provide watertight joint with adequate strength against pullout. Use only tapered taps.
- B. Maximum size of taps in pipe or fittings without bosses not to exceed that listed in appropriate table of appendix to ANSI A21.51 based on:
  - 1. 3 full threads for gray iron.
  - 2. 2 full threads for ductile iron.
- C. Where size of connection exceeds that given above for pipe, provide boss on pipe barrel or use tapping saddle. Make tap in flat part of intersection of run and branch of tee or cross, or connect by means of tapped tee, branch fitting and tapped plug or reducing flange, or tapping tee and tapping valve, as indicated or permitted.

## 2.8 STANDARD LINING AND COATING:

- A. Inside of pipe and fittings: Double thickness cement lining and bituminous seal coat conforming to ANSI A21.4.
- B. Outside of buried pipe and fittings: Clean and apply one coat of Series 66- 1211 Epoxoline Primer and two finish coats of Series 66 Hi-Build Epoxoline coating, both made by Tnemec Co., North Kansas City, MO; or acceptable equivalent. Total dry film thickness shall equal 15 mils. Coating to be applied by the pipe and fitting manufacturer(s) in accordance with the coating manufacturer's specifications.
- C. Outside surfaces of castings to be encased in concrete: Leave bare, do not use coating.
- D. Machined surfaces cleaned and coated with suitable rust-preventative compound at shop.

## 2.9 GASKETS, BOLTS AND NUTS:

- A. Ring rubber gaskets with cloth insertion for flanged joints. Neoprene faced phenols for insulating gaskets.
  - 1. Gaskets 12 in. in diameter, 1/16 in. thick.
  - 2. Larger than 12 in., 1/8 in. thick.
- B. Flanged joints made with:
  - 1. Bolts.
  - 2. Bolt studs with nut on each end.
  - 3. Studs with nuts where flange is tapped.

- 4. Plastic bolt sleeves and washers for insulating joints.
- C. Number and size of bolts conform to same ANSI Standard as flanges.
- D. Bolts and nuts, except as specified or indicated, Grade B, ASTM A307.
- E. Bolt studs and studs same quality as machine bolts.

### **3. EXECUTION**

#### **3.1 INSPECTION BEFORE INSTALLATION:**

- A. Visual Inspection.
- B. Hammer test.

#### **3.2 HANDLING AND CUTTING:**

- A. Mark pipe and fitting "Rejected" and remove from site when cracked or has received a severe blow.
- B. If permitted, cut on sound barrel at a point at least 12 in. from visible limit of crack, at Contractor's expense.
- C. Machine cut with milling type cutters, knives, or saws. Snap cutters, torch, or hammer and chisel NOT ALLOWED. Examine for possible cracks.
- D. Chamfer cut ends if used for push-on joints.

#### **3.3 INSTALLATION:**

- A. Piping Support:
  - 1. Back up bends, tees, and other fittings in pipelines buried in ground with Class B concrete placed against undisturbed earth. If soil does not provide firm support, provide bridle rods, clamps, and accessories to brace fitting properly. Coat bridle rods, etc., with two coats of an acceptable bituminous paint after assembly and wrap in polyethylene.
- B. Pipe and Fittings:
  - 1. Remove and replace defective pieces.
  - 2. Clear of all debris and dirt before installing and keep clean until accepted.
  - 3. Lay accurately to lines and grades indicated or required. Provide accurate alignment, both horizontally and vertically.
  - 4. Provide firm bearing along entire length of buried pipeline.

5. Deflection of alignment at joint not to exceed permissible deflection as specified below.

Maximum Permissible Deflection, in. \*

Size of Pipe	Push-on Joints	Mechanical Joints
10	19	20
12	19	20
14	11	13 1/2
16	11	13 1/2
18	11	11
20	11	11
24	11	9
30	11	9

\*Maximum permissible deflection for 20-ft. lengths, for other lengths in proportion of such lengths to 20 ft.

6. For push-on joint or similar pipe, clean bell of excess tar or other obstruction and wipe out before inserting next pipe spigot. Shove new pipe into place until properly seated and hold securely until joint completed.
7. Set castings to be encased in concrete accurately with boltholes, if any, carefully aligned. Clean off rust and scale before setting.
- C. Temporary Plugs: When pipe laying not in progress, close open ends of pipe with temporary watertight plugs. If water in trench, plug not to be removed until danger of water entering pipe passed.
- D. Trust Restrainers: Where indicated or necessary to prevent joints or sleeve couplings from pulling apart under pressure. Uniflange Series 1400
- E. Appurtenances: Set valves, fittings and appurtenances as indicated.

### 3.4 JOINTS AND COUPLINGS:

- A. Push-on Joints:
1. Insert gasket into groove bell. Apply thin film of nontoxic gasket lubricant over inner surface of gasket in contact with spigot end.
  2. Insert chamfered end into gasket. Force pipe past it until it seats against socket bottom.

B. Bolted Joints:

1. Remove rust-preventative coatings from machined surfaces.
2. Clean pipe ends, sockets, sleeves, housings, and gaskets and smooth all burrs and other defects.
3. Correct range of torque as indicated by torque wrench, not to exceed values specified below:

**TORQUE RANGE VALUES**

Nominal Pipe Size, in.	Bolt Diameter, in	Range of Torque, ft. - lb.
3	5/8	40-60
4-24, incl.	3/4	75-90
30,36	1	100-120
42,48	1-¼	120-150

C. Flanged Joint:

1. Make up tight
2. No strain on nozzles, valves, and other equipment.

D. Mechanical Joints:

1. Wire brush surfaces in contact with gasket and clean gasket.
2. Lubricate gasket, bell, and spigot with soapy water.
3. Slip gland and gasket over spigot and insert spigot into bell until seated.
4. Seat gasket and press gland firmly against gasket.
5. After bolts inserted and nuts made finger-tight, tighten diametrically opposite nuts progressively and uniformly around joint by torque wrench. Torque bolts to values specified above.

E. Sleeve-Type Coupling:

1. Clean pipe ends for distance of 8 in.
2. Use soapy water as gasket lubricant.

3. Slip follower and gasket over each pipe to a distance of 6 in. from end and place middle ring on pipe end until centered over joint.
4. Insert other pipe end into middle ring and bring to proper position in relation to pipe laid.
5. Press gaskets and followers into middle ring flares.
6. After bolts inserted and nuts made finger-tight, tighten diametrically opposite nuts by use of torque wrench of size and torque specified below:

#### **TORQUE**

Nominal pipe size, in.	Bolt diameter, in.	Maximum torque, ft. - lb.
3-24	5/8	75
30-36 (½ in. mid. ring)	5/8	65
30-36 (3/8 in. mid. ring)	5/8	70
30-48	3/4	80
48-72	3/4	70

7. After assembly and inspection and before backfill, coat exterior surfaces of buried couplings with heavy-bodied bituminous mastic.

#### **F. Tapped Connection:**

1. Drill and tap normal to longitudinal axis.
2. Drilled by skilled mechanics using proper tools.
3. Use only tapered threads.
4. Any damage to polywrap shall be completely repaired.

### **3.5 TESTING:**

- A. Clean off all dirt, dust, oil, grease and other foreign material, before conducting pressure and leakage tests.
- B. Pressure and Leakage Tests:
  1. Conduct combined pressure and leakage test using procedures conforming to AWWA C600 - Hydrostatic Testing. See Appendix A.

### **3.6 DISINFECTING AND FLUSHING:**

- A. Disinfect potable water lines using procedures and materials conforming to AWWA C651, Section 5.1; Tablet Method.
- B. Dosage to produce minimum of 25mg/L after a minimum contact period of 24 hours. The following table shows the number of 5g or 7g chlorine tablets required for various pipe sizes.

Pipe Diameter, in	Pipe Length, ft	No. of 5g Tablets	No. of 7g Tablets
4	20	1	1
6	20	1	1
8	20	2	2
10	20	3	2
12	20	4	3
14	20	5	4
16	20	7	5
18	20	8	6
20	20	10	7
24	20	14	10
30	20	22	16

- C. After treatment, flush with clean water until residual chlorine content less than 0.2 PPM.
- D. Prevent contamination of water in existing water mains. Neutralize chlorine content of water used in disinfecting and flushing accordance with AWWA C651.

END OF SECTION

# **SECTION 02623**

## **PVC PRESSURE PIPE**

- 1. GENERAL
  - 1.1 Description
  - 1.2 Related Work
  - 1.3 Quality Assurance
  - 1.4 References
  - 1.5 Submittals
- 2. PRODUCTS
  - 2.1 Pipe, Fittings, and Specials
  - 2.2 Joints
- 3. EXECUTION
  - 3.1 Inspection
  - 3.2 Handling
  - 3.3 Installation
  - 3.4 Testing
  - 3.5 Disinfecting and Flushing

### **1. GENERAL**

#### **1.1 DESCRIPTION:**

- A. Provide and test polyvinylchloride (PVC) pipe as indicated and specified.

#### **1.2 RELATED WORK:**

- A. Section 02210: Earth Excavation and Backfill
- B. Section 03346: Cast-in-place Concrete

#### **1.3 QUALITY ASSURANCE:**

- A. Provide labor necessary to assist the Engineer in inspecting pipe upon delivery. Remove rejected pipe immediately.
- B. Reject pipe of any manufacturer if more than five unsatisfactory joint assembly operations or "bell breaks" occur in 100 consecutive joints, even if the pipe conforms to ASTM Specifications. Remove unsatisfactory pipe of that manufacturer of same shipment from work site. Furnish pipe of another manufacturer conforming to these specifications.

- C. Perform tests in accordance with methods prescribed by ASTM and AWWA specifications. Accept or reject based on the test results.

#### 1.4 REFERENCES:

- A. American Water Works Association (AWWA):

- 1. C900-89: Polyvinylchloride (PVC) Pressure Pipe.

- B. American Society for Testing and Materials (ASTM) Publications:

- 1. D-2241-88: Specification for Polyvinylchloride (PVC) Pressure-Rated Pipe (SDR-Series).
  - 2. D-1784-81: Specification for Rigid Polyvinylchloride (PVC) Compounds and Chlorinated Polyvinylchloride (CPVC) Compounds.
  - 3. D-1784-88: Specification for Polyvinylchloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
  - 4. D-2672-88: Specification for Joints for IPS PVC Pipe Using Solvent Cement.
  - 5. D-2855-83: Practice for Making Solvent- Cemented Joints with Polyvinylchloride (PVC) Pipe and Fittings.
  - 6. D-3139-84: Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
  - 7. F-402-88: Standard Practice for Safe Handling of Solvent Cements and Primers Used for Joining Thermoplastic Pipe and Fittings.

- C. American National Standard Institute, Inc. (ANSI):

- 1. A21.10-87: Standard for Ductile-Iron and Gray- Iron Fittings, 3-in. Through 48-in. for Water and Other Liquids.

#### 1.5 SUBMITTALS:

- A. Shop Drawings: Submit the following in accordance with Section 01000 - GENERAL SPECIFICATIONS:

- 1. Shop drawings and descriptive literature showing pipe dimensions, joints, joint gaskets, pipe stiffness, and other details for each size of pipe indicated.
  - 2. Gasket and pipe manufacturer's printed joint assembly directions.
  - 3. Certification with each delivery that pipe complies with this specification.

4. Certified copies of test reports with each delivery, stating compliance with ASTM 1784, ASTM 1785, ASTM 2672, and AWWA C900.

## **2. PRODUCTS**

### **2.1 PIPE, FITTINGS, AND SPECIALS:**

- A. 4-in. through 12-in.:
  1. Pipe including those required for stubs: Conform to AWWA C900.
  2. Pipe Class 200 (DR 14) unless otherwise indicated or specified.
  3. Pipe in standard laying lengths of 20 ft.
  4. Fittings: Mechanical Joint, meeting requirements of ANSI A21.10-1982. Pressure classification of fittings at least equal to that of the piping.

### **2.2 JOINTS:**

- A. 4-in. through 12-in.:
  1. Use elastomeric gasket joints. Do not use solvent-cement joints.
  2. Use elastomeric gaskets of synthetic rubber; resistant to common ingredients of sewage and industrial wastes, including oils and groundwater, capable of enduring permanently under conditions of proposed use.

## **3. EXECUTION**

### **3.1 INSPECTION:**

- A. Examine excavation before pipe placement to ensure:
  1. Excavation is complete to elevations and slopes indicated.
  2. No obstruction exists to interfere with installation.
  3. Bottom is firm and dry.
- B. Inspect each pipe length and each fitting before installation. Remove defective pipe and fittings. Replace with sound pipe and fittings.

### **3.2 HANDLING:**

- A. Store until installation in a place acceptable to Engineer; keep place at ambient outdoor temperature.
  1. Provide temporary shading.

2. Do not use covering causing temperature build- up.

B. Handle into position to avoid damage in a manner acceptable to Engineer.

### 3.3 INSTALLATION:

A. Do not install non-straight pipe.

1. Do not allow pipe centerline to deviate from straight line drawn between ends, by more than 1/16 in. per ft. of length.

2. Remove pipe failing to meet above requirement.

B. Support pipe on compacted clean earth conforming to Section 02210. Do not permanently support on saddles, blocking or stones.

C. Excavate bells and coupling holes so that only pipe barrel receives bearing pressure.

D. Clear pipe units of debris and dirt before installation and keep clean until acceptance.

E. Install to lines and grades indicated or required by Engineer.

F. Maintain close joint with previously installed pipe. Match with adjoining pipe.

G. Do not drive pipe down to required grade by; striking with shovel handle, timber, or the like.

H. Elastomeric Gasket Joints:

1. Clean joint surfaces. Prepare joint surfaces according to manufacturer's recommendation. Push pipe until into place without damage to pipe or gasket. Use devices to force pipes together with minimum open recess inside and outside and tightly sealed joints. Avoid force that could wedge apart and split bell ends.

2. Do not pull or cramp joints without permission of Engineer.

3. Remove unfittable pipes and replace with sound units.

4. Follow directions of joint material and pipe manufacturers when installing gaskets and joints to render them watertight and flexible.

I. Make solvent-cement joints in accordance with ASTM D2855. Observe precautions per ASTM F402.

J. Close open ends of pipe and branches with PVC stoppers secured in place.

K. After bedding pipe, place and compact clean earth between pipe and sides of trench. Use extra care to compact clean earth under lower half of pipe. Fill bell holes with clean earth and compact. Place and compact clean earth as indicated.

- L. Prevent pipe flotation in trench.
- M. Make open ends of pipe and branches watertight with temporary plugs when pipe installation not in progress.
- N. If water exists in trench, do not remove plug until making provisions to prevent water, earth, or other substances from entering pipe; then resume work.
- O. Do not use pipeline as conductor for trench drainage.
- P. Restrainers: Where indicated or necessary to prevent joints or sleeve couplings from pulling apart under pressure. Uniflange Series 1500 or approved equal
- Q. Cleaning:
  - 1. Prevent earth, water, and other material from entering pipeline.
  - 2. Clean pipeline upon completion.
  - 3. Remove all loose dirt and foreign material from interior of pipe before installation.

#### 3.4 TESTING:

- A. Clean pipe of dirt, dust, oil, grease and other foreign material, before pressure and leakage tests.
- B. Pressure and Leakage Tests:
  - 1. Conduct combined pressure and leakage test using procedures conforming to AWWA C600 - Hydrostatic Testing. See Appendix A.

#### 3.5 DISINFECTING AND FLUSHING:

- A. Disinfect potable water lines using procedures and materials conforming to AWWA C651, Section 5.1; Tablet Method.
- B. Dosage to produce minimum of 25mg/L after a minimum contact period of 24 hours. The following table shows the number of 5g or 7g chlorine tablets required for various pipe sizes.

Pipe Diameter, in	Pipe Length, ft	No. of 5g Tablets	No. of 7g Tablets
4	20	1	1
6	20	1	1
8	20	2	2

10	20	3	2
12	20	4	3
14	20	5	4
16	20	7	5
18	20	8	6
20	20	10	7
24	20	14	10
30	20	22	16

- C. After treatment, flush with clean water until residual chlorine content less than 0.2 PPM.
- D. Prevent contamination of water in existing water mains. Neutralize chlorine content of water used in disinfecting and flushing in accordance with AWWA C651.

END OF SECTION

# **SECTION 02713**

## **WATER SERVICE CONNECTIONS**

### **1. GENERAL**

- 1.1 Description
- 1.2 Related Work
- 1.3 References
- 1.4 Submittals
- 1.5 Quality Assurance
- 1.6 Safety

### **2. PRODUCTS**

- 2.1 Service Tubing
- 2.2 Corporation Stops
- 2.3 Pipe Saddles
- 2.4 Check Valve, Meter and Meter Box
- 2.5 Branch Connections
- 2.6 Curb Stops

### **3. EXECUTION**

- 3.1 Service Piping
- 3.2 Corporation Stops, Curb Stops, Saddle, Meter and Meter Box
- 3.3 Branch Connections

### **1. GENERAL**

#### **1.1 DESCRIPTION:**

- A. Furnish and install water service 3/4-in, 1-in., and 2-in. connections as specified, and at the direction of the Engineer.

#### **1.2 RELATED WORK:**

- A. Section 02100: Site Preparation
- B. Section 02210: Earth Excavation, Backfill, Fill and Grading.
- C. Section 02500: Paving

#### **1.3 REFERENCES:**

- A. AWWA C901-88 Standard Specification for polyethylene (PE) pressure pipe and tubing, 1/2-in. through 2-in. for water services.
- B. ASTM D1785-83 Standard Specification for polyvinyl chloride (PVC) plastic pipe schedule 80.

#### 1.4 SUBMITTALS:

- A. Submission of manufacturer's specifications catalog data, descriptive matter, illustrations, diagrams, etc., for Engineer's review.

#### 1.5 QUALITY ASSURANCE:

- A. Suitable for potable water transmission and distribution.
- B. Withstand service pressure of 150 psi at 80 °F.

#### 1.6 SAFETY:

- A. Prevent contamination of contiguous potable water distribution system and service.

### 2. PRODUCTS

#### 2.1 SERVICE TUBING:

- A. ASTM D1785- Polyvinylchloride (PVC) Schedule 80 pipe for use with pack joints or solvent cement joints. Service lines to be 3/4-in., 1-in., and 2-in. diameter or as directed.
- B. Polyethylene Tubing. Service line diameters to be 3/4-inch, 1- inch or 2-in. diameter as shown on plans. Polyethylene pipe must meet PE 3408 Materials, pressure class 20 for outside diameter Based DR-9. Pipe shall be so marked as to identify by permanent identification marking the size, PE Code designation, dimension ratio (DR), AWWA pressure class and standard, manufacturers name and NSF seal.

#### 2.2 CORPORATION STOPS:

- A. Manufactured by AY. Mc. Donald model #4701-44, or approved equivalent.
- B. Provisions: Brass, plug style, Bronze with a lapped, ground key. Inlet thread of AWWA type. Outlet connections to be pack joint connection for PVC schedule 80 pipe. Outlet 44 PVC Compression.

#### 2.3 PIPE SADDLES:

- A. Manufactured by AY. Mc. Donald model #3825 with AWWA thread, or approved equivalent.
- B. Provisions: Double straps Stainless steel saddle for service tap with neoprene gasket.

#### 2.4 CHECK VALVE, METER AND METER BOX:

- A. Meter: Manufactured by Invensys, Model 50865-966- 71918A, touch readable, measured in gallons, Rocksyn chamber, 5/8-in. by 3/4-in water meter, bronze housing for aggressive water.
- B. Check Valve and Meter Box: Meter boxes must be yoke style, with electronic locking lid for 5/8 by 3/4 standard meters, straight inlet and straight outlet, with straight dual check valves, with 3/4-44PVC Compression inlet and 3/4" FIP outlet. Manufactured by AY. Mc. Donald model #75-208DC44 333 or approved equal with outlet connections to suit pack joint connections to existing service line.

## 2.5 BRANCH CONNECTIONS:

- A. Brass Tee: Manufactured by A.Y. Mc Donald Model # 4760- 44 Branch fittings must be corrosion resistant internally and externally.
- B. 3-Part Union: Manufactured by AY. Mc Donald Model #4758-44 or approved equal. Branch fittings must be corrosion resistant internally and externally.
- C. 1/4 Bend: Manufactured by AY. Mc Donald Model #4761-44 or approved equal. Branch fittings must be corrosion resistant internally and externally.
- D. Any additional connections required must be approved by Field Engineer

## 2.6 CURB STOPS AND BOXES:

- A. Curb stops: Brass, regular pattern ball valve, flathead, with 44 PVC Compression inlet and outlet, Manufactured by AY Mc Donald model 6100-44 or approved equal.
- B. Curb boxes: Two piece 2.5" shaft, screw type, high impact A.B.S. plastic with round cast iron lid and rim, extendable from 18" to 26", with standard bell arch for curb stop. Lid must say "WATER" and have standard pentagon bolt. Manufactured by Bingham & Taylor series 250 or approved equal. Provisions: Brass ball valve curb stop to have pack-joint connection for PVC schedule 80 pipe.

## 2.6 CUSTOMER GATE AND CHECK VALVES:

- A. Gate Valves: Class 125 bronze, screw type, must conform to MSS SP-80. Manufactured by Nibco item T-113 or approved equal.
- B. Check Valves: Class 125 bronze, screw type, must conform to MSS SP-80. Manufactured by Nibco item T-413-W or approved equal.

## 3. EXECUTION

### 3.1 SERVICE PIPING:

- A. Lay service pipe in a 6-in. wide, clean, and rock-free trench. Pipe depth should be a minimum of 18 inches if the pipe lies in a road or driveway; a minimum of 12 inches deep elsewhere.
- B. Backfill trench, place and compact base course and pavement as specified, replace grassing as specified.
- C. Use pack joint or solvent cement joint connection for all service piping and appurtenances.

### 3.2 CORPORATION STOPS, SADDLE, METER, METER BOX, CURB STOPS, AND CHECK VALVE

- A. Install and support stops in respective positions free from distortion and strain on appurtenances during handling and installation and in accordance with manufacturer's instructions. Install service taps in upper quadrant of main pipe above the main pipe spring line.
- B. Inspect for defects in materials and workmanship.
- C. Clean debris and foreign material from openings and seats. Flush pipe and fittings with chlorinated water for disinfection.
- D. Ensure that operating mechanism is plumb to main pipe wall.
- E. Test operating mechanism for proper functioning.
- F. Check installation for leakage.

### 3.3 BRANCH CONNECTIONS:

- A. Manufactured by A.Y. McDonald MFG. Co., branch connections as shown on plans, or approved equivalent. Branch fittings must be corrosion resistant internally and externally.

END OF SECTION

## **SECTION 02951**

### **STEEL AND DUCTILE IRON CASING PIPE**

#### **1. GENERAL**

- 1.1 Scope
- 1.2 Shop Drawings and Engineering Data
- 1.3 Storage and Delivery

#### **2. PRODUCTS**

- 2.1 Steel Casing Pipe
- 2.2 Ductile Iron Casing Pipe
- 2.3 Seals

#### **3. EXECUTION**

- 3.1 General

#### **1. GENERAL**

##### **1.1 SCOPE**

The work covered by this section includes furnishing labor, materials, service, and equipment required to properly complete electrical conduit and/or water pipeline construction under a through storm sewers, as described herein and/or shown on the Drawings.

##### **1.2 SHOP DRAWINGS AND ENGINEERING DATA**

Complete engineering data and product information shall be submitted to the Engineer in accordance with the requirements of the section entitled "Shop Drawings" of these Specifications.

##### **1.3 STORAGE AND DELIVERY**

All materials shall be stored and protected with strict conformance to the manufacturer's recommendations and as approved by the Engineer.

#### **2. PRODUCTS**

##### **2.1 STEEL CASING PIPE**

1. Steel casing pipe for sized 6 inches and smaller shall conform to ASTM A 120 (standard weight), of the latest standard Specifications.
2. Steel casing pipe, sizes 8 inches through 54 inches, shall be spiral or straight seam welded steel pipe conforming to ASTM A 139 Grade B of the latest standard Specifications.
3. All steel casing pipe shall be bituminous coated inside and out.
4. All corrugated metal casing pipe and carrier pipe shall conform to the section entitled "Fine Aggregate for Portland Cement Concrete", Section 703 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

## 2.2 DUCTILE IRON CASING PIPE

1. Ductile iron pipe shall be designed in accordance with ANSI A21.50, Thickness Design of Ductile Iron Pipe, using 60,000-psi tensile strength, 42,000-psi yield strength, and 10 percent elongation.
2. Ductile iron pipe shall be manufactured in accordance with ANSI A21.51, Ductile Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water or Other Liquids and shall be made of ductile iron having a minimum tensile strength of 60,000 psi, a minimum yield strength of 42,000 psi and 10 percent minimum elongation.
3. Ductile iron casing pipe shall be asphaltic coated on the exterior and unlined and uncoated on the interior of the pipe.
4. The sand fill between the casing pipe and carrier pipe and conduit shall conform to the section entitled "Fine Aggregate for Portland Cement Concrete", Section 703 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

## 2.3 SEALS

1. The annular space between the casing pipe and carrier pipe shall be sealed with "Link Seal", by Thunder Line Corporation, or approved equal. Installation shall be per manufacturer's recommendations.

# 3. EXECUTION

## 3.1 GENERAL

1. The opening casing pipe shall be inserted into the opening as soon as possible after the opening is made. Lengths of casing pipe as long as practical shall be used. Joints between sections shall be completely welded as recommended for joining the particular type of pipe.
2. Once the installation procedure has begun, it should be continued without stopping until completed subject to weather and conditions beyond the control of the Contractor.
3. Care shall be taken to ensure that casing pipe will be at the proper alignment and grade.

4. The Contractor shall maintenance and operate pumps, well points, and drainage system equipment as necessary to keep work dewatered at all times.
5. Adequate sheeting, shoring, and bracing for embankments, operating pits and other appurtenances shall be placed and maintained to ensure that work proceeds safely and expeditiously. Upon completion of the required work, the sheeting, shoring, and bracing shall be left in place, cut off, or removed as designated by the Engineer.
6. Trench excavation; all classes and types of excavation; the removal of concrete, rock, muck, debris; the excavation of all working pits; and backfill requirement of Federal Specifications FP-14 are included under this section.
7. Carrier pipe for all lines 6 inches and larger shall have push-on joints and fittings.
8. After the casing pipe is installed, the carrier pipe shall be installed exercising care at all times to protect the interior of the casing pipe and to maintain tight, full-seated joints in the carrier pipe. The carrier pipe shall be installed at the proper line and grade without any sags or high spots.
9. The carrier shall be held concentric with the casing pipe by the use of hardwood blocks spaced radially around the pipe and secured together so that they remain firmly in place. The spacing of such blocks longitudinally in the casing pipe shall not be greater than 10 feet.
10. Sand shall be forced under pressure into the annular space between the carrier pipe and the casing pipe. This shall begin at the center of the crossing and completely fill the space to each end. Care shall be exercised at all times to maintain the carrier pipe at its proper line and grade.

END OF SECTION

## **SECTION 03346**

### **CAST-IN-PLACE CONCRETE**

Specifications for this section shall comply with Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14.

END OF SECTION

## **SECTION 15101**

### **GATE VALVES, HYDRANTS AND APPURTENANCES**

#### **1. GENERAL**

- 1.1 Description
- 1.2 Related Work
- 1.3 Quality Assurance
- 1.4 References
- 1.5 Submittals

#### **2. PRODUCTS**

- 2.1 Gate Valves 4-in and larger
- 2.2 Gate Valves 3-in and smaller
- 2.3 Butterfly Valves - Liquid Service
- 2.4 Tapping Sleeves & Valves
- 2.5 Cutting-In Valves
- 2.6 Air & Vacuum Release Valves
- 2.7 Fire Hydrants
- 2.8 Valve Boxes
- 2.9 T-Handle Operating Wrenches
- 2.10 Painting

#### **3. EXECUTION**

- 3.1 General
- 3.2 Gate Valves
- 3.3 Valve Boxes
- 3.4 Butterfly Valves
- 3.5 Fire Hydrants

#### **1. GENERAL**

##### **1.1 DESCRIPTION:**

Furnish and install valves, gates, hydrants and miscellaneous piping appurtenances as indicated and specified. Sizes and capacities as indicated or specified.

##### **1.2 RELATED WORK:**

- A. Section 02210: Earth Excavation, Backfill.

##### **1.3 QUALITY ASSURANCE:**

- A. Polywrap-type enclosures required for all metal waterline components when exposed to corrosive soils and aggressive water to be approved by Engineer.
- B. Single manufacturer preferred for purchase of gate, globe, angle, and butterfly valves.
- C. Use globe valves or angle valves for sizes 1-in. and smaller, if permitted by Engineer.
- D. Contractor responsible for verifying outside diameter of pipe to be tapped.
- E. Painting:
  - 1. Shop coats to be in accordance with the coating system specified in Specification Section 02615, 2.08 B. Field touch up to be done with a coating compatible with shop coats from the same coating manufacturer. All coating surface preparation and coating use, mixing, application, and curing in accordance with current printed instructions of coating by manufacturer and as specified.
  - 2. Coatings in contact with potable water, in any part of municipal water system, suitable for use with potable water, approved for such use by USFDA, NSF, or other appropriate authorities and not to impart harmful chemicals, taste or odor to water when cured.

#### 1.4 REFERENCES:

- A. American Society for Testing and Materials (ASTM).
  - 1. ASTM A48-83, Specification for Gray Iron Castings.
  - 2. ASTM A126-84, Standard Specification for Gray Iron Casting for Valves, Flanges and Pipe Fittings.
  - 3. ASTM A536-84 Specification for Ductile-Iron Castings.
  - 4. ASTM B61-82a, Standard Specification for Steam or Valve Bronze Casting.
  - 5. ASTM B271-84, Standard Specification for Copper-Base Alloy Centrifugal Castings.
  - 6. ASTM B584-87, Standard Specification for Copper Alloy Sand Castings for General Applications.
  - 7. ASTM D1785-86, Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80 and 120.
- B. American National Standards Institute (ANSI).
  - 1. ANSI B2.4-1966 (R1974), Hose Coupling Screw Threads.
  - 2. ANSI B16.1-1975, Cast-Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.

3. ANSI B16.4-1985, Cast-Iron Threaded Fittings, Class 125 and 250.
4. ANSI B16.10-1973, Face-to-Face and End-to-End Dimensions of Ferrous Valves.

C. American Water Works Association (AWWA).

1. AWWA C502-85, Standard for Dry-Barrel Fire Hydrants.
2. AWWA C509-80 Standard Specifications for Resilient-Seated Gate Valves, 3-in. through 12-in. NPS, for Water and Sewage Systems.
3. AWWA C906-90 Standard Specifications for Polyethylene (PE) pressure pipe and fittings, 4-in. through 62-in., for water distribution.

1.5 SUBMITTALS:

- A. Submit manufacturer's specifications, catalog data, descriptive matter, illustrations, certified shop drawings, wiring, diagrams, etc.
- B. Operating instructions and parts lists.

**2. PRODUCTS**

2.1 GATE VALVES - 4 INCH AND LARGER

A. GENERAL

1. Use resilient wedge gate valves.
2. Resilient wedged valves: Conform to AWWA C509 except as herein modified.
3. Use bronze grades A, D or E of AWWA C509 for wetted bronze parts, stem nut and stem.
4. Working water pressure: Minimum:
 

<u>Valve Size</u>	<u>Pressure</u>
4 to 12-in.	200 psi
5. Fusion bonded epoxy coated flange ends, non-rising stem valves with 2-in. square operating nut.
6. Provide conventional two O-ring and a wiper ring above thrust collar and a third O-ring below the thrust collar. Stem seals must be replaceable while under pressure.
7. Valves capable of being repacked or O-ring replaceable while under pressure.
8. Provide corrosion resistant steel bolts and bronze nuts for stuffing box follower.

9. Provide a 2" square operating nut with a casted arrow indicating the opening direction of the valve. per AWWA specifications.

B. Resilient Wedge Gate Valves:

1. AVK Series 55 manufactured by AVK.

2.2 TAPPING SADDLES AND VALVES:

- A. Tapping Saddle: AVK Universal Tapping Saddle Series 739 or approved equal.
- B. Tapping Valves: AVK Series 55
- C. Tapping sleeves and valves consist of epoxy coated split cast-iron sleeve tee with mechanical joint flange on branch and tapping type gate valve with one flange end and one mechanical joint end. Valve conforming to requirements for gate valves specified in this Section and furnished with 2-in. square operating nut.

2.3 AIR AND VACUUM RELEASE VALVES:

- A. Valve Body shall be of cast iron ASTM-A48-1974.
- B. Cover and nozzle shall be sealed to the body by an O-ring of NBR to AWWA C509- 87.
- C. Rated working pressure should be a minimum of 200 psi.
- D. AVK Single Acting Air Valve Series 701/30.

2.4 FIRE HYDRANTS:

- A. AVK Series 2700 by AVK.
- B. Conform to requirements of AWWA C502 for dry barrel fire hydrants.
- C. Provide electrostatically applied, fusion bonded, epoxy coating inside and out on all internal and external iron parts. All coating shall meet or exceed the requirements of AWWA C-550.
- D. All bronze alloy parts exposed to water shall be made from grade A, D, or E bronze.
- E. Provide one 4-½-inch pumper connections and two 2-½-inch hose connections. Hose and pumper connection threads National Standard 2 Hose Screw Threads.
- F. Valve opened by turning valve counterclockwise direction. Pentagonal operating nut 1-½ inch from point to opposite flat at the bottom of the nut.
- G. Provide two (2) fire hydrant wrenches.

## 2.5 VALVE BOXES:

- A. Manufacturers: Bingham & Taylor, Culpeper, VA; Mueller Co., Decatur. IL; or acceptable equivalent.
- B. Materials:
  - 1. Valve boxes must be of cast iron, adjustable two-piece screw type base and riser, for valves 4" through 12", with 5.25" shaft. Box lid must say "WATER".
  - 2. Tyler 6850 series or approved equal.
  - 3. Curb boxes for curb stops, plastic extension type, Arched-base design, diameter to suit curb stop size; flush cover marked WATER.

## 2.6 T-HANDLE OPERATING WRENCHES:

- A. Furnished by valve manufacturer.
- B. T-handle operating wrenches provided in lengths necessary to permit operation of all valves by operators of average height working in normal positions.
- C. Provide three (3) wrenches for valve stems over 5 feet deep.

## 2.7 PAINTING:

- A. Application:
  - 1. Paint equipment and appurtenance in shop before exposure to weather and after thorough cleaning to remove all rust, dirt, grease, and other foreign matter.
  - 2. Clean and apply one coat of Series 66-1211 Epoxoline Primer and two finish coats of Series 66 Hi-Build Epoxoline coating, both made by Tnemec Co., North Kansas City, MO; or acceptable equivalent. Total dry film thickness shall equal 15 mils. Coating to be applied by the pipe and fitting manufacturer(s) in accordance with the coating manufacturer's specifications.
  - 3. Provide fusion-bonded epoxy coating in accordance with AWWA C213 for all gate valves and butterfly valves.
  - 4. Field coat touch up paint per manufacturer's directions.
  - 5. Fire hydrants on potable water system shall be painted yellow or red as approved by Engineer.

# 3. EXECUTION

## 3.1 GENERAL

- A. Prior to installation, protect stored valves and appurtenances from damage due to exposure to sunlight, heat, dirt, debris, freezing and thawing, vandalism, etc.
- B. Clean all debris, dirt gravel, etc., from inside of valves and piping before placing valves in place.
- C. Erect and support valves in respective positions free from distortion and strain on appurtenances during handling and installation. Inspect material for defect in workmanship and material. Clean out debris and foreign material from valve opening and seats. Test operating mechanisms to check proper functioning, and check nuts and bolts for tightness. Repair, valves and other equipment which do not operate easily or are otherwise defective.
- D. Set plumb and support valves adequately in conformance with instructions or manufacturer. Shim valves mounted on face of concrete vertically and grout in place. Install valves in control piping for easy access.

### 3.2 GATE VALVES:

- A. Install gate valve stem as indicated or with stems between horizontal and vertical up. Valves installed with stem below horizontal not allowed.

### 3.3 VALVE BOXES:

- A. Provide valve box for each buried stop and valve.
- B. Set box so top is flush with finished surface and so box does not bear on valve, stop, or pipe.
- C. Provide 6-inch thick concrete pad around valve box lids.
- D. Valve boxes shall be plumb and centered over valve.

### 3.4 HYDRANTS:

- A. Set plumb, and center buried valve and valve box. Tamp earth fill carefully around valve box to 4 ft. on all insides of box, or to undisturbed trench face, if less than 4 ft. At least same depth of cover on hydrant and connecting pipe as distribution main. Set hydrant upon slab of stone or concrete not less than 4-in. thick and 14-in. square. Firmly wedge side of hydrant opposite pipe connections against vertical face of trench with concrete thrust block. Not less than 7 cu. ft of broken stone place around base of hydrant at location of drain holes. Backfill around hydrants as specified under Section 02210. Clean hydrant and valve interiors of all foreign matter before installation and inspect in opened and closed positions.

END OF SECTION

## **APPENDIX B**

### **HYDROSTATIC TESTING**

1.     Warning:

The testing methods described in this section are specific for water pressure testing. These procedures should not be applied for air-pressure testing because of the serious safety hazards involved.

2.     Test Restrictions:

Test Pressure shall not be less than 1.50 times the working pressure at the highest point along the test section.

Test pressure shall not exceed pipe or thrust-restraint design pressures. The hydrostatic pressure shall be of at least 2-hour duration.

Test Pressure shall not vary by more than +/-5 psi (35 Mpa or 0.35 bar).

Valves shall not be operated in either direction at differential pressure exceeding the rated valve working pressure. Use of a test pressure greater than the rated valve pressure can result in trapped test pressure between the gates of a double disc gate valve. For test at these pressures, the test setup should include provision, independent of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened if desired.

Test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient seat gate valves or butterfly valves.

Contractor shall not install more than 500 LF of water main prior to satisfactory hydrostatic testing results. Thereafter, the Contractor shall install and test in sections not longer than 500 LF. As much as possible, perform hydrostatic test on pipe that valved off on either end.

3.     Pressurization: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to an average hydrostatic pressure of 150psi. Each valved section of pipe shall be slowly filled with water, and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gage, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the owner. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.

4.     Air Removal:

Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, the contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed, and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of the owner.

5. Examination:

Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered following the pressure test shall be repaired or replaced with sound material, and the test shall be repeated until it is satisfactory to the owner.

6. Leakage Defined:

Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe or any valved section thereof to maintain pressure within 5 psi (35 Mpa or 0.35 bar) of the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

7. Allowable Leakage: No pipe installation will be accepted if the leakage is greater than that determined by the formula:

$$L = \left[ \frac{2SD(P^{0.5})}{147,809} \right] \text{ (Eqn.1)}$$

Where:

L = allowable leakage, (gallons per hour) S = length of pipe tested, (feet)

D = nominal pipe diameter, (inches)

P = average test pressure during the leakage test, (pounds per square inch (gage)).

This formula is based on an allowable leakage of 10.5 gallons per day per mile per inch of nominal diameter at a pressure of 150 psi. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gph/in. of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made against closed hydrant valves.

8. Acceptance of Installation:

Acceptance shall be determined on the basis of allowable leakage. If any test of laid pipe discharges leakage greater than that allowed from Eqn. 1, the contractor shall, at his own expense, locate and make approved repairs as necessary until the leakage is within the specified allowance. All visible leaks are to be repaired, regardless of the amount of leakage.

9. Modifications to test procedure:

Test procedure may be modified only if permitted by the Owner.

END OF SECTION

## **APPENDIX C**

### **DRIVEWAY CUT AND PATCH SPECIFICATIONS**

#### **1. Cutting Existing Driveways**

Prior to cutting and removal of any section of an existing driveway, written notification must be presented to the property owner and the Authority. Notify the property owner and the Authority at least three (3) days before the day work is planned to take place.

Mark the proposed cut to approval by the Authority with chalked "string line" marking the locations of your proposed cut. Once the location, size, etc. are approved for cutting, concrete cuts shall be made with a concrete saw, cutting through the full depth of the existing concrete. After cutting work and prior to pouring your patch, slightly round-out the edge of your cutting work, so as not to leave a sharp edge at the cut.

#### **2. Patching existing Driveways after Pipe Line Installations:**

Once the pipeline is installed and backfill operation and compaction work is completed up to the depth of the bottom of the existing driveway concrete driveway, and you are ready to perform patch work, you must first undercut the existing concrete to remain on each side of your patch location, a minimum area of three (3) inches by three (3) inches. Provide a minimum thickness of four (4) inches at the transition. See drawing detail.

3000 psi concrete must be used for any patchwork. No site mixed concrete will be allowed for this purpose. The "Finish" of the concrete used for the driveway patchwork should match existing. Do Not Feather concrete onto the existing but rather finish neat against your cut.

#### **3. Clean-up and removal of Debris**

The Contractor shall leave the patch area neat and clean. Do not add mix any concrete on top of the existing roadway or driveway. Cleanup and remove all debris.

**END OF SECTION**

## **APPENDIX D**

### **MATERIAL SPECIFICATION SHEETS**

# PIPE RESTRAINTS SPECIFICATION

The following tables specify the proper use of pipe restraints when installing water lines.

## END CAPS

PIPE OD (IN)	RESTRAINT LENGTH (FT)
4	56
6	78
8	101
10	122
12	143
16	182
18	201
20	220
24	257

### HORIZONTAL BENDS

90°	PIPE OD (IN)	RESTRAINT LENGTH (FT)
	4	20
	6	28
	8	36
	10	42
	12	50
	16	62
	18	69
	20	75
	24	86
45°	PIPE OD (IN)	RESTRAINT LENGTH (FT)
	4	8
	6	11
	8	14
	10	17
	12	20
	16	26
	18	28
	20	31
	24	35
22.5°	PIPE OD (IN)	RESTRAINT LENGTH (FT)
	4	4
	6	6
	8	7
	10	8
	12	10
	16	12
	18	14
	20	15
	24	17
11.25°	PIPE OD (IN)	RESTRAINT LENGTH (FT)
	4	2
	6	3
	8	3.5
	10	4
	12	5
	16	6
	18	6.8
	20	7
	24	8.5

## REDUCERS

REDUCERS (IN X IN)	LARGERSIDE RESTRAINT LENGTH	SMALLERSIDE RESTRAINT LENGTH
6X4	41	20
8X4	73	20
8X6	43	20
10X4	99	20
10X6	75	20
10X8	41	20
12X4	124	20
12X6	104	20
12X8	76	20
12X10	42	20
16X4	168	20
16X6	153	20
16X8	133	20
16X10	108	20
16X12	77	20
24x4	248	20
24x6	238	20
24x8	225	20
24x10	209	20
24x12	189	20
24x16	140	20
24x18	110	20
24x20	76	20

## BRANCH RESTRAINTS ON TEE

If the run is greater than  $L_R$ , then no restraint is required on bells located at least 20ft from the Tee. Bells cannot be located less than 5ft from the Tee.

TEE SIZE (Run x Br)	$L_R$
4X4	47
4X6	72
4X8	96
4X10	118
4X12	139
4X16	180
6x4	38
6x6	66
6X8	92
6X10	114
6X12	136
6X16	178
8x4	26
8x6	58
8x8	85
10x4	10
10x6	46
10x8	77
10x10	102
12x4	5
12x6	32
12x8	66

12x10	94
12x12	119
16x4	5
16x6	5
16x8	38
16x10	71
16x12	100
16x16	152
18x4	5
18x6	5
18x8	20
18x10	56
18x12	88
18x16	143
18x18	167
20x4	5
20x6	5
20x8	5
20x10	40
20x12	75
20x16	132
20x18	158
20x20	181
24x4	5
24x6	5
24x8	5

24x10	5
24x12	41
24x16	108
24x18	136
24x20	162
24x24	209