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## INVITATION TO BID

25-0027-UT

### 25-0027-UT WATER, RECLAIMED WATER AND WELL REPAIR & IMPROVEMENTS

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#### INSTRUCTIONS TO BIDDERS

##### SECTION II INSTRUCTIONS TO BIDDERS

##### **1. COPIES OF BIDDING DOCUMENTS**

1.1. Bid Documents, any attachments and addenda are available for download at: <https://procurement.opengov.com/portal/myclearwater/projects/189741>. Bidding Documents may include, but are not limited to, plans, specifications, bond forms, contract form, affidavits, bid/proposal form, and addendums.

1.2. Complete sets of Bidding Documents must be used in preparing bids. Neither the City nor the Engineer shall be liable for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, by Bidders, sub-bidders, or others.

##### **2. QUALIFICATION OF BIDDERS**

2. 1 Each prospective Bidder must pre-qualify to demonstrate, to the complete satisfaction of the City of Clearwater, that the Bidder has the necessary facilities, equipment, ability, financial resources and experience to perform the work in a satisfactory manner. An application package for pre-qualification may be obtained by contacting the City of Clearwater, Engineering Division by phone at (727) 562-4750. Pre-qualification requirement information is also available on the City of Clearwater Website at address:

[www.myclearwater.com/government/city-departments/engineering/construction-management](http://www.myclearwater.com/government/city-departments/engineering/construction-management).

Contractors wanting to pre-qualify to bid on a project as a General Contractor must do so two weeks (ten workdays) prior to the bid opening date. Bidders currently pre-qualified by the City do not have to make reapplication. It is the Contractor's responsibility to confirm pre-qualification status before a Bid Opening.

The Contractor shall include copies of their current license/registration with the State of Florida and Pinellas County (if applicable) with their bid response.

##### **3. EXAMINATION OF CONTRACT DOCUMENTS AND SITE**

3.1. It is the responsibility of each Bidder, before submitting a Bid, to (a) examine the Contract Documents thoroughly; (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress, performance or furnishing of the work; (c) consider and abide by all applicable federal, state and local laws, ordinances, rules and regulations; and (d) study and carefully correlate Bidder's observations with the Contract Documents, and notify Engineer in writing of all conflicts, errors or discrepancies in the Contract Documents.

3.2. For the purposes of bidding or construction, bidder may rely upon the accuracy of the technical data contained in reports of explorations and tests of subsurface conditions at the site which have been utilized by the Engineer in the preparation of the Contract Documents, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof. Drawings relating to physical conditions of existing surface and subsurface conditions (except Underground Facilities) which are at or contiguous to the site and which have been utilized by the Engineer in preparation of the Contract Documents, may be relied upon by Bidder for accuracy of the technical data contained in such drawings but not upon the completeness thereof for the purposes of bidding or construction.

3.3. Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site are based upon information and data furnished to the City and Engineer by owners of such Underground Facilities or others, and the City does not assume responsibility for the accuracy or completeness thereof unless expressly provided in the Contract Documents.

3.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities, other physical conditions, possible conditions, and possible changes in the Contract Documents due to differing conditions appear in the General Conditions.

3.5. Before submitting a Bid, each Bidder shall, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing the work in accordance with the time, price and other terms and conditions of the Contract Documents.

3.6. On request in advance, City will provide each Bidder access to the site to conduct such explorations and tests at Bidder's own expense as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the site to its former condition upon completion of such explorations and tests.

3.7. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by the Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by the Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the City unless otherwise provided in the Contract Documents.

3.8. The submission of a Bid will constitute an unequivocal representation by the Bidder that the Bidder has complied with every requirement of these Instructions to Bidders and that, without exception, the Bid is premised upon performing and furnishing the Work required by the Contract Documents by such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance and furnishing of the work.

## **4. INTERPRETATIONS AND ADDENDA**

4.1. All questions as to the meaning or intent of the Contract Documents are to be directed in writing to the Engineer. Interpretations or clarifications considered necessary by the Engineer in response to such questions will be issued by Addenda, via OpenGov. Questions received after the time frame specified on the pre-bid meeting agenda, prior to the date for opening of Bids, may not be answered. Only information provided by formal written Addenda will be binding. Oral and other interpretations of clarifications will be without legal effect.

4.2. Addenda may also be issued to modify the Bidding Documents as deemed advisable by the City or Engineer.

## **5. BID SECURITY OR BID BOND**

5.1. Each Bid must be accompanied by Bid Security made payable to the City of Clearwater in an amount equal to ten percent (10%) of the Bidder's maximum Bid price and in the form of a certified or cashier's check or a Proposal/Bid Bond (on form provided in Section V) issued by a surety meeting the requirements of the General Conditions.

5.2. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Payment and Performance bonds, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute, deliver the Agreement and furnish the required Bonds within ten (10) days after the award of contract by the City Council, the City may annul the bid and the Bid Security of the Bidder will be forfeited. The Bid Security of any Bidder whom the City believes to have a reasonable chance of receiving the award may be retained by the City until the successful execution of the agreement with the successful Bidder or for a period up to ninety (90) days following bid opening. Security of other Bidders will be returned approximately fourteen (14) days after the Bid Opening.

5.3. The Bid Bond shall be issued in the favor of the City of Clearwater by a surety company qualified to do business in, and having a registered agent in, the State of Florida.

## **6. CONTRACT TIME**

6.1. The number of consecutive calendar days within which the work is to be completed is set forth in the Technical Specifications.

## **7. LIQUIDATED DAMAGES**

7.1. Provisions for liquidated damages are set forth in the Contract Agreement, Section V.

## **8. SUBSTITUTE MATERIAL AND EQUIPMENT**

8.1. The contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item may be furnished or used, application for its acceptance will not be considered by the Engineer until after the effective date of the Contract Agreement. The procedure for submittal of any such application is described in the General Conditions and as supplemented in the Technical Specifications.

## **9. SUBCONTRACTORS**

9.1. If requested by the City or Engineer, the Successful Bidder, and any other Bidder so requested, shall, within seven (7) days after the date of the request, submit to the Engineer an experience statement with pertinent information as to similar projects and other evidence of qualification for each Subcontractor, supplier, person and organization to be used by the Contractor in the completion of the Work. The amount of subcontract work shall not exceed fifty percent (50%) of the Work except as may be specifically approved by the Engineer. If the Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, supplier, other person or organization, he may, before recommending award of the Contract to the City Council, request the Successful Bidder to submit an acceptable substitute without an increase in Contract Price or Contract Time. If the Successful Bidder declines to make any such substitution, the City may award the contract to the next lowest and most responsive Bidder that proposes to use acceptable Subcontractors, Suppliers, and other persons and organizations. Declining to make requested substitutions will not constitute grounds for sacrificing the Bid Security to the City of any Bidder. Any Subcontractor, supplier, other person or organization listed by the Contractor and to whom the Engineer does not make written objection prior to the recommendation of award to the City Council will be deemed acceptable to the City subject to revocation of such acceptance after the Effective Date of the Contract Agreement as provided in the General Conditions.

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

## **10. BID/PROPOSAL FORM**

10.1. The Bid/Proposal Form is included with the Contract Documents and shall be printed in ink or typewritten. All blanks on the Bid/Proposal Forms must be completed. Unit Prices shall be to no more than two decimal points in dollars and cents. The Bidder must state in the Bid/Proposal Form in words and numerals without delineation's, alterations or erasures, the price for which they will perform the work as required by the Contract Documents. Bidders are required to bid on all items in the Bid/Proposal form. The lump sum for each section or item shall be for furnishing all equipment, materials, and labor for completing the section or item as per the plans and contract specifications. Should it be found that quantities or amounts shown on the plans or in the proposal, for any part of the work, are exceeded or should they be found to be less after the actual construction of the work, the amount bid for each section or item will be increased or decreased in direct proportion to the unit prices bid for the listed individual items.

10.2. Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed. The corporate address and state of incorporation shall be shown below the Signature. If requested, the person signing a Bid for a corporation or partnership shall produce evidence satisfactory to the City of the person's authority to bind the corporation or partnership.

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

10.4. All names shall be typed or printed below the signature.

## **11. SUBMISSION OF BIDS**

11.1. It is recommended that bids are submitted electronically through the City's e-Procurement Portal located at <https://procurement.opengov.com/portal/myclearwater>. By way of the e-Procurement Portal, responses will be locked and digitally encrypted until the submission deadline passes.

Sealed Bids not submitted electronically shall be submitted at or before the time and at the place indicated in the Advertisement for Bids and shall be submitted in a sealed envelope with the project name and number on the bottom left-hand corner. If forwarded by mail, the Bid shall be enclosed in another envelope with the notation "Bid Enclosed" on the face thereof and addressed to the City of Clearwater, attention Purchasing Manager. Bids will be received at the office indicated in the Advertisement until the time and date specified. Bids in any other form will not be accepted.

E-mail or fax submissions will not be accepted.

No responsibility will attach to the City of Clearwater, its employees or agents for premature opening of a bid that is not properly addressed and identified.

11.2. If submitting a hard copy, the sealed bid envelope shall contain, but not be limited to, the Proposal/Bid Bond and corresponding Power of Attorney, Affidavit, Non-Collusion Affidavit, Proposal (pages one and two), Addendum Sheet, Bidder's Proposal, Scrutinized Companies and Business Operations with Cuba and Syria Certification Form, and E-Verify form.

## **12. MODIFICATION AND WITHDRAWAL OF BIDS**

12.1. For bids submitted electronically, vendors may use the "Unsubmit Response" button located on the Response Details page of their submission. Responses may be resubmitted once they have been edited or modified as needed.

For mailed in or hand delivered bids, written requests to modify or withdraw the bid received by the City prior to the scheduled opening time will be accepted and will be corrected after opening. Written requests must be addressed and labeled in the same manner as the bid and marked as a MODIFICATION or WITHDRAWAL of the bid.

No oral requests will be allowed.

Requests for withdrawal after the bid opening will only be granted upon proof of undue hardship and may result in the forfeiture of any bid security. Any withdrawal after the bid opening shall be allowed solely at the City's discretion.

## **13. REJECTION OF BIDS**

13.1. To the extent permitted by applicable State and Federal laws and regulations, the City reserves the right to reject any, and all Bids, and to waive any, and all informalities. Grounds for the rejection of a bid include but are not limited to a material omission, unauthorized alteration of form, unauthorized alternate bids, incomplete or unbalanced unit prices, or irregularities of any kind. Also, the City reserves the right to reject any Bid if the City believes that it would not be in the best interest of the public to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the City. The City reserves the right to decide which bid is deemed to be the lowest and best in the interest of the public.

## **14. DISQUALIFICATION OF BIDDER**

14.1. Any or all bids will be rejected if there is any reason for believing that collusion exists among the bidders, the participants in such collusion will not be considered in future proposals for the same work. Each bidder shall execute the Non-Collusion Affidavit contained in the Contract Documents.

## **15. OPENING OF BIDS**

15.1. Bids will be opened and read publicly at the location and time stated in the Advertisement for Bids. Bidders are invited to be present at the opening of bids.

## **16. LICENSES, PERMITS, ROYALTY FEES AND TAXES**

16.1. The Contractor shall secure all licenses and permits (and shall pay all permit fees) except as specifically stated otherwise in the Technical Specifications. The Contractor shall comply with all Federal and State Laws, County and Municipal Ordinances and regulations, which in any manner effect the prosecution of the work. City of Clearwater building permit fees and impact fees will be waived except as specifically stated otherwise in the Technical Specifications.

16.2. The Contractor shall assume all liability for the payment of royalty fees due to the use of any construction or operation process, which is protected by patent rights except as specifically stated otherwise in the Technical Specifications. The amount of royalty fee, if any, shall be stated by the Contractor.

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

16.4. The City of Clearwater is exempt from state sales tax on materials purchased by the City and incorporated into the WORK. The City of Clearwater reserves the right to implement the Owner Direct Purchase (ODP) Option, as may be indicated in the Scope of Work Description in Section IV – Technical Specifications and as defined in Section III – General Conditions.

## **17. IDENTICAL TIE BIDS/VENDOR DRUG FREE WORKPLACE**

17.1. In accordance with the requirements of Section 287.087 Florida Statutes regarding a Vendor Drug Free Workplace, in the event of identical tie bids, preference shall be given to bidders with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the City for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none or all of the tied bidders have a drug-free workplace program. In order to have a drug-free workplace program, a contractor shall supply the City with a certificate containing the following six statements and the accompanying certification statement:

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

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

(3) Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

(4) In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to,

any violation of chapter 893, or of any controlled substance law, of the United States, or of any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

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

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

I certify that this firm does/does not (select only one) fully comply with the above requirements.

## **18. AWARD OF CONTRACT**

18.1. Discrepancies between words and figures will be resolved in favor of words. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

18.2. In evaluating the Bids, the City will consider the qualifications of the Bidders, whether the Bids comply or not with the prescribed requirements, unit prices, and other data as may be requested in the Bid/Proposal form. The City may consider the qualifications and experience of Subcontractors, suppliers and other persons and organizations proposed by the Contractor for the Work. The City may conduct such investigations as the City deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons, and organizations to perform and furnish the Work in accordance with the Contract Documents to the City's satisfaction within the prescribed time.

18.3. If the Contract is to be awarded, it will be awarded to the lowest responsible, responsive Bidder whose evaluation by the City indicates to the City that the award will be in the best interest of the City.

18.4. Award of contract will be made for that combination of base bid and alternate bid items in the best interest of the City, however, unless otherwise specified all work awarded will be awarded to only one Contractor.

18.5. The successful bidder/contractor will be required to comply with Section 119.0701, Florida Statutes, specifically to:

A. Keep and maintain public records that ordinarily and necessarily would be required by the City of Clearwater in order to perform the service;

B. Provide the public with access to public records on the same terms and conditions that the City of Clearwater would provide the records and at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law;

C. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and

D. Meet all requirements for retaining public records and transfer, at no cost, to the City of Clearwater all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the City of Clearwater.

## **19. BID PROTEST**

### **19.1. RIGHT TO PROTEST:**

Pursuant to Section 2.562(3), Clearwater Code of Ordinances, a bidder who submitted a response to a competitive solicitation and was not selected may appeal the decision through the bid protest procedures, a copy of which shall be available in the Procurement Division. A protesting bidder must include a fee of one percent of the amount of the bid or proposed contract to offset the City's additional expenses related to the protest. This fee shall not exceed \$5,000.00 nor be less than \$50.00. Full refund will be provided should the protest be upheld. No partial refunds will be made.

## **20. TRENCH SAFETY ACT**

20.1. The Bidder shall comply with the provisions of the City of Clearwater's Ordinance related to trench digging (Ordinance No. 7918-08) along with the Florida Trench Safety Act (Sections 553.60-553.64, Florida Statutes) and the provisions of the Occupational Safety and Health Administration's (OSHA) excavation safety standards, 29 C.F.R.s 1926.650 Subparagraph P, or current revisions of these laws.

## **21. CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL MANAGEMENT MEASURES**

21.1. The Bidder shall comply with the provisions of the Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) stormwater permit and implement stormwater pollution prevention plans (SWPPP's) or stormwater management programs (both using best management practices (BMPs) that effectively reduce or prevent the discharge of pollutants into receiving waters.

- A. The control of construction-related sediment loadings is critical to maintaining water quality. The implementation of proper erosion and sediment control practices during the construction stage can significantly reduce sediment loadings to surface waters.
- B. Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

NPDES Management Measures available at [City of Clearwater Engineering Environmental Division](#) and [EPA](#) websites to help address construction-related Best Management Practices.

## **GENERAL CONDITIONS**

Section III - General Conditions can be found on the City's website at:

<https://www.myclearwater.com/Business-Development/Doing-Business-with-the-City/Engineering-Construction-Bid-Information/Contract-Specifications>

## **TECHNICAL SPECIFICATIONS**

The estimated duration of the total project is 4 years, beginning with one year and (3) one-year options to renew.

### **3.1 SCOPE OF WORK**

Project Name: 25-0027-UT Water, Reclaimed Water and Well Repair & Improvements

Project Number: 25-0027-UT

Scope of Work:

The intent of this bid is to obtain competitive prices to establish an annual contract for on-call (as-needed) services for **water and reclaimed water infrastructure repairs and improvements** (Group A), on-call (as-needed) services for **water and reclaimed water trenchless pipeline installations** (Group B), on-call **asphalt replacement** (Group C), on-call **concrete replacement** (Group D), and on-call **well maintenance** (Group E). Bidders may bid on one or all Groups.

The City of Clearwater owns and operates 44 groundwater wells that are the primary source of raw water treated by the City's three water treatment plants. The City of Clearwater also owns, operates, and maintains 586 miles of potable water main and 140 miles of reclaimed water mains. The work that may be included as part of this Contract may include but is not limited to:

Group A: Point repairs, pipe installation/replacement (with various different installation methods), valve installation/replacement, service line installation, hydrant installation, etc.

Group B: Trenchless pipeline installation/replacement including but not limited to horizontal directional drill, pipebursting, and jack and bore.

Group C: Asphalt replacements following public utility point repairs and/or associated maintenance activities.

Group D: Concrete replacement following public utility point repairs and/or associated maintenance activities.

Group E: Well maintenance including all pump removal and replacement, well refurbishment through acidification, well evaluations and mechanical integrity testing of the City's injection well. Specific work for this contract will be at the request of the City by a work order request. All quantities are estimates only and the city of Clearwater (city) is not obligated to purchase any minimum or maximum amount during the life of the contract. All the work is to be administered per Section III, Section 11.3, Unit Price Work, of the Contract Documents.

The city reserves the right to increase funds during the contract term if work exceeds original estimates, subject to required authorizations. Beyond the initial one-year term, the city reserves the right to renew the contract for up to three (3) years.

The successful contractor will be required to enter into a contract with the City of Clearwater and provide all labor, equipment, and materials for water and reclaimed water infrastructure improvements and repairs. The City has an expectation as part of this contract that the successful contractor(s) will mobilize in an expedited manner during emergencies in order to minimize water and reclaimed water outages for City residents. The City shall define what constitutes as an emergency. For emergency repairs, estimates shall be provided by the contractor within 6 hours and mobilization shall occur within 12 hours. Mobilization, whether nonemergency or emergency, shall be per work order request as defined by the City. Each work order may include more than one individual project.

The various items shall be performed in accordance with City of Clearwater specifications and in conformity with the existing condition of the pipe, its grade, and dimensions. All work shall be completed in accordance with the City of Clearwater Construction Standard Details, unless otherwise directed. Products, materials, dimensions specified in this section (IV) and preferred products list shall supersede those products, materials, and dimension called out in the City of Clearwater Construction Standard Details.

The Contract will be on the basis of materials and equipment specified or described in the bidding documents. The materials and equipment described herein establish a standard of required type,

function, and quality. No item of material or equipment will be considered by the Engineer and/or City as an "or-equal" item unless written request for approval has been submitted by the Bidder and has been received by the City at least 15 days prior to the date for receipt of Bids. Each request shall conform to the requirements of the General Conditions. The City's decision of approval or disapproval of a proposed item will be final. Warranty for all work conducted under this contract shall be one (1) year for labor. Materials shall comply with the individual products installed.

The Contractor shall provide copies of a current Contractor License/Registration with the state of Florida and Pinellas County in the bid response.

The Contractor shall provide Fixed and Portable project signs as described in Section III, Section 23 of the Contract Documents. The final number of project signs will be determined at the beginning of the project based on the Contractor's schedule of work submitted for approval. Additional project signs may be required at no additional cost to the city due to the Contractor's schedule of work.

### **3.2 Section IV - Technical Specifications**

Section IV - Technical Specifications can be found on the City's website at:

<https://www.myclearwater.com/Business-Development/Doing-Business-with-the-City/Engineering-Construction-Bid-Information/Contract-Specifications>

### **3.3 Section V - Contract Documents**

Section V - Contract Documents can be found on the City's website

at: <https://www.myclearwater.com/Business-Development/Doing-Business-with-the-City/Engineering-Construction-Bid-Information/Contract-Specifications>

## **SUPPLEMENTAL TECHNICAL SPECIFICATIONS - Section IVA**

### **4.1 SECTION 01 22 13 MEASUREMENT AND PAYMENT**

#### **PART 1 - GENERAL 1.01**

##### **GENERAL PROVISIONS**

A. General: All schedules and Schedules of Values are given for the convenience of the Engineer, Owner, and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment to be included in Work performed under this Contract.

B. Unit Price Contracts: The quantities of work to be performed and materials to be furnished under a Unit Price Contract, as given in the Bid Form or Schedule, are to be considered as approximate only and are to be used solely for the comparison of Bids received and determining an initial Contract Price. The Owner/Engineer do not expressly or by implication represent that the actual quantities involved will correspond exactly therewith; nor shall the Contractor plead misunderstanding or deception because of such estimate or quantities or of the character, location or other conditions pertaining to the Work. Payment to the Contractor will be made only for the actual quantities of work performed or material furnished in accordance with the Drawings and other Contract Documents, and it is understood that the quantities may be increased or diminished as provided in the General Conditions without in any way invalidating any of the unit prices bid.

C. Lump Sum Contracts: The quantities of work to be performed and materials to be furnished, including all labor, equipment and incidentals required to complete the Work, are specified in the Contract Documents. Payment to the Contractor of the Lump Sum Price bid for the Work will be made and shall

fully compensate the Contractor for the construction of the Work, completed and ready for continuous operation and use, in the manner contemplated by the Contract Documents.

**1.02 SCHEDULE OF VALUES**

**A. Scope of Work**

1. Submit to the Engineer a Schedule of Values based upon the Total Bid price total cost.
2. A Schedule of Values shall be submitted based on the major items of work and structured so that the costs of the major items of work can be allocated to the various elements of the work and the total sum of the values in the schedule shall equal the Total Bid amount as stated in the Notice of Award and the Agreement.
3. The Schedule of Values shall establish the actual value of the component parts of the Work and, unless objected to by the Owner, shall be used as the basis for the Contractor's Applications for Payment.
4. The Schedule of Values for Unit Price Contracts shall restate all unit price bid items as presented in the Bid Schedule. Lump sum bid items included within the Bid Schedule shall be separated into major work/activity items and sub-items in a format as required for Lump Sum Contracts.

**B. Form and Content**

1. Type the schedule on the Owner's standard form. Contractor's standard forms and computer printout will be considered for approval by the Owner upon Contractor's request.
2. The values listed shall be the installed values of the component parts of the Work, including material, labor, overhead and profit, and all other costs associated with the installed value of each scheduled item.

**C. Unit Price Work:** For Unit Price Contracts, the Bid Schedule shall be used as the basis for the Schedule of Values. The Contractor shall resubmit the Bid Schedule in the format described herein, and if requested by the Owner, shall sub-divide the bid items in the Bid Schedule into sub-items to provide a more detailed basis of payment. Lump sum bid items included within the Bid Schedule shall be separated into major work/activity items and sub-items in a format as required for Lump Sum Contracts.

**D. Lump Sum Work:** For Lump Sum Contracts or applicable Lump Sum bid items stipulated in Unit Price Contracts, the cost of the Work shall be separated into major items and sub-items as outlined below. Each item or sub-item shall be provided with associated estimated quantities and unit prices for the purpose of estimating the completion status for progress payments. The costs of Insurance, Overhead (Administration) and profit shall be distributed among all components of the Work in proportion to the respective values, or if scheduled as a lump sum shall be paid in proportion to the value of the Work completed in conformance with the Documents.

1. General Requirements (Division 1 Specification Sections)
  - a. Mobilization, Demobilization, Bonds and Permits
  - b. Construction Video and Photograph
  - c. Record Drawing Preparation
  - d. Construction Progress Schedule
  - e. All other costs associated with Contract Specifications

2. **Mobilization, Demobilization, Bonds and Permits:** The amount of this item shall be on a per job basis, amount paid per job shall be determined based on the bid tabulation. Payment of unit price shall be made for the preparatory work and operations in mobilizing for beginning the Work on the project. Payment of the unit price shall be inclusive the finalization of the project, including demobilization, contract closeout documents, removal of field office and final site clean-up. Retainage requirements as stated in the General Conditions will apply to this pay item.

3. **Construction Video and Photograph:** The applicable lump sum price shall be full compensation for all labor, materials and equipment necessary to furnish the audio-visual tape recording, video tape identification and log as a pre-construction record and for periodic photograph during construction. No work shall proceed until the complete video pre-construction record is received by the Engineer and the Contractor has received the Engineer's approval of such documentation.

4. **Record Drawing Preparation:** This work shall include both field documentation and the updating, printing and submittal of Engineer approved reproducible Record Drawings.

5. **Construction Progress Schedule Preparation:** This work shall include both schedule preparation and the updating, printing and submittal of Engineer approved schedules.

6. **Site Work:** The cost of the site work, with the exception of earthwork for structures and underground piping, shall be separated by task, with estimated quantities where applicable.

7. **Structures:** The cost of each structure shall be given separately, and each structure, at a minimum, shall be further separated into the major sub-items.

8. **Unit Processes:** The cost of each unit process shall be given separately, and each unit process, at a minimum, shall be further separated into the major sub-items to include equipment cost, equipment installation cost, piping installed cost.

9. **Yard Piping:** The cost of yard piping shall be separated by pipe size and type, valves and appurtenances. The Contractor's estimated quantities and unit prices shall be included for each sub-item.

10. **Electrical Work:** The cost of electrical work shall be separated, at a minimum, into the following sub-items: Conduit, wire, ductbank, pull boxes, motor control centers, emergency power and yard lighting.

11. **Instrumentation Work:** The cost of instrumentation work shall be separated, at a minimum, into the following sub-items; conduit, fiber optics, control panels, PLC and I/O modules, computer hardware/software, programming, flow meters, level and pressure sensors and other field mounted monitors / controls.

**E. Allowances:** The Contractor shall include in the Total Bid Amount all cash allowances stated hereinafter. Equipment, materials, furnishings, services and other bid items under this bid category shall be covered by specific allowances established herein and shall be supplied in such amounts and by such persons as the Owner may direct. The amount of the allowance shall be adjusted accordingly by Change Order to recognize the actual cost incurred by the Contractor. The Contractor shall submit appropriate documentation to validate the actual cost of the item. An allowance is not, nor shall it be considered as, a Lump Sum cost item. Cash allowances for the purposes of bidding shall be so reflected in the Bid Form for the designated item.

**F. Alternate Bid Items:** When Additive or Deductive Alternates have been accepted by the Owner and are included in the Contract Amount indicated in the Notice of Award and the Agreement, each Additive or Deductive Alternate shall be individually scheduled with the corresponding Unit Price information or Lump Sum Price and sub-item breakdown.

## 1.03 APPLICATIONS FOR PAYMENT

A. Applications for Payment shall be submitted by the Contractor to the Owner in accordance with the schedule established by the Contract Documents.

B. Format

1. Submit applications typed on forms provided by the Owner. The Contractor shall prepare itemized continuation sheets using the accepted Schedule of Values and attach them to the Application. Each item shall have an assigned dollar value for the current pay period, and a cumulative value for the project to date. Change Orders executed prior to the date of submission shall be listed at the end of the continuation sheets and shall be totaled separately.

2. The following items shall be included with each copy of the application for payment (Waiver and Release of Lien(s) and Affidavit(s) shall conform to Chapter 713 of the Florida Statues, Supplement 1996. Statutory forms will be provided at the Pre-Construction Conference.):

a. Progress Photographs

b. *Waiver and Release of Liens Upon Progress Payment (for suppliers and subcontractors)*

c. Consent of Surety

d. *Affidavits*

3. The Contractor shall certify *by affidavit*, for each current pay request, that all previous payments received from the Owner, under his Contract, have been applied by the Contractor to discharge in full all obligations of the Contractor in connection with Work covered by prior applications for payment, and all materials and equipment incorporated into the Work are free and clear of all liens, claims, security interest and encumbrances. Contractor shall attach to each application for payment like affidavits by all Subcontractors and Suppliers. Contractor shall also attach a "Consent of Surety" to each application for payment. Additionally, a "Waiver and Release of Lien Upon Progress Payment" from each subcontractor and supplier shall be attached to each application for payment.

4. Submit electronic (pdf) copies of each application to the Engineer. Each copy shall include original signatures. The Engineer shall review the application and verify quantities of installed work. When the Engineer finds the application properly completed and correct, he will transmit recommendation of payment to Owner, with copy to Contractor.

C. The Engineer's recommendation of any payment requested constitutes a representation to the Owner that the Quality of Work is generally in accordance with the Contract Documents subject to the results of any subsequent inspections or tests required by the Contract Documents. Should subsequent inspections or tests indicate that portions of the Work is not installed in accordance with the Contract Documents, the Engineer may nullify any such payment previously recommended to such extent as may be necessary in the Engineer's opinion to protect the Owner from loss because of Defective Work. In this regard, partial payment requests for the installation of materials and equipment shall be supported by acceptable field tests as required by each respective specification section. The supporting test or inspection results shall be submitted with the next scheduled partial payment request.

1. If the test or inspection results indicate Defective Work, the respective partial payment request shall be adjusted to nullify payment for the installation of the defective portion or segment of the Work.

2. If supporting test or inspection results are not provided for the payment of installed materials or equipment in the subsequent partial payment request, then additional retainage shall be recommended by the Engineer for the Owner's consideration. The additional retainage shall be equivalent to the value of the tests required to be performed by the Contractor but not provided, or an amount, in the opinion of the Engineer, that maybe necessary to protect the Owner from loss.

D. The Application for Final Payment shall be prepared in accordance with the Contract Closeout specification.

#### 1.04 MEASUREMENT AND PAYMENT

##### A. Methods of Payment

1. Unit Price Contracts: Payment will be made for actual quantities of work properly installed as approved by the Engineer. 2. Lump Sum Contracts: Payment will be made for each individual item on a percentage of completion basis as estimated by the Contractor and approved by the Engineer. Quantities provided in the Schedule of Values are for the purpose of estimating the completion status for progress payments. Adjustments to costs provided in the accepted Schedule of Values may be made only by Change Order.

##### B. Methods of Measurement

1. Units of measurement shall be defined in general terms as follows:

- a. Linear Feet (LF)
- b. Square Feet (SF)
- c. Square Yards (SY)
- d. Cubic Yards (CY)
- e. Each (EA)
- f. Sacks (SK)
- g. Lump Sum (LS)
- h. Vertical Feet (VF)

2. Unit Price Contracts

a. Linear Feet (LF) shall be measured along the horizontal length of the centerline of the installed material, unless otherwise specified. Pipe shall be measured along the length of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves or fittings. Pipe included within the limits of lump sum items will not be measured.

b. Square Feet (SF), Square Yards (SY), Cubic Yards (CY), Each (EA) and Sacks (SK) shall be measured as the amount of the unit of measure installed within the limits specified and shown in the Specifications and Drawings. Slope angles and elevations shall be measured using land surveying equipment. Contractor shall provide supporting documentation (i.e. drawings, truck tickets, invoices, etc.) to verify actual installed quantities.

c. No measurement is required for Lump Sum (LS) items. Lump Sum Contracts: The Measurement of Work for lump sum contracts shall be based on the information provided in the Contract Documents and compiled through the Contractor's own field verifications, investigations and testing prior to Bidding.

C. **Bid Items – Group A – Water and RCW Point Repair** The following bid items are intended for water and reclaimed water point repairs and improvement projects. These bid items may be used for incidental sanitary or sewer work.

1. Bid Item No. 1 – Emergency Mobilization/ Demobilization including General Conditions and Traffic Control

- a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price. Emergency demobilization shall be defined mobilizing within 8 hours of initial request for work order assistance.
- b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

2. Bid Item No. 2 – Non-Emergency Mobilization/ Demobilization including General Conditions and Traffic Control

- a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the unit price for mobilization.
- b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

3. Maintenance of Traffic – Complete Indices

- a. Bid Item No. 3a – FDOT Index 601 - Work Beyond the Shoulder (see "j" Measurement and "k" Payment below)

- b. Bid Item No. 3b – FDOT Index 602 - Work on Shoulder (see "j" Measurement and "k" Payment below)
- c. Bid Item No. 3c – FDOT Index 603 - Two Lane Two Way Work within Travel Way (see "j" Measurement and "k" Payment below)
- d. Bid Item No. 3d – FDOT Index 604 - Two Lane Two Way - Intersection Work (see "j" Measurement and "k" Payment below) e. Bid Item No. 3e – FDOT Index 613 - Multilane Roadway - Lane Closures (see "j" Measurement and "k" Payment below) f. Bid Item No. 3f – FDOT Index 615 - Multilane Road - Intersection Work (see "j" Measurement and "k" Payment below)
- g. Bid Item No. 3g – FDOT Index 620 - Multilane Roadway - Temporary Diversion (see "j" Measurement and "k" Payment below)
- h. Bid Item No. 3h – FDOT Index 625 - Temporary Road Closure (see "j" Measurement and "k" Payment below)
- i. Bid Item No. 3i – FDOT Index 628 - Two Lane Left Turn Lanes (see "j" Measurement and "k" Payment below)
- j. 

Measurement: This work consists of maintaining vehicular and pedestrian traffic within the limits of the project at each location specified for the duration of the construction period, including any temporary suspensions of the work. This bid item shall include labor and equipment to furnish, install and maintain complete traffic control and safety devices during construction for each defined FDOT MOT Index; shall include any necessary furnishing and maintenance of any necessary detour facilities; providing necessary facilities for access to residences, businesses, pedestrian traffic, schools, etc., and any other special requirements for safe and expeditious movement of traffic as may be called for on the MOT plan. The term, Maintenance of Traffic, shall include all such facilities, devices and operations as are required for the safety and convenience of the public, as well as for minimizing public nuisance. The Contractor, however, shall not obstruct nor create a hazard to any traffic during the performance of the work and shall be responsible for repair of any damage to existing pavement or facilities caused by his operations. Traffic Control Devices include all types of barricades, arrow boards, variable message boards, cones, channelizing drums, signs, temporary pavement markers, lights, concrete barriers, and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. All MOT Index line items shall be fully inclusive of all costs for items associated with the appropriate FDOT Index. There shall be no separate payment for signs, barricades, etc. included with index will be allowed. Measurement for these items shall be based on the actual number of each (ea) line item per day or as specified in the Bid Form. These bid item shall not be used where already included in an inclusive bid item 3a-3i for FDOT standard index.
- k. 

Payment: Payment for maintenance of traffic shall be full compensation of the applicable unit price for furnishing all labor, materials and equipment, and installation necessary to provide safe and effective maintenance of vehicular and pedestrian traffic including but not limited to preparation and submittal of a complete traffic control plan, temporary lanes, walks or drainage facilities, flagmen, signs, barrels, barricades, lights and other protective devices as necessary to meet FDOT standards and specifications at each location for each type of MOT index required. Prior to any payment for any MOT Index bid item, the Contractor shall submit an MOT plan for review and approval.

4. Maintenance of Traffic – Miscellaneous Items These bid items are designated for as-needed MOT not covered under Maintenance of Traffic Complete Indices, and these items should only be used for work outside the scope of Maintenance of Traffic Complete Indices. It is essential to ensure these hours do not overlap with work covered by other bid line items, avoiding duplication of payment. Each task using these bid items must be separately documented to prevent billing redundancy.

- a. Bid Item No. 3j – Flagman (see "k" Measurement and "l" Payment below)

- b. Bid Item No. 3k – Arrow Board - 5' Minimum Horizontal Size (see "k" Measurement and "l" Payment below)
- c. Bid Item No. 3l – Variable Message Board (see "k" Measurement and "l" Payment below)
- d. Bid Item No. 3m – Concrete Barrier (FDOT Index No. 415) (see "k" Measurement and "l" Payment below)
- e. Bid Item No. 3n – Low Profile Barrier (FDOT Index No. 412) (see "k" Measurement and "l" Payment below)
- f. Bid Item No. 3o – Sign in Work Zone (see "k" Measurement and "l" Payment below)
- g. Bid Item No. 3p – FDOT Cone (see "k" Measurement and "l" Payment below)
- h. Bid Item No. 3q – FDOT Channelizing Drum (see "k" Measurement and "l" Payment below)
- i. Bid Item No. 3r – Barricade, Type III with Warning Light (see "k" Measurement and "l" Payment below)
- j. Bid Item No. 3s – Barricade I or II with Warning Light (see "k" Measurement and "l" Payment below)
- k. **Measurement:** This work consists of maintaining vehicular and pedestrian traffic within the limits of the project at each location specified for the duration of the construction period, including any temporary suspensions of the work. It shall include labor and equipment to furnish, install and maintain of traffic control and safety devices during construction; It shall include the construction and maintenance of any necessary detour facilities; providing necessary facilities for access to residences, businesses, pedestrian traffic, schools, etc., and any other special requirements for safe and expeditious movement of traffic as may be called for on the MOT plan. The term, Maintenance of Traffic, shall include all such facilities, devices and operations as are required for the safety and convenience of the public, as well as for minimizing public nuisance. The Contractor, however, shall not obstruct nor create a hazard to any traffic during the performance of the work and shall be responsible for repair of any damage to existing pavement or facilities caused by his operations. Traffic Control Devices include all types of barricades, arrow boards, variable message boards, cones, channelizing drums, signs, temporary pavement markers, lights, concrete barriers, and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Measurement for these items shall be based on the actual number of each (ea) line item utilized per day or as specified in the Bid Form.
- l. **Payment:** Payment for maintenance of traffic shall be full compensation of the applicable unit price for furnishing all labor, materials and equipment, and installation necessary to provide safe and effective maintenance of vehicular and pedestrian traffic including but not limited to preparation and submittal of a complete traffic control plan, temporary lanes, walks or drainage facilities, flagmen, signs, barrels, barricades, lights and other protective devices as necessary to meet FDOT standards and specifications at each location. Prior to any payment for any MOT bid item, the Contractor shall submit an MOT plan for review and approval.

5. **Labor Hour** These bid items are designated for as-needed tasks not covered under other bid items, and labor hours should only be used for work outside the scope of other specified items. It is essential to ensure these hours do not overlap with work covered by other bid line items, avoiding duplication of payment. Each task using labor hours must be separately documented to prevent billing redundancy, and labor hours under this item shall not be combined with other inclusive bid items.

- a. Bid Item No. 4a – Foreman regular time (see "m" Measurement and "n" Payment below)

- b. Bid Item No. 4b – Foreman overtime (see “m” Measurement and “n” Payment below)
- c. Bid Item No. 4c – Operator regular time (see “m” Measurement and “n” Payment below)
- d. Bid Item No. 4d – Operator Overtime (see “m” Measurement and “n” Payment below)
- e. Bid Item No. 4e – Truck Driver regular time (see “m” Measurement and “n” Payment below)
- f. Bid Item No. 4f – Truck driver overtime (see “m” Measurement and “n” Payment below)
- g. Bid Item No. 4g – Pipe Layer regular time (see “m” Measurement and “n” Payment below)
- h. Bid Item No. 4h – Pipe Layer overtime (see “m” Measurement and “n” Payment below)
- i. Bid Item No. 4i – Laborer regular time (see “m” Measurement and “n” Payment below)
- j. Bid Item No. 4j – Laborer overtime (see “m” Measurement and “n” Payment below)
- k. Bid Item No. 4k – Preconstruction Video (see “m” Measurement and “n” Payment below)
- l. Bid Item No. 4l – Asbuilt Survey (see “m” Measurement and “n” Payment below)
- m. Measurement: Measurement of various worker regular time and overtime shall be based on the per unit price for each labor hour category. Use of labor hours, whether regular hours or overtime, shall only be at the review and approval of the City.
- n. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor performed as approved by the City to complete the bid item. Contractor will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without Owner consent given after prior notice to Engineer.

6. Equipment These bid items are designated for as-needed tasks not covered under other bid items, and equipment hours should only be used for work outside the scope of other specified items. It is essential to ensure these hours do not overlap with work covered by other bid line items, avoiding duplication of payment. Each task using equipment hours must be separately documented to prevent billing redundancy, and equipment hours under this item shall not be combined with other inclusive bid items.

- a. Bid Item No. 5a – Foreman’s pickup truck with hand tools (see “w” Measurement and “x” Payment below)
- b. Bid Item No. 5b – Job truck with tools (see “w” Measurement and “x” Payment below)
- c. Bid Item No. 5c – Tractor & Trailer (Transport) (see “w” Measurement and “x” Payment below)
- d. Bid Item No. 5d – Track Hoe (to 100 HP) (see “w” Measurement and “x” Payment below)
- e. Bid Item No. 5e – Track Hoe (101 HP to 170 HP) (see “w” Measurement and “x” Payment below)
- f. Bid Item No. 5f – Track Hoe (170 HP and up) (see “w” Measurement and “x” Payment below)
- g. Bid Item No. 5g – Rubber Tired Backhoe (see “w” Measurement and “x” Payment below)
- h. Bid Item No. 5h – Wheel Loader (to 150 HP) (see “w” Measurement and “x” Payment below)
- i. Bid Item No. 5i – Wheel Loader (151 HP and up) (see “w” Measurement and “x” Payment below)

- j. Bid Item No. 5j – Track Type Tractors (to 100 HP) (see “w” Measurement and “x” Payment below)
- k. Bid Item No. 5k – Track Type Tractors (101 HP and up) (see “w” Measurement and “x” Payment below)
- l. Bid Item No. 5l – Dump Truck (Tandem Axle) (see “w” Measurement and “x” Payment below)
- m. Bid Item No. 5m – Plate Tamp (see “w” Measurement and “x” Payment below)
- n. Bid Item No. 5n – 3” Trash Pump (see “w” Measurement and “x” Payment below)
- o. Bid Item No. 5o – 4” Double Diaphragm pump (see “w” Measurement and “x” Payment below)
- p. Bid Item No. 5p – Air Compressor (125 CFM min.) (see “w” Measurement and “x” Payment below)
- q. Bid Item No. 5q – 4” Jet Pump (see “w” Measurement and “x” Payment below)
- r. Bid Item No. 5r – Emergency Hauling up to 2500 gallons (see “w” Measurement and “x” Payment below)
- s. Bid Item No. 5s – Emergency Hauling over 2500 gallons (see “w” Measurement and “x” Payment below)
- t. Bid Item No. 5t – Street Sweeper (see “w” Measurement and “x” Payment below)
- u. Bid Item No. 5u – Mobile Light Tower (see “w” Measurement and “x” Payment below)
- v. Bid Item No. 5v – Vactor Truck (see “w” Measurement and “x” Payment below)
- w. Measurement: Measurement for these items shall be at the unit price for the specific equipment necessary as defined in the bid form. Use of equipment at an hourly rate shall only be where not already included in the bid item and at the review and approval of the City.
- x. Payment: Payment will be of the unit price for furnishing all tools and equipment for performing all operations necessary to complete the work under the contract, including but not limited to, job trucks with tools, tractors and trailers for transport, track hoes of various horsepower, rubber tired backhoes, wheel loaders, track type tractors, dump trucks, plate tramps, trash pumps, diaphragm pumps, air compressors, jet pumps, emergency hauling, street sweepers, mobile light towers, vactor trucks, and all other associated costs to complete the bid item.

7. Bid Item No. 6a – Sodding

- a. Measurement: Measurement for this item will be based on the actual unit quantity, square foot, of sodding installed. b. Payment: Payment will be of the unit price for furnishing all necessary labor, materials, and equipment necessary to install sodding and other related items for full work site remediation at the approval of the Owner. This shall also include necessary maintenance of sodding to ensure proper integration of the sodding with the existing work site.

8. Bid Item No. 6b – Brush Removal

- a. Measurement: Measurement for this item shall be the actual weight of brush removal completed. The weight shall be based on tipping tickets from landfill or other documentation method as accepted by the County and/or resident project representative. b. Payment: Payment will be

the unit price for furnishing all necessary labor, materials, and equipment necessary for brush removal, hauling, and proper disposal of the associated material.

9.         **Bid Item No. 6c – Tree Protection**

- a.             Measurement: Measurement for this item shall be the actual number of trees protected as required by the work or City direction.
- b.             Payment: Payment will be the unit price for furnishing all necessary labor, materials, and equipment necessary for to protect the tree in accordance with City standard detail 909. This shall include but not be limited to barriers to protect tree at drip line, posts, and all other items necessary to complete this bid item.

10.         **Tree Removal**

- a.             **Bid Item No. 6d – Tree Removal (<6" Truck Diameter) (see "e" Measurement and "f" Payment below)**
- b.             **Bid Item No. 6e – Tree Removal (6"-12" Truck Diameter) (see "e" Measurement and "f" Payment below)**
- c.             **Bid Item No. 6f – Tree Removal (13"-18" Truck Diameter) (see "e" Measurement and "f" Payment below)**
- d.             **Bid Item No. 6g – Tree Removal (>18" Truck Diameter) (see "e" Measurement and "f" Payment below)**
- e.             Measurement: Measurement for this item shall be the actual number of trees removed, based on the trunk diameter size. Tree replacement shall be determined on an as needed basis.
- f.             Payment: Payment of the applicable unit price shall be for furnishing all necessary labor, materials, and equipment necessary for brush removal, tree protection, tree removal, stump removal, hauling, and disposal of tree and associated material for full work site remediation at the approval of the Owner.

11.         **Remove and Replace Concrete Sidewalk**

- a.             **Bid Item No. 7a – Remove and Replace Concrete Sidewalk, (4" Min Thickness) (see "c" Measurement and "d" Payment below)**
- b.             **Bid Item No. 7b – Remove and Replace Concrete Sidewalk, (6" Min Thickness) (see "c" Measurement and "d" Payment below)**
- c.             Measurement: Measurement shall be the actual square yard of concrete sidewalk of each thickness specified satisfactorily removed and subsequently furnished and installed.
- d.             Payment: Payment shall constitute full compensation for all labor, materials, and equipment required for demolition/removal of existing concrete sidewalk, preparation of ground surface (grading, compaction, etc.) to accept new sidewalk, preparation of the surface, cast in place formwork, rebar and/or wire mesh, fiber, expansion joints, ADA accessible ramps, detectable warning surfaces, disposal of existing concrete and waste, grout repair and smoothing, material testing and incidental work as shown on the Contract Drawings and as specified. All costs associated with the provision of an acceptable alternate (temporary) sidewalk surface or detour as required to facilitate pedestrian traffic during the course of work shall also be included.

12.         **Bid Item No. 7c – Remove and Replace Concrete Driveway**

- a. Measurement: Measurement shall be the actual square yard of concrete driveway satisfactorily removed and subsequently furnished and installed.
- b. Payment: Payment of the applicable unit price shall constitute full compensation for all labor, materials, and equipment required for demolition/removal of existing concrete driveway, preparation of ground surface (grading, compaction, etc.) to accept new sidewalk, preparation of the surface, cast in place formwork, rebar and/or wire mesh, fiber, expansion joints, disposal of existing concrete and waste, grout repair and smoothing, material testing and incidental work as shown on the Contract Drawings and as specified. All costs associated with the provision of an acceptable alternate (temporary) sidewalk and/or driving surface or detour as required to facilitate pedestrian and vehicular traffic during the course of work shall also be included.

13. Asphalt Milling and Resurfacing

- a. Bid Item No. 7d – Full Width Milling (Up to 2") (see "c" Measurement and "d" Payment below)
- b. Bid Item No. 7e – Full Width Milling (2" to 4") (see "c" Measurement and "d" Payment below)
- c. Measurement: Measurement for this item will be based on the actual square yards of asphalt milled.
- d. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for asphalt milling preparation of the surface, disposal of existing asphalt and waste, smoothing, thermoplastic striping, traffic loops, material testing, and incidental work as shown on the Contract Drawings and as specified. Payment shall be for asphalt milled and resurfaced and shall not include the areas where complete asphalt removal and replacement is specified.

14. Asphalt Resurfacing

- a. Bid Item No. 7f – SP 12.5 Asphalt Concrete Resurfacing (see "c" Measurement and "d" Payment below)
- b. Bid Item No. 7g – SP 9.5 Asphalt Concrete Resurfacing (see "c" Measurement and "d" Payment below)
- c. Measurement: Measurement for this item shall be the actual weight (ton) of each type asphalt actually installed. Contractor shall provide any documentation of concrete asphalt used.
- d. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for asphalt resurfacing including but not limited to preparation of the surface, smoothing, thermoplastic striping, traffic loops, material testing, and incidental work as shown on the Contract Drawings and as specified. Payment shall be for asphalt milled and resurfaced and shall not include the areas where complete asphalt removal and replacement is specified.

15. Pavement Marking

- a. Bid Item No. 7h – Pavement Marking - Crosswalks (Lane) (see "i" Measurement and "j" Payment below)
- b. Bid Item No. 7i – Pavement Marking - Stop bars (Lane) (see "i" Measurement and "j" Payment below)
- c. Bid Item No. 7j – Pavement Marking - School Crossing/RR (see "i" Measurement and "j" Payment below)

- d. Bid Item No. 7k – Pavement Marking - Turn, Straight, Combo Arrows (see "i" Measurement and "j" Payment below) e. Bid Item No. 7l – Pavement Marking - Dashed (White, Yellow, or Double Yellow) (see "i" Measurement and "j" Payment below)
- f. Bid Item No. 7m – Pavement Marking - Solid White (see "i" Measurement and "j" Payment below)
- g. Bid Item No. 7n – Pavement Marking - Solid Double Yellow (see "i" Measurement and "j" Payment below)
- h. Bid Item No. 7o – Pavement Marking - Solid Yellow (see "i" Measurement and "j" Payment below)
- i. **Measurement:** Measurement for these items shall be the actual quantity of each bid item satisfactorily furnished and installed. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City. **Payment:** Payment will be the unit price for furnishing all necessary labor, material, and equipment necessary to complete installation of pavement markings as listed in each bid item. This shall include but not be limited to thermoplastic striping material, equipment, forms, etc. for the complete installation of pavement markings as defined in each bid item.

#### 16. Temporary Pavement Marking

- a. Bid Item No. 7p – Temporary Pavement Marking - Turn, Straight, Combo Arrows (see "f" Measurement and "g" Payment below)
- b. Bid Item No. 7q – Temporary Pavement Marking - Dashed (White, Yellow, or Double Yellow) (see "f" Measurement and "g" Payment below)
- c. Bid Item No. 7r – Temporary Pavement Marking - Solid White (see "f" Measurement and "g" Payment below)
- d. Bid Item No. 7s – Temporary Pavement Marking - Solid Double Yellow (see "f" Measurement and "g" Payment below) e. Bid Item No. 7t – Temporary Pavement Marking - Solid Yellow (see "f" Measurement and "g" Payment below)
- f. **Measurement:** Measurement for these items shall be the actual quantity satisfactorily furnished and installed. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City.
- g. **Payment:** Payment of the applicable unit price will be for furnishing all necessary labor, material, and equipment necessary to complete installation of pavement markings as listed in each bid item. This shall include but not be limited to temporary thermoplastic striping material, equipment, forms, etc. for the complete installation of pavement markings as defined in each bid item.

17. Remove and Replace Concrete Curb and Gutter

- a. Bid Item No. 7u – Remove and Replace Concrete Curb and Gutter (FDOT Type A) (see "d" Measurement and "e" Payment below)
- b. Bid Item No. 7v – Remove and Replace Concrete Curb and Gutter (FDOT Type E) (see "d" Measurement and "e" Payment below)
- c. Bid Item No. 7w – Remove and Replace Concrete Curb and Gutter (FDOT Type F) (see "d" Measurement and "e" Payment below)
- d. **Measurement:** Measurement will be the actual linear footage of the defined type of concrete curb satisfactorily removed, furnished, and installed.

e. Payment: Payment shall constitute full compensation for all labor, materials and equipment for concrete curb and gutter installation, preparation of the surface, case in place formwork, rebar and metal mesh, expansion joints, joint filler, joint seal, disposal of existing concrete and waste, smoothing, material testing and any incidental work to complete the bid item.

18. Bid Item No. 7x – 3000 psi Concrete

a. Measurement: Measurement shall be the actual cubic yards of concrete satisfactorily removed, furnished, and installed. b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment required for installation of concrete structures, preparation of ground surface (grading, compaction, etc.) to accept new concrete, cast in place formwork, rebar and/or wire mesh, fiber, expansion joints, disposal of existing concrete and waste, grout repair and smoothing, material testing and incidental work to complete the bid item.

19. Miscellaneous Material

- a. Bid Item No. 7y – Off Site Selected Fill (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 7z – Limerock Base Material (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 7aa – Crushed Concrete Base Material (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 7ab – Stabilized Subgrade (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 7ac – # 57 Washed Stone (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 7ad – Removal of Unsuitable Soil (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 7ae – Removal of buried concrete (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 7af – Removal of hazardous material (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 7ag – Rip Rap (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 7ah – Flowable Fill (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 7ai – Brick Pavers inclusive of leveling and joint sand (see "m" Measurement and "n" Payment below) l. Bid Item No. 7aj – Geogrid (see "m" Measurement and "n" Payment below)
- m. Measurement: Measurement of various items for miscellaneous material for civil work shall be at the unit price specified in the contract documents, and shall include furnishing all labor, equipment, preparation, materials, and incidentals required to install the material as required by the Contract documents. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City.
- n. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, and equipment necessary to perform site work and maintain, including but not limited to off site selected fill, limerock base material, crushed concrete base material, stabilized subgrade, #57 washed stone, rip rap, flowable fill, road plate, brick pavers, prick paver level sand, geo grid, material testing, and incidental work as shown on the Contract Drawings, according to OSHA standards, FDOT standards, and as specified herein.

20. Miscellaneous Materials – Shoring and Road Plates

- a. Bid Item No. 7ak – Shoring (4' to 6' deep) (see "d" Measurement and "e" Payment below)
- b. Bid Item No. 7al – Shoring (6' to 12' deep) (see "d" Measurement and "e" Payment below)
- c. Bid Item No. 7am – Road Plates (see "d" Measurement and "e" Payment below)
- d. Measurement: Measurement of miscellaneous material for civil work shall be at the unit price specified in the contract documents, and shall include furnishing all labor, equipment, preparation, materials, and incidentals required to install the material as required. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City.
- e. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, and equipment necessary to perform site work and maintain, including but not limited to excavation, site preparation, delivery, installation of proposed shoring/road plates, removal, restoration and incidental work as shown on the Contract Drawings, according to OSHA standards, FDOT standards, and as specified herein.

21. Bid Item No 8 – Well Point Dewatering

- a. Measurement: Measurement shall be the actual linear feet per day of wellpoint dewatering furnished and installed.
- b. Payment: Payment of the applicable unit price shall be full compensation for furnishing all equipment; labor, permits, and materials to install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work in accordance with the requirements set forth, as shown on the Drawings, and/or geotechnical report.

22. Grout Fill and Abandon Main

- a. Bid Item No. 9a – 2"-6" (see "e" Measurement and "f" Payment below)
- b. Bid Item No. 9b – 8"-12" (see "e" Measurement and "f" Payment below)
- c. Bid Item No. 9c – 16"-24" (see "e" Measurement and "f" Payment below)
- d. Bid Item No. 9d – >30" (see "e" Measurement and "f" Payment below)
- e. Measurement: Measurement shall be horizontally, above the centerline of the pipe, of pipe grout filled and abandoned. The limits of measurement shall be as shown on the plans or as directed by the Project Representative.
- f. Payment: Payment will be according to the diameter and per linear foot cost as set forth on the Bid Form. The unit price includes furnishing and installing all material, equipment, and labor required for complete abandonment grouting, including air venting, testing, temporary plugs, caps, and all incidentals necessary to complete this bid item.

23. Remove Abandoned Main

- a. Bid Item No. 10a – 2"-6" (see "e" Measurement and "f" Payment below)
- b. Bid Item No. 10b – 8"-12" (see "e" Measurement and "f" Payment below)
- c. Bid Item No. 10c – 16"-24" (see "e" Measurement and "f" Payment below)
- d. Bid Item No. 10d – >30" (see "e" Measurement and "f" Payment below)
- e. Measurement: Measurement will be horizontally, above the centerline of the pipe. The limits of measurement shall be as shown on the plans or as directed by the Project Representative.
- f. Payment: Payment will be in accordance per linear foot cost as set forth on the bid form. The unit cost includes furnishing all labor, materials, and equipment necessary for the complete removal

of pipe as required to complete the bid item. This shall include excavation, sheeting/shoring, stabilization, removal of existing pipeline, fill, compaction, final grading, proper disposal of any pipeline, and associated items necessary to complete the bid item.

24. PVC Installed Via Open Cut (Inclusive of all labor, material, and associated restraints)
  - a. Bid Item No. 11a – 4" diameter (0' to 5') (see "q" Measurement and "r" Payment below)
  - b. Bid Item No. 11b – 4" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
  - c. Bid Item No. 11c – 4" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
  - d. Bid Item No. 11d – 4" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)
  - e. Bid Item No. 11e – 6" diameter (0' to 5'), (see "q" Measurement and "r" Payment below)
  - f. Bid Item No. 11f – 6" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
  - g. Bid Item No. 11g – 6" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
  - h. Bid Item No. 11h – 6" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)
  - i. Bid Item No. 11i – 8" diameter (0' to 5'), (see "q" Measurement and "r" Payment below)
  - j. Bid Item No. 11j – 8" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
  - k. Bid Item No. 11k – 8" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
  - l. Bid Item No. 11l – 8" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)
  - m. Bid Item No. 11m – 10" diameter (0' to 5'), (see "q" Measurement and "r" Payment below)
  - n. Bid Item No. 11n – 10" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
  - o. Bid Item No. 11o – 10" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
  - p. Bid Item No. 11p – 10" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)
  - q. Measurement: The quantity for payment shall be the actual number of linear feet of main pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.
  - r. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.
25. Ductile Iron Installed Via Open Cut (Inclusive of all labor, material, and associated restraints)
  - a. Bid Item No. 12a – 4" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)

- b. Bid Item No. 12b – 4" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment below)
- c. Bid Item No. 12c – 4" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment below)
- d. Bid Item No. 12d – 4" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment below)
- e. Bid Item No. 12e – 6" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- f. Bid Item No. 12f – 6" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment below)
- g. Bid Item No. 12g – 6" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment below)
- h. Bid Item No. 12h – 6" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment below)
- i. Bid Item No. 12i – 8" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)
- j. Bid Item No. 12j – 8" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment below)
- k. Bid Item No. 12k – 8" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment below)
- l. Bid Item No. 12l – 8" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment below)
- m. Bid Item No. 12m – 10" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)
- n. Bid Item No. 12n – 10" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment below)
- o. Bid Item No. 12o – 10" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment below)
- p. Bid Item No. 12p – 10" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment below)
- q. Bid Item No. 12q – 12" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)
- r. Bid Item No. 12r – 12" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment below)
- s. Bid Item No. 12s – 12" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment below)
- t. Bid Item No. 12t – 12" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment below)
- u. Bid Item No. 12u – 14" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- v. Bid Item No. 12v – 14" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)

- w. Bid Item No. 12w – 14" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- x. Bid Item No. 12x – 14" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- y. Bid Item No. 12y – 16" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- z. Bid Item No. 12z – 16" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- aa. Bid Item No. 12aa – 16" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- bb. Bid Item No. 12ab – 16" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- cc. Bid Item No. 12ac – 18" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)
- dd. Bid Item No. 12ad – 18" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- ee. Bid Item No. 12ae – 18" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- ff. Bid Item No. 12af – 18" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- gg. Bid Item No. 12ag – 20" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- hh. Bid Item No. 12ah – 20" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- ii. Bid Item No. 12ai – 20" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- jj. Bid Item No. 12aj – 20" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- kk. Bid Item No. 12ak – 24" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- ll. Bid Item No. 12al – 24" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- mm. Bid Item No. 12am – 24" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- nn. Bid Item No. 12an – 24" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- oo. Bid Item No. 12ao – 30" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- pp. Bid Item No. 12ap – 30" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- qq. Bid Item No. 12aq – 30" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)

- rr. Bid Item No. 12ar – 30" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- ss. Bid Item No. 12as – 36" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- tt. Bid Item No. 12at – 36" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- uu. Bid Item No. 12au – 36" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- vv. Bid Item No. 12av – 36" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)

ww. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

xx. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

- 26. HDPE Installed Via Open Cut (Inclusive all Labor, Material, and Associated Restraints)
  - a. Bid Item No. 13a – 4" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
  - b. Bid Item No. 13b – 4" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
  - c. Bid Item No. 13c – 4" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
  - d. Bid Item No. 13d – 4" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
  - e. Bid Item No. 13e – 6" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
  - f. Bid Item No. 13f – 6" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
  - g. Bid Item No. 13g – 6" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
  - h. Bid Item No. 13h – 6" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
  - i. Bid Item No. 13i – 8" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
  - j. Bid Item No. 13j – 8" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
  - k. Bid Item No. 13k – 8" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
  - l. Bid Item No. 13l – 8" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
  - m. Bid Item No. 13m – 10" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
  - n. Bid Item No. 13n – 10" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)

- o. Bid Item No. 13o – 10" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- p. Bid Item No. 13p – 10" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- q. Bid Item No. 13q – 12" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- r. Bid Item No. 13r – 12" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- s. Bid Item No. 13s – 12" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- t. Bid Item No. 13t – 12" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- u. Bid Item No. 13u – 16" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- v. Bid Item No. 13v – 16" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- w. Bid Item No. 13w – 16" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- x. Bid Item No. 13x – 16" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- y. Bid Item No. 13y – 18" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- z. Bid Item No. 13z – 18" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- aa. Bid Item No. 13aa – 18" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- bb. Bid Item No. 13ab – 18" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- cc. Bid Item No. 13ac – 20" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- dd. Bid Item No. 13ad – 20" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- ee. Bid Item No. 13ae – 20" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- ff. Bid Item No. 13af – 20" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- gg. Bid Item No. 13ag – 24" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- hh. Bid Item No. 13ah – 24" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- ii. Bid Item No. 13ai – 24" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- jj. Bid Item No. 13aj – 24" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- kk. Bid Item No. 13ak – 30" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)

- ll. Bid Item No. 13al – 30" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- mm. Bid Item No. 13am – 30" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- nn. Bid Item No. 13an – 30" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- oo. Bid Item No. 13ao – 36" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- pp. Bid Item No. 13ap – 36" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- qq. Bid Item No. 13aq – 36" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- rr. Bid Item No. 13ar – 36" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- ss. **Measurement:** The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.
- tt. **Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, fusing, connections, adapters, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, thrust blocks, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

27. **Ductile Iron Fittings Installed Via Open Cut (Inclusive all Labor, Material, and Associated Restraints)**

- a. Bid Item No. 14a – 4" diameter, (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 14b – 6" diameter, (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 14c – 8" diameter, (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 14d – 10" diameter, (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 14e – 12" diameter, (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 14f – 14" diameter, (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 14g – 16" diameter, (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 14h – 18" diameter, (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 14i – 20" diameter, (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 14j – 24" diameter, (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 14k – 30" diameter, (see "m" Measurement and "n" Payment below)

- I. Bid Item No. 14I – 36" diameter, (see "m" Measurement and "n" Payment below)
  - m. Measurement: The quantity for payment shall be the actual weight of ductile iron fittings of each size satisfactorily furnished and installed. Fittings may include but not be limited to bends, tees, crosses, reducers, sleeves, wyes, flange, blind flange, plugs, and caps. Fittings may also include various end-types necessary to complete the work including but not limited to mechanical joint, flanged, and plain end.
  - n. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.
- 28. Pipe Bursting
  - a. Bid Item No. 15a – Furnish and Install 4" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - b. Bid Item No. 15b – Furnish and Install 6" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - c. Bid Item No. 15c – Furnish and Install 8" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - d. Bid Item No. 15d – Furnish and Install 10" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - e. Bid Item No. 15e – Furnish and Install 12" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - f. Bid Item No. 15f – Furnish and Install 16" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - g. Bid Item No. 15g – Furnish and Install 20" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - h. Bid Item No. 15h – Furnish and Install 24" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - i. Bid Item No. 15i – Furnish and Install 30" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
  - j. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.
  - k. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; bursting pits and equipment, clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling

joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

29. **Jack and Bore**

- a. Bid Item No. 16a – Furnish and Install 4" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- b. Bid Item No. 16b – Furnish and Install 6" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- c. Bid Item No. 16c – Furnish and Install 8" PVC or DI Pipe in 18" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- d. Bid Item No. 16d – Furnish and Install 12" PVC or DI Pipe in 24" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- e. Bid Item No. 16e – Furnish and Install 16" PVC or DI Pipe in 30" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- f. Bid Item No. 16f – Furnish and Install 20" PVC or DI Pipe in 36" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- g. Bid Item No. 16g – Furnish and Install 24" PVC or DI Pipe in 42" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- h. Bid Item No. 16h – Furnish and Install 30" PVC or DI Pipe in 48" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- i. Bid Item No. 16i – Furnish and Install 36" PVC or DI Pipe in 54" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- j. Bid Item No. 16j – Furnish and Install 42" PVC or DI Pipe in 60" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- k. **Measurement:** The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.
- l. **Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes casing, all necessary fittings, caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

30. **Directional Drilling**

- a. Bid Item No. 17a – Furnish and Install 4" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)

- b. Bid Item No. 17b – Furnish and Install 6" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- c. Bid Item No. 17c – Furnish and Install 8" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- d. Bid Item No. 17d – Furnish and Install 10" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- e. Bid Item No. 17e – Furnish and Install 12" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- f. Bid Item No. 17f – Furnish and Install 16" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- g. Bid Item No. 17g – Furnish and Install 20" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- h. Bid Item No. 17h – Furnish and Install 24" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- i. Bid Item No. 17i – Furnish and Install 30" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- j. Bid Item No. 17j – Furnish and Install 36" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- k. Bid Item No. 17k – Furnish and Install 4" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- l. Bid Item No. 17l – Furnish and Install 6" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- m. Bid Item No. 17m – Furnish and Install 8" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- n. Bid Item No. 17n – Furnish and Install 10" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- o. Bid Item No. 17o – Furnish and Install 12" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- p. Bid Item No. 17p – Furnish and Install 16" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- q. Bid Item No. 17q – Furnish and Install 20" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- r. Bid Item No. 17r – Furnish and Install 24" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- s. Bid Item No. 17s – Furnish and Install 30" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- t. Bid Item No. 17t – Furnish and Install 36" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- u. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured horizontally along the centerline of

the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

v. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This also includes open cuts at launching and receiving pits, temporary fencing, joints, coupling, machinery, HDD equipment, exploratory pits, protection of existing utilities, disposal of spoil or other materials, and hydrostatic testing. This item also includes all necessary plugs, sleeves, restraining devices, HDPE adapters, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

31. Slipline

a. Bid Item No. 18a – Furnish and Install 4" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

b. Bid Item No. 18b – Furnish and Install 6" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

c. Bid Item No. 18c – Furnish and Install 8" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

d. Bid Item No. 18d – Furnish and Install 10" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

e. Bid Item No. 18e – Furnish and Install 12" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

f. Bid Item No. 18f – Furnish and Install 16" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

g. Bid Item No. 18g – Furnish and Install 20" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

h. Bid Item No. 18h – Furnish and Install 24" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

i. Bid Item No. 18i – Furnish and Install 30" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

j. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured horizontally along the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

k. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This also includes open cuts at launching and receiving pits, temporary fencing, joints, coupling, machinery, HDD equipment,

exploratory pits, protection of existing utilities, disposal of spoil or other materials, and hydrostatic testing. This item also includes all necessary plugs, sleeves, restraining devices, HDPE adapters, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

32. **Temporary Water Service**

- a. Bid Item No. 19a – 2" Temporary HDPE Main (including Tap Connections to Existing Main and temporary service lines) (see "d" Measurement and "e" Payment below)
- b. Bid Item No. 19b – 4" Temporary HDPE Main (Including Tap Connections to Existing Main and temporary service lines) (see "d" Measurement and "e" Payment below)
- c. Bid Item No. 19c – 6" Temporary HDPE Main (Including Tap Connections to Existing Main and temporary service lines) (see "d" Measurement and "e" Payment below)
- d. **Measurement:** Measurement for this item will be based on the actual linear feet of temporary potable water service inclusive of fittings, taps and tapping valves, hose bibs, valves, and connections to main satisfactorily furnished and installed. **e. Payment:** Payment of the unit price shall be full compensation for furnishing all labor, materials, design, and equipment to furnish and install the temporary potable water service as shown on the Drawings and as specified herein. This item shall include all related material and work required to complete this item including temporary piping, connections to existing main (including tapping sleeve, valves, etc.), connections to existing services, fittings, valves, disinfection, bacteriological testing, and any incidental items to complete this bid item.

33. **Gate Valves with 3-Piece Valve Box**

- a. Bid Item No. 20a – 4" diameter (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 20b – 6" diameter (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 20c – 8" diameter (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 20d – 10" diameter (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 20e – 12" diameter (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 20f – 14" diameter (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 20g – 16" diameter (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 20h – 18" diameter (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 20i – 20" diameter (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 20j – 24" diameter (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 20k – 30" diameter (see "m" Measurement and "n" Payment below)
- l. Bid Item No. 20l – 36" diameter (see "m" Measurement and "n" Payment below)
- m. **Measurement:** The quantity for payment shall be the actual number of each size of gate valve satisfactorily furnished, installed, and incorporated into the piping system.
- n. **Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and installing the valve complete with valve box, cover, valve box extension, operating nut extension, valve wrench, restraining devices, test station box, concrete collar, identification disk (where applicable), bedding material, adjusting top of valve box to finished grade,

clearing and grubbing, excavation, sheeting, shoring and bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work to complete this item.

34. **Butterfly Valves with 3-Piece Valve Box**
  - a. Bid Item No. 21a – 12" diameter (see "m" Measurement and "n" Payment below)
  - b. Bid Item No. 21b – 16" diameter (see "m" Measurement and "n" Payment below)
  - c. Bid Item No. 21c – 18" diameter (see "m" Measurement and "n" Payment below)
  - d. Bid Item No. 21d – 20" diameter (see "m" Measurement and "n" Payment below)
  - e. Bid Item No. 21e – 24" diameter (see "m" Measurement and "n" Payment below)
  - f. Bid Item No. 21f – 30" diameter (see "m" Measurement and "n" Payment below)
  - g. **Measurement:** The quantity for payment shall be the actual number of each size of butterfly valve satisfactorily furnished, installed, and incorporated into the piping system.
  - h. **Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and installing the valve complete with valve box, cover, valve box extension, operating nut extension, valve wrench, restraining devices, test station box, concrete collar, identification disk (where applicable), bedding material, adjusting top of valve box to finished grade, clearing and grubbing, excavation, sheeting, shoring and bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work to complete this item.
35. **Service Saddle Replacement**
  - a. Bid Item No. 22a – 3/4" diameter (see "n" Measurement and "o" Payment below)
  - b. Bid Item No. 22b – 1" diameter (see "n" Measurement and "o" Payment below)
  - c. Bid Item No. 22c – 1.5" diameter (see "n" Measurement and "o" Payment below)
  - d. Bid Item No. 22d – 2" diameter (see "n" Measurement and "o" Payment below)
  - e. Bid Item No. 22e – 4" diameter (see "n" Measurement and "o" Payment below)
  - f. Bid Item No. 22f – 6" diameter (see "n" Measurement and "o" Payment below)
  - g. Bid Item No. 22g – 8" diameter (see "n" Measurement and "o" Payment below)
  - h. Bid Item No. 22h – 10" diameter (see "n" Measurement and "o" Payment below)
  - i. Bid Item No. 22i – 12" diameter (see "n" Measurement and "o" Payment below)
  - j. Bid Item No. 22j – 14" diameter (see "n" Measurement and "o" Payment below)
  - k. Bid Item No. 22k – 16" diameter (see "n" Measurement and "o" Payment below)
  - l. Bid Item No. 22l – 18" diameter (see "n" Measurement and "o" Payment below)
  - m. Bid Item No. 22m – 20" diameter (see "n" Measurement and "o" Payment below)
  - n. **Measurement:** The quantity for payment shall be the actual number of each size and type service saddle satisfactorily furnished, installed, and incorporated into the piping system. Sizing shall be based on the pipe diameter the service saddle is installed on, regardless of host pipe size.
  - o. **Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the service saddle and all other related and necessary

materials, work and equipment required to construct a complete operable service saddle. This shall include but not be limited to service saddle, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable wet tap to complete the connections identified in the Contract Documents.

36. **Tapping Sleeves and Tapping Valves**

- a. Bid Item No. 23a – 4" diameter (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 23b – 6" diameter (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 23c – 8" diameter (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 23d – 10" diameter (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 23e – 12" diameter (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 23f – 14" diameter (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 23g – 16" diameter (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 23h – 18" diameter (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 23i – 20" diameter (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 23j – 24" diameter (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 23k – 30" diameter (see "m" Measurement and "n" Payment below)
- l. Bid Item No. 23l – 36" diameter (see "m" Measurement and "n" Payment below)
- m. **Measurement:** Measurement will be the actual number of each tapping saddle, tapping valve, and wet tap satisfactorily furnished, installed and incorporated into the piping system. Sizing shall be based on the host pipe size, regardless of outlet size. **n. Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the tapping saddle, tapping valve, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable wet tap to complete the connections identified in the Contract Documents.

37. **Insert Gate Valve and Valve Box**

- a. Bid Item No. 24a – 4" diameter (see "f" Measurement and "g" Payment below)
- b. Bid Item No. 24b – 6" diameter (see "f" Measurement and "g" Payment below)
- c. Bid Item No. 24c – 8" diameter (see "f" Measurement and "g" Payment below)
- d. Bid Item No. 24d – 10" diameter (see "f" Measurement and "g" Payment below)
- e. Bid Item No. 24e – 12" diameter (see "f" Measurement and "g" Payment below)

f. Measurement: The quantity for payment shall be the actual number of each size and type valve satisfactorily furnished, installed, and incorporated into the piping system while maintaining constant pressure and service. Only complete Insert Gate Valves shall be acceptable with full tapping and removal of the pipe section. Top of pipe style valves will not be acceptable.

g. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and installing the Insert Gate Valve complete with valve box, cover, valve box extension, operating nut extension, valve wrench, restraining devices, test station box, concrete collar, identification disk (where applicable), bedding material, adjusting top of valve box to finished grade, clearing and grubbing, excavation, sheeting, shoring and bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work to complete this item.

38. Line Stops

- a. Bid Item No 25a – 2" diameter (see "n" Measurement and "o" Payment below)
- b. Bid Item No. 25b – 4" diameter (see "n" Measurement and "o" Payment below)
- c. Bid Item No. 25c – 6" diameter (see "n" Measurement and "o" Payment below)
- d. Bid Item No. 25d – 8" diameter (see "n" Measurement and "o" Payment below)
- e. Bid Item No. 25e – 10" diameter (see "n" Measurement and "o" Payment below)
- f. Bid Item No. 25f – 12" diameter (see "n" Measurement and "o" Payment below)
- g. Bid Item No. 25g – 14" diameter (see "n" Measurement and "o" Payment below)
- h. Bid Item No. 25h – 16" diameter (see "n" Measurement and "o" Payment below)
- i. Bid Item No. 25i – 18" diameter (see "n" Measurement and "o" Payment below)
- j. Bid Item No. 25j – 20" diameter (see "n" Measurement and "o" Payment below)
- k. Bid Item No. 25k – 24" diameter (see "n" Measurement and "o" Payment below)
- l. Bid Item No. 25l – 30" diameter (see "n" Measurement and "o" Payment below)
- m. Bid Item No. 25m – 36" diameter (see "n" Measurement and "o" Payment below)

n. Measurement: Measurement will be the actual number of each linestop and linestop saddle satisfactorily furnished, installed and incorporated into the piping system.

o. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the linestop, full body saddle, temporary valve, completion plug, concrete collar, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable linestop to isolate the required pipeline for installation and repairs without interrupting service unless otherwise specified.

39. Repair Clamp

- a. Bid Item No. 26a – 2" diameter (see "n" Measurement and "o" Payment below)

- b. Bid Item No. 26b – 4" diameter (see "n" Measurement and "o" Payment below)
- c. Bid Item No. 26c – 6" diameter (see "n" Measurement and "o" Payment below)
- d. Bid Item No. 26d – 8" diameter (see "n" Measurement and "o" Payment below)
- e. Bid Item No. 26e – 10" diameter (see "n" Measurement and "o" Payment below)
- f. Bid Item No. 26f – 12" diameter (see "n" Measurement and "o" Payment below)
- g. Bid Item No. 26g – 14" diameter (see "n" Measurement and "o" Payment below)
- h. Bid Item No. 26h – 16" diameter (see "n" Measurement and "o" Payment below)
- i. Bid Item No. 26i – 18" diameter (see "n" Measurement and "o" Payment below)
- j. Bid Item No. 26j – 20" diameter (see "n" Measurement and "o" Payment below)
- k. Bid Item No. 26k – 24" diameter (see "n" Measurement and "o" Payment below)
- l. Bid Item No. 26l – 30" diameter (see "n" Measurement and "o" Payment below)
- m. Bid Item No. 26m – 36" diameter (see "n" Measurement and "o" Payment below)
- n. Measurement: Measurement will be the actual number of each size repair clamps satisfactorily furnished, installed, and incorporated into the piping system.
- o. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the repair clamp including but not limited to full body sleeve, concrete collar, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete the bid item.

40. Restrained Joint

- a. Bid Item No. 27a – 2" Restrained Joint (see "l" Measurement and "m" Payment below)
- b. Bid Item No. 27b – 4" Restrained Joint (see "l" Measurement and "m" Payment below)
- c. Bid Item No. 27c – 6" Restrained Joint (see "l" Measurement and "m" Payment below)
- d. Bid Item No. 27d – 8" Restrained Joint (see "l" Measurement and "m" Payment below)
- e. Bid Item No. 27e – 10" Restrained Joint (see "l" Measurement and "m" Payment below)
- f. Bid Item No. 27f – 12" Restrained Joint (see "l" Measurement and "m" Payment below)
- g. Bid Item No. 27g – 16" Restrained Joint (see "l" Measurement and "m" Payment below)
- h. Bid Item No. 27h – 18" Restrained Joint (see "l" Measurement and "m" Payment below)
- i. Bid Item No. 27i – 20" Restrained Joint (see "l" Measurement and "m" Payment below)
- j. Bid Item No. 27j – 24" Restrained Joint (see "l" Measurement and "m" Payment below)
- k. Bid Item No. 27k – 30" Restrained Joint (see "l" Measurement and "m" Payment below)

I. Measurement: The quantity for payment shall be the applicable unit price (EA) of each size restraints satisfactorily furnished, installed, and incorporated on the existing pipe as necessary to complete the proposed work. Use of this bid item shall only be where not already included in a bid item and at the review and approval of the City.

m. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, material, and equipment for installing the joint restraints on the existing main and shall include any necessary accessories, excavation, bedding material, sheeting, shoring, bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work for each joint restraint.

41. Fire Hydrant Assemblies

a. Bid Item No. 28a – Remove and Replace Fire Hydrant Assembly with Valve (5-1/4") (see "c" Measurement and "d" Payment below)

b. Bid Item No. 28b – Remove and Replace Fire Hydrant Assembly Without Valve (5-1/4") (see "c" Measurement and "d" Payment below)

c. Measurement: Measurement will be for the actual number of fire hydrant assemblies of the type specified, furnished, and installed for water service.

d. Payment: Payment shall be for the applicable unit price (EA) and shall be full compensation for furnishing all labor, materials, and equipment for installing the fire hydrant assembly, complete, as shown on the drawings, including but not limited to piping, fittings, restraints, gate valve with valve box (if applicable), concrete collar, #57 stone, fire hydrant, clearing and grubbing, excavation, sheeting, shoring and bracing, dewatering, backfill, compaction, grading, temporary erosion control, testing, temporary restoration, clean up, and all other items incidental to the complete installation of the fire hydrant assembly. This shall also include the removal and proper disposal of existing fire hydrants.

42. Bid Item No. 28c – Install New Fire Hydrant with Assembly Valve

a. Measurement: Measurement will be for the actual number of fire hydrant assemblies of the type specified, furnished, and installed for water service.

b. Payment: Payment shall be for the applicable unit price (EA) and shall be full compensation for furnishing all labor, materials, and equipment for installing the fire hydrant assembly, complete, as shown on the drawings, including but not limited to piping, fittings, restraints, gate valve with valve box (if applicable), concrete collar, #57 stone, fire hydrant, clearing and grubbing, excavation, sheeting, shoring and bracing, dewatering, backfill, compaction, grading, temporary erosion.

43. Bid Item No. 28d – Remove Fire Hydrant

a. Measurement: Measurement will be for the actual number of fire hydrant assemblies of the type to be removed as approved by the City. This bid item shall only be used for removal of hydrants where replacements are not required.

b. Payment: Payment shall be for the applicable unit price (EA) and shall be full compensation for furnishing all labor, materials, and equipment for removal of existing fire hydrant assembly where replacement is not required. This shall include but not be limited to clearing and grubbing, excavation, sheeting, shoring and bracing, dewatering, backfill, compaction, grading, temporary erosion control, testing, temporary restoration, clean up, disposal and hauling, and all other items incidental to the complete the removal and replacement of the existing fire hydrant assembly.

44. Water Service Connection including Saddle, Corporation Stop, Casing, Curb Stop, and Meter Box

- a. Bid Item No. 29a – Furnish and Install 5/8" Service Connection (corp to meter including 3 piece) and 2" PVC Casing (see "f" Measurement and "g" Payment below)
- b. Bid Item No. 29b – Furnish and Install 3/4" Service Connection (corp to meter including 3 piece) and 2" PVC Casing (see "f" Measurement and "g" Payment below)
- c. Bid Item No. 29c – Furnish and Install 1" Service Connection (corp to meter including 3 piece) and 2" PVC Casing (see "f" Measurement and "g" Payment below)
- d. Bid Item No. 29d – Furnish and Install 1-1/2" Service Connection (corp to meter including 3 piece) and 3" PVC Casing (see "f" Measurement and "g" Payment below)
- e. Bid Item No. 29e – Furnish and Install 2" Service Connection (corp to meter including 3 piece) and 3" PVC Casing (see "f" Measurement and "g" Payment below)
- f. Measurement: Measurement will be the actual number of water service connections of each size furnished, installed, and accepted.
- g. Payment: Payment will be according to the actual service connections installed and accepted. This item includes furnishing and installing all service tubing and accessories including casing, connections, fittings, reducers, service saddle, corporation stops, meter box, curb stop, tracer wire, labor, machinery, construction equipment, roadway subbase and asphalt repair, adjusting/relocating, supporting, protecting or replacement of existing underground or aboveground utilities including associated utility coordination; and necessary materials, work and equipment required to rehabilitate a complete operable service connection.

45. Bid Item No. 30a – Bollard

- a. Measurement: Measurement for this item shall be the actual number of bollards furnished, installed and accepted by the City.
- b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment required for installation of bollards including but not limited to excavation, concrete, formwork, metal bollard, rebar, steel studs, expansion joints, OSHA reflective taping, finish coating, material testing and incidental work as shown on the Contract Drawings and as specified.

46. Bid Item No. 30b – ARV Assembly (Inclusive of Fittings and Enclosure)

- a. Measurement: Measurement for this pay item shall be the actual quantity of ARV assemblies satisfactorily removed, furnished, and installed.
- b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for ARV assembly installation including ARV, piping, valving, tapping saddle, above ground enclosure, bedding material, clearing and grubbing, excavation, bracing, shoring, sheeting, exploratory excavation, construction the specified protection of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable ARV assembly to complete the connections identified in the Contract Documents.

47. Bid Item No. 30c – ARV Only

- a. Measurement: Measurement for this pay item shall be the actual quantity of ARVs satisfactorily removed, furnished, and installed.

b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for ARV installation including ARV, piping, valving, above ground enclosure, bedding material, clearing and grubbing, excavation, bracing, shoring, sheeting, exploratory excavation, construction the specified protection of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable ARV assembly to complete the connections identified in the Contract Documents.

48. Bid Item No. 30d – Temporary Blowoff Assembly

a. Measurement: Measurement will be the actual number of temporary blowoff assemblies furnished, installed, and accepted. b. Payment: Payment will be according to the actual number of temporary blowoff assemblies installed and accepted. This item includes furnishing and installing all piping and accessories including casing, connections, fittings, reducers, service saddle, corporation stops, meter box, curb stop, tracer wire, labor, machinery, construction equipment, roadway subbase and asphalt repair, adjusting/relocating, supporting, protecting or replacement of existing underground or aboveground utilities including associated utility coordination; and necessary materials, work and equipment required to rehabilitate a complete operable temporary blowoff assembly.

49. Bid Item No. 30e – 4" Blowoff Assembly

a. Measurement: Measurement will be the actual number of blowoff assemblies furnished, installed, and accepted.

b. Payment: Payment will be according to the actual number of blowoff assemblies installed and accepted. This item includes furnishing and installing all piping and accessories including casing, connections, fittings, reducers, service saddle, corporation stops, meter box, curb stop, plug, tracer wire, labor, machinery, construction equipment, roadway subbase and asphalt repair, adjusting/relocating, supporting, protecting or replacement of existing underground or aboveground utilities including associated utility coordination; and necessary materials, work and equipment required to rehabilitate a complete operable blowoff assembly.

50. Bid Item No. 30f – Pipe Exterior Coating

a. Measurement: Measurement for this pay item shall be the contract unit price per square feet (SF) of pipe exterior coating furnished, installed, and accepted by the City.

b. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment necessary to satisfactorily apply exterior coating on piping as identified in the Contract Documents and as specified. This shall include but not be limited to cleaning and preparation of pipe surface including powertool cleaning, and pressure washing; application of base coat, secondary coat, and finish coat; and any incidental items necessary to complete this bid item.

51. Water Main Disinfection

a. Bid Item No. 31a – Cleaning and Disinfection of 2" and 6" Potable Water Main (see "i" Measurement and "j" Payment below) b. Bid Item No. 31b – Cleaning and Disinfection of 8" and 12" Potable Water Main (see "i" Measurement and "j" Payment below) c. Bid Item No. 31c – Cleaning and Disinfection of 14" and 20" Potable Water Main (see "i" Measurement and "j" Payment below)

d. Bid Item No. 31d – Cleaning and Disinfection of 24" and 36" Potable Water Main (see "i" Measurement and "j" Payment below)

- e. Bid Item No. 31e – Cleaning and Disinfection of 2" and 6" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- f. Bid Item No. 31f – Cleaning and Disinfection of 8" and 12" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- g. Bid Item No. 31g – Cleaning and Disinfection of 14" and 20" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- h. Bid Item No. 31h – Cleaning and Disinfection of 24" and 36" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- i. Measurement: The quantity for payment shall be the actual number of linear feet of water main pipe of each size and type satisfactorily disinfected in accordance with Contract Documents.
- j. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and conducting the pipeline's complete disinfection, including but not limited to chemicals, sampling equipment and procedures, neutralizing chemicals if needed, permits, and incidental work as specified.

52. PVC Gravity Main (Inclusive all Labor, Material, and Associated Restraints)

- a. Bid Item No. 32a – 6" diameter (see "j" Measurement and "k" Payment below)
- b. Bid Item No. 32b – 8" diameter (see "j" Measurement and "k" Payment below)
- c. Bid Item No. 32c – 10" diameter (see "j" Measurement and "k" Payment below)
- d. Bid Item No. 32d – 12" diameter (see "j" Measurement and "k" Payment below)
- e. Bid Item No. 32e – 14" diameter (see "j" Measurement and "k" Payment below)
- f. Bid Item No. 32f – 16" diameter (see "j" Measurement and "k" Payment below)
- g. Bid Item No. 32g – 18" diameter (see "j" Measurement and "k" Payment below)
- h. Bid Item No. 32h – 20" diameter (see "j" Measurement and "k" Payment below)
- i. Bid Item No. 32i – 24" diameter (see "j" Measurement and "k" Payment below)
- j. Measurement: The quantity for payment shall be the actual number of linear feet of gravity main pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

k. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the PVC gravity main's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), trimming or removal, sheeting, rough grading, compaction, fittings, restraints, dismantling joints, pipe supports, finish grading, testing, and cleanup. This item also includes all necessary fittings, reducers, bends, tees, wyes, caps, plugs, sleeves, restraining devices, locator plates, locate wire, connections to existing manholes or gravity mains, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

53. Wastewater Manhole

- a. Bid Item No. 33a – Manhole - 4 feet Diameter (see "d" Measurement and "e" Payment below)

- b. Bid Item No. 33b – Manhole - 5 feet Diameter (see "d" Measurement and "e" Payment below)
- c. Bid Item No. 33c – Manhole - 6 feet Diameter (see "d" Measurement and "e" Payment below)
- d. Measurement: The quantity for payment shall be the actual vertical feet depth of each size diameter manholes satisfactorily furnished, installed, and incorporated into the piping system.
- e. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, tools and equipment necessary to construct the indicated manholes on the plans, including but not limited to, precast manhole, rim and cover; associated piping; invert and flow channels; joint seals, site grading; bedding; subgrade; sodding; bracing, shoring, and sheeting; interior/exterior coating; addition and replacement of acceptable fill material, sealing, testing and all other work and expense incidental thereto, as indicated on the drawings and specified herein.

54. Existing Wastewater Manhole Adjustments

- a. Bid Item No. 33d – Adjust Existing Manhole Frame and Cover (paved areas) (see "e" Measurement and "f" Payment below) b. Bid Item No. 33e – Adjust Existing Manhole Frame and Cover (unpaved areas) (see "e" Measurement and "f" Payment below)
- c. Bid Item No. 33f – Replace Existing Manhole Frame and Cover (paved areas) (see "e" Measurement and "f" Payment below) d. Bid Item No. 33g – Replace Existing Manhole Frame and Cover (unpaved areas) (see "e" Measurement and "f" Payment below)
- e. Measurement: The quantity for payment shall be the actual number of manhole covers/frames adjustments made or covers/frames replaced as indicated in the Contract Documents.
- f. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, tools, and equipment necessary to adjust/replace existing manhole frames and covers. This shall include but not be limited to cleaning and preparing of surfaces, adjustment of existing cover and frame to match existing grade, removal and replacement of existing cover/frame, installing new rain pan, and any other incidental item necessary to complete this bid item.

55. Wastewater Service Lateral

- a. Bid Item No. 34a – Install/Repair/Replace 4" Sanitary Sewer Lateral (see "c" Measurement and "d" Payment below) b. Bid Item No. 34b – Install/Repair/Replace 6" Sanitary Sewer Lateral (see "c" Measurement and "d" Payment below) c. Measurement: Measurement for this bid item shall be the actual number of existing laterals installed, repaired, or replaced (from gravity main to sanitary clean out).
- d. Payment: Payment will be according to the actual number of laterals removed and replaced. This item includes but is not limited to furnishing and installing all materials, equipment labor including but not limited to bypassing, clearing and grubbing (unless otherwise covered), dewatering, excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); supporting/protecting existing underground and aboveground utilities, dewatering, backfill, rough grading, compaction, fencing removal and replacement, finish grading, flushing, new sewer lateral saddles, accessories, connections, and restoration.

56. Bid Item No. 35 – Owners Contingency 10% of Bid

- a. Measurement: Use of the Owners contingency line item shall only be with written authorization and approval by the City. Owners contingency shall be at a maximum 10% markup.

b. Payment: Payment shall be at the agreed upon and approved price by the City and shall be inclusive of furnishing all labor, material, and equipment necessary to complete the bid item.

D. **Bid Items – Group B – Water and RCW Trenchless Pipeline Installation** The following bid items are intended for water and reclaimed water trenchless pipeline improvement projects. These bid items may be used for incidental sanitary or sewer work. 1. Bid Item No. 1 – Emergency Mobilization/ Demobilization including General Conditions and Traffic Control

a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price. Emergency demobilization shall be defined mobilizing within 8 hours of initial request for work order assistance.

b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

2. Bid Item No. 2 – Non-Emergency Mobilization/ Demobilization including General Conditions and Traffic Control

a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the unit price for mobilization.

b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with

each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

3. Maintenance of Traffic – Complete Indices

- a. Bid Item No. 3a – FDOT Index 601 - Work Beyond the Shoulder (see "j" Measurement and "k" Payment below)
- b. Bid Item No. 3b – FDOT Index 602 - Work on Shoulder (see "j" Measurement and "k" Payment below)
- c. Bid Item No. 3c – FDOT Index 603 - Two Lane Two Way Work within Travel Way (see "j" Measurement and "k" Payment below)
- d. Bid Item No. 3d – FDOT Index 604 - Two Lane Two Way - Intersection Work (see "j" Measurement and "k" Payment below) e. Bid Item No. 3e – FDOT Index 613 - Multilane Roadway - Lane Closures (see "j" Measurement and "k" Payment below) f. Bid Item No. 3f – FDOT Index 615 - Multilane Road - Intersection Work (see "j" Measurement and "k" Payment below)
- g. Bid Item No. 3g – FDOT Index 620 - Multilane Roadway - Temporary Diversion (see "j" Measurement and "k" Payment below)
- h. Bid Item No. 3h – FDOT Index 625 - Temporary Road Closure (see "j" Measurement and "k" Payment below)
- i. Bid Item No. 3i – FDOT Index 628 - Two Lane Left Turn Lanes (see "j" Measurement and "k" Payment below)
- j. Measurement: This work consists of maintaining vehicular and pedestrian traffic within the limits of the project at each location specified for the duration of the construction period, including any temporary suspensions of the work. This bid item shall include labor and equipment to furnish, install and maintain complete traffic control and safety devices during construction for each defined FDOT MOT Index; shall include any necessary furnishing and maintenance of any necessary detour facilities; providing necessary facilities for access to residences, businesses, pedestrian traffic, schools, etc., and any other special requirements for safe and expeditious movement of traffic as may be called for on the MOT plan. The term, Maintenance of Traffic, shall include all of such facilities, devices and operations as are required for the safety and convenience of the public, as well as for minimizing public nuisance. The Contractor, however, shall not obstruct nor create a hazard to any traffic during the performance of the work and shall be responsible for repair of any damage to existing pavement or facilities caused by his operations. Traffic Control Devices include all types of barricades, arrow boards, variable message boards, cones, channelizing drums, signs, temporary pavement markers, lights, concrete barriers, and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. All MOT Index line items shall be fully inclusive of all costs for items associated with the appropriate FDOT Index. There shall be no separate payment for signs, barricades, etc. included with index will be allowed. Measurement for these items shall be based on the actual number of each (ea) line item per day or as specified in the Bid Form.
- k. Payment: Payment for maintenance of traffic shall be full compensation of the applicable unit price for furnishing all labor, materials and equipment, and installation necessary to provide safe and effective maintenance of vehicular and pedestrian traffic including but not limited to preparation and submittal of a complete traffic control plan, temporary lanes, walks or drainage facilities, flagmen, signs, barrels, barricades, lights and other protective devices as necessary to meet FDOT standards and specifications at each location for each type of MOT index required. Prior to any payment for any MOT Index bid item, the Contractor shall submit an MOT plan for review and approval.

4. Maintenance of Traffic – Miscellaneous Items These bid items are designated for as-needed MOT not covered under Maintenance of Traffic Complete Indices, and these items should only be used for work outside the scope of Maintenance of Traffic Complete Indices. It is essential to ensure these hours do not overlap with work covered by other bid line items, avoiding duplication of payment. Each task using these bid items must be separately documented to prevent billing redundancy.

- a. Bid Item No. 3j – Flagman (see "k" Measurement and "l" Payment below)
- b. Bid Item No. 3k – Arrow Board - 5' Minimum Horizontal Size (see "k" Measurement and "l" Payment below)
- c. Bid Item No. 3l – Variable Message Board (see "k" Measurement and "l" Payment below)
- d. Bid Item No. 3m – Concrete Barrier (FDOT Index No. 415) (see "k" Measurement and "l" Payment below)
- e. Bid Item No. 3n – Low Profile Barrier (FDOT Index No. 412) (see "k" Measurement and "l" Payment below)
- f. Bid Item No. 3o – Sign in Work Zone (see "k" Measurement and "l" Payment below)
- g. Bid Item No. 3p – FDOT Cone (see "k" Measurement and "l" Payment below)
- h. Bid Item No. 3q – FDOT Channelizing Drum (see "k" Measurement and "l" Payment below)
- i. Bid Item No. 3r – Barricade, Type III with Warning Light (see "k" Measurement and "l" Payment below)
- j. Bid Item No. 3s – Barricade I or II with Warning Light (see "k" Measurement and "l" Payment below)

k. Measurement: This work consists of maintaining vehicular and pedestrian traffic within the limits of the project at each location specified for the duration of the construction period, including any temporary suspensions of the work. It shall include labor and equipment to furnish, install and maintain of traffic control and safety devices during construction; It shall include the construction and maintenance of any necessary detour facilities; providing necessary facilities for access to residences, businesses, pedestrian traffic, schools, etc., and any other special requirements for safe and expeditious movement of traffic as may be called for on the MOT plan. The term, Maintenance of Traffic, shall include all of such facilities, devices and operations as are required for the safety and convenience of the public, as well as for minimizing public nuisance. The Contractor, however, shall not obstruct nor create a hazard to any traffic during the performance of the work and shall be responsible for repair of any damage to existing pavement or facilities caused by his operations. Traffic Control Devices include all types of barricades, arrow boards, variable message boards, cones, channelizing drums, signs, temporary pavement markers, lights, concrete barriers, and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Measurement for these items shall be based on the actual number of each (ea) line item utilized per day or as specified in the Bid Form. These bid item shall not be used where already included in an inclusive bid item 3A-3i for FDOT standard index.

l. Payment: Payment for maintenance of traffic shall be full compensation of the applicable unit price for furnishing all labor, materials and equipment, and installation necessary to provide safe and effective maintenance of vehicular and pedestrian traffic including but not limited to preparation and submittal of a complete traffic control plan, temporary lanes, walks or drainage facilities, flagmen, signs, barrels, barricades, lights and other protective devices as necessary to meet FDOT standards and specifications at each location. Prior to any payment for any MOT bid item, the Contractor shall submit an MOT plan for review and approval.

5. **Labor Hour** These bid items are designated for as-needed tasks not covered under other bid items, and labor hours should only be used for work outside the scope of other specified items. It is essential to ensure these hours do not overlap with work covered by other bid line items, avoiding duplication of payment. Each task using labor hours must be separately documented to prevent billing redundancy, and labor hours under this item shall not be combined with other inclusive bid items.

- a. Bid Item No. 4a – Foreman regular time (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 4b – Foreman overtime (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 4c – Operator regular time (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 4d – Operator Overtime (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 4e – Truck Driver regular time (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 4f – Truck driver overtime (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 4g – Pipe Layer regular time (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 4h – Pipe Layer overtime (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 4i – Laborer regular time (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 4j – Laborer overtime (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 4k – Preconstruction Video (see "m" Measurement and "n" Payment below)
- l. Bid Item No. 4l – Asbuilt Survey (see "m" Measurement and "n" Payment below)
- m. **Measurement:** Measurement of various worker regular time and overtime shall be based on the per unit price for each labor hour category. Use of labor hours, whether regular hours or overtime, shall only be at the review and approval of the City.
- n. **Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor performed as approved by the City to complete the bid item. Contractor will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without Owner consent given after prior notice to Engineer.

6. **Equipment** These bid items are designated for as-needed tasks not covered under other bid items, and equipment hours should only be used for work outside the scope of other specified items. It is essential to ensure these hours do not overlap with work covered by other bid line items, avoiding duplication of payment. Each task using equipment hours must be separately documented to prevent billing redundancy, and equipment hours under this item shall not be combined with other inclusive bid items.

- a. Bid Item No. 5a – Foreman's pickup truck with hand tools (see "w" Measurement and "x" Payment below)
- b. Bid Item No. 5b – Job truck with tools (see "w" Measurement and "x" Payment below)
- c. Bid Item No. 5c – Tractor & Trailer (Transport) (see "w" Measurement and "x" Payment below)
- d. Bid Item No. 5d – Track Hoe (to 100 HP) (see "w" Measurement and "x" Payment below)
- e. Bid Item No. 5e – Track Hoe (101 HP to 170 HP) (see "w" Measurement and "x" Payment below)

- f. Bid Item No. 5f – Track Hoe (170 HP and up) (see “w” Measurement and “x” Payment below)
- g. Bid Item No. 5g – Rubber Tired Backhoe (see “w” Measurement and “x” Payment below)
- h. Bid Item No. 5h – Wheel Loader (to 150 HP) (see “w” Measurement and “x” Payment below)
- i. Bid Item No. 5i – Wheel Loader (151 HP and up) (see “w” Measurement and “x” Payment below)
- j. Bid Item No. 5j – Track Type Tractors (to 100 HP) (see “w” Measurement and “x” Payment below)
- k. Bid Item No. 5k – Track Type Tractors (101 HP and up) (see “w” Measurement and “x” Payment below)
- l. Bid Item No. 5l – Dump Truck (Tandem Axle) (see “w” Measurement and “x” Payment below)
- m. Bid Item No. 5m – Plate Tamp (see “w” Measurement and “x” Payment below)
- n. Bid Item No. 5n – 3” Trash Pump (see “w” Measurement and “x” Payment below)
- o. Bid Item No. 5o – 4” Double Diaphragm pump (see “w” Measurement and “x” Payment below)
- p. Bid Item No. 5p – Air Compressor (125 CFM min.) (see “w” Measurement and “x” Payment below)
- q. Bid Item No. 5q – 4” Jet Pump (see “w” Measurement and “x” Payment below)
- r. Bid Item No. 5r – Emergency Hauling up to 2500 gallons (see “w” Measurement and “x” Payment below)
- s. Bid Item No. 5s – Emergency Hauling over 2500 gallons (see “w” Measurement and “x” Payment below)
- t. Bid Item No. 5t – Street Sweeper (see “w” Measurement and “x” Payment below)
- u. Bid Item No. 5u – Mobile Light Tower (see “w” Measurement and “x” Payment below)
- v. Bid Item No. 5v – Vactor Truck (see “w” Measurement and “x” Payment below)
- w. **Measurement:** Measurement for these items shall be at the unit price for the specific equipment necessary as defined in the bid form. Use of equipment at an hourly rate shall only be where not already included in the bid item and at the review and approval of the City.
- x. **Payment:** Payment will be of the unit price for furnishing all tools and equipment for performing all operations necessary to complete the work under the contract, including but not limited to, job trucks with tools, tractors and trailers for transport, track hoes of various horsepower, rubber tired backhoes, wheel loaders, track type tractors, dump trucks, plate tramps, trash pumps, diaphragm pumps, air compressors, jet pumps, emergency hauling, street sweepers, mobile light towers, vactor trucks, and all other associated costs to complete the bid item.

7. Bid Item No. 6a – Sodding

- a. **Measurement:** Measurement for this item will be based on the actual unit quantity, square foot, of sodding installed. b. **Payment:** Payment will be of the unit price for furnishing all necessary labor, materials, and equipment necessary to install sodding and other related items for full

work site remediation at the approval of the Owner. This shall also include necessary maintenance of sodding to ensure proper integration of the sodding with the existing work site.

8. Bid Item No. 6b – Brush Removal

a. Measurement: Measurement for this item shall be the actual weight of brush removal completed. The weight shall be based on tipping tickets from landfill or other documentation method as accepted by the County and/or resident project representative. b. Payment: Payment will be the unit price for furnishing all necessary labor, materials, and equipment necessary for brush removal, hauling, and proper disposal of the associated material.

9. Bid Item No. 6c – Tree Protection

a. Measurement: Measurement for this item shall be the actual number of trees protected as required by the work or City direction.

b. Payment: Payment will be the unit price for furnishing all necessary labor, materials, and equipment necessary for to protect the tree in accordance with City standard detail 909. This shall include but not be limited to barriers to protect tree at drip line, posts, and all other items necessary to complete this bid item.

10. Tree Removal

a. Bid Item No. 6d – Tree Removal (<6" Truck Diameter) (see "e" Measurement and "f" Payment below)

b. Bid Item No. 6e – Tree Removal (6"-12" Truck Diameter) (see "e" Measurement and "f" Payment below)

c. Bid Item No. 6f – Tree Removal (13"-18" Truck Diameter) (see "e" Measurement and "f" Payment below)

d. Bid Item No. 6g – Tree Removal (>18" Truck Diameter) (see "e" Measurement and "f" Payment below)

e. Measurement: Measurement for this item shall be the actual number of trees removed, based on the trunk diameter size. Tree replacement shall be determined on an as needed basis.

f. Payment: Payment of the applicable unit price shall be for furnishing all necessary labor, materials, and equipment necessary for brush removal, tree protection, tree removal, stump removal, hauling, and disposal of tree and associated material for full work site remediation at the approval of the Owner.

11. Remove and Replace Concrete Sidewalk

a. Bid Item No. 7a – Remove and Replace Concrete Sidewalk, (4" Min Thickness) (see "c" Measurement and "d" Payment below)

b. Bid Item No. 7b – Remove and Replace Concrete Sidewalk, (6" Min Thickness) (see "c" Measurement and "d" Payment below)

c. Measurement: Measurement shall be the actual square yard of concrete sidewalk of each thickness specified satisfactorily removed and subsequently furnished and installed.

d. Payment: Payment shall constitute full compensation for all labor, materials, and equipment required for demolition/removal of existing concrete sidewalk, preparation of ground surface (grading, compaction, etc.) to accept new sidewalk, preparation of the surface, cast in place formwork, rebar and/or wire mesh, expansion joints, ADA accessible ramps, detectable warning surfaces, disposal of existing

concrete and waste, grout repair and smoothing, material testing and incidental work as shown on the Contract Drawings and as specified. All costs associated with the provision of an acceptable alternate (temporary) sidewalk surface or detour as required to facilitate pedestrian traffic during the course of work shall also be included.

12. Bid Item No. 7c – Remove and Replace Concrete Driveway

- a. Measurement: Measurement shall be the actual square yard of concrete driveway satisfactorily removed and subsequently furnished and installed.
- b. Payment: Payment of the applicable unit price shall constitute full compensation for all labor, materials, and equipment required for demolition/removal of existing concrete driveway, preparation of ground surface (grading, compaction, etc.) to accept new sidewalk, preparation of the surface, cast in place formwork, rebar and/or wire mesh, expansion joints, disposal of existing concrete and waste, grout repair and smoothing, material testing and incidental work as shown on the Contract Drawings and as specified. All costs associated with the provision of an acceptable alternate (temporary) sidewalk and/or driving surface or detour as required to facilitate pedestrian and vehicular traffic during the course of work shall also be included.

13. Asphalt Milling and Resurfacing

- a. Bid Item No. 7d – Full Width Milling (Up to 2") (see "c" Measurement and "d" Payment below)
- b. Bid Item No. 7e – Full Width Milling (2" to 4") (see "c" Measurement and "d" Payment below)
- c. Measurement: Measurement for this item will be based on the actual square yards of asphalt milled.
- d. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for asphalt milling preparation of the surface, disposal of existing asphalt and waste, smoothing, thermoplastic striping, traffic loops, material testing, and incidental work as shown on the Contract Drawings and as specified. Payment shall be for asphalt milled and resurfaced and shall not include the areas where complete asphalt removal and replacement is specified.

14. Asphalt Resurfacing

- a. Bid Item No. 7f – SP 12.5 Asphalt Concrete Resurfacing (see "c" Measurement and "d" Payment below)
- b. Bid Item No. 7g – SP 9.5 Asphalt Concrete Resurfacing (see "c" Measurement and "d" Payment below)
- c. Measurement: Measurement for this item shall be the actual weight (ton) of each type asphalt actually installed. Contractor shall provide any documentation of concrete asphalt used.
- d. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for asphalt resurfacing including but not limited to preparation of the surface, smoothing, thermoplastic striping, traffic loops, material testing, and incidental work as shown on the Contract Drawings and as specified. Payment shall be for asphalt milled and resurfaced and shall not include the areas where complete asphalt removal and replacement is specified.

15. Pavement Marking

- a. Bid Item No. 7h – Pavement Marking - Crosswalks (Lane) (see "i" Measurement and "j" Payment below)

- b. Bid Item No. 7i – Pavement Marking - Stop bars (Lane) (see "i" Measurement and "j" Payment below)
- c. Bid Item No. 7j – Pavement Marking - School Crossing/RR (see "i" Measurement and "j" Payment below)
- d. Bid Item No. 7k – Pavement Marking - Turn, Straight, Combo Arrows (see "i" Measurement and "j" Payment below) e. Bid Item No. 7l – Pavement Marking - Dashed (White, Yellow, or Double Yellow) (see "i" Measurement and "j" Payment below)
- f. Bid Item No. 7m – Pavement Marking - Solid White (see "i" Measurement and "j" Payment below)
- g. Bid Item No. 7n – Pavement Marking - Solid Double Yellow (see "i" Measurement and "j" Payment below)
- h. Bid Item No. 7o – Pavement Marking - Solid Yellow (see "i" Measurement and "j" Payment below)
- i. Measurement: Measurement for these items shall be the actual quantity of each bid item satisfactorily furnished and installed. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City. j. Payment: Payment will be the unit price for furnishing all necessary labor, material, and equipment necessary to complete installation of pavement markings as listed in each bid item. This shall include but not be limited to thermoplastic striping material, equipment, forms, etc. for the complete installation of pavement markings as defined in each bid item.

#### 16. Temporary Pavement Marking

- a. Bid Item No. 7p – Temporary Pavement Marking - Turn, Straight, Combo Arrows (see "f" Measurement and "g" Payment below)
- b. Bid Item No. 7q – Temporary Pavement Marking - Dashed (White, Yellow, or Double Yellow) (see "f" Measurement and "g" Payment below)
- c. Bid Item No. 7r – Temporary Pavement Marking - Solid White (see "f" Measurement and "g" Payment below)
- d. Bid Item No. 7s – Temporary Pavement Marking - Solid Double Yellow (see "f" Measurement and "g" Payment below) e. Bid Item No. 7t – Temporary Pavement Marking - Solid Yellow (see "f" Measurement and "g" Payment below)
- f. Measurement: Measurement for these items shall be the actual quantity satisfactorily furnished and installed. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City.
- g. Payment: Payment of the applicable unit price will be for furnishing all necessary labor, material, and equipment necessary to complete installation of pavement markings as listed in each bid item. This shall include but not be limited to temporary thermoplastic striping material, equipment, forms, etc. for the complete installation of pavement markings as defined in each bid item. 17. Remove and Replace Concrete Curb and Gutter

- a. Bid Item No. 7u – Remove and Replace Concrete Curb and Gutter (FDOT Type A) (see "d" Measurement and "e" Payment below)
- b. Bid Item No. 7v – Remove and Replace Concrete Curb and Gutter (FDOT Type E) (see "d" Measurement and "e" Payment below)

c. Bid Item No. 7w – Remove and Replace Concrete Curb and Gutter (FDOT Type F) (see “d” Measurement and “e” Payment below)

d. Measurement: Measurement will be the actual linear footage of the defined type of concrete curb satisfactorily removed, furnished, and installed.

e. Payment: Payment shall constitute full compensation for all labor, materials and equipment for concrete curb and gutter installation, preparation of the surface, case in place formwork, rebar and metal mesh, expansion joints, joint filler, joint seal, disposal of existing concrete and waste, grout repair and smoothing, material testing and any incidental work to complete the bid item. 18. Bid Item No. 7x – 3000 psi Concrete

a. Measurement: Measurement shall be the actual cubic yards of concrete satisfactorily removed, furnished, and installed. b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment required for installation of concrete structures, preparation of ground surface (grading, compaction, etc.) to accept new concrete, cast in place formwork, rebar and/or wire mesh, expansion joints, disposal of existing concrete and waste, grout repair and smoothing, material testing and incidental work to complete the bid item.

19. Miscellaneous Material

a. Bid Item No. 7y – Off Site Selected Fill (see “n” Measurement and “o” Payment below)

b. Bid Item No. 7z – Limerock Base Material (see “n” Measurement and “o” Payment below)

c. Bid Item No. 7aa – Crushed Concrete Base Material (see “n” Measurement and “o” Payment below)

d. Bid Item No. 7ab – Stabilized Subgrade (see “n” Measurement and “o” Payment below)

e. Bid Item No. 7ac – # 57 Washed Stone (see “n” Measurement and “o” Payment below)

f. Bid Item No. 7ad – Removal of Unsuitable Soil (see “n” Measurement and “o” Payment below)

g. Bid Item No. 7ae – Removal of Buried Concrete (see “n” Measurement and “o” Payment below)

h. Bid Item No. 7af – Removal of Hazardous Materials (see “n” Measurement and “o” Payment below)

i. Bid Item No. 7ag – Rip Rap (see “n” Measurement and “o” Payment below)

j. Bid Item No. 7ah – Flowable Fill (see “n” Measurement and “o” Payment below)

k. Bid Item No. 7ai – Brick Pavers (see “n” Measurement and “o” Payment below)

l. Bid Item No. 7aj – Brick Paver Level Sand (see “n” Measurement and “o” Payment below)

m. Bid Item No. 7ak – Geogrid (see “n” Measurement and “o” Payment below)

n. Measurement: Measurement of various items for miscellaneous material for civil work shall be at the unit price specified in the contract documents, and shall include furnishing all labor, equipment, preparation, materials, and incidentals required to install the material as required by the Contract documents. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City.

o. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, and equipment necessary to perform site work and maintain, including but not limited to

off site selected fill, limerock base material, crushed concrete base material, stabilized subgrade, #57 washed stone, rip rap, flowable fill, road plate, brick pavers, prick paver level sand, geo grid, material testing, and incidental work as shown on the Contract Drawings, according to OSHA standards, FDOT standards, and as specified herein.

20.       Miscellaneous Materials – Shoring and Road Plates

- a.           Bid Item No. 7a1 – Shoring (4' to 6' deep) (see "d" Measurement and "e" Payment below)
- b.           Bid Item No. 7a2 – Shoring (6' to 10' deep) (see "d" Measurement and "e" Payment below)
- c.           Bid Item No. 7a3 – Steel Road Plates (see "d" Measurement and "e" Payment below)
- d.           Measurement: Measurement of miscellaneous material for civil work shall be at the unit price specified in the contract documents, and shall include furnishing all labor, equipment, preparation, materials, and incidentals required to install the material as required. Use of this bid item shall be only where not already included in the bid item and at the review and approval of the City.
- e.           Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, and equipment necessary to perform site work and maintain, including but not limited to excavation, site preparation, delivery, installation of proposed shoring/road plates, removal, restoration and incidental work as shown on the Contract Drawings, according to OSHA standards, FDOT standards, and as specified herein.

21.       Bid Item No 8 – Well Point Dewatering

- a.           Measurement: Measurement shall be the actual linear feet per day of wellpoint dewatering furnished and installed.
- b.           Payment: Payment of the applicable unit price shall be full compensation for furnishing all equipment; labor, permits, and materials to install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the Work in accordance with the requirements set forth, as shown on the Drawings, and/or geotechnical report.

22.       Grout Fill and Abandon Main

- a.           Bid Item No. 9a – 2"-6" (see "e" Measurement and "f" Payment below)
- b.           Bid Item No. 9b – 8"-12" (see "e" Measurement and "f" Payment below)
- c.           Bid Item No. 9c – 16"-24" (see "e" Measurement and "f" Payment below)
- d.           Bid Item No. 9d – >30" (see "e" Measurement and "f" Payment below)
- e.           Measurement: Measurement shall be horizontally, above the centerline of the pipe, of pipe grout filled and abandoned. The limits of measurement shall be as shown on the plans or as directed by the Project Representative.
- f.           Payment: Payment will be according to the diameter and per linear foot cost as set forth on the Bid Form. The unit price includes furnishing and installing all material, equipment, and labor required for complete abandonment grouting, including air venting, testing, temporary plugs, caps, and all incidentals necessary to complete this bid item.

23.       Remove Abandoned Main

- a.           Bid Item No. 10a – 2"-6" (see "e" Measurement and "f" Payment below)
- b.           Bid Item No. 10b – 8"-12" (see "e" Measurement and "f" Payment below)
- c.           Bid Item No. 10c – 16"-24" (see "e" Measurement and "f" Payment below)

- d. Bid Item No. 10d – >30" (see "e" Measurement and "f" Payment below)
- e. Measurement: Measurement will be horizontally, above the centerline of the pipe. The limits of measurement shall be as shown on the plans or as directed by the Project Representative.
- f. Payment: Payment will be in accordance per linear foot cost as set forth on the bid form. The unit cost includes furnishing all labor, materials, and equipment necessary for the complete removal of pipe as required to complete the bid item. This shall include excavation, sheeting/shoring, stabilization, removal of existing pipeline, fill, compaction, final grading, proper disposal of any pipeline, and associated items necessary to complete the bid item.

24. Temporary Water Service

- a. Bid Item No. 11a – 2" Temporary HDPE Main (including Tap Connections to Existing Main) (see "d" Measurement and "e" Payment below)
- b. Bid Item No. 11b – 4" Temporary HDPE Main (Including Tap Connections to Existing Main) (see "d" Measurement and "e" Payment below)
- c. Bid Item No. 11c – 6" Temporary HDPE Main (Including Tap Connections to Existing Main) (see "d" Measurement and "e" Payment below)
- d. Measurement: Measurement for this item will be based on the actual linear feet of temporary potable water service inclusive of fittings, hose bibs, valves, and connections to main satisfactorily furnished and installed.
- e. Payment: Payment of the unit price shall be full compensation for furnishing all labor, materials, design, and equipment to furnish and install the temporary potable water service as shown on the Drawings and as specified herein. This item shall include all related material and work required to complete this item including temporary piping, connections to existing main (including tapping sleeve, valves, etc.), connections to existing services, fittings, valves, disinfection, bacteriological testing, and any incidental items to complete this bid item.

25. Directional Drilling

- a. Bid Item No. 12a – Furnish and Install 4" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- b. Bid Item No. 12b – Furnish and Install 6" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- c. Bid Item No. 12c – Furnish and Install 8" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- d. Bid Item No. 12d – Furnish and Install 10" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- e. Bid Item No. 12e – Furnish and Install 12" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- f. Bid Item No. 12f – Furnish and Install 16" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- g. Bid Item No. 12g – Furnish and Install 20" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- h. Bid Item No. 12h – Furnish and Install 24" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)

- i. Bid Item No. 12i – Furnish and Install 30" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- j. Bid Item No. 12j – Furnish and Install 36" HDPE by directional drill, DR11 with Transitional Ends (see "u" Measurement and "v" Payment below)
- k. Bid Item No. 12k – Furnish and Install 4" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- l. Bid Item No. 12l – Furnish and Install 6" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- m. Bid Item No. 12m – Furnish and Install 8" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- n. Bid Item No. 12n – Furnish and Install 10" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- o. Bid Item No. 12o – Furnish and Install 12" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- p. Bid Item No. 12p – Furnish and Install 16" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- q. Bid Item No. 12q – Furnish and Install 20" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- r. Bid Item No. 12r – Furnish and Install 24" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- s. Bid Item No. 12s – Furnish and Install 30" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- t. Bid Item No. 12t – Furnish and Install 36" Restrained PVC by directional drill, DR18 with Transitional Ends (see "u" Measurement and "v" Payment below)
- u. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured horizontally along the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.
- v. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This also includes open cuts at launching and receiving pits, temporary fencing, joints, coupling, machinery, HDD equipment, exploratory pits, protection of existing utilities, disposal of spoil or other materials, and hydrostatic testing. This item also includes all necessary plugs, sleeves, restraining devices, HDPE adapters, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

## 26. Pipe Bursting

- a. Bid Item No. 13a – Furnish and Install 4" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)

- b. Bid Item No. 13b – Furnish and Install 6" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- c. Bid Item No. 13c – Furnish and Install 8" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- d. Bid Item No. 13d – Furnish and Install 10" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- e. Bid Item No. 13e – Furnish and Install 12" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- f. Bid Item No. 13f – Furnish and Install 16" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- g. Bid Item No. 13g – Furnish and Install 20" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- h. Bid Item No. 13h – Furnish and Install 24" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- i. Bid Item No. 13i – Furnish and Install 30" HDPE Perchlorinated Pipe Bursting, DR 11 (see "j" Measurement and "k" Payment below)
- j. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.
- k. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; bursting pits and equipment, necessary preparation to clean existing main to pull new main through, clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

## 27. Slipline

- a. Bid Item No. 14a – Furnish and Install 4" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- b. Bid Item No. 14b – Furnish and Install 6" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- c. Bid Item No. 14c – Furnish and Install 8" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- d. Bid Item No. 14d – Furnish and Install 10" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- e. Bid Item No. 14e – Furnish and Install 12" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)

- f. Bid Item No. 14f – Furnish and Install 16" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- g. Bid Item No. 14g – Furnish and Install 20" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- h. Bid Item No. 14h – Furnish and Install 24" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- i. Bid Item No. 14i – Furnish and Install 30" HDPE by slipline, DR11 with Transitional Ends (see "j" Measurement and "k" Payment below)
- j. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured horizontally along the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.
- k. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This also includes open cuts at launching and receiving pits, temporary fencing, joints, coupling, machinery, HDD equipment, exploratory pits, protection of existing utilities, disposal of spoil or other materials, and hydrostatic testing. This item also includes all necessary plugs, sleeves, restraining devices, HDPE adapters, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

28. Jack and Bore

- a. Bid Item No. 15a – Furnish and Install 4" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- b. Bid Item No. 15b – Furnish and Install 6" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- c. Bid Item No. 15c – Furnish and Install 8" PVC or DI Pipe in 18" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- d. Bid Item No. 15d – Furnish and Install 12" PVC or DI Pipe in 24" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- e. Bid Item No. 15e – Furnish and Install 16" PVC or DI Pipe in 30" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- f. Bid Item No. 15f – Furnish and Install 20" PVC or DI Pipe in 36" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- g. Bid Item No. 15g – Furnish and Install 24" PVC or DI Pipe in 42" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- h. Bid Item No. 15h – Furnish and Install 30" PVC or DI Pipe in 48" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)
- i. Bid Item No. 15i – Furnish and Install 36" PVC or DI Pipe in 54" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)

j. Bid Item No. 15j – Furnish and Install 42" PVC or DI Pipe in 60" OD Steel Casing Pipe by Jack and Bore per city standard detail (see "k" Measurement and "l" Payment below)

k. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

l. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes casing, all necessary fittings, caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

29. PVC Installed Via Open Cut (Inclusive of all labor, material, and associated restraints)

- a. Bid Item No. 16a – 4" diameter (0' to 5') (see "q" Measurement and "r" Payment below)
- b. Bid Item No. 16b – 4" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
- c. Bid Item No. 16c – 4" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
- d. Bid Item No. 16d – 4" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)
- e. Bid Item No. 16e – 6" diameter (0' to 5'), (see "q" Measurement and "r" Payment below)
- f. Bid Item No. 16f – 6" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
- g. Bid Item No. 16g – 6" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
- h. Bid Item No. 16h – 6" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)
- i. Bid Item No. 16i – 8" diameter (0' to 5'), (see "q" Measurement and "r" Payment below)
- j. Bid Item No. 16j – 8" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
- k. Bid Item No. 16k – 8" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
- l. Bid Item No. 16l – 8" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)
- m. Bid Item No. 16m – 10" diameter (0' to 5'), (see "q" Measurement and "r" Payment below)
- n. Bid Item No. 16n – 10" diameter (5.1' to 10'), (see "q" Measurement and "r" Payment below)
- o. Bid Item No. 16o – 10" diameter (10.1' to 15'), (see "q" Measurement and "r" Payment below)
- p. Bid Item No. 16p – 10" diameter (15.1' to 20'), (see "q" Measurement and "r" Payment below)

q. Measurement: The quantity for payment shall be the actual number of linear feet of main pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

r. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

30. Ductile Iron Installed Via Open Cut (Inclusive of all labor, material, and associated restraints)

- a. Bid Item No. 17a – 4" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- b. below) Bid Item No. 17b – 4" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment
- c. below) Bid Item No. 17c – 4" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment
- d. below) Bid Item No. 17d – 4" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment
- e. Bid Item No. 17e – 6" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- f. below) Bid Item No. 17f – 6" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment
- g. below) Bid Item No. 17g – 6" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment
- h. below) Bid Item No. 17h – 6" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment
- i. Bid Item No. 17i – 8" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)
- j. below) Bid Item No. 17j – 8" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment
- k. below) Bid Item No. 17k – 8" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment
- l. below) Bid Item No. 17l – 8" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment
- m. Bid Item No. 17m – 10" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)
- n. below) Bid Item No. 17n – 10" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment
- o. below) Bid Item No. 17o – 10" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment
- p. below) Bid Item No. 17p – 10" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment
- q. Bid Item No. 17q – 12" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)

- r. Bid Item No. 17r – 12" diameter (5.1' to 10'), (see "ww" Measurement and "xx" Payment below)
- s. Bid Item No. 17s – 12" diameter (10.1' to 15'), (see "ww" Measurement and "xx" Payment below)
- t. Bid Item No. 17t – 12" diameter (15.1' to 20'), (see "ww" Measurement and "xx" Payment below)
- u. Bid Item No. 17u – 14" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- v. Bid Item No. 17v – 14" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- w. Bid Item No. 17w – 14" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- x. Bid Item No. 17x – 14" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- y. Bid Item No. 17y – 16" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- z. Bid Item No. 17z – 16" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- aa. Bid Item No. 17aa – 16" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- bb. Bid Item No. 17ab – 16" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- cc. Bid Item No. 17ac – 18" diameter (0' to 5'), (see "ww" Measurement and "xx" Payment below)
- dd. Bid Item No. 17ad – 18" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- ee. Bid Item No. 17ae – 18" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- ff. Bid Item No. 17af – 18" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- gg. Bid Item No. 17ag – 20" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- hh. Bid Item No. 17ah – 20" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- ii. Bid Item No. 17ai – 20" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- jj. Bid Item No. 17aj – 20" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- kk. Bid Item No. 17ak – 24" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- ll. Bid Item No. 17al – 24" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)

- mm.      Bid Item No. 17am – 24" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- nn.      Bid Item No. 17an – 24" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- oo.      Bid Item No. 17ao – 30" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- pp.      Bid Item No. 17ap – 30" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- qq.      Bid Item No. 17aq – 30" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- rr.      Bid Item No. 17ar – 30" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)
- ss.      Bid Item No. 17as – 36" diameter (0' to 5') (see "ww" Measurement and "xx" Payment below)
- tt.      Bid Item No. 17at – 36" diameter (5.1' to 10') (see "ww" Measurement and "xx" Payment below)
- uu.      Bid Item No. 17au – 36" diameter (10.1' to 15') (see "ww" Measurement and "xx" Payment below)
- vv.      Bid Item No. 17av – 36" diameter (15.1' to 20') (see "ww" Measurement and "xx" Payment below)

ww.      Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

xx.      Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

31.      HDPE Installed Via Open Cut (Inclusive all Labor, Material, and Associated Restraints)

- a.      Bid Item No. 18a – 4" diameter (0' to 5'), (see "ss" Measurement and "tt" Payment below)
- b.      Bid Item No. 18b – 4" diameter (5.1' to 10'), (see "ss" Measurement and "tt" Payment below)
- c.      Bid Item No. 18c – 4" diameter (10.1' to 15'), (see "ss" Measurement and "tt" Payment below)
- d.      Bid Item No. 18d – 4" diameter (15.1' to 20'), (see "ss" Measurement and "tt" Payment below)
- e.      Bid Item No. 18e – 6" diameter (0' to 5'), (see "ss" Measurement and "tt" Payment below)
- f.      Bid Item No. 18f – 6" diameter (5.1' to 10'), (see "ss" Measurement and "tt" Payment below)

- g. Bid Item No. 18g – 6" diameter (10.1' to 15'), (see "ss" Measurement and "tt" Payment below)
- h. Bid Item No. 18h – 6" diameter (15.1' to 20'), (see "ss" Measurement and "tt" Payment below)
- i. Bid Item No. 18i – 8" diameter (0' to 5'), (see "ss" Measurement and "tt" Payment below)
- j. Bid Item No. 18j – 8" diameter (5.1' to 10'), (see "ss" Measurement and "tt" Payment below)
- k. Bid Item No. 18k – 8" diameter (10.1' to 15'), (see "ss" Measurement and "tt" Payment below)
- l. Bid Item No. 18l – 8" diameter (15.1' to 20'), (see "ss" Measurement and "tt" Payment below)
- m. Bid Item No. 18m – 10" diameter (0' to 5'), (see "ss" Measurement and "tt" Payment below)
- n. Bid Item No. 18n – 10" diameter (5.1' to 10'), (see "ss" Measurement and "tt" Payment below)
- o. Bid Item No. 18o – 10" diameter (10.1' to 15'), (see "ss" Measurement and "tt" Payment below)
- p. Bid Item No. 18p – 10" diameter (15.1' to 20'), (see "ss" Measurement and "tt" Payment below)
- q. Bid Item No. 18q – 12" diameter (0' to 5'), (see "ss" Measurement and "tt" Payment below)
- r. Bid Item No. 18r – 12" diameter (5.1' to 10'), (see "ss" Measurement and "tt" Payment below)
- s. Bid Item No. 18s – 12" diameter (10.1' to 15'), (see "ss" Measurement and "tt" Payment below)
- t. Bid Item No. 18t – 12" diameter (15.1' to 20'), (see "ss" Measurement and "tt" Payment below)
- u. Bid Item No. 18u – 16" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- v. Bid Item No. 18v – 16" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- w. Bid Item No. 18w – 16" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- x. Bid Item No. 18x – 16" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- y. Bid Item No. 18y – 18" diameter (0' to 5'), (see "ss" Measurement and "tt" Payment below)
- z. Bid Item No. 18z – 18" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- aa. Bid Item No. 18aa – 18" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment below)
- bb. Bid Item No. 18ab – 18" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment below)
- cc. Bid Item No. 18ac – 20" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)

- dd. Bid Item No. 18ad – 20" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- ee. below) Bid Item No. 18ae – 20" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment
- ff. below) Bid Item No. 18af – 20" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment
- gg. Bid Item No. 18ag – 24" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- hh. Bid Item No. 18ah – 24" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- ii. below) Bid Item No. 18ai – 24" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment
- jj. below) Bid Item No. 18aj – 24" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment
- kk. Bid Item No. 18ak – 30" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- ll. below) Bid Item No. 18al – 30" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment
- mm. below) Bid Item No. 18am – 30" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment
- nn. below) Bid Item No. 18an – 30" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment
- oo. Bid Item No. 18ao – 36" diameter (0' to 5') (see "ss" Measurement and "tt" Payment below)
- pp. Bid Item No. 18ap – 36" diameter (5.1' to 10') (see "ss" Measurement and "tt" Payment below)
- qq. below) Bid Item No. 18aq – 36" diameter (10.1' to 15') (see "ss" Measurement and "tt" Payment
- rr. below) Bid Item No. 18ar – 36" diameter (15.1' to 20') (see "ss" Measurement and "tt" Payment

ss. Measurement: The quantity for payment shall be the actual number of linear feet of pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

tt. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, fusing, connections, adapters, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, thrust blocks, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

32. Ductile Iron Fittings Installed Via Open Cut (Inclusive all Labor, Material, and Associated Restraints)

- a. Bid Item No. 19a – 4" diameter, (see "m" Measurement and "n" Payment below)

- b. Bid Item No. 19b – 6" diameter, (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 19c – 8" diameter, (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 19d – 10" diameter, (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 19e – 12" diameter, (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 19f – 14" diameter, (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 19g – 16" diameter, (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 19h – 18" diameter, (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 19i – 20" diameter, (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 19j – 24" diameter, (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 19k – 30" diameter, (see "m" Measurement and "n" Payment below)
- l. Bid Item No. 19l – 36" diameter, (see "m" Measurement and "n" Payment below)

m. Measurement: The quantity for payment shall be the actual weight of ductile iron fittings of each size satisfactorily furnished and installed. Fittings may include but not be limited to bends, tees, crosses, reducers, sleeves, wyes, flange, blind flange, plugs, and caps. Fittings may also include various end-types necessary to complete the work including but not limited to mechanical joint, flanged, and plain end.

n. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the pipeline's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); backfill, rough grading, compaction, fencing removal and replacement, restraints, dismantling joints, pipe supports, finish coating, finish grading, cleaning, connection to existing mains and cleanup. This item also includes all necessary caps, plugs, sleeves, restraining devices, locator plates, locate wire, street signage, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

33. Gate Valves with 3-Piece Valve Box

- a. Bid Item No. 20a – 4" diameter (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 20b – 6" diameter (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 20c – 8" diameter (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 20d – 10" diameter (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 20e – 12" diameter (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 20f – 14" diameter (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 20g – 16" diameter (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 20h – 18" diameter (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 20i – 20" diameter (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 20j – 24" diameter (see "m" Measurement and "n" Payment below)

- k. Bid Item No. 20k – 30" diameter (see "m" Measurement and "n" Payment below)
- l. Bid Item No. 20l – 36" diameter (see "l" Measurement and "m" Payment below)
- m. Measurement: The quantity for payment shall be the actual number of each size of gate valve satisfactorily furnished, installed, and incorporated into the piping system.
- n. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and installing the valve complete with valve box, cover, valve box extension, operating nut extension, valve wrench, restraining devices, test station box, concrete collar, identification disk (where applicable), bedding material, adjusting top of valve box to finished grade, clearing and grubbing, excavation, sheeting, shoring and bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work to complete this item.

34. Butterfly Valves with 3-Piece Valve Box

- a. Bid Item No. 21a – 12" diameter (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 21b – 16" diameter (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 21c – 18" diameter (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 21d – 20" diameter (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 21e – 24" diameter (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 21f – 30" diameter (see "m" Measurement and "n" Payment below)
- g. Measurement: The quantity for payment shall be the actual number of each size of butterfly valve satisfactorily furnished, installed, and incorporated into the piping system.
- h. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and installing the valve complete with valve box, cover, valve box extension, operating nut extension, valve wrench, restraining devices, test station box, concrete collar, identification disk (where applicable), bedding material, adjusting top of valve box to finished grade, clearing and grubbing, excavation, sheeting, shoring and bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work to complete this item.

35. Service Saddle Replacement

- a. Bid Item No. 22a – 3/4" diameter (see "n" Measurement and "o" Payment below)
- b. Bid Item No. 22b – 1" diameter (see "n" Measurement and "o" Payment below)
- c. Bid Item No. 22c – 1.5" diameter (see "n" Measurement and "o" Payment below)
- d. Bid Item No. 22d – 2" diameter (see "n" Measurement and "o" Payment below)
- e. Bid Item No. 22e – 4" diameter (see "n" Measurement and "o" Payment below)
- f. Bid Item No. 22f – 6" diameter (see "n" Measurement and "o" Payment below)
- g. Bid Item No. 22g – 8" diameter (see "n" Measurement and "o" Payment below)
- h. Bid Item No. 22h – 10" diameter (see "n" Measurement and "o" Payment below)
- i. Bid Item No. 22i – 12" diameter (see "n" Measurement and "o" Payment below)
- j. Bid Item No. 22j – 14" diameter (see "n" Measurement and "o" Payment below)

- k. Bid Item No. 22k – 16" diameter (see "n" Measurement and "o" Payment below)
- l. Bid Item No. 22l – 18" diameter (see "n" Measurement and "o" Payment below)
- m. Bid Item No. 22m – 20" diameter (see "n" Measurement and "o" Payment below)
- n. Measurement: The quantity for payment shall be the actual number of each size and type service saddle satisfactorily furnished, installed, and incorporated into the piping system. Sizing shall be based on the pipe diameter the service saddle is installed on, regardless of host pipe size.
- o. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the service saddle and all other related and necessary materials, work and equipment required to construct a complete operable service saddle. This shall include but not be limited to service saddle, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable wet tap to complete the connections identified in the Contract Documents.

36. Tapping Sleeves and Tapping Valves

- a. Bid Item No. 23a – 4" diameter (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 23b – 6" diameter (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 23c – 8" diameter (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 23d – 10" diameter (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 23e – 12" diameter (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 23f – 14" diameter (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 23g – 16" diameter (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 23h – 18" diameter (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 23i – 20" diameter (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 23j – 24" diameter (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 23k – 30" diameter (see "m" Measurement and "n" Payment below)
- l. Bid Item No. 23l – 36" diameter (see "m" Measurement and "n" Payment below)
- m. Measurement: Measurement will be the actual number of each tapping saddle, tapping valve, and wet tap satisfactorily furnished, installed and incorporated into the piping system. Sizing shall be based on the host pipe size, regardless of outlet size.
- n. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the tapping saddle, tapping valve, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and

all other related and necessary materials, work and equipment required to construct a complete operable wet tap to complete the connections identified in the Contract Documents.

37. Insert Gate Valve and Valve Box

- a. Bid Item No. 24a – 4" diameter (see "f" Measurement and "g" Payment below)
- b. Bid Item No. 24b – 6" diameter (see "f" Measurement and "g" Payment below)
- c. Bid Item No. 24c – 8" diameter (see "f" Measurement and "g" Payment below)
- d. Bid Item No. 24d – 10" diameter (see "f" Measurement and "g" Payment below)
- e. Bid Item No. 24e – 12" diameter (see "f" Measurement and "g" Payment below)
- f. Measurement: The quantity for payment shall be the actual number of each size and type valve satisfactorily furnished, installed, and incorporated into the piping system while maintaining constant pressure and service. Only complete Insert Gate Valves shall be acceptable with full tapping and removal of the pipe section. Top of pipe style valves will not be acceptable.
- g. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and installing the Insert Gate Valve complete with valve box, cover, valve box extension, operating nut extension, valve wrench, restraining devices, test station box, concrete collar, identification disk (where applicable), bedding material, adjusting top of valve box to finished grade, clearing and grubbing, excavation, sheeting, shoring and bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work to complete this item.

38. Line Stops

- a. Bid Item No. 25a – 4" diameter (see "m" Measurement and "n" Payment below)
- b. Bid Item No. 25b – 6" diameter (see "m" Measurement and "n" Payment below)
- c. Bid Item No. 25c – 8" diameter (see "m" Measurement and "n" Payment below)
- d. Bid Item No. 25d – 10" diameter (see "m" Measurement and "n" Payment below)
- e. Bid Item No. 25e – 12" diameter (see "m" Measurement and "n" Payment below)
- f. Bid Item No. 25f – 14" diameter (see "m" Measurement and "n" Payment below)
- g. Bid Item No. 25g – 16" diameter (see "m" Measurement and "n" Payment below)
- h. Bid Item No. 25h – 18" diameter (see "m" Measurement and "n" Payment below)
- i. Bid Item No. 25i – 20" diameter (see "m" Measurement and "n" Payment below)
- j. Bid Item No. 25j – 24" diameter (see "m" Measurement and "n" Payment below)
- k. Bid Item No. 25k – 30" diameter (see "m" Measurement and "n" Payment below)
- l. Bid Item No. 25l – 36" diameter (see "m" Measurement and "n" Payment below)
- m. Measurement: Measurement will be the actual number of each linestop and linestop saddle satisfactorily furnished, installed and incorporated into the piping system.
- n. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the linestop, full body saddle, temporary valve, completion plug, concrete collar, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of

existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable linestop to isolate the required pipeline for installation and repairs without interrupting service unless otherwise specified.

39. Repair Clamp

- a. Bid Item No. 26a – 2" diameter (see "n" Measurement and "o" Payment below)
- b. Bid Item No. 26b – 4" diameter (see "n" Measurement and "o" Payment below)
- c. Bid Item No. 26c – 6" diameter (see "n" Measurement and "o" Payment below)
- d. Bid Item No. 26d – 8" diameter (see "n" Measurement and "o" Payment below)
- e. Bid Item No. 26e – 10" diameter (see "n" Measurement and "o" Payment below)
- f. Bid Item No. 26f – 12" diameter (see "n" Measurement and "o" Payment below)
- g. Bid Item No. 26g – 14" diameter (see "n" Measurement and "o" Payment below)
- h. Bid Item No. 26h – 16" diameter (see "n" Measurement and "o" Payment below)
- i. Bid Item No. 26i – 18" diameter (see "n" Measurement and "o" Payment below)
- j. Bid Item No. 26j – 20" diameter (see "n" Measurement and "o" Payment below)
- k. Bid Item No. 26k – 24" diameter (see "n" Measurement and "o" Payment below)
- l. Bid Item No. 26l – 30" diameter (see "n" Measurement and "o" Payment below)
- m. Bid Item No. 26m – 36" diameter (see "n" Measurement and "o" Payment below)
- n. Measurement: Measurement will be the actual number of each size repair clamps satisfactorily furnished, installed, and incorporated into the piping system.
- o. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment, and installing the repair clamp including but not limited to full body sleeve, concrete collar, bedding material, clearing and grubbing, excavation, bracing, shoring and sheeting; exploratory excavation; backfill, compaction, constructing the specified protection and adjusting of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete the bid item.

40. Restrained Joint

- a. Bid Item No. 27a – 2" Restrained Joint (see "l" Measurement and "m" Payment below)
- b. Bid Item No. 27b – 4" Restrained Joint (see "l" Measurement and "m" Payment below)
- c. Bid Item No. 27c – 6" Restrained Joint (see "l" Measurement and "m" Payment below)
- d. Bid Item No. 27d – 8" Restrained Joint (see "l" Measurement and "m" Payment below)

- e. Bid Item No. 27e – 10" Restrained Joint (see "l" Measurement and "m" Payment below)
- f. Bid Item No. 27f – 12" Restrained Joint (see "l" Measurement and "m" Payment below)
- g. Bid Item No. 27g – 16" Restrained Joint (see "l" Measurement and "m" Payment below)
- h. Bid Item No. 27h – 18" Restrained Joint (see "l" Measurement and "m" Payment below)
- i. Bid Item No. 27i – 20" Restrained Joint (see "l" Measurement and "m" Payment below)
- j. Bid Item No. 27j – 24" Restrained Joint (see "l" Measurement and "m" Payment below)
- k. Bid Item No. 27k – 30" Restrained Joint (see "l" Measurement and "m" Payment below)
- l. Measurement: The quantity for payment shall be the actual weight of each size restraints in tons (EA) each satisfactorily furnished, installed, and incorporated on the existing pipe as necessary to complete the proposed work. Use of this bid item shall only be where not already included in a bid item and at the review and approval of the City.
- m. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, material, and equipment for installing the joint restraints on the existing main and shall include any necessary accessories, excavation, bedding material, sheeting, shoring, bracing, backfill, compaction, grading, temporary erosion control, and all incidental and related work for each joint restraint.

41. Fire Hydrant Assemblies

- a. Bid Item No. 28a – Remove and Replace Fire Hydrant Assembly With Valve (5-1/4") (see "c" Measurement and "d" Payment below)
- b. Bid Item No. 28b – Remove and Replace Fire Hydrant Assembly Without Valve (5-1/4") (see "c" Measurement and "d" Payment below)
- c. Measurement: Measurement will be for the actual number of fire hydrant assemblies of the type specified, furnished, and installed for water service.
- d. Payment: Payment shall be for the applicable unit price (EA) and shall be full compensation for furnishing all labor, materials, and equipment for installing the fire hydrant assembly, complete, as shown on the drawings, including but not limited to piping, fittings, restraints, gate valve with valve box (if applicable), concrete collar, #57 stone, fire hydrant, clearing and grubbing, excavation, sheeting, shoring and bracing, dewatering, backfill, compaction, grading, temporary erosion control, testing, temporary restoration, clean up, and all other items incidental to the complete installation of the fire hydrant assembly. This shall also include the removal and proper disposal of existing fire hydrants.

42. Bid Item No. 28c – Install New Fire Hydrant Assembly with Valve

- a. Measurement: Measurement will be for the actual number of fire hydrant assemblies of the type specified, furnished, and installed for water service. This bid item shall be for new hydrant assemblies where there is no existing hydrant.
- b. Payment: Payment shall be for the applicable unit price (EA) and shall be full compensation for furnishing all labor, materials, and equipment for installing the fire hydrant assembly, complete, as shown on the drawings, including but not limited to piping, fittings, restraints, gate valve with valve box (if applicable), concrete collar, #57 stone, fire hydrant, clearing and grubbing, excavation, sheeting, shoring and bracing, dewatering, backfill, compaction, grading, temporary erosion control, testing, temporary restoration, clean up, and all other items incidental to the complete installation of the fire hydrant assembly. This shall also include the removal and proper disposal of existing fire hydrants.

43. Bid Item No. 28d – Remove Existing Fire Hydrant

a. Measurement: Measurement will be for the actual number of fire hydrant assemblies of the type to be removed as approved by the City. This bid item shall only be used for removal of hydrants where replacements are not required.

b. Payment: Payment shall be for the applicable unit price (EA) and shall be full compensation for furnishing all labor, materials, and equipment for removal of existing fire hydrant assembly where replacement is not required. This shall include but not be limited to clearing and grubbing, excavation, sheeting, shoring and bracing, dewatering, backfill, compaction, grading, temporary erosion control, testing, temporary restoration, clean up, disposal and hauling, and all other items incidental to the complete the removal and replacement of the existing fire hydrant assembly.

44. Water Service Connection including Saddle, Corporation Stop, Casing, Curb Stop, and Meter Box

a. Bid Item No. 29a – Furnish and Install 5/8" Service Connection (corp to meter including 3 piece) and 2" PVC Casing (see "f" Measurement and "g" Payment below)

b. Bid Item No. 29b – Furnish and Install 3/4" Service Connection (corp to meter including 3 piece) and 2" PVC Casing (see "f" Measurement and "g" Payment below)

c. Bid Item No. 29c – Furnish and Install 1" Service Connection (corp to meter including 3 piece) and 2" PVC Casing (see "f" Measurement and "g" Payment below)

d. Bid Item No. 29d – Furnish and Install 1-1/2" Service Connection (corp to meter including 3 piece) and 3" PVC Casing (see "f" Measurement and "g" Payment below)

e. Bid Item No. 29e – Furnish and Install 2" Service Connection (corp to meter including 3 piece) and 3" PVC Casing (see "f" Measurement and "g" Payment below)

f. Measurement: Measurement will be the actual number of water service connections of each size furnished, installed, and accepted.

g. Payment: Payment will be according to the actual service connections installed and accepted. This item includes furnishing and installing all service tubing and accessories including casing, connections, fittings, reducers, service saddle, corporation stops, meter box, curb stop, tracer wire, labor, machinery, construction equipment, roadway subbase and asphalt repair, adjusting/relocating, supporting, protecting or replacement of existing underground or aboveground utilities including associated utility coordination; and necessary materials, work and equipment required to rehabilitate a complete operable service connection. 4

5. Bid Item No. 30a – Bollard

a. Measurement: Measurement for this item shall be the actual number of bollards furnished, installed and accepted by the City.

b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment required for installation of bollards including but not limited to excavation, concrete, formwork, metal bollard, rebar, steel studs, expansion joints, OSHA reflective taping, finish coating, material testing and incidental work as shown on the Contract Drawings and as specified.

46. Bid Item No. 30b – ARV Assembly (Inclusive of Fittings and Enclosure)

a. Measurement: Measurement for this pay item shall be the actual quantity of ARV assemblies satisfactorily removed, furnished, and installed.

b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for ARV assembly installation including ARV, piping, valving, tapping saddle, above ground enclosure,

bedding material, clearing and grubbing, excavation, bracing, shoring, sheeting, exploratory excavation, construction the specified protection of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable ARV assembly to complete the connections identified in the Contract Documents.

47. Bid Item No. 30c – ARV Only

- a. **Measurement:** Measurement for this pay item shall be the actual quantity of ARVs satisfactorily removed, furnished, and installed.
- b. **Payment:** Payment shall constitute full compensation for all labor, materials, and equipment for ARV installation including ARV, piping, valving, above ground enclosure, bedding material, clearing and grubbing, excavation, bracing, shoring, sheeting, exploratory excavation, construction the specified protection of existing above ground and underground utilities and service connections; adjusting/relocating, supporting, protecting, or replacement of existing underground or aboveground utilities including associated utility coordination; signage removal and replacement; seeding and mulching, disposal of soil or other materials; hydrostatic testing; erosion control; concrete encasement; underdrain restoration and all other related and necessary materials, work and equipment required to construct a complete operable ARV assembly to complete the connections identified in the Contract Documents.

48. Bid Item No. 30d – Temporary Blowoff Assembly

- a. **Measurement:** Measurement will be the actual number of temporary blowoff assemblies furnished, installed, and accepted. b. **Payment:** Payment will be according to the actual number of temporary blowoff assemblies installed and accepted. This item includes furnishing and installing all piping and accessories including casing, connections, fittings, reducers, service saddle, corporation stops, meter box, curb stop, tracer wire, labor, machinery, construction equipment, roadway subbase and asphalt repair, adjusting/relocating, supporting, protecting or replacement of existing underground or aboveground utilities including associated utility coordination; and necessary materials, work and equipment required to rehabilitate a complete operable temporary blowoff assembly.

49. Bid Item No. 30e – 4" Blowoff Assembly

- a. **Measurement:** Measurement will be the actual number of blowoff assemblies furnished, installed, and accepted.
- b. **Payment:** Payment will be according to the actual number of blowoff assemblies installed and accepted. This item includes furnishing and installing all piping and accessories including casing, connections, fittings, reducers, service saddle, corporation stops, meter box, curb stop, plug, tracer wire, labor, machinery, construction equipment, roadway subbase and asphalt repair, adjusting/relocating, supporting, protecting or replacement of existing underground or aboveground utilities including associated utility coordination; and necessary materials, work and equipment required to rehabilitate a complete operable blowoff assembly.

50. Bid Item No. 30f – Pipe Exterior Coating

- a. **Measurement:** Measurement for this pay item shall be the contract unit price per square feet (SF) of pipe exterior coating furnished, installed, and accepted by the City.
- b. **Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment necessary to satisfactorily apply exterior coating on piping as identified in the Contract Documents and as specified. This shall include but not be limited to cleaning and

preparation of pipe surface including powertool cleaning, and pressure washing; application of base coat, secondary coat, and finish coat; and any incidental items necessary to complete this bid item.

51. Water Main Disinfection

- a. Bid Item No. 31a – Cleaning and Disinfection of 2" and 6" Potable Water Main (see "i" Measurement and "j" Payment below) b. Bid Item No. 31b – Cleaning and Disinfection of 8" and 12" Potable Water Main (see "i" Measurement and "j" Payment below) c. Bid Item No. 31c – Cleaning and Disinfection of 14" and 20" Potable Water Main (see "i" Measurement and "j" Payment below)
- d. Bid Item No. 31d – Cleaning and Disinfection of 24" and 36" Potable Water Main (see "i" Measurement and "j" Payment below)
- e. Bid Item No. 31e – Cleaning and Disinfection of 2" and 6" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- f. Bid Item No. 31f – Cleaning and Disinfection of 8" and 12" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- g. Bid Item No. 31g – Cleaning and Disinfection of 14" and 20" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- h. Bid Item No. 31h – Cleaning and Disinfection of 24" and 36" Reclaimed Water Main (see "i" Measurement and "j" Payment below)
- i. Measurement: The quantity for payment shall be the actual number of linear feet of water main pipe of each size and type satisfactorily disinfected in accordance with Contract Documents.
- j. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and conducting the pipeline's complete disinfection, including but not limited to chemicals, sampling equipment and procedures, neutralizing chemicals if needed, permits, and incidental work as specified.

52. PVC Gravity Main (Inclusive all Labor, Material, and Associated Restraints)

- a. Bid Item No. 32a – 6" diameter (see "j" Measurement and "k" Payment below)
- b. Bid Item No. 32b – 8" diameter (see "j" Measurement and "k" Payment below)
- c. Bid Item No. 32c – 10" diameter (see "j" Measurement and "k" Payment below)
- d. Bid Item No. 32d – 12" diameter (see "j" Measurement and "k" Payment below)
- e. Bid Item No. 32e – 14" diameter (see "j" Measurement and "k" Payment below)
- f. Bid Item No. 32f – 16" diameter (see "j" Measurement and "k" Payment below)
- g. Bid Item No. 32g – 18" diameter (see "j" Measurement and "k" Payment below)
- h. Bid Item No. 32h – 20" diameter (see "j" Measurement and "k" Payment below)
- i. Bid Item No. 32i – 24" diameter (see "j" Measurement and "k" Payment below)
- j. Measurement: The quantity for payment shall be the actual number of linear feet of gravity main pipe of each size and type satisfactorily furnished and installed, as measured along the length of the centerline of the completed pipeline, regardless of the type joint required, without deduction for the length of valves and fittings.

k. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials and equipment and constructing the PVC gravity main's complete installation including, but not limited to; clearing and grubbing (unless otherwise covered), trimming or removal, sheeting, rough grading, compaction, fittings, restraints, dismantling joints, pipe supports, finish grading, testing, and cleanup. This item also includes all necessary fittings, reducers, bends, tees, wyes, caps, plugs, sleeves, restraining devices, locator plates, locate wire, connections to existing manholes or gravity mains, and all other items incidental to the construction of the pipeline. All costs to furnish and install such items shall be included.

53. Wastewater Manhole

a. Bid Item No. 33a – Manhole - 4 feet Diameter (see "d" Measurement and "e" Payment below)

b. Bid Item No. 33b – Manhole - 5 feet Diameter (see "d" Measurement and "e" Payment below)

c. Bid Item No. 33c – Manhole - 6 feet Diameter (see "d" Measurement and "e" Payment below)

d. Measurement: The quantity for payment shall be the actual vertical feet depth of each size diameter manholes satisfactorily furnished, installed, and incorporated into the piping system.

e. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, tools and equipment necessary to construct the indicated manholes on the plans, including but not limited to, precast manhole, rim and cover; associated piping; invert and flow channels; joint seals, site grading; bedding; subgrade; sodding; bracing, shoring, and sheeting; interior/exterior coating; addition and replacement of acceptable fill material, sealing, testing and all other work and expense incidental thereto, as indicated on the drawings and specified herein.

54. Existing Wastewater Manhole Adjustments

a. Bid Item No. 33d – Adjust Existing Manhole Frame and Cover (paved areas) (see "e" Measurement and "f" Payment below) b. Bid Item No. 33e – Adjust Existing Manhole Frame and Cover (unpaved areas) (see "e" Measurement and "f" Payment below)

c. Bid Item No. 33f – Replace Existing Manhole Frame and Cover (paved areas) (see "e" Measurement and "f" Payment below) d. Bid Item No. 33g – Replace Existing Manhole Frame and Cover (unpaved areas) (see "e" Measurement and "f" Payment below)

e. Measurement: The quantity for payment shall be the actual number of manhole covers/frames adjustments made or covers/frames replaced as indicated in the Contract Documents.

f. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, tools, and equipment necessary to adjust/replace existing manhole frames and covers. This shall include but not be limited to cleaning and preparing of surfaces, adjustment of existing cover and frame to match existing grade, removal and replacement of existing cover/frame, installing new rain pan, and any other incidental item necessary to complete this bid item.

55. Wastewater Service Lateral

a. Bid Item No. 34a – Install/Repair/Replace 4" Sanitary Sewer Lateral (see "c" Measurement and "d" Payment below) b. Bid Item No. 34b – Install/Repair/Replace 6" Sanitary Sewer Lateral (see "c" Measurement and "d" Payment below) c. Measurement: Measurement for this bid item shall be the actual number of existing laterals installed, repaired, or replaced (from gravity main to sanitary clean out).

d. Payment: Payment will be according to the actual number of laterals removed and replaced. This item includes but is not limited to furnishing and installing all materials, equipment labor including but not limited to bypassing, clearing and grubbing (unless otherwise covered), dewatering, excavation, tree and landscaping protection, trimming or removal, sheeting, shoring and bracing (and/or trench box installation); supporting/protecting existing underground and aboveground utilities, dewatering, backfill, rough grading, compaction, fencing removal and replacement, finish grading, flushing, new sewer lateral saddles, accessories, connections, and restoration.

56. **Bid Item No. 35 – Owners Contingency 10% of Bid**

- a. Measurement: Use of the Owners contingency line item shall only be with written authorization and approval by the City. Owners contingency shall be at a maximum 10% markup.
- b. Payment: Payment shall be at the agreed upon and approved price by the City and shall be inclusive of furnishing all labor, material, and equipment necessary to complete the bid item.

**E. Bid Items – Group C – Asphalt Milling and Resurfacing**

**Bid Item No. 1a – Non-Emergency Mobilization/ Demobilization including General Conditions and Traffic Control**

- a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the unit price for mobilization.
- b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

**Bid Item No. 1b – Emergency Mobilization/ Demobilization including General Conditions and Traffic Control**

- a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price. Emergency demobilization shall be defined mobilizing within 8 hours of initial request for work order assistance.
- b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid

supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; re-work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

#### Asphalt Milling

- a. Bid Item No. 2a – Full Width Milling Only (Up to 2") (see "c" Measurement and "d" Payment below)
- b. Bid Item No. 2b – Full Width Milling Only (2" to 4") (see "c" Measurement and "d" Payment below)
- c. Measurement: Measurement for this item will be based on the actual square yards of asphalt milled and resurfaced. This item shall include specifically only the areas which are being milled and resurfaced.
- d. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for asphalt milling and resurfacing installation, preparation of the surface, disposal of existing asphalt and waste, smoothing, thermoplastic striping, traffic loops, material testing, and incidental work as shown on the Contract Drawings and as specified. Payment shall be for asphalt milled and resurfaced and shall not include the areas where complete asphalt removal and replacement is specified.

#### Bid Item No. 2c – Asphalt Patch

- a. Measurement: Measurement for this item will be based on the actual square yards of asphalt satisfactorily removed and replaced for an asphalt patch.
- b. Payment: Payment shall constitute full compensation for all labor, materials and equipment for asphalt removal and replacement installation, preparation of the surface, install stabilization and base materials, compaction at specified lifts and to required densities, disposal of existing asphalt and waste, smoothing, thermoplastic striping, traffic loops, material testing and incidental work as shown on the Contract Drawings and as specified.

#### Bid Item No 2d – Complete Removal and Replacement of Asphalt Pavement

- a. Measurement: Measurement for this item will be based on the actual square yards of asphalt satisfactorily removed and replaced. This item shall include only the areas which are for complete asphalt replacement (i.e. road base, etc.).
- b. Payment: Payment shall constitute full compensation for all labor, materials and equipment for asphalt removal and replacement installation, preparation of the surface, install stabilization and base materials, compaction at specified lifts and to required densities, disposal of existing asphalt and waste, smoothing, thermoplastic striping, traffic loops, material testing and incidental work as shown on the Contract Drawings and as specified.

**Bid Item No. 3a – Remove and Replace Limerock Base only**

- a. **Measurement:** Measurement for this item will be based on the actual square yards of limerock base removed and replaced. This item shall include specifically only the areas where only limerock base is required.
- b. **Payment:** Payment shall constitute full compensation for all labor, materials, and equipment for limerock base installation, preparation of the surface, disposal of existing material, compaction, smoothing, material testing, and incidental work as shown on the Contract Drawings and as specified.

**Bid Item No. 3b – Remove and Replace Crushed Concrete Base only**

- a. **Measurement:** Measurement for this item will be based on the actual square yards of crushed concrete base removed and replaced. This item shall include specifically only the areas where only crushed concrete base is required.
- b. **Payment:** Payment shall constitute full compensation for all labor, materials, and equipment for crushed concrete base installation, preparation of the surface, disposal of existing material, compaction, smoothing, material testing, and incidental work as shown on the Contract Drawings and as specified.

**Bid Item No. 4a – Sodding**

- a. **Measurement:** Measurement for this item will be based on the actual quantity of sodding installed.
- b. **Payment:** Payment will be of the unit price for furnishing all necessary labor, materials, and equipment necessary to install sodding and other related items for full work site remediation at the approval of the Owner. This shall also include necessary maintenance of sodding to ensure proper integration of the sodding with the existing work site.

**Bid Item No. 4b – Brush Removal**

- a. **Measurement:** Measurement for this item will be based on the actual quantity (tons) of brush removed from the construction work area as required.
- b. **Payment:** Payment will be for the unit price for furnishing all necessary labor, materials, and equipment necessary to remove brush and landscaping and other related items as defined by the owner. This shall include but not be limited to trimming, removal, hauling, and appropriate disposal of material.

**Bid Item No. 4c – Tree Protection**

- a. **Measurement:** Measurement for this item shall be the actual number of tree protection furnished and installed.
- b. **Payment:** Payment will be for the unit price for furnishing all necessary labor, materials, and equipment necessary to install tree protection within the vicinity of work or as otherwise requested by the Owner. This bid item shall include subsequent tree protection removal once determined by the Owner to be acceptable for removal.

**11. Tree Removal**

- a. **Bid Item No. 4d – Tree Removal (<6" Trunk Diameter) (see "e" Measurement and "f" Payment below)**

- b. Bid Item No. 4e – Tree Removal (6"-12" Trunk Diameter) (see "e" Measurement and "f" Payment below)
- c. Bid Item No. 4f – Tree Removal (13"-18" Trunk Diameter) (see "e" Measurement and "f" Payment below)
- d. Bid Item No. 4g – Tree Removal (>18" Trunk Diameter) (see "e" Measurement and "f" Payment below)
- e. Measurement: Measurement for this item shall be the actual number of trees removed, based on the trunk diameter size. Tree replacement shall be determined on an as needed basis.
- f. Payment: Payment will be for the unit price for furnishing all necessary labor, materials, and equipment necessary to remove trees. This shall include but not be limited to tree removal, stump removal, hauling, and disposal of tree and associated material. Tree replacement shall be covered under the contingency for sub group.

## 12. Pavement Marking

- a. Bid Item No. 5a – Pavement Marking - Crosswalks (Lane) (see "i" Measurement and "j" Payment below)
- b. Bid Item No. 5b – Pavement Marking - Stop Bars (Lane) (see "i" Measurement and "j" Payment below)
- c. Bid Item No. 5c – Pavement Marking - School Crossing/RR(see "i" Measurement and "j" Payment below)
- d. Bid Item No. 5d – Pavement Marking - Turn, Straight, Combo Arrows(see "i" Measurement and "j" Payment below) e. Bid Item No. 5e – Pavement Marking - Dashed (White, Yellow or Double Yellow) (see "i" Measurement and "j" Payment below)
- f. Bid Item No. 5f – Pavement Marking - Solid White (see "i" Measurement and "j" Payment below)
- g. Bid Item No. 5g – Pavement Marking - Solid Double Yellow (see "i" Measurement and "j" Payment below)
- h. Bid Item No. 5h – Pavement Marking - Solid Yellow (see "i" Measurement and "j" Payment below)
- i. Measurement: Measurement for these items shall be the actual quantity of the unit price satisfactorily furnished and installed.
- j. Payment: Payment will be the unit price for furnishing all necessary labor, material, and equipment necessary to complete installation of pavement markings as listed in each bid item. This shall include but not be limited to thermoplastic striping material, equipment, forms, etc. for the complete installation of pavement markings as defined in each bid item.

## 13. Temporary Pavement Marking

- a. Bid Item No. 5i – Temporary Pavement Marking - Turn, Straight, Combo Arrows (see "f" Measurement and "g" Payment below)
- b. Bid Item No. 5j – Temporary Pavement Marking - Dashed (White, Yellow or Double Yellow) (see "f" Measurement and "g" Payment below)

- c. Bid Item No. 5k – Temporary Pavement Marking - Solid White (see "f" Measurement and "g" Payment below)
- d. Bid Item No. 5l – Temporary Pavement Marking - Solid Double Yellow (see "f" Measurement and "g" Payment below) e. Bid Item No. 5m – Temporary Pavement Marking - Solid Yellow (see "f" Measurement and "g" Payment below)
- f. Measurement: Measurement for these items shall be the actual quantity of the unit price satisfactorily furnished and installed.
- g. Payment: Payment will be the unit price for furnishing all necessary labor, material, and equipment necessary to complete installation of pavement markings as listed in each bid item. This shall include but not be limited to temporary thermoplastic striping material, equipment, forms, etc. for the complete installation of pavement markings as defined in each bid item.

14. Bid Item No. 6 – Owners Contingency

- a. Measurement: Use of the Owners contingency line item shall only be with written authorization and approval by the City. Owners contingency shall be at a maximum 10% markup.
- b. Payment: Payment shall be at the agreed upon and approved price by the City and shall be inclusive of furnishing all labor, material, and equipment necessary to complete the bid item.

**F. Bid Items – Group D – Concrete Aprons, Sidewalk, and Curb**

- 1. Bid Item No. 1a – Non-Emergency Mobilization/ Demobilization including General Conditions and Traffic Control
  - a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price.
  - b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.
- 2. Bid Item No. 1b – Emergency Mobilization/ Demobilization including General Conditions and Traffic Control

- a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price. Emergency demobilization shall be defined mobilizing within 6 hours of initial request for work order assistance.
- b. Payment: Payment of the unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

3. Bid Item No. 2a – Milling Removal

- a. Measurement: Measurement for this item will be based on the actual square yards of asphalt millings removed. This item shall include specifically only the areas which milling is being removed.
- b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for asphalt milling installation and removal, preparation of the surface, disposal of existing asphalt and waste as specified.

4. Removal and Replacement of Concrete

- a. Bid Item No. 2b - Removal and Replacement of Concrete Apron (see "c" Measurement and "d" Payment below)
- b. Bid Item No. 2c - Removal and Replacement of Concrete Sidewalk (see "c" Measurement and "d" Payment below) c. Measurement: Measurement shall be the actual square yard of concrete driveway removed and replaced.
- d. Payment: Payment shall constitute full compensation for all labor, materials, and equipment required for demolition/removal of existing concrete driveway, preparation of ground surface (grading, compaction, etc.) to accept new sidewalk, preparation of the surface, cast in place formwork, rebar and/or wire mesh, expansion joints, ADA ramps, ADA detectable warning surfaces, disposal of existing concrete and waste, grout repair and smoothing, material testing and incidental work as shown on the Contract Drawings and as specified. All costs associated with the provision of an acceptable alternate (temporary) sidewalk and/or driving surface or detour as required to facilitate pedestrian and vehicular traffic during the course of work shall also be included. 5. Concrete Curb

- a. Bid Item No. 2d - Remove and replace concrete curb and gutter (City Standard Detail Straight Curb) (see "e" Measurement and "f" Payment below)

b. Bid Item No. 2e - Remove and replace concrete curb and gutter (City Standard Detail Type I Curb) (see "e" Measurement and "f" Payment below)

c. Bid Item No. 2f - Remove and replace concrete curb and gutter (City Standard Detail Valley Curb) (see "e" Measurement and "f" Payment below)

d. Bid Item No. 2g - Remove and replace concrete curb and gutter (City Standard Detail Pin/Dowelled Curb) (see "e" Measurement and "f" Payment below)

e. Measurement: Measurement will be the actual linear footage of concrete curb satisfactorily removed, furnished, and installed.

f. Payment: Payment shall constitute full compensation for all labor, materials and equipment for concrete curb and gutter installation, preparation of the surface, case in place formwork, rebar and metal mesh, expansion joints, joint filler, joint seal, disposal of existing concrete and waste, grout repair and smoothing, material testing and incidental work as shown on the Contract Drawings and as specified.

6. Bid Item No. 3a – Remove and Replace Limerock Base only

a. Measurement: Measurement for this item will be based on the actual square yards of limerock base removed and replaced. This item shall include specifically only the areas where only limerock base is required.

b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for limerock base installation, preparation of the surface, disposal of existing material, compaction, smoothing, material testing, and incidental work as shown on the Contract Drawings and as specified.

7. Bid Item No. 3b – Remove and Replace Crushed Concrete Base only

a. Measurement: Measurement for this item will be based on the actual square yards of crushed concrete base removed and replaced. This item shall include specifically only the areas where only crushed concrete base is required.

b. Payment: Payment shall constitute full compensation for all labor, materials, and equipment for crushed concrete base installation, preparation of the surface, disposal of existing material, compaction, smoothing, material testing, and incidental work as shown on the Contract Drawings and as specified.

8. Bid Item No. 4a – Sodding

a. Measurement: Measurement for this item will be based on the actual quantity of sodding installed.

b. Payment: Payment will be of the unit price for furnishing all necessary labor, materials, and equipment necessary to install sodding and other related items for full work site remediation at the approval of the Owner. This shall also include necessary maintenance of sodding to ensure proper integration of the sodding with the existing work site.

9. Bid Item No. 4b – Brush Removal

a. Measurement: Measurement for this item will be based on the actual quantity (tons) of brush removed from the construction work area as required.

b. Payment: Payment will be for the unit price for furnishing all necessary labor, materials, and equipment necessary to remove brush and landscaping and other related items as defined by the owner. This shall include but not be limited to trimming, removal, hauling, and appropriate disposal of material.

10. Bid Item No. 4c – Tree Protection

a. Measurement: Measurement for this item shall be the actual number of tree protection furnished and installed.

b. Payment: Payment will be for the unit price for furnishing all necessary labor, materials, and equipment necessary to install tree protection within the vicinity of work or as otherwise requested by the Owner. This bid item shall include subsequent tree protection removal once determined by the Owner to be acceptable for removal.

11. **Tree Removal**

a. Bid Item No. 4d – Tree Removal (<6" Trunk Diameter) (see "e" Measurement and "f" Payment below)

b. Bid Item No. 4e – Tree Removal (6"-12" Trunk Diameter) (see "e" Measurement and "f" Payment below)

c. Bid Item No. 4f – Tree Removal (13"-18" Trunk Diameter) (see "e" Measurement and "f" Payment below)

d. Bid Item No. 4g – Tree Removal (>18" Trunk Diameter) (see "e" Measurement and "f" Payment below)

e. Measurement: Measurement for this item shall be the actual number of trees removed, based on the trunk diameter size. f. Payment: Payment will be for the unit price for furnishing all necessary labor, materials, and equipment necessary to remove trees. This shall include but not be limited to tree removal, stump removal, hauling, and disposal of tree and associated material in accordance with the requirements and specifications.

12. **Bid Item No. 5 – Owners Contingency**

a. Measurement: Use of the Owners contingency line item shall only be with written authorization and approval by the City. Owners contingency shall be at a maximum 10% markup.

b. Payment: Payment shall be at the agreed upon and approved price by the City and shall be inclusive of furnishing all labor, material, and equipment necessary to complete the bid item.

**G. Bid Items – Group E – Well Maintenance**

1. **Bid Item No. 1a – Mobilization/ Demobilization including General Conditions and Traffic Control**

a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price.

b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project

including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

2. Bid Item No. 1b – Remove and Reinstall Well Head & Pumping Equipment

- a. Measurement: Measurement for this pay item shall be the actual quantity of well head & pumping equipment satisfactorily removed, furnished, and reinstalled.
- b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, and equipment to remove and reinstall wellhead and pumping equipment. This shall include but not be limited to removing the existing pump and any associated equipment as required to complete the work and reinstalling equipment as required to be placed back into operation. This shall include coordination with the City staff to disconnect and subsequently reconnect the electrical connection at the wellhead.

3. Bid Item No. 1c – Perform Pump Repair

- a. Measurement: Measurement for this pay item shall be the actual quantity of time, measured in hours, necessary to perform pump repairs as required by the City. The measurement of hours shall be only be paid upon verification, review and approval by the City.
- b. Payment: Payment for this unit price item for hourly pump repair shall be full compensation for all labor, materials, and equipment to perform required pump repairs as requested by the City.

4. Bid Item No. 1d - Well disinfection

- a. Measurement: Measurement for this pay item shall be the actual quantity of wells disinfected as required following pump repair and replacement services.
- b. Payment: Payment for the unit price item shall be full compensation for all labor, materials, and equipment to perform well disinfection following pump repair and replacement services, including but not limited to chemicals, sampling equipment and procedures, neutralizing chemicals, permits, and incidental work necessary to complete the bid item.

5. Bid Item No. 2a – Mobilization/Demobilization including General Conditions and Traffic Control for Well Acidization Services a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price.

- b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project

record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

6. Bid Item No. 2b – Perform Pre-Acidizing Specific Capacity Test
  - a. Measurement: Measurement for this pay item shall be the actual quantity of specific capacity tests performed using the production well's normal operating rate.
  - b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, and equipment to perform pre-acidizing specific capacity test including but not limited to coordination with City to operate well pump, measuring depth to water prior to test, measuring depth to water during pumping, measuring depth to water following pumping, provision of data, installation of temporary pump, and coordination of discharge water following testing.
7. Bid Item No. 2c – Remove and Re-install Production Pump
  - a. Measurement: Measurement for this pay item shall be the actual quantity of production pump satisfactorily removed, furnished, and reinstalled.
  - b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, and equipment to remove and reinstall production pump. This shall include but not be limited to removing the existing pump and any associated equipment as required to complete the work and reinstalling equipment as required to be placed back into operation. This shall include coordination the City staff to disconnect and subsequently reconnect the electrical connection at the wellhead.
8. Bid Item No. 2d – Provide and Install Acidization Well Head Flange Plate
  - a. Measurement: Measurement for this pay item shall be the actual quantity of well head flange plates installed to the well casing blind flange.
  - b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, and equipment to install wellhead flange plate equipped with acid injection port, water injection port, pressure blowoff port with pressure gauge, and other items as detailed in the specifications along with any incidental items necessary to complete this bid item.
9. Bid Item No. 2e – Provide 32 Percent Inhibited Hydrochloric Acid
  - a. Measurement: Measurement for this pay item shall be the actual quantity (gallons) of hydrochloric acid at the strength specified.
  - b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, equipment, delivery, and storage for hydrochloric acid. This shall include controlling of flow during acidization, dilution of hydrochloric acid, and coordination with City for review and approval.
10. Bid Item No. 2f – Acidize Well
  - a. Measurement: Measurement for this pay item shall be the actual quantity of wells acidized as required by the City. b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, and equipment to acidize the well, including but not limited to injecting water and hydrochloric acid at the flow rates defined in the specifications along with subsequent proper discharge of water. This shall include pumps, piping, connections, fittings, and other items incidental to complete this item.
11. Bid Item No. 2g – Provide and Set Test Pump and Pump Well

- a. Measurement: Measurement for this pay item shall be the actual quantity of test pumps installed as required to complete the work.
- b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, and equipment to remove the acidization flange cover and install a test pump capable of pumping as required by the specifications. This bid item shall also include any incidental items necessary to complete the bid item.

12. Bid Item No. 2h – Well Disinfection

- a. Measurement: Measurement for this pay item shall be the actual quantity of wells disinfected as required following well acidization.
- b. Payment: Payment for the unit price item shall be full compensation for all labor, materials, and equipment to perform well disinfection following well acidization services, including but not limited to chemicals, sampling equipment and procedures, neutralizing chemicals, permits, and incidental work necessary to complete the bid item.

13. Bid Item No. 3a - Mobilization/Demobilization including General Conditions and Traffic Control for Well Evaluation

- a. Measurement: Measurement of various items for mobilization and demobilization will not be made for payment and all items shall be included in the lump sum price.
- b. Payment: Payment of unit price for the item shall be full compensation for the preparatory work and operations in mobilizing for beginning Work on the project including, but not limited to, multiple operations necessary for the movement of personnel, equipment, project signs, supplies and incidentals to the project site, and for the establishment of field offices, storage sheds, safety equipment and first aid supplies, sanitary and other facilities, as required by these Specifications, and State and local laws and regulations; and any other preconstruction expense necessary for the start of the Work; construction schedules; shop drawings; temporary facilities; lay down/storage area; construction aids; erosion control; work associated with the Contractor support during Owner/Engineer reviews and inspection; re-inspections; and any re-work resulting from same. Traffic control shall include but not be limited to Traffic Control Devices include all types of barricades, arrow boards, variable message boards, signs, temporary pavement markers, lights, concrete barriers and permanent striping. All travel, equipment, labor, overhead or any other associated expenses in transportation and setting up the MOT will be included in the price. Payment of the unit price for the item shall be full compensation for finalization of this project including demobilization of personnel, equipment, supplies, and incidentals from the project site; project record documents; contract close-out documents; removal of field offices and storage; final site restoration; and clean-up. The Contractor shall submit invoices substantiating the cost of mobilization with each pay request. In consideration of the Contractor's Indemnity Agreement as set out in the Contract Documents, Owner specifically agrees to give the Contractor a sum of \$100.00 and other good and valuable consideration, receipt of which is acknowledged upon signing of the Agreement.

14. Bid Item No. 3b – Perform Specific Capacity Test with Production Pump

- a. Measurement: Measurement for this pay item shall be the actual quantity of specific capacity tests performed using production pump.
- b. Payment: Payment for the unit price item shall be full compensation for all labor, materials, and equipment to perform specific capacity tests with production pump including but not be limited to coordinating with City staff to operate well pump, measurement of flow and depth of water level, measurement of discharge flow, coordinating the discharge of any water from testing, and any other items incidental to completing this bid item.

15. Bid Item No. 3c – Set Test Pump & Perform Specific Capacity Test

a. Measurement: Measurement for this pay item shall be the actual quantity of specific capacity tests performed using a test pump as defined in the specifications.

b. Payment: Payment for the unit price item shall be full compensation for all labor, materials, and equipment to perform specific capacity tests with test pump including but not be limited to coordinating with City staff to operate well pump, measurement of flow and depth of water level, measurement of discharge flow, installing temporary pumps capable of minimum flow as defined in the specifications, coordinating the discharge of any water from testing, and any other items incidental to completing this bid item. 16. Bid Item No. 3d – Remove and Re-install Well Head and Pumping Equipment

a. Measurement: Measurement for this pay item shall be the actual quantity of well head & pumping equipment satisfactorily removed, furnished, and reinstalled.

b. Payment: Payment for this unit price item shall be full compensation for all labor, materials, and equipment to remove and reinstall wellhead and pumping equipment. This shall include but not be limited to removing the existing pump and any associated equipment as required to complete the work and reinstalling equipment as required to be placed back into operation. This shall include coordination the City staff to disconnect and subsequently reconnect the electrical connection at the wellhead.

17. Bid Item No. 3e – Provide and Install Test Pump for Geophysical Logging

a. Measurement: Measurement for this pay item shall be the actual quantity of test pumps furnished and installed where wells do not have an operating production pump.

b. Payment: Payment for this unit price item shall be full compensation for all labor, equipment, and materials necessary to furnish and install a temporary test pump for wells that do not have operating production pump.

18. Bid Item No. 3f – Perform Geophysical Logging

a. Measurement: Measurement for this pay item shall be the actual quantity of downhole geophysical logs performed. b. Payment: Payment for this unit price item shall be full compensation for all labor, equipment, and materials necessary to perform geophysical logging, including but not limited to preparing and condition each hole to ensure that each borehole is open and can be logged, performing electrical resistivity, natural gamma, caliper under static conditions, and fluid resistivity temperature and flow velocity under static and dynamic conditions. This shall also include dynamic logs be performed for at minimum pumping rates for production and monitoring wells as defined in the specifications, submission of logs to City, and any other incidental items necessary to complete the bid item.

19. Bid Item No. 3g – Perform Video Survey

a. Measurement: Measurement for this pay item shall be the actual quantity of video surveys performed.

b. Payment: Payment for this unit price item shall be full compensation for all labor, equipment, and materials necessary to perform video surveys of the entire well. This shall include all video equipment and provision of one electronic transferred copy and two copies on thumb drives, coordination with City staff, and ensuring that the borehole fluid is of sufficient clarity to allow a video survey to be conducted.

20. Bid Item No. 4 – Perform Mechanical Integrity Testing

a. Measurement: Measurement for this pay item shall be the actual quantity of mechanical integrity tests performed. b. Payment: Payment for this unit price item shall be full compensation for all labor, equipment, and materials necessary to perform mechanical integrity testing

including but not limited to mobilization/demobilization, removal and replacement of well head to allow access, completion of background temperature, gamma, and caliper logs, video survey, radioactive tracer survey, injection tube pressure test, and all other items incidental to complete this bid item.

21. **Labor Hour** This bid item is designated for as-needed tasks not covered under other bid items, and labor hours should only be used for work outside the scope of other specified items. It is essential to ensure these hours do not overlap with work covered by other bid line items, avoiding duplication of payment. Each task using labor hours must be separately documented to prevent billing redundancy, and labor hours under this item shall not be combined with other inclusive bid items.

- a. **Bid Item No. 5a – Foreman regular time** (see “b” Measurement and “c” Payment below)
- b. **Measurement:** Measurement of various worker regular time and overtime shall be based on the per unit price for each labor hour category. Use of labor hours, whether regular hours or overtime, shall only be at the review and approval of the City. **c. Payment:** Payment of the applicable unit price shall be full compensation for furnishing all labor performed as approved by the City to complete the bid item. Contractor will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without Owner consent given after prior notice to Engineer.

22. **Bid Item No. 6 – Owners Contingency**

- a. **Measurement:** Use of the Owners contingency line item shall only be with written authorization and approval by the City. Owners contingency shall be at a maximum 10% markup.
- b. **Payment:** Payment shall be at the agreed upon and approved price by the City and shall be inclusive of furnishing all labor, material, and equipment necessary to complete the bid item

END OF SECTION

## **4.2 SECTION 01 32 33 CONSTRUCTION PHOTOGRAPHS**

### **PART 1: GENERAL**

#### **SCOPE OF WORK**

The Contractor shall employ a competent photographer to provide color digital photographs of all construction areas prior to start of Work and to take construction record photographs periodically during the course of the Work.

#### **PHOTOGRAPHY REQUIRED**

Photographs taken in conformance with this Section shall be furnished to the Engineer with each pay request.

Preconstruction and Post-Construction:

- Initial preconstruction photographs shall be taken no later than 14 calendar days after Notice to Proceed and prior to beginning of construction, and shall show views of the Site, including adjacent private property.
- Particular emphasis shall be directed to structures both inside and outside the Site.

Photographs shall be taken at each of the major stages of construction.

Photographs may be taken by the Contractor's personnel but must be of professional quality as specified herein. Photographs which are deemed unsatisfactory will be rejected and retakes will be required.

**Views Required:**

- A. One (1) view of each activity as directed by the Engineer, up to a limit of ten activities photographed per month.
- B. Five (5) views of overall project site monthly, as directed by the Engineer.

**COSTS OF PHOTOGRAPHY**

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

**PART 2: PRODUCTS**

**DIGITAL PHOTOGRAPHS**

Digital construction photographs shall be labeled and burned to a jump drive or File Sharing Site for distribution.

Each digital photograph shall be renamed to identify the following information:

- Name of Project
- Date and time of exposure
- Orientation of View
- Photographer's numbered identification of exposure

- A. In lieu of renaming each picture, a numbered index corresponding to the numbered digital images may be provided which identifies the above-listed information for each image.
- B. The photo label shall include the following information:
  - A. Name of project
  - B. Date and time of submittal
  - C. Name of photographer

**FORMAT**

Digital images submitted shall be as follows:

- In a conventional digital photographic format (i.e. jpeg)
- Minimum resolution of 1,152 x 864 pixels

- 24-bit millions of colors

### **PART 3 EXECUTION**

#### **TECHNIQUE**

- Factual Presentation.
- Correct exposure and focus.
- High resolution and sharpness
- Maximum depth of field
- Minimum distortion
- Correct white balance

#### **VIEWS REQUIRED**

- Photograph from locations to adequately illustrate condition of construction and state of progress.
- At successive periods of photography, take at least one photograph from the same overall view as previously photographed.
- Consult with the Engineer at each period of photography for instructions concerning views required.

#### **DELIVERY OF PRINTS AND DIGITAL PHOTOGRAPHS**

- The digital images from the subject pay period shall be delivered to accompany each Pay Estimate.
- Additional flash drive/CDs/DVDs shall be created and distributed as follows:
- Owner (one copy)
- Engineer (one copy)
- Project record file (one copy to be stored by the Contractor until the end of the project which may be retained by the Contractor at his option).

End Of Section

### **4.3 SECTION 01 51 00 FIELD ENGINEERING**

#### **PART 1: GENERAL**

##### **DESCRIPTION**

Scope of Work: Contractor shall provide and pay for field engineering services for the Project in accordance with this section.

Survey work required in execution of the Project.

Civil, structural or other professional engineering services specified or required to execute the Contractor's construction methods.

The method of field staking for the construction of the work shall be at the option of the Contractor. The Drawings provide the engineering surveys to establish reference points which were judged necessary to enable the Contractor to proceed with his work.

The accuracy of any method of staking shall be the responsibility of the Contractor. All engineering for vertical and horizontal control shall be the responsibility of the Contractor.

The Contractor shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the Contractor, the Contractor shall not proceed with any work until he has established such points, marks lines and elevations as may be necessary for the prosecution of the Work.

The Contractor shall retain the services of a registered land surveyor licensed in the State of Florida to identify existing control points and maintain a survey during construction and for record drawing purposes.

#### **QUALIFICATIONS OF SURVEYOR OR ENGINEER**

Qualified engineer or registered land surveyor, acceptable to the Engineer.

Registered professional engineer of the discipline required for the specific service on the Project, currently licensed in the State of Florida.

#### **SURVEY REFERENCE POINTS**

Locate and protect control points prior to starting site work and preserve all permanent reference points during construction.

Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

Require surveyor to replace Project control points which may be lost or destroyed at no additional cost to the Owner. Establish replacement based on original survey control.

#### **PROJECT SURVEY REQUIREMENTS**

Establish a minimum of two permanent bench marks on site prior to beginning work, referenced to data established by survey control points.

Record locations, with horizontal and vertical data, on Project Record Documents.

Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:

Site improvements:

Stakes for grading, fill and topsoil replacement.

Utility slopes and invert elevations.

Batter boards for structures.

Building foundations, column locations and floor levels.

Controlling lines and levels required for mechanical and electrical trades.

From time to time, verify layouts by same methods.

## **RECORDS**

Maintain a complete, accurate log of all control and survey work as it progresses.

Maintain a record drawing markup set of the original drawings to be submitted at the end of the project per Section 01, Project Record Documents.

## **SUBMITTALS**

Submit resume, name and address of Surveyor and professional engineer to the Engineer.

Submit certificate signed by a registered engineer or surveyor certifying that elevations and locations of improvements are in conformance with the Contract Documents, or if not in conformance, certify as to variances from the Contract Documents.

Submit drawings showing surveyed elevation and location coordinates of all structures and above ground facilities constructed in asset management table. This drawing shall be included with the project Record Documents.

## **PRODUCTS (Not used)**

## **EXECUTION (Not used)**

END OF SECTION

## **4.4 SECTION 01 57 00 MAINTENANCE OF TRAFFIC**

### **PART 1 - GENERAL 1.01**

**DESCRIPTION A.** This section includes identifying safety hazards and then furnishing all necessary labor, materials, tools, and equipment including, but not limited, to signs, barricades, traffic drums, cones, flashers, construction fencing, flag persons, warning devices, temporary pavement markings, delineators, etc., to control vehicular and pedestrian traffic through and adjacent to the project area. These measures and actions shall be taken to safely maintain the accessibility of public and construction traffic by preventing potential construction hazards. This Work shall also include all costs associated with the erecting, maintaining, moving, adjusting, cleaning, relocating, and storing the materials necessary to ensure safe movement of vehicular and pedestrian traffic throughout the project area. The Contractor may request that the Owner approve the detouring of traffic around the Construction area if it is in the best interest of public safety and the Owner. Detouring shall be limited to normal construction hours and two-way traffic patterns shall be re-established at the end of each workday.

### **1.02 REQUIREMENTS**

A. Traffic planning and control for the maintenance and protection of pedestrian and vehicular traffic affected by the Contractor's Work includes, but is not limited to:

1. Construction and maintenance of any necessary detour equipment and facilities.
2. Providing necessary facilities for access to residences and businesses.
3. Furnishing, installing, and maintenance of traffic control and safety devices (e.g. signage, barricades, barriers, message boards, etc.), and flag persons as appropriate during Construction.
4. Control of water runoff, dust and any other special requirements for safe and expeditious movement of traffic.

B. Planning, maintenance and control of traffic shall be provided at the Contractor's expense. The Contractor will bear all expense of maintaining the vehicle and pedestrian traffic throughout the work area.

C. The Contractor will ensure all personnel involved in traffic control are properly trained and capable of communicating with the public during closures and detours. The Contractor may be required to hire off-duty uniformed police officers, in addition to flag persons, to direct and maintain traffic on heavily traveled thoroughfares on which traffic is subject to delays or detours caused by the Contractor's operations. Locations and conditions requiring such uniformed police officers shall be as directed by the Owner.

D. The Contractor will remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions.

#### 1.03 SUBMITTALS

A. Submit at Contractor's own expense a Maintenance of Traffic for approval by the Owner prior to the start of any Work. Contractor shall sequence the work in a manner that will minimize disruption of vehicular and pedestrian access through and around the construction area. The Contractor shall not proceed with any activities that would impact traffic or pedestrian flow until the Owner and Engineer have returned a response indicating no objections to the proposed Maintenance of Traffic plan.

B. The Traffic Control Plan will detail procedures and protective measures proposed by the Contractor to provide for protection and control of traffic affected by the Work consistent with the following applicable standards:

1. Standard Specifications for Road and Bridge Construction, latest edition including all subsequent supplements issued by the Florida Department of Transportation, (FDOT Spec.).

2. Manual of Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations, FDOT. C. All references to the respective agencies in the above referenced standards shall be construed to also include the municipality as applicable for this Work.

D. The Traffic Control Plan will be signed and sealed by a Professional Engineer registered in the state of Florida and shall include proposed locations and time durations of the following, as applicable:

1. Pedestrian and public vehicular traffic routing.

2. Lane and sidewalk closures, other traffic blockage and lane restrictions and reductions anticipated to be caused by construction operations. Show and describe the proposed location, dates, hours and duration of closure, vehicular and pedestrian traffic routing and management, traffic control devices for implementing pedestrian and vehicular movement around the closures, and details of barricades.

3. Location, type and method of shoring to provide lateral support to the side of an excavation or embankment parallel to an open travel-way.

4. Allowable on-street parking within the immediate vicinity of worksite.

5. Access to buildings immediately adjacent to worksite.

6. Driveways blocked by construction operations.

7. Temporary traffic control devices, temporary pavement striping and marking of streets and sidewalks affected by construction 8. Temporary commercial and industrial loading and unloading zones.

9. Construction vehicle reroutes, travel times, staging locations, and number and size of vehicles involved.

E. Obtain and submit prior to erection, or otherwise impacting traffic, all required permits from all authorities having jurisdiction.

## PART 2 - PRODUCTS 2.01

## MATERIALS AND EQUIPMENT

A. The Contractor will furnish barricades, warning signs, delineators, pilot cars and other traffic control materials and equipment in accordance with the Manual of Uniform Traffic Control Devices for Streets and Highways published by the United States Government Printing Office.

## 2.02 FLAG PERSONS

A. All flag persons used on this Project will adhere to the following requirements:

1. Any person acting as a flag person on this Project will have attended a training session taught by a Contractor's qualified trainer before the start date of this Contract.

2. The Contractor's qualified trainer will have completed a "Flag person Train the Trainer Session" in the 5-years previous or before the start date of this Contract and will be on file as a qualified flag person trainer.

3. The flag person trainer's name and Qualification Number will be furnished by the Contractor at the Pre-Construction meeting. The Contractor will provide all flag persons with the Flag Person Handbook and will observe the rules and regulations contained therein. This handbook will be in the possession of all flag person while flagging on the Project.

4. Flag persons will not be assigned other duties while working as authorized flag persons.

5. Any person replacing flag person for break shall have the same training.

## PART 3 - EXECUTION 3.01

### NOTIFICATIONS

A. The Contractor will notify individual owners, owner's agents, and tenants of buildings adjacent to worksite in writing, with copies to the Owner, 72-hours in advance of any disruption to their access to those buildings and/or use of public ways adjacent to the buildings or prohibiting the stopping and parking of vehicles.

B. Before closing any vehicle or pedestrian thoroughfare, the Contractor will give written notice to the Owner. Notice will be given no less than 72-hours in advance of the proposed closure, or as may be otherwise provided in the accepted Traffic Control Plan, so that the final approval of such closings can be obtained at least 48-hours in advance.

C. The Contractor is responsible for notifying Fire and Ambulance Departments whenever roads are impassable.

D. The Contractor will immediately notify the Owner of any vehicular or pedestrian safety or efficiency problems incurred as a result of the construction of the Project.

## 3.02 GENERAL TRAFFIC CONTROL

- A. The Contractor will sequence and plan construction operations and will generally conduct Work in such a manner as not to unduly or unnecessarily restrict or impede normal traffic.
- B. Unless otherwise provided, all roads within the limits of the Work will be kept open to all traffic by the Contractor. The Contractor will keep the portion of the project being used by public traffic, whether it is through or local traffic, in such condition that traffic will be adequately accommodated.
- C. The Contractor will be responsible for installation and maintenance of all traffic control devices and requirements for the duration of the construction period. Necessary precautions for traffic control will include, but not be limited to, warning signs, signals, lighting devices, markings, barricades, canalizations and hand signaling devices.
- D. The Contractor will provide and maintain in a safe condition temporary approaches or crossings and intersections with trails, roads, streets, businesses, parking lots, residences, garages and farms.
- E. The Contractor will provide emergency access to all residences and businesses at all times. Residential and business access will be restored and maintained at all times outside of the Contractor's normal working hours.
- F. Traffic is to be maintained on one section of existing pavement, proposed pavement, or a combination thereof. Alternating one-way traffic may be utilized and limited to a maximum length of 500-feet during construction hours. Lane width for alternating one-way traffic will be kept to a minimum width of 10-feet, or as directed by the Owner.
- G. Travel lanes and pedestrian passways will be drained and kept reasonably smooth, and in a suitable condition at all times in order to provide minimum interference to traffic consistent with the prosecution of the Work.
- H. The Contractor will make provisions at all "open cut" street crossings to allow for free passage of vehicles and pedestrians, either by bridging or other temporary crossing structures. Such structures will be of adequate strength and proper construction and will be maintained by the Contractor in such a manner as not to constitute an undue traffic hazard.
- I. The Contractor will keep all signs in proper position, clean, and legible at all times. Care will be taken so that weeds, shrubbery, construction materials, equipment, and soil are not allowed to obscure any sign, light, or barricade. Signs that do not apply to construction conditions should be removed or adjusted so that the legend is not visible to approaching traffic.
- J. The Owner may determine the need for, and extent of, additional striping removal and restriping.
- K. Excavated material, spoil banks, construction materials, equipment and supplies will not be located in such a manner as to obstruct traffic, as practicable. The Contractor will immediately remove from the site all demolition material, exercising such precaution as may be directed by the Owner. All material excavated shall be disposed of so as to minimize traffic and pedestrian inconvenience and to prevent damage to adjacent property.
- L. During any suspension, the Contractor will make passable and open to traffic such portions of the Project and/or temporally roadways as directed by the Owner for accommodation of traffic during the anticipated period of suspension. Passable conditions will be maintained until issuance of an order for the resumption of construction operations. When Work is resumed, the Contractor will replace or renew any Work or materials lost or damaged because of such temporary use in every respect as though its prosecution had been continuous and without interferences.

### 3.03 TEMPORARY SHORING

A. Use shoring to maintain traffic when it is necessary to provide lateral support to the side of an excavation or embankment parallel to an open travel-way. Provide shoring when a theoretical 2:1 or steeper slope from the bottom of the excavation or embankment intersects the existing ground line closer than 5-feet (1.5 m) from the edge of pavement of the open travel-way.

B. The Contractor will furnish, install, and remove sheeting, shoring, and bracing necessary to maintain traffic at locations shown on the Traffic Control Plan and other locations determined during construction.

## END OF SECTION

### **4.5 SUPPLEMENTAL SECTION 03 30 00 CAST-IN-PLACE CONCRETE SUPPLEMENT**

#### PART 1 - GENERAL 1.01

##### SCOPE OF WORK

A. Furnish all labor and materials required and install cast-in-place concrete complete as specified herein.

1.02 RELATED WORK A. This section shall supplement the City Technical Specifications Section IV. Specifically, see City Technical Specifications Section IV Section 301, 302, 303, and 707.

#### 1.03 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field.

2. ASTM C33 -Standard Specification for Concrete Aggregates.

3. ASTM C39 -Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

4. ASTM C42 -Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

5. ASTM C94 -Standard Specification for Ready-Mixed Concrete.

6. ASTM C143 -Standard Test Method for Slump of Hydraulic Cement Concrete

7. ASTM C150 -Standard Specification for Portland Cement

8. ASTM C171 -Standard Specification for Sheet Materials for Curing Concrete

9. ASTM C173 -Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

10. ASTM C231 -Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

11. ASTM C260 -Standard Specification for Air-Entraining Admixtures for Concrete.

12. ASTM C309 -Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

13. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.

14. ASTM C618 -Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
15. ASTM C1017 - Standard Specification for Chemical Admixtures for use in Producing Flowing Concrete.

- B. American Concrete Institute (ACI).
  1. ACI 304 -Guide for Measuring, Mixing, Transporting and Placing Concrete.
  2. ACI 305 -Hot Weather Concreting.
  3. ACI 306.1 -Standard Specification for Cold Weather Concreting.
  4. ACI 318 -Building Code Requirements for Structural Concrete.
  5. ACI 350 -Environmental Engineering Concrete Structures.
6. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.04 QUALITY ASSURANCE

- A. Reinforced concrete shall comply with ACI 318, the recommendations of ACI 350R and other stated requirements, codes and standards. The most stringent requirement of the codes, standards and this Section shall apply when conflicts exist.
- B. Only one source of cement and aggregates shall be used on any one structure. Concrete shall be uniform in color and appearance.
- C. Well in advance of placing concrete, discuss with the Engineer the sources of individual materials and batched concrete proposed for use. Discuss placement methods, waterstops and curing. Propose methods of hot and cold weather concreting as required. Prior to the placement of any concrete containing a high-range water-reducing admixture (plasticizer), the Contractor, accompanied by the plasticizer manufacturer, shall discuss the properties and techniques of batching and placing plasticized concrete.
- D. If, during the progress of the work, it is impossible to secure concrete of the required workability and strength with the materials being furnished, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the desired properties. All changes so ordered shall be made at the Contractor's expense.
- E. If, during the progress of the work, the materials from the sources originally accepted change in characteristics, the Contractor shall, at his/her expense, make new acceptance tests of aggregates and establish new design mixes.
- F. Testing of the following materials shall be furnished by Contractor to verify conformity with this Specification Section and the stated ASTM Standards.
  1. Fine aggregates for conformity with ASTM C33 - sieve analysis, physical properties, and deleterious substances.
  2. Coarse aggregates for conformity with ASTM C33 - sieve analysis, physical properties, and deleterious substances.
  3. Cements for conformity with ASTM C150 - chemical analysis and physical properties.
  4. Pozzolans for conformity with ASTM C618 - chemical analysis and physical properties.

5. Proposed concrete mix designs - compressive strength, slump and air content.

G. Testing of the following items shall be at the discretion of the Owner to verify conformity with this Specification Section.

1. Concrete placements - compressive strength (cylinders), compressive strength (cores), slump, and air content.

2. Other materials or products that may come under question.

H. All materials incorporated in the work shall conform to accepted samples.

#### 1.05 DELIVERY, STORAGE AND HANDLING

A. Cement: Store in weather-tight buildings, bins or silos to provide protection from dampness and contamination and to minimize warehouse set.

B. Aggregate: Arrange and use stockpiles to avoid excessive segregation or contamination with other materials or with other sizes of like aggregates. Build stockpiles in successive horizontal layers not exceeding 3-ft in thickness. Complete each layer before the next is started. Do not use frozen or partially frozen aggregate.

C. Sand: Arrange and use stockpiles to avoid contamination. Allow sand to drain to uniform moisture content before using. Do not use frozen or partially frozen aggregates.

D. Admixtures: Store in closed containers to avoid contamination, evaporation or damage. Provide suitable agitating equipment to assure uniform dispersion of ingredients in admixture solutions which tend to separate. Protect liquid admixtures from freezing and other temperature changes which could adversely affect their characteristics.

E. Pozzolan: Store in weather-tight buildings, bins or silos to provide protection from dampness and contamination.

F. Sheet Curing Materials: Store in weather-tight buildings or off the ground and under cover.

G. Liquid Curing Compounds: Store in closed containers.

#### PART 2 - PRODUCTS 2.01

##### GENERAL

A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Cement: U.S. made Portland cement complying with ASTM C150. Air entraining cements shall not be used. Cement brand shall be subject to approval by the Engineer and one brand shall be used throughout the work.

#### 2.02 MATERIALS

A. Materials shall comply with this Section and any applicable State or local requirements.

B. Cement: The following cement type(s) shall be used:

1. All Classes – Type I/II or Type II

C. Fine Aggregate: Washed inert natural sand conforming to the requirements of ASTM C33.

D. Coarse Aggregate: Well-graded crushed stone or washed gravel conforming to the requirements of ASTM C33. Grading requirements shall be as listed in ASTM C33 Table 2 for the

specified coarse aggregate size number. Limits of Deleterious Substances and Physical Property Requirements shall be as listed in ASTM C33 Table 3 for severe weather regions. Size numbers for the concrete mixes shall be as shown in Table 1 herein.

E. Water: Potable water free from injurious amounts of oils, acids, alkalis, salts, organic matter, or other deleterious substances. F. Admixtures: Admixtures shall be free of chlorides and alkalis (except for those attributable to water). When it is required to use more than one admixture in a concrete mix, the admixtures shall be from the same manufacturer. Admixtures shall be compatible with the concrete mix including other admixtures and shall be suitable for use in contact with potable water after 30 days of concrete curing.

1. Air-Entraining Admixture: The admixture shall comply with ASTM C260. Proportioning and mixing shall be in accordance with manufacturer's recommendations.

2. Water-Reducing Agent: The admixture shall comply with ASTM C494, Type A. Proportioning and mixing shall be in accordance with manufacturer's recommendations.

3. High-Range Water-Reducer (Plasticizer): The admixture shall comply with ASTM C494, Type F and shall result in non-segregating plasticized concrete with little bleeding and with the physical properties of low water/cement ratio concrete. The treated concrete shall be capable of maintaining its plastic state in excess of 2 hours. Proportioning and mixing shall be in accordance with manufacturer's recommendations. Where walls are 14" thick or less and the wall height exceeds 12 ft a mix including a plasticizer must be used.

4. Admixtures causing retarded or accelerated setting of concrete shall not be used without written approval from the Engineer. When allowed, the admixtures shall be retarding or accelerating water reducing or high range water reducing admixtures.

G. Pozzolan (Fly Ash): Pozzolan shall be Class C or Class F fly ash complying with ASTM C618 except the Loss on Ignition (LOI) shall be limited to 3 percent maximum.

H. Sheet Curing Materials. Waterproof paper, polyethylene film or white burlap-polyethylene sheeting all complying with ASTM C171.I. Liquid Curing Compound. Liquid membrane-forming curing compound shall comply with the requirements of ASTM C309, Type 1-D (clear or translucent with fugitive dye) and shall contain no wax, paraffin, or oil. Curing compound shall be approved for use in contact with potable water after 30 days (non-toxic and free of taste or odor). Curing compound shall comply with Federal, State and local VOC limits.

## 2.03 PRE-BAGGED CONCRETE MIX

A. With the approval of the City and Engineer, the use of pre-bagged concrete mix will be acceptable for small concrete quantities where less than 3 cubic yards are placed in one day and less than 1 cubic yard is placed in a single placement. Any other quantity shall be a ready mix concrete as detailed in Section 2.04.

B. Pre-bagged mixtures shall meet the following requirements:

1. Fiber Reinforced Concrete Mix with 4,000 psi 28-day strength
2. High Strength Concrete Mix with 5,000 psi 28-day Strength

C. Pre-bagged concrete mixes shall be prepared in strict accordance with manufacturer requirements and shall be prepared using a mechanical concrete mixer. Hand mixing will not be acceptable.

D. Pre-bagged concrete mixes shall be placed and cured in accordance with manufacturer requirements and in accordance with the installation requirements detailed herein. This includes but is not

limited formwork, reinforcing, placement, finishing, and curing. E. Concrete prepared by pre-bagged mixes shall have a minimum of four (4) cylinders collected for inspection and field strength testing in accordance with

### Section 3.07, 2.04

## READY MIX CONCRETE

A. Development of mix designs and testing shall be by an independent testing laboratory acceptable to the Engineer engaged by and at the expense of the Contractor.

B. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce concrete having proper placability, durability, strength, appearance and other required properties. Proportion ingredients to produce a homogenous mixture which will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing excessive free water to collect on the surface.

C. The design mix shall be based on standard deviation data of prior mixes with essentially the same proportions of the same constituents or, if such data is not available, be developed by a testing laboratory, acceptable to the Engineer, engaged by and at the expense of the Contractor. Acceptance of mixes based on standard deviation shall be based on the modification factors for standard deviation tests contained in ACI 318. The water content of the concrete mix, determined by laboratory testing, shall be based on a curve showing the relation between water cementitious ratio and 7 and 28 day compressive strengths of concrete made using the proposed materials. The curves shall be determined by four or more points, each representing an average value of at least three test specimens at each age. The curves shall have a range of values sufficient to yield the desired data, including the specified design strengths as modified below, without extrapolation. The water content of the concrete mixes to be used, as determined from the curve, shall correspond to strengths 16 percent greater than the specified design strengths. The resulting mix shall not conflict with the limiting values for maximum water cementitious ratio and net minimum cementitious content as specified in Table 1.

D. Compression Tests: Provide testing of the proposed concrete mix or mixes to demonstrate compliance with the specified design strength requirements in conformity with the above paragraph.

E. Entrained air, as measured by ASTM C231, shall be as shown in Table 1. 1. If the air-entraining agent proposed for use in the mix requires testing methods other than ASTM C231 to accurately determine air content, make special note of this requirement in the admixture submittal.

F. Slump of the concrete as measured by ASTM C143, shall be as shown in Table 1. If a high-range water-reducer (plasticizer) is used, the slump indicated shall be that measured before plasticizer is added. Plasticized concrete shall have a slump ranging from 5 to 8-in.

G. Proportion admixtures according to the manufacturer's recommendations. Two or more admixtures specified may be used in the same mix provided that the admixtures in combination retain full efficiency and have no deleterious effect on the concrete or on the properties of each other.

TABLE 1  
CONCRETE MIX REQUIREMENTS

	Design		Fine	Coarse	Cem
entitious					
Class ent	Strength	Cement	Aggregate	Aggregate	Cont

	(1)	(2)	(2)	(3)	(4)		
A min.	2500	C150 Type II	C33	57	440		
B min.	3000	C150 Type II	C33	57	480		
C min.	4000	C150 Type II	C33	57	560		
D min.	5000	C150 Type II	C33	57	600		
<hr/>							
mp Class Ash ches	Ratio Range (5)	W/cm Fly WR	AE HRWR (6)	Slu Range (7)	In (8)		
4	A	0.63 max.	--	3.5 to 5	Yes	*	1-
5	B	0.54 max.	--	3.5 to 1-3			
5	Yes	*					
C	0.44 max.	25% max	3.5 to 5	Yes	*	3-	
D	0.40 max.	--	3.5 to 5	Yes	*	3-	

NOTES:

- (1) Minimum compressive strength in psi at 28 days
- (2) ASTM designation
- (3) Size Number in ASTM C33

- (4) Cementitious content in lbs/cu yd
- (5) W/Cm is Water-Cementitious ratio by weight
- (6) AE is percent air-entrainment
- (7) WR is water-reducer admixture
- (8) HRWR is high-range water-reducer admixture
  - \* HRWR used at contractor's option except where walls are 14" thick or less and the wall height exceeds 12 ft a mix including a plasticizer must be used.

### PART 3 - EXECUTION 3.01

#### MEASURING MATERIALS

A. Concrete shall be composed of portland cement, fine aggregate, coarse aggregate, water and admixtures as specified and shall be produced by a plant acceptable to the Engineer. All constituents, including admixtures, shall be batched at the plant except a high-range water-reducer may also be added in the field.

B. Measure materials for batching concrete by weighing in conformity with and within the tolerances given in ASTM C94 except as otherwise specified. Scales shall have been certified by the local Sealer of Weights and Measures within 1 year of use.

C. Measure the amount of free water in fine aggregates within 0.3 percent with a moisture meter. Compensate for varying moisture contents of fine aggregates. Record the number of gallons of water as batched on printed batching tickets.

D. Admixtures shall be dispensed either manually using calibrated containers or measuring tanks, or by means of an automatic dispenser approved by the manufacturer of the specific admixture.

1. Charge air entraining and chemical admixtures into the mixer as a solution using an automatic dispenser or similar metering device.

2. Inject multiple admixtures separately during the batching sequence.

#### 3.02 MIXING AND TRANSPORTING

A. Batch plants shall have a current NRMCA Certification or equal.

B. Concrete shall be ready mixed concrete produced by equipment acceptable to the Engineer. No hand mixing will be permitted. Clean each transit mix truck drum and reverse drum rotation before the truck proceeds under the batching plant. Equip each transit mix truck with a continuous, nonreversible, revolution counter showing the number of revolutions at mixing speeds.

C. Ready-mix concrete shall be transported to the site in watertight agitator or mixer trucks loaded not in excess of their rated capacities as stated on the name plate.

D. Keep the water tank valve on each transit truck locked at all times. Any addition of water above the appropriate W/Cm ratio must be directed by the Engineer. Added water shall be incorporated by additional mixing of at least 35 revolutions. All added water shall be metered and the amount of water added shall be shown on each delivery ticket.

E. All central plant and rolling stock equipment and methods shall comply with ACI 318 and ASTM C94.

F. Select equipment of size and design to ensure continuous flow of concrete at the delivery end. Metal or metal-lined non-aluminum discharge chutes shall be used and shall have slopes not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20-ft

long and chutes not meeting slope requirements may be used if concrete is discharged into a hopper before distribution.

G. Retempering (mixing with or without additional cement, aggregate, or water) of concrete or mortar which has reached initial set will not be permitted.

H. Handle concrete from mixer to placement as quickly as practicable while providing concrete of required quality in the placement area. Dispatch trucks from the batching plant so they arrive at the work site just before the concrete is required, thus avoiding excessive mixing of concrete while waiting or delays in placing successive layers of concrete in the forms.

I. Furnish a delivery ticket for ready mixed concrete to the Engineer as each truck arrives. Each ticket shall provide a printed record of the weight of cement and each aggregate as batched individually. Use the type of indicator that returns for zero punch or returns to zero after a batch is discharged. Clearly indicate the weight of fine and coarse aggregate, cement and water in each batch, the quantity delivered, the time any water is added, and the numerical sequence of the delivery. Show the time of day batched and time of discharge from the truck. Indicate the number of revolutions of the truck mixer.

J. Temperature and Mixing Time Control

1. In cold weather, do not allow the as-mixed temperature of the concrete and concrete temperatures at the time of placement in the forms to drop below 40 degrees F.

2. If water or aggregate has been heated, combine water with aggregate in the mixer before cement is added. Do not add cement to mixtures of water and aggregate when the temperature of the mixture is greater than 90 degrees F.

3. In hot weather, cool ingredients before mixing to maintain temperature of the concrete below the maximum placing temperature of 90 degrees F. If necessary, substitute well-crushed ice for all or part of the mixing water.

4. The maximum time interval between the addition of mixing water and/or cement to the batch and the placing of concrete in the forms shall not exceed the values shown in Table 2.

TABLE 2  
MAXIMUM TIME TO DISCHARGE OF CONCRETE

<u>Time</u>	<u>Air or Concrete Temperature (whichever is higher)</u>	<u>Maximum</u>
	80 to 90 Degree F (27 to 32 Degree C).....	45 minutes
	70 to 79 Degree F (21 to 26 Degree C).....	60 minutes
	40 to 69 Degree F (5 to 20 Degree C).....	90 minutes

If an approved high-range water-reducer (plasticizer) is used to produce plasticized concrete, the maximum time interval shall not exceed 90 minutes.

### 3.03 CONCRETE APPEARANCE

A. Concrete mix showing either poor cohesion or poor coating of the coarse aggregate with paste shall be remixed. If this does not correct the condition, the concrete shall be rejected. If the slump is within the allowable limit, but excessive bleeding, poor workability, or poor finishability are observed, changes in the concrete mix shall be obtained only by adjusting one or more of the following:

1. The gradation of aggregate.
2. The proportion of fine and coarse aggregate.
3. The percentage of entrained air, within the allowable limits.

B. Concrete for the work shall provide a homogenous structure which, when hardened, will have the required strength, durability and appearance. Mixtures and workmanship shall be such that concrete surfaces, when exposed, will require no finishing. When concrete surfaces are stripped, the concrete, when viewed in good lighting from 10-ft away, shall be pleasing in appearance, and at 20-ft shall show no visible defects.

### 3.04 PLACING AND COMPACTING

#### A. Placing

1. Verify that all formwork completely encloses concrete to be placed and is securely braced prior to concrete placement. Remove ice, excess water, dirt and other foreign materials from forms. Confirm that reinforcement and other embedded items are securely in place. Have a competent workman at the location of the placement who can assure that reinforcing steel and embedded items remain in designated locations while concrete is being placed. Sprinkle semi-porous subgrades or forms to eliminate suction of water from the mix. Seal extremely porous subgrades in an approved manner.
2. Deposit concrete as near its final position as possible to avoid segregation due to rehandling or flowing. Place concrete continuously at a rate which ensures the concrete is being integrated with fresh plastic concrete. Do not deposit concrete which has partially hardened or has been contaminated by foreign materials or on concrete which has hardened sufficiently to cause formation of seams or planes of weakness within the section. If the section cannot be placed continuously, place construction joints as specified or as approved.
3. Pumping of concrete will be permitted at the discretion of the City and Engineer. Use a mix design and aggregate sizes suitable for pumping and submit for approval.
4. Remove temporary spreaders from forms when the spreader is no longer useful. Temporary spreaders may remain embedded in concrete only when made of galvanized metal or concrete and if prior approval has been obtained.
5. Where surface mortar is to form the base of a finish, especially surfaces designated to be painted, work coarse aggregate back from forms with a suitable tool to bring the full surface of the mortar against the form. Prevent the formation of excessive surface voids.

#### B. Compacting

1. Consolidate concrete by vibration, puddling, spading, rodding or forking so that concrete is thoroughly worked around reinforcement, embedded items and openings and into corners of forms. Puddling, spading, etc., shall be continuously performed along with vibration of the placement to eliminate air or stone pockets which may cause honeycombing, pitting or planes of weakness.
2. All concrete shall be placed and compacted with mechanical vibrators. The number, type and size of the units shall be approved by the Engineer in advance of placing operations. No concrete

shall be ordered until sufficient approved vibrators (including standby units in working order) are on the job.

3. A minimum frequency of 7000 rpm is required for mechanical vibrators. Insert vibrators and withdraw at points from 18 to 30-in apart. At each insertion, vibrate sufficiently to consolidate concrete, generally from 5 to 15 seconds. Do not over vibrate so as to segregate. Keep a spare vibrator on the site during concrete placing operations.

4. **Concrete Slabs:** Concrete for slabs less than 8-in thick shall be consolidated with vibrating screeds; slabs 8 to 12-in thick shall be compacted with internal vibrators and (optionally) with vibrating screeds. Vibrators shall always be placed into concrete vertically and shall not be laid horizontally or laid over.

5. **Amount of Vibration:** Vibrators are to be used to consolidate properly placed concrete but shall not be used to move or transport concrete in the forms. Vibration shall continue until:

- A. Frequency returns to normal.
- B. Surface appears liquefied, flattened and glistening.
- C. Trapped air ceases to rise.
- D. Coarse aggregate has blended into surface, but has not disappeared.

### 3.05 CURING AND PROTECTION

A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations. B. **Curing Methods**

1. **Curing Methods for Concrete Surfaces:** Cure concrete to retain moisture and maintain specified temperature at the surface for a minimum of 7 days after placement. Curing methods to be used are as follows:

A. **Water Curing:** Keep entire concrete surface wet by ponding, continuous sprinkling or covered with saturated burlap. Begin wet cure as soon as concrete attains an initial set and maintain wet cure 24 hours a day.

B. **Sheet Material Curing:** Cover entire surface with sheet material. Securely anchor sheeting to prevent wind and air from lifting the sheeting or entrapping air under the sheet. Place and secure sheet as soon as initial concrete set occurs.

C. **Liquid Membrane Curing:** Apply over the entire concrete surface except for surfaces to receive additional concrete. Curing compound shall NOT be placed on any concrete surface where additional concrete is to be placed, where concrete sealers or surface coatings are to be used, or where the concrete finish requires an integral floor product. Curing compound shall be applied as soon as the free water on the surface has disappeared and no water sheen is visible, but not after the concrete is dry or when the curing compound can be absorbed into the concrete. Application shall be in compliance with the manufacturer's recommendations.

2. Specified applications of curing methods.

A. **Slabs for Water Containment Structures:** Water curing only.

B. **Slabs on Grade and Footings (not used to contain water):** Water curing, sheet material curing or liquid membrane curing. C. **Structural Slabs (other than water containment):** Water curing or liquid membrane curing.

D. Horizontal Surfaces which will Receive Additional Concrete, Coatings, Grout or Other Material that Requires Bond to the substrate: Water curing.

E. Formed Surfaces: None if nonabsorbent forms are left in place 7 days. Water cure if absorbent forms are used. Sheet cured or liquid membrane cured if forms are removed prior to 7 days. Exposed horizontal surfaces of formed walls or columns shall be water cured for 7 days or until next placement of concrete is made.

F. Surfaces of Concrete Joints: Water cured or sheet material cured. G. Finished surfaces and slabs shall be protected from the direct rays of the sun to prevent checking and crazing.

H. Cold Weather Concreting: 3. "Cold weather" is defined as a period when for more than 3 successive days, the average daily outdoor temperature drops below 40 degrees F. The average daily temperature shall be calculated as the average of the highest and the lowest temperature during the period from midnight to midnight. 4. Cold weather concreting shall conform to ACI 306.1 and the additional requirements specified herein. Temperatures at the concrete placement shall be recorded at 12 hour intervals (minimum). 5. Discuss a cold weather work plan with the Engineer. The discussion shall encompass the methods and procedures proposed for use during cold weather including the production, transportation, placement, protection, curing and temperature monitoring of the concrete. The procedures to be implemented upon abrupt changes in weather conditions or equipment failures shall also be discussed. Cold weather concreting shall not begin until the work plan is acceptable to the Engineer. 6. During periods of cold weather, concrete shall be protected to provide continuous warm, moist curing (with supplementary heat when required) for a total of at least 350 degree-days of curing.

A. Degree-days are defined as the total number of 24 hour periods multiplied by the weighted average daily air temperature at the surface of the concrete (e.g.: 5 days at an average 70 degrees F = 350 degree-days). B. To calculate the weighted average daily air

temperature, sum hourly measurements of the air temperature in the shade at the surface of the concrete taking any measurement less than 50 degrees F as 0 degrees F. Divide the sum thus calculated by 24 to obtain the weighted average temperature for that day. 7. Salt, manure or other chemicals shall

not be used for protection. 8. The protection period for concrete being water cured shall not be terminated during cold weather until at least 24 hours after water curing has been terminated.

C. Hot Weather Concreting 1. "Hot weather" is defined as any combination of high air temperatures, low relative humidity and wind velocity which produces a rate of evaporation estimated in accordance with ACI 305R, approaching or exceeding 0.2 lbs/sqft/hr). 2. Concrete placed during hot weather, shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 305R and the additional requirements specified herein.

A. Temperature of concrete being placed shall not exceed 90 degrees F and every effort shall be made to maintain a uniform concrete mix temperature below this level. The temperature of the concrete shall be such that it will cause no difficulties from loss of slump, flash set or cold joints.

B. All necessary precautions shall be taken to promptly deliver, to promptly place the concrete upon its arrival at the job and to provide vibration immediately after placement. C. The Engineer may direct the Contractor to immediately cover plastic concrete with sheet material.

3. Discuss with the Engineer a work plan describing the methods and procedures proposed to use for concrete placement and curing during hot weather periods. Hot weather concreting shall not begin until the work plan is acceptable to the Engineer. 3.06 REMOVAL OF FORMS

A. Except as otherwise specifically authorized by the Engineer, forms shall not be removed before the concrete has attained a strength of at least 70 percent of its specified design strength for beams and slabs and at least 30 percent of its specified design strength for walls and vertical surfaces, nor before reaching the following number of day-degrees of curing (whichever is the longer)

TABLE 3  
MINIMUM TIME TO FORM REMOVAL  
Forms for Degree Days

Beams and slabs	500
Walls and vertical surfaces	100
(See definition of degree-days in Paragraph 3.05D above).	

B. Shores shall not be removed until the concrete has attained at least 70 percent of its specified design strength and also sufficient strength to support safely its own weight and construction live loads. 3.07

#### INSPECTION AND FIELD TESTING

A. The batching, mixing, transporting, placing and curing of concrete shall be subject to the inspection of the Engineer at all times. The Contractor shall advise the Engineer of his/her readiness to proceed at least 24 hours prior to each concrete placement. The Engineer will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing steel and the alignment, cleanliness and tightness of formwork. No placement shall be made without the inspection and acceptance of the Engineer.

B. Sets of field control cylinder specimens will be taken by the Engineer (or inspector) during the progress of the work, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete placed each day shall not be less than one set per day, nor less than one set for each 150 cu yds of concrete nor less than one set for each 5,000 sq ft of surface area for slabs or walls.

1. A "set" of test cylinders consists of four cylinders: one to be tested at 7 days and two to be tested and their strengths averaged at 28 days. The fourth may be used for a special test at 3 days or to verify strength after 28 days if 28 day test results are low.

2. When the average 28 day compressive strength of the cylinders in any set falls below the specified design strength or below proportional minimum 7 day strengths (where proper relation between seven and 28 day strengths have been established by tests), proportions, water content, or temperature conditions shall be changed to achieve the required strengths.

C. Cooperate in the making of tests by allowing free access to the work for the selection of samples, providing an insulated closed curing box for specimens, affording protection to the specimens against injury or loss through the operations and furnish material and labor required for the purpose of taking concrete cylinder samples. All shipping of specimens will be paid for by the Owner. Curing boxes shall be acceptable to the Engineer.

D. Slump tests will be made in the field immediately prior to placing the concrete. Such tests shall be made in accordance with ASTM C143. If the slump is greater the specified range, the concrete shall be rejected.

E. Air Content: Test for air content shall be made on fresh concrete samples. Air content for concrete made of ordinary aggregates having low absorption shall be made in compliance with either the pressure method complying with ASTM C231 or by the volumetric method complying with ASTM C173.

F. The Engineer may have cores taken from any questionable area in the concrete work such as construction joints and other locations as required for determination of concrete quality. The results of tests on such cores shall be the basis for acceptance, rejection or determining the continuation of concrete work.

G. Cooperate in obtaining cores by allowing free access to the work and permitting the use of ladders, scaffolding and such incidental equipment as may be required. Repair all core holes. The work of cutting and testing the cores will be at the expense of the Owner.

#### 3.08 FAILURE TO MEET REQUIREMENTS

A. Should the strengths shown by the test specimens made and tested in compliance with the previous provisions fall below the values given in Table 1, the Engineer shall have the right to require changes in proportions outlined to apply to the remainder of the work. Furthermore, the Engineer shall have the right to require additional curing on those portions of the structure represented by the test specimens which failed. The cost of such additional curing shall be at the Contractor's expense. In the event that such additional curing does not give the strength required, as evidenced by core and/or load tests, the Engineer shall have the right to require strengthening or replacement of those portions of the structure which fail to develop the required strength. The cost of all such core borings and/or load tests and any strengthening or concrete replacement required because strengths of test specimens are below that specified, shall be entirely at the expense of the Contractor. In such cases of failure to meet strength requirements the Contractor and Engineer shall confer to determine what adjustment, if any, can be made in compliance with Sections titled "Strength" and "Failure to Meet Strength Requirements" of ASTM C94. The "purchaser" referred to in ASTM C94 is the Contractor in this Section.

B. When the tests on control specimens of concrete fall below the specified strength, the Engineer will permit check tests for strengths to be made by means of typical cores drilled from the structure in compliance with ASTM C42 and C39. In the case of cores not indicating adequate strength, the Engineer, in addition to other recourses, may require, at the Contractor's expense, load tests on any one of the slabs, beams, piles, caps, and columns in which such concrete was used. Tests need not be made until concrete has aged 60 days.

C. Should the strength of test cylinders fall below 60 percent of the required minimum 28 day strength, the concrete shall be rejected and shall be removed and replaced.

### 3.09 PATCHING AND REPAIRS

A. It is the intent of this Section to require quality work including adequate forming, proper mixture and placement of concrete and curing so completed concrete surfaces will require no patching.

B. Defective concrete and honeycombed areas as determined by the Engineer shall be repaired as specified by the Engineer. C. As soon as the forms have been stripped and the concrete surfaces exposed, fins and other projections shall be removed; recesses left by the removal of form ties shall be filled; and surface defects which do not impair structural strength shall be repaired. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to approval of the Engineer.

D. Immediately after removal of forms remove plugs and break off metal ties as required. Promptly fill holes upon stripping as follows: Moisten the hole with water, followed by a 1/16-in brush coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1 to 1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of "balling"). Hammer the grout into the hole until dense, and an excess of paste appears on the surface in the form of a spiderweb. Trowel smooth with heavy pressure. Avoid burnishing.

E. When patching exposed surfaces the same source of cement and sand as used in the parent concrete shall be employed. Adjust color if necessary by addition of proper amounts of white cement. Rub lightly with a fine Carborundum stone at an age of 1 to 5 days if necessary to bring the surface down with the parent concrete. Exercise care to avoid damaging or staining the virgin skin of the surrounding parent concrete. Wash thoroughly to remove all rubbed matter.

## END OF SECTION

### 4.6 Section 33 11 15 VALVES AND PIPING APPURTEANCES

#### PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Scope of Work: The scope of work includes the furnishing of all labor, materials, equipment and appurtenances required for the complete installation of all valves and associated appurtenances as shown on the Drawings and as specified herein.
- B. Related Work Described Elsewhere.
  - 1. Piping and Accessories are included in the City's Specifications Section IV 502-3.
  - 2. Line stops and wet taps are included in the City's Specifications Section IV Section 502-8 and 502-9.
  - 3. Service Saddles are included in the City's Specifications Section IV Section 502-6.
- C. General Design
  - 1. All of the equipment and materials specified herein are intended to be standard for use in controlling the flow of reclaimed water.
  - 2. The equipment includes, but is not limited to the following:
    - a. Ball Valves
    - b. TEAM Insert Valve Gate Valves
    - c. Air Release Valves

## 1.02 QUALITY ASSURANCE

- A. All of the valves and appurtenances specified herein shall be products of well established reputable firms who are fully experienced and qualified in the manufacture of the particular equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with standard practices and methods and shall comply with these specifications as applicable.

## 1.03 SUBMITTALS

- A. Submit manufacturer's product literature for all equipment to demonstrate compliance with Section 01 30 00, this Specification and information on the Drawings.
  - 1. Submit manufacturer's catalog data and detail construction sheets showing all valve and actuator parts and describing material of construction by materials and specification such as AWWA, ANSI, ASTM, SAE or CDA.
  - 2. Show valve and actuator dimensions including laying lengths and show dimensions and orientation of valve operators as installed on the valves.
  - 3. Show valve linings and coatings.

## 1.04 DELIVERY, STORAGE, AND HANDLING

- A. The equipment provided under this section shall be shipped, handled and stored in accordance with the Manufacturer's written instructions.

## 1.05 TOOLS

- A. Special tools, if required for normal operation and maintenance, shall be supplied with the equipment.

## PART 2 - PRODUCTS

2.01

GENERAL

A. Valves shall include the required accessories such as operators, actuators, extension stems, etc. necessary for proper operation. Attach a permanent plate to the valve or operator indicating serial number, order number, accessories, operator model and manufacturer, etc. in accordance with the specifications.

B. Valves shall have a temperature rating of 180°F unless otherwise noted.

C. All valves and appurtenances shall be of the size shown on the Drawings. All similar type valves shall be from the same manufacturer.

D. All valves and appurtenances shall have the name of the manufacturer and the working pressure for which they are rated cast in raised letters upon the body.

E. Valves shall be installed in valve boxes. Valve boxes shall be in accordance with this specification.

F. Ball Valves

1. Ball valves shall be 316L stainless steel material unless otherwise specified in the Contract drawings.

2. Stainless steel ball valves shall be standard port type for the sizes indicated on the Drawings. Ball valves shall be designed for a working pressure of 200 psi with positive shut off when in the closed position.

3. Valve body and ends shall be constructed of forged Type 316 stainless steel and valve ends shall be NPT threaded connections unless otherwise specified in the Contract Drawings. The ball shall have a full bore port design machined from a solid metal piece with highly polished surfaces. The ball and stem shall be manufactured from Type 316 stainless steel.

4. Manually operated ball valves shall be furnished with level operators manufactured of forged Type 316 stainless steel with a molded vinyl sleeve.

G. Butterfly Valves:

1. Butterfly valves shall be Class 150B in conformance with AWWA C504, latest revision, and designed for a minimum working pressure of 150 psi.

2. Butterfly valves shall be of the tight closing rubber-seat type. Valves shall be drip-tight with 150 psi versus 0 psi in either direction. The seat shall be made of ethylene propylene diene (EPDM) rubber.

3. Valves shall be satisfactory for applications involving valve operation after long periods of inactivity.

4. Valve bodies shall be constructed of high-strength cast iron conforming to ASTM A126, Class B. Valve body thickness shall be in accordance with AWWA C504, latest revision, for Class 150B valves.

5. Buried valves shall have integrally cast mechanical joint ends in accordance with ANSI/AWWA C111/A21.11, latest revision. Gaskets for mechanical joints shall be made of ethylene propylene diene (EPDM) rubber.

6. Above ground valves buried valves shall have cast iron flanges in accordance with ANSI/AWWA C110/A21.10 with bolt circle and bolt holes drilled to match ANSI B16.1, Class 125. All flange related bolts, nuts, and washers shall be Type 316 stainless steel.

7. Valve seats shall be of a corrosion and chloramine resistant synthetic rubber compound bonded to a high grade stainless steel retaining ring and secured to the valve disc by Type 304 stainless steel set screws or shall be molded in, vulcanized, and bonded to the body. The valve seat shall be adjustable and replaceable in the field without dismantling operator, disc, or shaft. Seats bonded to the body shall withstand a 75-pound pull tested in accordance with ASTM D429, Method B. Valve seat rings shall be constructed of Type 316 stainless steel. Seating edges of the seat ring shall be smooth and polished. The seat ring shall be capable of compensating for changes in direction of flow to assure a drip-tight seal in either direction.

8. Valve discs shall be either solid or hollow core. Discs shall be constructed of ductile iron ASTM A536, Grade 65-45-12. Valve disc shall be of the offset design to provide 360 degree uninterrupted seating. The valve disc shall be attached to the shaft by means of "O" ring sealed taper pins.

9. Valve discs shall rotate 90 degrees from the fully open position to the fully closed position.

10. Valve shafts may consist of a one piece unit extending completely through the valve disc bearings and into the operating mechanism or may be stub shaft construction. Shaft materials connection torque requirements shall conform to AWWA C504. No deviation will be accepted. Valve shafts shall be minimum Type 316 stainless steel.

11. The valve shaft seal shall consist of "O" rings in bronze cartridge or self-adjusting nitrile "V"-type ring seals. All shaft seals shall be replaceable without disassembly of the valve.

12. All buried butterfly valves shall open left or counterclockwise when viewed from the stem and shall have a 2" operating nut which conforms to AWWA C504. All exposed butterfly valves shall open left or counter-clockwise when viewed from the stem and shall have a hand wheel operator. Manual valve operators shall be of the worm gear or traveling nut type and shall be fully enclosed. All operators shall have adjustable mechanical stop limiting devices to prevent over travel of disc. Should an adjustment of the disc be required to maintain a bubble tight seal, this adjustment shall be made externally without removing the operator housing cover. The operator shall be designed such that all adjustments can be made under pressure and without the possibility of dirt getting into the operator lubricant. Any adjustments through the lower shaft will not be acceptable. Units furnished for buried service shall be fully gasketed and grease packed. Manual valves located above ground shall be equipped with handwheel or chainwheel operators and shall have a suitable indicator arrow to give valve position from fully open to fully closed. Buried butterfly valves shall be furnished with 2-inch square AWWA nut operator with valve box and cover. Operator components shall, at the extreme operator positions, withstand without damage a pull of 200 lbs. for handwheel or chainwheel operators or an input torque of 450 ft.-lbs. for operating nuts.

13. Interior of valve body and valve disc except for valve seat and stainless steel valve seat ring shall be coated with a fusion bonded or thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free with a minimum thickness of 10 mils. Surfaces shall be clean, dry, and free from rust and grease before coating.

14. All exterior surfaces of butterfly valves shall be clean, dry, and free from rust and grease before coating.

a. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Prior to backfilling, all uncoated nuts, bolts, glands, rods, and other parts of joints shall be coated with two coats, 10 mils DFT per coat, of bituminous paint, Themic Series 46-465, Carboine Bitumastic 50, or equal.

b. For valves installed above ground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness of 4 mils, of a rust inhibitive, universal epoxy primer. Primer shall be suitable for finish paint specified. Following installation above ground valves

shall be finish painted in accordance with Section 09910 – Utility System Painting and Section 09905 – Piping, Valve, and Equipment Identification System.

15. Prior to shipment from the factory, hydrostatic and leakage tests shall be conducted for each butterfly valve. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C504, latest revision, and results shall be submitted to the Engineer.

16. Butterfly valve shall be manufactured by DeZurik or approved equal.

H. Rigid Pipe Couplings

1. Pipe couplings used to join two pieces of plain end pipe shall be sized to suit the outside diameter of the pipe ends to be joined. Transition couplings shall be used to join pipes of different outside diameters. Pipe couplings shall be bolted type with steel middle ring and end followers.

2. All carbon steel parts of the coupling shall be coated on the interior and exterior with a fusion bonded thermosetting epoxy coating with a 12-mil nominal coating thickness. The coating shall be equal to AL-CLAD as manufactured by Dresser Industries, Inc. 3. Gaskets for the coupling shall be wedge type manufactured of ethylene propylene diene (EPDM) rubber.

4. Bolts shall be manufactured of high strength Type 316 stainless steel with Type 316 stainless steel hexagonal nuts. Bolts and nuts shall conform dimensionally to ANSI/AWWA C111/A21.11, latest revision.

5. Couplings shall be Style 38 as manufactured by Dresser Industries, Inc. or an equal approved by the Engineer. I. Dismantling Joints

1. Dismantling joints shall be installed as shown on the Drawings and shall be constructed in accordance with ASTM A36 Carbon Steel.

2. All dismantling joints connection shall be a Class 125 flanged joint conforming to AWWA C207 Class D flanges.

3. Gaskets for the dismantling joint shall be wedge type manufactured of ethylene propylene diene (EPDM) rubber in accordance with ASTM D2000.

4. All tie-rods shall be high strength steel in accordance with ASTM A193.

5. Dismantling joints shall be Style 400 as manufactured by Romac Industries, Inc or approved equal.

J. Restrained Rigid Pipe Couplings

1. Restrained pipe coupling to prevent axial separation shall be incorporated into the design of the sleeve or coupling used to connect two plain pipe ends.

2. The restraint mechanism shall consist of a plurality of individually actuated gripping surfaces to maximize restraint capability. Torque limiting twist off nuts shall be used to insure proper actuating of the restraint devices.

3. Ductile Iron components shall be of a minimum of 65-45-12 ductile iron meeting the requirements of ASTM A536 of the latest revision and shall be tested in accordance with the stated standard.

4. The restrained joining system shall meet the applicable requirements of AWWA C219, ANSI/AWWA C111/A21.11, and ASTM D2000.

5. Restrained couplings shall be Series 3800 Mega-Coupling as manufactured by EBBA Iron or approved equal.

K. Resilient Wedge Insertion Gate Valve

1. The resilient wedge gate valve shall be rated for 250 psi and used for installation of the valve into an existing pressurized pipeline while maintaining constant pressure and service without interruption to customers.

2. Only complete insert valves shall be acceptable with full tapping and removal of a pipe section. Top of pipe tapping style insert valves will not be acceptable.

3. Installation of the insertion valve shall only be completed by a specialty contractor with experience in the specialty installation and tap required to insert the valve under pressure per manufacturer recommendations.

4. Approved manufacturer shall be TEAM Inc. InsertValve, Mueller Company Permaseal, or Engineer approved equal.

5. The insertion gate valve body shall meet the following material requirements:

a. The ductile iron body, bonnet, and wedge shall meet or exceed the requirements of AWWA C515.

b. The valve body shall be of ductile iron construction meeting ASTM A536 Grade 65-45-12.

6. Resilient Wedge Gate Assembly:

a. The Resilient Wedge shall comply with AWWA C509.

b. The ductile iron wedge shall be fully encapsulated with EPDM rubber by a high pressure and high temperature compression or injection mold process to assure the ductile iron gate is fully coated with no exposed iron.

c. The resilient wedge shall seat on the valve body and not the pipe to obtain the optimum seating and flow control results. d. The valve resilient wedge shall be independent of the carrier pipe.

e. The resilient wedge shall not come into contact with the carrier pipe or be dependent on the carrier pipe to create the seal. f. Pressure equalization shall not be necessary on either side of the closed wedge to open the valve.

g. The wedge shall be symmetrical and seal equally well with flow in either direction.

h. The resilient wedge shall ride inside the body channels to maintain wedge alignment through its travel to achieve maximum fluid control.

7. Gaskets and Triple O-Ring Stem Seals:

a. The insertion valve shall have three O-Ring stem seals, two located above and one located below the thrust collar.

b. The lower two O-Rings will provide a permanently sealed lubrication chamber to ensure valve operation over time. The upper O-Ring will ensure no sand, dirt, grit, or material can enter the valve.

8. Valve Stem & Thrust Washers

a. The gate valve stem and wedge nut shall be copper alloy in accordance with AWWA C515 Section 4.4.5.1.

- b. NRS stem shall have an integral thrust collar in accordance with AWWA C515 Section 4.4.5.3.
- c. The insertion valve shall utilize two 'anti friction' thrust washers located above and below the stem thrust collar.
- d. The Valve shall be operated by a 2-inch square nut wrench in accordance with ASTM A126. The bolt attaching the operating nut to the stem shall be 316 SS.
- e. Valve stem diameter and number of turns to open shall be as required by AWWA C515 Table 8 4.4.5.7.

9. Coating

- a. The insertion valve shall be fully epoxy coated on the interior and exterior. The fusion bonded coating shall be applied prior to assembly to ensure all bolt holes and body to bonnet flange surfaces are completely epoxy coated.
- b. The valve shall be coated with a minimum 10 mils epoxy in compliance with AWWA C550 and certified to ANSI/NSF 61.

10. Hardware

- a. All hardware shall meet or exceed the requirements of ASTM A307 with dimensions conforming to ANSI B18.2.1.

11. Split Restraint Devices:

- a. Split restraint devices shall consist of multiple gripping wedges incorporated into a follower gland meeting or exceeding the requirements of ANSI/AWWA C110/A21.10.
- b. The devices shall have a working pressure of 350 psi with a minimum safety factor of 2 to 1.
- c. Gland body wedges and wedge actuating components shall be ductile iron and shall meet or exceed ASTM A536 Grade 65-45-12.
- d. The mechanical joint restraint shall require conventional tools and installation procedures per AWWA C600

12. Pressure Testing

- a. After manufacture, after manufacture, each gate valve shall be subjected to operation and hydrostatic tests at the manufacturer's facility. Each valve shall be operated through a complete cycle and production seat tested to 350PSIG (250PSIG for asbestos cement and 10"-12" cast iron class C,D) drip-tight from each direction, also shell tested to 700PSIG (500PSIG for asbestos cement and 10"-12" cast iron class C,D)

L. Repair Clamp

- 1. Repair fittings shall be the high strength type fabricated of ASTM A36, A516 GR 70 or equal Steel, which conforms to and reinforces the pipe. Sleeve shall be of sufficient width and size to fit and reinforce the pipe circumference.
- 2. Sleeve repair area shall have a minimum 3/4" wide Buna-N gasket recessed in a machined groove. Repair fitting shall have a 3/4" outlet for venting and test purposes.
- 3. Repair fitting shall be furnished with a corrosion resistant shop coat paint primer with high strength, low alloy corrosion resistant bolts and nuts per AWWA/ANSI C111/21.11.

4. Approved manufacturer shall be JCM 118 or Engineer approved equal.
- M. Air Release Valve
  1. Air release valves shall meet or exceed the requirements ANSI/AWWA C512.
  2. Valve body shall be constructed of 316 stainless or reinforced nylon.
  3. Install valves in accordance with manufacturer's instructions and recommendations and as shown in the drawings.
  4. Install all valves in the vertical position and allow sufficient clearance around valve for proper maintenance and removal.
5. Approved manufacturer shall be per the City Preferred Product List.

#### PART 3 - EXECUTION

##### 3.01 INSTALLATION

###### A. General:

1. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Valves shall be installed in accordance with manufacturer's installation instructions and with the details shown on the Drawings. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.
2. Valves shall be installed such that they are supported properly in their respective positions, free from distortion and strain. Valves shall be installed such that their weight is not borne by pumps and equipment that are not designed to support the weight of the valve.
3. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat: Check and adjust all valves for smooth operation.
4. After installation, all valves, appurtenances and piping specialties shall be tested as specified for adjacent piping. If any joint or equipment proves to be defective, it shall be repaired and re-tested to the satisfaction of the Engineer.
5. After installation, all valves and appurtenances shall be tested at least 2 hours at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, it shall be repaired to the satisfaction of the Engineer.
6. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections.
7. Valves shall be tested hydrostatically, concurrently with the pipeline in which they are installed. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the pressure used for the pressure test(s). If valve joints leak during pressure testing, loosen or remove the nuts and bolts, reseat or replace the gasket, reinstall or retighten the bolts and nuts, and hydrostatically retest the joints.

#### END OF SECTION

## **4.7 SECTION 33 25 00 WELL MAINTENANCE AND TESTING**

### **PART 1 - General**

#### **1.01 DESCRIPTION**

A. Scope of Work: This work includes detailed specifications for as-needed well maintenance, evaluation, and mechanical integrity testing services for the City's Water Treatment Plant production wells and Class I injection well.

#### **1.02 QUALIFICATIONS OF WELL Contractor**

A. Contractor shall have a State of Florida Water Well Contractor License issued by a Florida Water Management District. Proof of licensing shall be provided with bid submittal.

B. Contractor shall provide a list of projects, including reference contact information, for projects that have been completed within the last ten (10) years with bid submittal. This list shall include:

1. A minimum of three (3) projects where wells were successfully acidized.
2. A minimum of three (3) well maintenance projects with geophysical logging, video surveys, pump testing and replacement of pumping equipment.
3. A minimum of three (3) projects where mechanical integrity testing was performed.

#### **- PRODUCTS (Not used) PART**

### **3 - EXECUTION**

#### **3.01 WELL MAINTENANCE SPECIFICATIONS**

A. Pump Repair/Replacement: Contractor shall supply all labor, materials, tools, transportation, equipment and other items necessary to perform maintenance, evaluations and mechanical integrity testing for the various wells described below. Authorized Public Utilities staff shall coordinate the scheduling of the work and provide the specifications for the pump to be repaired and/or replaced. Services for pump repair/replacement shall include, but are not limited to, the following:

1. Mobilization/Demobilization, which shall include delivery and set up of a crane truck, if needed, and any other necessary equipment.

2. Removal and reinstallation of the wellhead and pumping equipment.

a. Authorized Public Utilities staff will be responsible for disconnecting and reconnecting the electrical connection at the wellhead.

3. Well disinfection with a sodium hypochlorite solution following reinstallation of the pump, prior to electrical reconnection, as described in 3.01. Well Disinfection.

a. The Contractor shall continue the disinfection process until the well passes the requirements set by the Florida Department of Environmental Protection (FDEP) and 62-555.315(6) per the Florida Administrative Code (FAC).

b. Authorized Public Utilities staff will collect the required samples and deliver them to a state certified laboratory for analysis.

B. Well Acidization: Services for well acidization shall include the use of hydrochloric acid (muriatic acid) for the purposes of treatment for chemical precipitates or persistent physical clogging of the borehole wall. Contractor shall supply all labor, materials, tools, transportation, equipment and other

items necessary to perform chemical treatment of wells. Contractor is required to visit the site within thirty (30) days from award and conduct the well acidization services as outlined below. Authorized Public Utilities Staff will coordinate the scheduling of work. Services for well acidization shall include, but are not limited to, the following:

1. Mobilization/Demobilization, which shall include delivery and set up of a crane truck, if needed, and any other necessary equipment.
2. Specific capacity test using the production pump at the well's normal operating rate.
  - a. Contractor shall coordinate with authorized Public Utilities staff to turn the well on, pump the well for 30 minutes, turn the pump off, and Public Utilities staff will provide the pumping rate to the Contractor.
  - b. Contractor shall measure and record the following: (1) the depth to water prior to the start of pumping to determine the non-pumping static, (2) the depth to water during the pumping period to determine the pumping water level, and (3) the depth to water after the pump is turned off to determine the post pumping water level.
  - c. Contractor shall provide the water level and pumping rate data to authorized Public Utilities staff at a time agreed upon by both parties.
  - d. Contractor shall install a temporary test pump capable of pumping a minimum of 200 gallons per minute (gpm) for wells that do not have an operating production pump.
  - e. Discharge rates shall be measured with a calibrated totalizing flow meter.
  - f. All discharged water shall be released into a stormwater ditch or retention area, as approved by the City.
3. Removal and reinstallation of the wellhead and pumping equipment.
  - a. Authorized Public Utilities staff shall be responsible for disconnecting and reconnecting the electrical connection at the wellhead.
4. Preparation of the wellhead by installing a flange plate to the well casing blind flange.
  - a. The flange plate shall include one (1) port for the acid injection line and shall be capable of injection at the required rates, one (1) port for water injection, and one (1) port for a pressure blow-off line. The pressure blow-off line must contain a pressure gauge installed on the line downstream of the port.
  - b. The acid and water lines shall be connected to the flange cover ports and shall be equipped with valves on each pipeline to control flows.
  - c. The gauge shall be suitable for intended use and shall be calibrated from 0 to 100 pounds per square inch (psi).
  - d. The water line shall be connected to the well discharge water pipeline so that water can be injected into the well during the acidization process.
  - e. A back-flow preventer shall be installed on the water line between the connection to the well discharge water pipeline and the wellhead.
  - f. The pressure blow-off line shall be directed to containment (such as a 500-gallon tote).
5. Supply and use of 32% inhibited hydrochloric acid from an approved source and carrier. This shall be provided prior to starting work on the well(s).

- a. Contractor shall be responsible for controlling flow of the acid from the well and for the prevention of leaks during the acidization process.
- b. The 32% hydrochloric acid shall be diluted to 8% hydrochloric acid for injection into the well with the volume of the 8% hydrochloric acid being calculated as 1.5 times the open borehole volume.
- c. The Contractor shall provide the formula and quantities of the proposed hydrochloric acid and shall obtain approval from authorized Public Utilities staff prior to the commencement of the acidizing process.

6. **Injection of the water and hydrochloric acid**

- a. Water shall be injected at a rate of approximately 100 gpm for 15 minutes prior to the injection of hydrochloric acid.
- b. The hydrochloric acid shall be injected into the well while continuing water injection.
- c. Upon completion of the acid injection, water injection shall continue at approximately 100 gpm for two (2) hours to remove the spent acid and chase water volume. The water shall be discharged to a stormwater ditch or retention area, as approved by the City.

7. **Removal of the acidization flange cover and installation of a test pump**

- a. The test pump shall be capable of pumping 200 gpm.

8. **Well disinfection with a sodium hypochlorite solution following reinstallation of the pump, as described in 3.01. Well Disinfection.**

- a. The Contractor shall continue the disinfection process until the well passes the requirements set by the Florida Department of Environmental Protection (FDEP) and 62-555.315(6) per the Florida Administrative Code (FAC).

- b. Authorized Public Utilities staff will collect the required samples and deliver them to a state certified laboratory for analysis.

- C. **Well Disinfection**

1. Any production well maintenance involving the removal of the pump requires disinfection of the well after the pump has been reinstalled.

2. Contractor shall disinfect the well using 12% sodium hypochlorite mixed at the ratio of one (1) gallon of sodium hypochlorite to 400 gallons of water.

3. The total volume of disinfecting solution shall be calculated as three (3) times the volume of the open borehole.

4. The solution shall be pumped down the disinfection port, which is located on the side of the well head.

5. Authorized Public Utilities staff will pump out the disinfectant as part of the bacteriological sampling.

- 3.02 **Well evaluation specifications**

- A. **Specific Capacity Testing**

1. Testing shall be performed with the production pump at the well's normal operating rate.

2. Contractor shall coordinate with authorized Public Utilities staff to turn the well on, pump the well for 30 minutes, turn the pump off, and the Public Utilities staff will provide the pumping rate to the Contractor.

3. Contractor shall measure and record the following: (1) the depth to water prior to the start of pumping to determine the non-pumping static, (2) the depth to water during the pumping period to determine the pumping water level, and (3) the depth to water after the pump is turned off to determine the post pumping water level.

4. Contractor shall provide the water level and pumping rate data to the authorized Public Utilities staff at a time agreed upon by both parties.

5. Contractor shall install a temporary test pump capable of pumping a minimum of 200 gpm for wells that do not have an operating production pump.

6. Discharge rates shall be measured with a calibrated totalizing flow meter.

7. All discharged water shall be released into a stormwater ditch or retention area, as approved by the City.

B. Removal and reinstallation of the wellhead and pumping equipment.

1. Authorized Public Utilities staff will be responsible for disconnecting and reconnecting the electrical connection at the wellhead.

C. Geophysical Logging

1. Contractor shall perform downhole geophysical logs.

a. All services shall meet the requirements. If awarded Contractor does not meet these requirements, then they are able to hire a subcontractor that they are solely responsible for.

*i. The subcontractor shall be confirmed by authorized Public Utilities staff after the bid is awarded and prior to submitting a quote for service.*

2. Contractor shall prepare and condition each hole to ensure that each borehole is open and can be logged with a minimal delay. 3. The following logs shall be performed for a full well evaluation:

a. Electrical resistivity

b. Natural gamma

c. Caliper under static conditions

d. Fluid resistivity temperature and flow velocity under static and dynamic conditions

4. Dynamic logs shall be performed at a minimum pumping rate of 200 gpm in the production wells and 50 gpm in the monitoring wells.

5. All discharged water shall be released into a stormwater ditch or retention area, as approved by the City.

6. No payment will be made for logs that are unusable or inaccurate due to poor performance of the logging equipment.

7. Contractor shall be responsible for all logging and shall provide Public Utilities with three (3) hard copies of each log, and one electronic copy of each log in American Standard Code for Information Interchange (ASCII), or other approved format.

8. Contractor shall utilize their computer software to process the caliper and flow log data as a function of depth.

D. Video Surveys

1. Contractor shall perform a video survey of the entire well to the base of the open hole.

2. Contractor shall utilize their own equipment to conduct the video surveys.

3. Contractor shall provide proof of capability of the equipment after award and at any time during the contract term as requested by the City.

4. Contractor shall provide two (2) copies of the video surveys on thumb drives for distribution.

5. Contractor shall be responsible for coordinating and scheduling the video surveys with authorized Public Utilities staff.

6. Contractor shall be responsible for ensuring that the borehole fluid is of sufficient clarity to allow a video survey to be conducted.

3.03 Mechanical Integrity Testing Specifications The mechanical integrity tests (MIT) will be performed at the City's Class I injection well.

A. Mobilization/Demobilization: Contractor shall set up the equipment necessary to meet the quality of workmanship and timeliness required by these specifications and to complete the work on schedule. At the completion of the MIT, Contractor shall remove all items and equipment which are not part of the completed well and leave the site in its original condition.

B. Removal and reinstallation of the wellhead to allow access for pressure testing and subsequent radioactive tracer testing. C. Background Temperature, Gamma, and Caliper Logs

1. Contractor shall perform a high-resolution temperature log to the total depth of the well.

2. Upon completion of the temperature log, Contractor shall perform a caliper and natural gamma log to the total depth of the well.

D. Video Survey

1. Contractor shall perform a video survey of the entire well to the base of the open hole.

2. Contractor shall utilize their own equipment to conduct the video surveys.

3. Contractor shall provide proof of capability of the equipment after award and at any time during the contract term as requested by the City.

4. Contractor shall provide two (2) copies of the video survey on thumb drives for distribution.

5. Contractor shall be responsible for coordinating and scheduling the video surveys with authorized Public Utilities staff.

6. Contractor shall be responsible for ensuring that the borehole fluid is of sufficient clarity to allow a video survey to be conducted.

a. Water clarity may be enhanced, if necessary, by flowing water to the well.

E. Radioactive tracer survey (RTS)

1. Contractor shall furnish and operate the equipment used in collecting this information.
  - a. All services shall meet the requirements. If awarded Contractor's personnel does not meet certification requirements, then the Contractor shall be able to hire a licensed subcontractor that meets the certification requirements that the Contractor is solely responsible for.
  - b. The subcontractor shall be confirmed by authorized Public Utilities staff after the bid is awarded and prior to submitting a quote for service.
2. The RTS shall be conducted as directed per the following procedure outline:
  - a. Logging Tool Requirements
    - i. *A combination tool or a combination of tools capable of providing natural gamma logs, casing collar locator, temperature, and differential temperature surveys in the hole.*
    - ii. *The temperature survey, differential temperature survey, casing collar locator, and background gamma log will be performed from the surface to 1,020 feet bbls, unless hole conditions are such that there is an unacceptable risk of losing the tool in the hole.*
  - I. If a combination tool is not used, then the casing collar locator need only be run over the length of the liner, 719 feet bbls.
  - I. The radioactive slug ejector tool shall be equipped with one (1) gamma ray detector above the ejector, Gamma Ray Top, (GRT) and two (2) gamma ray detectors below the ejector, Gamma Ray Middle (GRM) & Gamma Ray Below (GRB).
    - I. Detectors shall be located far enough from the radioactive source so that background readings are not affected.
    - II. Detectors shall be of the scintillator-photomultiplier design and shall be calibrated by the Contractor and field tested.
  - II. Contractor shall provide a copy of the field calibration procedure for the RTS tool to Public Utilities after award, prior to start or work.
    - I. Contractor shall supply a Geiger counter to be used to demonstrate that there was no leak of the radioactive iodine during the tracer loading.
    - II. A leak in the ejector that results in questionable results shall require the tests to be re-run using an ejector in proper working condition at no additional cost to the City.
  - i. Low Flow Rate Dynamic RTS

- I. Prior to the start of the RTS, the well shall be flushed with three (3) casing volumes of fresh water. Contractor shall coordinate this work with authorized Public Utilities staff.
- II. The tracer ejector shall be positioned approximately five (5) feet above the bottom of the casing, with one (1) gamma ray detector above the ejector (GRT), and two (2) gamma ray detectors below the ejector (GRM inside the casing above the casing seat and GRB outside the casing below the casing seat).
- III. A low injection rate shall be established and maintained throughout this portion of the testing using potable water. The injection rate shall be as close to a flow velocity of five (5) feet per minute (ft/min) inside the injection tube (16 gpm) as possible.
- IV. After the injection water is at 16 gpm for five (5) minutes, the Contractor shall start time drive monitoring and eject a slug of tracer. Length of time required to monitor gamma ray levels during the injection shall be specified in the field by a Florida Department of Environmental Protection (FDEP) observer or authorized Public Utilities staff.
- V. Hold tool stationary to observe tracer movement. This release may be confirmed by detectors GRM and GRB. Detector GRT, located inside the casing above the ejector, will monitor the fluid in the casing to confirm the absence of tracer material rising upward inside or outside the casing.
- VI. If upward tracer movement is detected in GRT, the following steps shall be followed:
  - I. Log upward from the initial starting depth. Note top of tracer migration. Log through tracer as many times as needed to determine the extent of possible channeling and the tip of tracer movement.
  - II. Make overlapping passes to follow the slug up-hole. Each pass should extend from about 100 feet below the bottom of the previously recorded slug to about 100 feet above the top of the new slug location. The last pass should run high enough to be sure the slug is no longer detectable.
  - III. Note: After each log out of position and flushing event to remove tracer, another log out of position needs to be made to at least 200 feet above the casing bottom. This repeat step is not necessary if flushing is not needed due to lack of tracer seen on first log out of position.
- VII. If upward movement is not detected, log upward from the initial starting depth to at least 200 feet above the bottom of the casing.
- VIII. Flush well at maximum flow rate available with clean water to remove tracer.

- IX. Repeat the low injection rate RTS procedures listed above. During the repeat run, the time required for this test will be specified by the FDEP observer or authorized Public Utilities staff.
- X. Additional ejects while pumping may be requested by FDEP if there is an indication of vertical migration.

ii. Final Gamma Ray Survey

- I. Prior to running the final natural gamma logs, the wireline operator will set the ejector to 20 feet below the base of the casing.
- II. While the well is being flushed with one (1) to two (2) casing volumes (2,200 to 4,400 gallons) and near the beginning of the flushing operation, the wireline operator will discharge and clean the tool of all remaining radioactive material. The wireline operator shall make sure that all radioactive material has been flushed from around the RTS tool before attempting to move the tool down the hole. After 15 minutes of flushing, the wireline operator shall log down to the bottom of the hole as established by the video survey.
- III. A final natural gamma log shall be run over the same interval as the background log (1,020 feet bbls to the surface). The output from all logging runs shall be the same for direct comparison.

iii. RTS Logging Requirements

- I. All logging procedures shall be fully documented. Minimum requirements shall include, but not be limited to, the following:
  - I. The tracer material slug shall be a volume of Iodine 131 equivalent to approximately one (1) to two (2) millicuries.
  - II. The tracer should have an assay date of less than one (1) half-life at the time of the mechanical integrity test.
  - III. Documentation of tracer release, including depth of ejection, volume, and concentration of tracer used in each eject.
  - IV. A record of all gamma ray detector responses shall be provided for each tracer survey.
  - V. Beginning and ending clock times on each log pass or each log file.
  - VI. Injection rates.
  - VII. Logging speed, time constant used, and logging scales.
  - VIII. Distances between detectors and ejector.
- IX. Calibration Data.

II. It is also required that totalizer-flow meters shall be used that have been recently calibrated. These devices shall be used to calculate equivalent well volumes and flow velocities.

III. The Contractor shall provide three (3) copies of the radioactive tracer, background gamma ray, and temperature surveys on thumb drives for distribution.

1. Injection Tube Pressure Test

- a. An inflatable packer shall be set five (5) feet above the bottom of the injection tube.
- b. A temporary well head cover, provided by the Contractor, with connections for a water line and calibrated gauge shall be installed on the well head flange.
- c. Contractor shall submit verification that the pressure gauge calibration occurred within the last 60 days prior to commencement of the pressure test.
- d. The casing shall be filled with water and placed under a minimum pressure of approximately 60 psi and held for one (1) hour. No pressure changes in excess of 5% of the initial test pressure is allowed for a period of 60 minutes.
  - i. If a pressure change in excess of 5% of the initial test pressure occurs, the test shall be repeated under controlled conditions to the satisfaction of the FDEP.
  - ii. If the pressure changes or if there is some other indication of leakage, the Contractor shall take steps to locate the leak and make repairs in a manner satisfactory to authorized Public Utilities staff.
- e. Pressure testing shall be conducted during daylight hours, Monday through Friday, and shall be witnessed and certified in writing. A representative of the FDEP shall witness the pressure test following reasonable prior notice. Notice of the FDEP will be given by the Contractor.

**END OF SECTION**

**4.8 SECTION IIIa SUPPLEMENTARY GENERAL CONDITIONS**

1. SUPPLEMENTAL CONDITIONS

1.1. DEFINITIONS

*Work Order*

A written directive to Contractor ordering a specific task, repair, or maintenance work to be performed or emergencies on an as-needed basis, as signed and approved by the Owner.

*Cost Estimate*

A written document from the Contractor to the Owner tabulating the materials, quantity of materials, equipment, labor, unit cost, total cost, and schedule to satisfactorily execute all work as specified in the Work Order, to be approved by the Owner.

1.2. WORK ORDERS

Work Orders are necessary to construct individual projects that are typically smaller in cost and are more efficiently managed through a Work Order type contract rather than advertising and bidding each small project or repair individually. This approach reduces the overall construction timeframe and provides cost-benefits to the City by grouping numerous small projects under a Work Order type contract rather than advertising and bidding on each small project or repair individually. It also provides flexibility to address unanticipated infrastructure needs (i.e., emergency failures).

Information regarding the scope of Work provided by the Owner within the Work Request Form must be confirmed by the Contractor. Work Orders do not relieve the contractor of responsibility for confirming and verifying information provided by the Owner as specified in Section III Subsection 4.3 and Section IV Subsection 210 of the Contract Documents.

If any errors and/or omissions appear in the Contract Documents for individual Work orders, or construction stakeout, the Contractor shall immediately notify the Engineer in writing, of such errors and/or omissions, as specified in Section III Subsection 2.4. In the event the Contractor knows or should have known of any errors and/or omissions and fails to provide such notification, it shall be deemed to have waived any claim for increased time or compensation it may have had and they shall be held responsible for the results and the costs of rectifying any such errors and/or omissions.

#### 1.2.1. EMERGENCY WORK ORDER

Due to the nature of this contract, the Contractor may be requested to mobilize for emergency work orders. Emergency mobilizations shall be defined as mobilization within 8 hours of request by the City. The Contractor may be allowed to begin work prior to Work Order approval, only at the request of the City. The Contractor shall coordinate with the City and the Resident Project Representative during mobilization, exploratory investigations, and subsequent repair. The Contractor may be requested to provide documentation (photos, etc.) of any existing infrastructure. The Contractor shall submit in a timely manner a cost estimate for the anticipated emergency work for City review and approval.

#### 1.3. COST ESTIMATES

After Owner approval of the Work Order has been submitted to the Contractor, the Contractor shall provide the City with a Cost Estimate within fourteen (14) calendar days of receipt of approved Work Order. The cost estimate shall contain the following:

- Construction schedule with estimated number of days for completion
- Estimated cost of the proposed work utilizing Contract Bid Items
- Identification of any additional cost estimate item not included in bid item. Contractor shall provide supplementary information to support use of any miscellaneous/contingency for any required item not included in the bid items. Any use of the miscellaneous/contingency may include up to a 10% markup for overhead/profit. All compensation due the Contractor and any Subcontractor or sub-subcontractor for field and home office overhead is included in the markups

noted, as specified in Section III Subsections 10 and 11 of the Contract Documents.

Upon submission of cost estimate, the City and/or Engineer will provide any comments or requests for modifications to the Contractor in a timely manner.

For emergency related Work Order Requests, the Contractor shall submit to the City a Cost Estimate for Approval in a timely manner. The Contractor may be allowed to proceed prior to approval of a cost estimate as described above only at the request and approval of the City. Payment for any work associated with an Emergency Work Order Request will not be made until a cost estimate has been submitted for review and approval by the City.

Note that the City will not provide separate payment for stored materials. Any costs incurred for storing materials and laydown areas shall be the responsibility of the Contractor.

#### 1.4. PRECONSTRUCTION COORDINATION MEETINGS

After the Work Order and Cost Estimate have been approved and before the commencement of work per each Work Order, the City's Representative shall schedule a preconstruction coordination meeting to be attended by Contractor, Engineer, City, and others as appropriate to establish a working understanding among the parties as to the Work Order and to discuss the schedule of the Work Order and general Contract procedures.

#### 1.5. WORK ORDER TIME AND TIME EXTENSIONS

Contractor shall include an estimated construction schedule attached to the Cost Estimate per each Work Order. In the event of unforeseen physical conditions encountered in the field that results in any item of the Cost Estimate that differs materially and significantly from the estimated quantity of such item indicated in the Cost Estimate, the Contractor may request a schedule adjustment as specified in Section III Subsection 10 of the Contract Documents.

Should the Contractor be obstructed or delayed in the prosecution of or completion of the Work as a result of unforeseeable causes beyond the control of the Contractor, and not due to his fault or neglect, including but not restricted to acts of God or the public enemy, acts of government, fires, floods, hurricanes, discovery of pre-existing hazardous materials, utility conflicts, epidemics, quarantine regulations, strikes or lockouts, the Contractor shall notify the Engineer or Owner in writing within two (2) regular Work days after the commencement of such delay, stating the cause or causes thereof, or be deemed to have waived any right which the Contractor may have had to request the time extension. It is the contractor's responsibility to safely and appropriately secure the worksite prior to the approach of unfavorable weather conditions such as the onset of a tropical storm, hurricane, or similar event. No interruption, interference, inefficiency, suspension or delay in the commencement or progress of the Work from any cause whatsoever, including those for which the City may be responsible, in whole or in part,

shall relieve the Contractor of their duty to perform or give rise to any right to damages or additional compensation from the City. It being expressly acknowledged and agreed by the parties hereto that the Contractor shall receive no damages for delay. The Contractor's sole remedy, if any, against the City shall be the right to seek an extension to the Contract Time. Such extensions of time will not be granted for delays caused by unfavorable weather, ground conditions related to the weather, inadequate construction force or for the failure of the Contractor to timely order equipment or materials.

If the Contractor complies with the two (2) regular workdays notice requirement, the Engineer or Owner shall ascertain the facts and the extent of the delay being claimed, in the Engineer or Owner's sole judgment, the findings of fact justify such an extension, and the Engineer or Owner finding of fact shall be final and conclusive on the parties. The Contractor shall cooperate with the Engineer or Owner's investigation of the delays by providing any schedules, correspondence or other data that may be required to complete the findings of fact. Extensions of the Work Order Time must be authorized by City.

#### **1.6. SUSPENSION AND TERMINATION OF WORK ORDERS**

The Owner may terminate or suspend the Work for an individual Work Order upon the conditions as specified in Section III Subsection 15 Suspension of Work and Termination of the Contract Documents.

The Owner may also terminate or suspend the Work for an individual Work Order for convenience as described below.

- The Owner shall have the right to terminate or suspend a Work Order and, in whole or in part; without cause upon 30 calendar days written notice to the Contractor.
- In the event of such termination or suspension for convenience, the Contractor's sole recovery against the Owner shall be limited to that portion of the Agreement Amount earned through the date of termination or suspension, together with any retainage withheld and reasonable termination or suspension expenses incurred, but the Contractor shall not be entitled to any other or further recovery against the Owner, including, but not limited to, damages and any anticipated profit or Work not performed.

#### **1.7. INSPECTION, CORRECTION AND REMOVAL/ACCEPTEANCE OF DEFFECTIVE WORK**

Testing and inspection for work shall be in accordance with General Conditions Section III Subsection 13.1.

The Contractor must respond within five (5) calendar days of issuance of a written notice of defective work from the Engineer or Owner's Representative. The Contractor shall issue a plan and estimated date of completion for defective work in accordance with Section III Subsection 13 of the Contract Documents.

#### **1.8. CHANGES IN THE WORK ORDER**

Without invalidating the original Work Order request, the Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such additions, deletions, or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as may otherwise be specifically provided).

If the Owner and Contractor are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Time that should be allowed as a result of a Work Change Directive, a claim may be made therefore as provided in the General Conditions.

Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in these General Conditions except in the case of an emergency as provided or in the case of uncovering work as provided in article for Uncovering Work.

The Owner and Contractor shall execute Change Orders or Written Amendments recommended by the Owner's Representative in accordance with General Conditions Section 10.

#### 1.9. SITE INVESTIGATION AND DETECTION OF FACILITIES

The Contractor shall adhere to the guidelines as specified in Section III Subsection 4 and Section IV Subsection 210 of the Contract Documents for all Work Orders.

The Contractor shall visit the site of the proposed Work and fully acquaint themselves with conditions relating to construction and labor so that they may fully understand the facilities, difficulties and restrictions attending the execution of Work under the Agreement. The Contractor shall thoroughly examine and be familiar with the Contract Documents/Work Order. Failure or omission of the Contractor to receive or examine any form, instrument, addendum, or other documents, or to visit the site and acquaint themselves with conditions existing thereon, shall in no way relieve the Contractor from any obligation with respect to the Agreement.

The City does not warrant the accuracy or completeness of these reports, soil samples, or any other site condition information or data made available including, but not limited to, underground utility location. The submission of a bid shall be taken as *prima-facie* evidence of compliance with this paragraph.

The Contractor acknowledges that they have satisfied themselves as to the nature and location of the Work; the general and local conditions, including but not restricted to, those bearing upon transportation, disposal, handling and storage of materials; availability of labor, water, electric power, roads; and uncertainties of weather, river stages, tides or similar physical conditions at the site; the conformation and conditions of the ground; the character of equipment and facilities needed preliminary to and during prosecution of the Work Order.

The Contractor further acknowledges that they have satisfied themselves as to the character, quality and quantity of surface and subsurface materials, obstacles, or conditions to be encountered. Any failure by the Contractor to acquaint themselves with any aspect of the Work Order or with any of the applicable conditions shall not relieve the Contractor from responsibility for adequately evaluating the difficulty or cost of successfully performing the Work Order under the Contract Documents, nor shall it be considered the basis for any claim for additional time or compensation.

#### PRICING SHEET

#### 25-0027-UT WATER, RECLAIMED WATER AND WELL REPAIR & IMPROVEMENTS (GROUP A - WATER AND RCW POINT REPAIR)

All bid items, unless otherwise specified, shall be inclusive of furnishing all material and labor for the complete installation of the bid item, inclusive of any necessary removal. Installation shall be completed in accordance with the specifications. The quantities provided are estimated per year for bidding purposes and may vary based on the actual work throughout the duration of the contract. The City of Clearwater (City) is not obligated to purchase any minimum or maximum amount during the life of the contract. Unit costs for all bid items shall not be changed in the event of overruns or underruns. All groups do not need to be priced however, all items within a group need to be completed in order to be considered for award of that group.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>GENERAL - GROUP A: Water and RCW Point Repair</b>					
<p><b>*Mobilization shall be per work order as defined by the City. Each work order may include more than one individual project. The unit price for mobilization shall not exceed \$4,000 for non emergency mobilization and \$5,000 for emergency mobilization. Emergency and non emergency mobilization are further defined in Section IV of the Contract Documents.</b></p>					
1	*Emergency Mobilization/Demobilization & General Conditions and Traffic Control1 (max \$5,000)	30	EA		
2	Non-Emergency Mobilization/Demobilization & General Conditions and Traffic Control1 (max \$4,000)	75	EA		
<p><b>Bid Items 3a to 3i shall be fully inclusive of furnishing and installation all items to provide a complete maintenance of traffic installation including but not limited to signage, barricades, channelizing devices, flaggers, etc. Bid Items 3j-3r shall only be allowed where not included as part of a complete MOT bid item.</b></p>					
3a	FDOT Index 601 - Work Beyond the Shoulder	180	EA/DAY		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
3b	FDOT Index 602 - Work on Shoulder	180	EA/DAY		
3c	FDOT Index 603 - Two Lane Two Way Work within Travel way	60	EA/DAY		
3d	FDOT Index 604 - Two Lane Two Way - Intersection Work	60	EA/DAY		
3e	FDOT Index 613 - Multilane Roadway - Lane Closures	60	EA/DAY		
3f	FDOT Index 615 - Multilane Roadway - Intersection Work	60	EA/DAY		
3g	FDOT Index 620 - Multilane Roadway - Temporary Diversion	60	EA/DAY		
3h	FDOT Index 625 - Temporary Road Closure	60	EA/DAY		
3i	FDOT Index 628 - Two Way Left Turn Lanes	60	EA/DAY		
3j	Flagman	200	HOUR		
3k	Arrow Board - 5' Minimum Horizontal Size	30	EA/DAY		
3l	Variable Message Board	30	EA/DAY		
3m	Concrete Barrier (FDOT Index No. 415)	60	EA/DAY		
3n	Low Profile Barrier (FDOT Index No. 412)	60	EA/DAY		
3o	Sign in Work Zone	100	EA/DAY		
3p	FDOT Cone	100	EA/DAY		
3q	FDOT Channelizing Drum	100	EA/DAY		
3r	Barricade, Type III with Warning Light	100	EA/DAY		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
3s	Barricade, Type I or II with Warning Light	100	EA/DAY		

#### LABOR AND EQUIPMENT

**Bid Items 4a-l and 5a-v shall only be used at the approval of the City where other bid items are not fully inclusive or where applicable at discretion and approval of the City.**

#### LABOR HOUR

4a	Foreman regular time	1,500	HOUR		
4b	Foreman overtime	200	HOUR		
4c	Operator regular time	2,000	HOUR		
4d	Operator overtime	200	HOUR		
4e	Truck Driver regular time	1,000	HOUR		
4f	Truck Driver overtime	50	HOUR		
4g	Pipe Layer regular time	2,000	HOUR		
4h	Pipe Layer overtime	200	HOUR		
4i	Laborer regular time	2,000	HOUR		
4j	Laborer overtime	2,000	HOUR		
4k	Preconstruction Video	30	DAY		
4l	Asbuilt Survey	80	DAY		

#### EQUIPMENT

5a	Foreman's pickup truck with hand tools	1,500	HOUR		
5b	Job truck with tools	1,500	HOUR		
5c	Tractor & Trailer (Transport)	200	HOUR		
5d	Track Hoe (to 100 HP)	1,100	HOUR		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
5e	Track Hoe (101 HP to 170 HP)	500	.HOUR		
5f	Track Hoe (171 HP and up)	750	.HOUR		
<b>LANDSCAPING/RESTORATION</b>					
6a	Sodding	75,000	.SF		
6b	Brush Removal	40	.TON		
6c	Tree Protection	15	.EA		
6d	Tree Removal (<6" Trunk Diameter)	5	.EA		
6e	Tree Removal (6"-12" Trunk Diameter)	3	.EA		
6f	Tree Removal (13"-18" Trunk Diameter)	3	.EA		
6g	Tree Removal (>18" Trunk Diameter)	3	.EA		
<b>MATERIALS</b>					
7a	Remove and Replace Concrete Sidewalk, (4" Min Thickness)	500	.SF		
7b	Remove and Replace Concrete Sidewalk, (6" Min Thickness)	500	.SF		
7c	Remove and Replace Concrete Driveway	250	.SY		
7d	Full Width Milling (Up to 2")	7,500	.SY		
7e	Full Width Milling (2" to 4")	7,500	.SY		
7f	SP 12.5 Asphalt Concrete Resurfacing	500	.TON		
7g	SP 9.5 Asphalt Concrete Resurfacing	500	.TON		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
7h	Pavement Marking - Crosswalks (Lane)	500	LF		
7i	Pavement Marking - Stop Bars (Lane)	250	EA		
7j	Pavement Marking - School Crossing/RR	50	EA		
7k	Pavement Marking - Turn, Straight, Combo Arrows	50	EA		
7l	Pavement Marking - Dashed (White, Yellow, or Double Yellow)	500	LF		
7m	Pavement Marking - Solid White	250	LF		
7n	Pavement Marking - Solid Double Yellow	250	LF		
7o	Pavement Marking - Solid Yellow	250	LF		
7p	Temporary Pavement Marking - Turn, Straight, Combo Arrows	250	EA		
7q	Temporary Pavement Marking - Dashed (White, Yellow, or Double Yellow)	250	LF		
7r	Temporary Pavement Marking - Solid White	250	LF		
7s	Temporary Pavement Marking - Solid Double Yellow	250	LF		
7t	Temporary Pavement Marking - Solid Yellow	250	LF		
7u	Remove and replace concrete curb and gutter (FDOT Type A)	750	LF		
7v	Remove and replace concrete curb and gutter (FDOT Type E)	750	LF		
7w	Remove and replace concrete curb and gutter (FDOT Type F)	750	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
7x	3000 psi Concrete	100	CY		
7y	Off Site Selected Fill	1,500	CY		
7z	Limerock Base Material	750	TON		
7aa	Crushed Concrete Base Material	750	TON		
7ab	Stabilized Subgrade	750	TON		
7ac	# 57 Washed Stone	750	TON		
7ad	Removal of unsuitable soil	300	TON		
7ae	Removal of buried concrete	300	TON		
7af	Removal of Hazardous Material	300	TON		
7ag	Rip Rap	300	TON		
7ah	Flowable Fill	100	CY		
7ai	Brick Pavers	100	SY		
7aj	Geo Grid	20	SY		
7ak	Shoring (4' to 6' deep)	10	EA		
7al	Shoring (6' to 10' deep)	10	EA		
7am	Steel Road Plates	40	EA		

#### **WELL POINT DEWATERING**

8	Well Point Dewatering	2,000	LF/DAY		
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#### **GROUT FILL AND ABANDON MAIN**

9a	2"-6"	7,500	LF		
9b	8"-12"	7,500	LF		
9c	16"-24"	5,000	LF		
9d	>30"	5,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>REMOVE ABANDONED MAIN</b>					
10a	2"-6"	5,000	LF		
10b	8"-12"	5,000	LF		
10c	16"-24"	2,000	LF		
10d	>30"	500	LF		
<b>PRESSURE PIPE (OPEN CUT)</b>					
<b>PVC (Inclusive all Labor, Material, and Associated Restraints)</b>					
11a	4" diameter (0' to 5')	1,000	LF		
11b	4" diameter (5.1' to 10')	500	LF		
11c	4" diameter (10.1' to 15')	100	LF		
11d	4" diameter (15.1' to 20')	50	LF		
11e	6" diameter (0' to 5')	1,000	LF		
11f	6" diameter (5.1' to 10')	500	LF		
11g	6" diameter (10.1' to 15')	100	LF		
11h	6" diameter (15.1' to 20')	50	LF		
11i	8" diameter (0' to 5')	1,000	LF		
11j	8" diameter (5.1' to 10')	500	LF		
11k	8" diameter (10.1' to 15')	100	LF		
11l	8" diameter (15.1' to 20')	50	LF		
11m	10" diameter (0' to 5')	200	LF		
11n	10" diameter (5.1' to 10')	200	LF		
11o	10" diameter (10.1' to 15')	50	LF		
11p	10" diameter (15.1' to 20')	30	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>DUCTILE IRON (Inclusive all Labor, Material, and Associated Restraints)</b>					
12a	4" diameter (0' to 5')	1,000	LF		
12b	4" diameter (5.1' to 10')	500	LF		
12c	4" diameter (10.1' to 15')	100	LF		
12d	4" diameter (15.1' to 20')	50	LF		
12e	6" diameter (0' to 5')	1,000	LF		
12f	6" diameter (5.1' to 10')	500	LF		
12g	6" diameter (10.1' to 15')	100	LF		
12h	6" diameter (15.1' to 20')	50	LF		
12i	8" diameter (0' to 5')	1,000	LF		
12j	8" diameter (5.1' to 10')	500	LF		
12k	8" diameter (10.1' to 15')	100	LF		
12l	8" diameter (15.1' to 20')	50	LF		
12m	10" diameter (0' to 5')	100	LF		
12n	10" diameter (5.1' to 10')	100	LF		
12o	10" diameter (10.1' to 15')	50	LF		
12p	10" diameter (15.1' to 20')	30	LF		
12q	12" diameter (0' to 5')	1,000	LF		
12r	12" diameter (5.1' to 10')	500	LF		
12s	12" diameter (10.1' to 15')	100	LF		
12t	12" diameter (15.1' to 20')	50	LF		
12u	14" diameter (0' to 5')	100	LF		
12v	14" diameter (5.1' to 10')	50	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
12w	14" diameter (10.1' to 15')	20	LF		
12x	14" diameter (15.1' to 20')	20	LF		
12y	16" diameter (0' to 5')	500	LF		
12z	16" diameter (5.1' to 10')	200	LF		
12aa	16" diameter (10.1' to 15')	50	LF		
12ab	16" diameter (15.1' to 20')	30	LF		
12ac	18" diameter (0' to 5')	50	LF		
12ad	18" diameter (5.1' to 10')	50	LF		
12ae	18" diameter (10.1' to 15')	20	LF		
12af	18" diameter (15.1' to 20')	20	LF		
12ag	20" diameter (0' to 5')	500	LF		
12ah	20" diameter (5.1' to 10')	200	LF		
12ai	20" diameter (10.1' to 15')	50	LF		
12aj	20" diameter (15.1' to 20')	30	LF		
12ak	24" diameter (0' to 5')	500	LF		
12al	24" diameter (5.1' to 10')	200	LF		
12am	24" diameter (10.1' to 15')	50	LF		
12an	24" diameter (15.1' to 20')	30	LF		
12ao	30" diameter (0' to 5')	100	LF		
12ap	30" diameter (5.1' to 10')	50	LF		
12aq	30" diameter (10.1' to 15')	20	LF		
12ar	30" diameter (15.1' to 20')	20	LF		
12as	36" diameter (0' to 5')	100	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
12at	36" diameter (5.1' to 10')	50	LF		
12au	36" diameter (10.1' to 15')	20	LF		
12av	36" diameter (15.1' to 20')	20	LF		

**HDPE (Inclusive all Labor, Material, and Associated Restraints)**

13a	4" diameter (0' to 5')	1,000	LF		
13b	4" diameter (5.1' to 10')	500	LF		
13c	4" diameter (10.1' to 15')	100	LF		
13d	4" diameter (15.1' to 20')	50	LF		
13e	6" diameter (0' to 5')	1,000	LF		
13f	6" diameter (5.1' to 10')	500	LF		
13g	6" diameter (10.1' to 15')	100	LF		
13h	6" diameter (15.1' to 20')	50	LF		
13i	8" diameter (0' to 5')	1,000	LF		
13j	8" diameter (5.1' to 10')	500	LF		
13k	8" diameter (10.1' to 15')	100	LF		
13l	8" diameter (15.1' to 20')	50	LF		
13m	10" diameter (0' to 5')	200	LF		
13n	10" diameter (5.1' to 10')	200	LF		
13o	10" diameter (10.1' to 15')	50	LF		
13p	10" diameter (15.1' to 20')	30	LF		
13q	12" diameter (0' to 5')	200	LF		
13r	12" diameter (5.1' to 10')	200	LF		
13s	12" diameter (10.1' to 15')	100	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
13t	12" diameter (15.1' to 20')	50	LF		
13u	16" diameter (0' to 5')	500	LF		
13v	16" diameter (5.1' to 10')	200	LF		
13w	16" diameter (10.1' to 15')	100	LF		
13x	16" diameter (15.1' to 20')	50	LF		
13y	18" diameter (0' to 5')	500	LF		
13z	18" diameter (5.1' to 10')	200	LF		
13aa	18" diameter (10.1' to 15')	100	LF		
13ab	18" diameter (15.1' to 20')	50	LF		
13ac	20" diameter (0' to 5')	500	LF		
13ad	20" diameter (5.1' to 10')	200	LF		
13ae	20" diameter (10.1' to 15')	100	LF		
13af	20" diameter (15.1' to 20')	50	LF		
13ag	24" diameter (0' to 5')	500	LF		
13ah	24" diameter (5.1' to 10')	200	LF		
13ai	24" diameter (10.1' to 15')	100	LF		
13aj	24" diameter (15.1' to 20')	50	LF		
13ak	30" diameter (0' to 5')	500	LF		
13al	30" diameter (5.1' to 10')	200	LF		
13am	30" diameter (10.1' to 15')	100	LF		
13an	30" diameter (15.1' to 20')	50	LF		
13ao	36" diameter (0' to 5')	500	LF		
13ap	36" diameter (5.1' to 10')	200	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
13aq	36" diameter (10.1' to 15')	100	LF		
13ar	36" diameter (15.1' to 20')	50	LF		
<b>DUCTILE IRON FITTINGS (Tees, Crosses, 90, 45, 22.5, 11.25, Sleeve, and inclusive all necessary restraints)</b>					
14a	4" diameter	2	TON		
14b	6" diameter	2	TON		
14c	8" diameter	2	TON		
14d	10" diameter	2	TON		
14e	12" diameter	2	TON		
14f	14" diameter	2	TON		
14g	16" diameter	2	TON		
14h	18" diameter	2	TON		
14i	20" diameter	2	TON		
14j	24" diameter	2	TON		
14k	30" diameter	2	TON		
14l	36" diameter	2	TON		
<b>PIPE BURSTING</b>					
15a	Furnish and Install 4" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		
15b	Furnish and Install 6" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		
15c	Furnish and Install 8" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
15d	Furnish and Install 10" HDPE Perchlorinated Pipe Bursting, DR 11	500	LF		
15e	Furnish and Install 12" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		
15f	Furnish and Install 16" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		
15g	Furnish and Install 20" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		
15h	Furnish and Install 24" HDPE Perchlorinated Pipe Bursting, DR 11	500	LF		
15i	Furnish and Install 30" HDPE Perchlorinated Pipe Bursting, DR 11	500	LF		

#### **JACK AND BORE**

16a	Furnish and Install 4" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		
16b	Furnish and Install 6" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		
16c	Furnish and Install 8" PVC or DI Pipe in 18" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		
16d	Furnish and Install 12" PVC or DI Pipe in 24" OD Steel Casing Pipe by Jack and Bore per city standard detail	750	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
16e	Furnish and Install 16" PVC or DI Pipe in 30" OD Steel Casing Pipe by Jack and Bore per city standard detail	750	LF		
16f	Furnish and Install 20" PVC or DI Pipe in 36" OD Steel Casing Pipe by Jack and Bore per city standard detail	750	LF		
16g	Furnish and Install 24" PVC or DI Pipe in 42" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		
16h	Furnish and Install 30" PVC or DI Pipe in 48" OD Steel Casing Pipe by Jack and Bore per city standard detail	300	LF		
16i	Furnish and Install 36" PVC or DI Pipe in 54" OD Steel Casing Pipe by Jack and Bore per city standard detail	300	LF		
16j	Furnish and Install 42" PVC or DI Pipe in 60" OD Steel Casing Pipe by Jack and Bore per city standard detail	300	LF		
<b>DIRECTIONAL DRILL</b>					
17a	Furnish and Install 4" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17b	Furnish and Install 6" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17c	Furnish and Install 8" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
17d	Furnish and Install 10" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	500	LF		
17e	Furnish and Install 12" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17f	Furnish and Install 16" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17g	Furnish and Install 20" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17h	Furnish and Install 24" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17i	Furnish and Install 30" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17j	Furnish and Install 36" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
17k	Furnish and Install 4" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
17l	Furnish and Install 6" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
17m	Furnish and Install 8" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
17n	Furnish and Install 10" Restrained PVC by directional drill, DR 18 with Transitional Ends	500	LF		
17o	Furnish and Install 12" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
17p	Furnish and Install 16" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
17q	Furnish and Install 20" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
17r	Furnish and Install 24" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
17s	Furnish and Install 30" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
17t	Furnish and Install 36" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
<b>SLILINE HDPE THROUGH EXISTING MAIN (Inclusive all Labor, Material, and Associated Restraints)</b>					
18a	Furnish and Install 4" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
18b	Furnish and Install 6" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
18c	Furnish and Install 8" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
18d	Furnish and Install 10" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
18e	Furnish and Install 12" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
18f	Furnish and Install 16" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
18g	Furnish and Install 20" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
18h	Furnish and Install 24" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	500	LF		
18i	Furnish and Install 30" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	500	LF		

#### **TEMPORARY WATER SERVICE**

19a	2" Temporary HDPE Water Main (Including Tap Connections to Existing Main)	2,500	LF		
19b	4" Temporary HDPE Water Main (Including Tap Connections to Existing Main)	2,500	LF		
19c	6" Temporary HDPE Water Main (Including Tap Connections to Existing Main)	1,000	LF		

#### **APPURTEANCES**

20a	4"	100	EA		
20b	6"	100	EA		
20c	8"	50	EA		
20d	10"	10	EA		
20e	12"	30	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
20f	14"	10	EA		
20g	16"	10	EA		
20h	18"	10	EA		
20i	20"	5	EA		
20j	24"	5	EA		
20k	30"	5	EA		
20l	36"	5	EA		

#### **BUTTERFLY VALVES WITH VALVE BOX**

21a	12"	5	EA		
21b	16"	5	EA		
21c	18"	5	EA		
21d	20"	5	EA		
21e	24"	5	EA		
21f	30"	5	EA		

#### **SERVICE SADDLES REPLACEMENT**

22a	3/4"	300	EA		
22b	1"	300	EA		
22c	1.5"	300	EA		
22d	2"	100	EA		
22e	4"	10	EA		
22f	6"	10	EA		
22g	8"	10	EA		
22h	10"	10	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
22i	12"	10	EA		
22j	14"	10	EA		
22k	16"	10	EA		
22l	18"	10	EA		
22m	20"	10	EA		

**TAPPING SLEEVES WITH TAPPING VALVES (Including 3 Piece Valve Box)**

23a	4"	25	EA		
23b	6"	25	EA		
23c	8"	25	EA		
23d	10"	10	EA		
23e	12"	10	EA		
23f	14"	3	EA		
23g	16"	3	EA		
23h	18"	3	EA		
23i	20"	3	EA		
23j	24"	3	EA		
23k	30"	3	EA		
23l	36"	3	EA		

**INSERT GATE VALVES**

24a	4"	50	EA		
24b	6"	50	EA		
24c	8"	30	EA		
24d	10"	10	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
24e	12"	20	EA		
<b>LINE STOPS</b>					
25a	2"	10	EA		
25b	4"	10	EA		
25c	6"	10	EA		
25d	8"	10	EA		
25e	10"	10	EA		
25f	12"	15	EA		
25g	14"	15	EA		
25h	16"	15	EA		
25i	18"	15	EA		
25j	20"	10	EA		
25k	24"	3	EA		
25l	30"	3	EA		
25m	36"	3	EA		
<b>REPAIR CLAMP</b>					
26a	2"	15	EA		
26b	4"	15	EA		
26c	6"	15	EA		
26d	8"	15	EA		
26e	10"	15	EA		
26f	12"	15	EA		
26g	14"	5	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
26h	16"	5	EA		
26i	18"	5	EA		
26j	20"	5	EA		
26k	24"	5	EA		
26l	30"	5	EA		
26m	36"	5	EA		
<b>RESTRAINED JOINT (for Existing Mains)</b>					
27a	2" Restrained Joint	50	EA		
27b	4" Restrained Joint	100	EA		
27c	6" Restrained Joint	100	EA		
27d	8" Restrained Joint	100	EA		
27e	10" Restrained Joint	100	EA		
27f	12" Restrained Joint	100	EA		
27g	16" Restrained Joint	50	EA		
27h	18" Restrained Joint	50	EA		
27i	20" Restrained Joint	20	EA		
27j	24" Restrained Joint	20	EA		
27k	30" Restrained Joint	20	EA		
<b>FIRE HYDRANT ASSEMBLY</b>					
28a	Remove and Replace Fire Hydrant Assembly With Valve (5-1/4")	60	EA		
28b	Remove and Replace Fire Hydrant Assembly Without Valve (5-1/4")	20	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
28c	Install New Fire Hydrant Assembly With Valve (5-1/4")	10	EA		
28d	Remove Existing Fire Hydrant Only	10	EA		
<b>SERVICE CONNECTIONS</b>					
29a	Furnish and Install 5/8" Service Connection (corp to meter including meter box) and 2" PVC Casing	150	EA		
29b	Furnish and Install 3/4" Service Connection (corp to meter including meter box) and 2" PVC Casing	500	EA		
29c	Furnish and Install 1" Service Connection (corp to meter including meter box) and 2" PVC Casing	500	EA		
29d	Furnish and Install 1-1/2" Service Connection (including brass ball valve to meter including meter box) and 3" PVC Casing	75	EA		
29e	Furnish and Install 2" Service Connection (including brass ball valve to meter including meter box) and 3" PVC Casing	50	EA		
<b>OTHER ITEMS</b>					
30a	Bollard	30	EA		
30b	ARV Assembly (Inclusive of fittings and enclosure)	10	EA		
30c	ARV Only	10	EA		
30d	Temporary Blowoff Assembly	10	EA		
30e	4" Blowoff Assembly	10	EA		
30f	Pipe Exterior Coating	100	SF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>WATER MAIN DISINFECTION</b>					
31a	Cleaning and Disinfection of 2" to 6" Potable Water Main	7,000	LF		
31b	Cleaning and Disinfection of 8" to 12" Potable Water Main	5,000	LF		
31c	Cleaning and Disinfection of 14" to 20" Potable Water Main	5,000	LF		
31d	Cleaning and Disinfection of 24" to 36" Potable Water Main	5,000	LF		
31e	Cleaning and Disinfection of 2" to 6" Reclaimed Water Main	5,000	LF		
31f	Cleaning and Disinfection of 8" to 12" Reclaimed Water Main	5,000	LF		
31g	Cleaning and Disinfection of 14" to 20" Reclaimed Water Main	2,000	LF		
31h	Cleaning and Disinfection of 24" to 36" Reclaimed Water Main	2,000	LF		
<b>GRAVITY SANITARY SEWER PIPE REPAIR (Incidental to Water or Reclaimed Water Repair)</b>					
<b>PVC GRAVITY MAIN (Inclusive all Labor, Material, and Associated Restraints)</b>					
32a	6" diameter	500	LF		
32b	8" diameter	500	LF		
32c	10" diameter	500	LF		
32d	12" diameter	500	LF		
32e	14" diameter	100	LF		
32f	16" diameter	100	LF		
32g	18" diameter	100	LF		
32h	20" diameter	100	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
32i	24" diameter	100	LF		
<b>WASTEWATER MANHOLE</b>					
33a	Manhole - 4 feet Diameter	200	VF		
33b	Manhole - 5 feet Diameter	100	VF		
33c	Manhole - 6 feet Diameter	100	VF		
33d	Adjust Existing Manhole Frame and Cover (paved areas)	10	EA		
33e	Adjust Existing Manhole Frame and Cover (unpaved areas)	10	EA		
33f	Replace Existing Manhole Frame and Cover (paved areas)	10	EA		
33g	Replace Existing Manhole Frame and Cover (unpaved areas)	10	EA		
<b>WASTEWATER SERVICE LATERAL</b>					
34a	Install/Repair/Replace 4" Sanitary Sewer Lateral	10	EA		
34b	Install/Repair/Replace 6" Sanitary Sewer Lateral	10	EA		
<b>TOTAL</b>					

#### OWNER'S CONTINGENCY

10% of the subtotal of lines 1-34b in Group A above.

Line Item	Description	Unit of Measure	Unit Cost
35	GROUP A: Water and RCW Point Repair 10% Contingency	LS	

#### 25-0027-UT WATER, RECLAIMED WATER AND WELL REPAIR & IMPROVEMENTS (GROUP B - WATER AND RCW TRENCHLESS PIPE INSTALLATION)

All bid items, unless otherwise specified, shall be inclusive of furnishing all material and labor for the complete installation of the bid item, inclusive of any necessary removal. Installation shall be completed in accordance with the specifications. The quantities provided are estimated per year for bidding purposes and may vary based on the actual work throughout the duration of the contract. The City of Clearwater (City) is not obligated to purchase any minimum or maximum amount during the life of the contract. Unit costs for all bid items shall not be changed in the event of overruns or underruns. All groups do not need to be priced however, all items within a group need to be completed in order to be considered for award of that group.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>GENERAL - GROUP B: Water and RCW Trenchless Pipe Installation</b>					
<p><b>*Mobilization shall be per work order as defined by the City. Each work order may include more than one individual project. The unit price for mobilization shall not exceed \$4,000 for non emergency mobilization and \$5,000 for emergency mobilization. Emergency and non emergency mobilization are further defined in Section IV of the Contract Documents.</b></p>					
1	*Emergency Mobilization/Demobilization & General Conditions and Traffic Control1 (max \$5,000)	25	EA		
2	Non-Emergency Mobilization/Demobilization & General Conditions and Traffic Control1 (max \$4,000)	50	EA		
<b>MAINTENANCE OF TRAFFIC</b>					
<p><b>Bid Items 3a to 3i shall be fully inclusive of furnishing and installation all items to provide a complete maintenance of traffic installation including but not limited to signage, barricades, channelizing devices, flaggers, etc. Bid Items 3j-3r shall only be allowed where not included as part of a complete MOT bid item.</b></p>					
3a	FDOT Index 601 - Work Beyond the Shoulder	180	EA/DAY		
3b	FDOT Index 602 - Work on Shoulder	180	EA/DAY		
3c	FDOT Index 603 - Two Lane Two Way Work within Travel way	60	EA/DAY		
3d	FDOT Index 604 - Two Lane Two Way - Intersection Work	60	EA/DAY		
3e	FDOT Index 613 - Multilane Roadway - Lane Closures	60	EA/DAY		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
3f	FDOT Index 615 - Multilane Roadway - Intersection Work	60	EA/DAY		
3g	FDOT Index 620 - Multilane Roadway - Temporary Diversion	60	EA/DAY		
3h	FDOT Index 625 - Temporary Road Closure	60	EA/DAY		
3i	FDOT Index 628 - Two Way Left Turn Lanes	60	EA/DAY		
3j	Flagman	200	HOUR		
3k	Arrow Board - 5' Minimum Horizontal Size	30	EA/DAY		
3l	Variable Message Board	30	EA/DAY		
3m	Concrete Barrier (FDOT Index No. 415)	60	EA/DAY		
3n	Low Profile Barrier (FDOT Index No. 412)	60	EA/DAY		
3o	Sign in Work Zone	100	EA/DAY		
3p	FDOT Cone	100	EA/DAY		
3q	FDOT Channelizing Drum	100	EA/DAY		
3r	Barricade, Type III with Warning Light	100	EA/DAY		
3s	Barricade, Type I or II with Warning Light	100	EA/DAY		

#### LABOR AND EQUIPMENT

**Bid Items 4a-l and 5a-v shall only be used at the approval of the City where other bid items are not fully inclusive or where applicable at discretion of the City.**

#### LABOR HOUR

4a	Foreman regular time	1,500	HOUR		
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Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
4b	Foreman overtime	200	HOUR		
4c	Operator regular time	2,000	HOUR		
4d	Operator overtime	200	HOUR		
4e	Truck Driver regular time	1,000	HOUR		
4f	Truck Driver overtime	50	HOUR		
4g	Pipe Layer regular time	2,000	HOUR		
4h	Pipe Layer overtime	200	HOUR		
4i	Laborer regular time	2,000	HOUR		
4j	Laborer overtime	2,000	HOUR		
4k	Preconstruction Video	30	DAY		
4l	Asbuilt Survey	80	DAY		

#### **EQUIPMENT**

5a	Foreman's pickup truck with hand tools	1,500	HOUR		
5b	Job truck with tools	1,500	HOUR		
5c	Tractor & Trailer (Transport)	200	HOUR		
5d	Track Hoe (to 100 HP)	1,100	HOUR		
5e	Track Hoe (101 HP to 170 HP)	500	HOUR		
5f	Track Hoe (171 HP and up)	750	HOUR		
5g	Rubber Tired Backhoe	25	HOUR		
5h	Wheel Loader (to 150 HP)	2,000	HOUR		
5i	Wheel Loader (151 HP and up)	250	HOUR		
5j	Track Type Tractors (to 100 HP)	150	HOUR		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
5k	Track Type Tractors (101 HP and up)	25	HOUR		
5l	Dump Truck (Tandem Axle)	750	HOUR		
5m	Plate Tamp	250	HOUR		
5n	3" Trash Pump	250	HOUR		
5o	4" Double Diaphragm Pump	2,000	HOUR		
5p	Air Compressor (125 CFM min.)	100	HOUR		
5q	4" Jet Pump	25	DAY		
5r	Emergency Hauling up to 2500 gallons	25	HOUR		
5s	Emergency Hauling over 2500 gallons	25	HOUR		
5t	Street Sweeper	200	HOUR		
5u	Mobile Light Tower	40	DAY		
5v	Vactor Truck	250	HOUR		

#### LANDSCAPING/RESTORATION

6a	Sodding	75,000	SF		
6b	Brush Removal	40	TON		
6c	Tree Protection	15	EA		
6d	Tree Removal (<6" Trunk Diameter)	5	EA		
6e	Tree Removal (6"-12" Trunk Diameter)	3	EA		
6f	Tree Removal (13"-18" Trunk Diameter)	3	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
6g	Tree Removal (>18" Trunk Diameter)	3	EA		
<b>MATERIALS</b>					
7a	Remove and Replace Concrete Sidewalk, (4" Min Thickness)	500	SF		
7b	Remove and Replace Concrete Sidewalk, (6" Min Thickness)	500	SF		
7c	Remove and Replace Concrete Driveway	250	SY		
7d	Full Width Milling (Up to 2")	7,500	SY		
7e	Full Width Milling (2" to 4")	7,500	SY		
7f	SP 12.5 Asphalt Concrete Resurfacing	500	TON		
7g	SP 9.5 Asphalt Concrete Resurfacing	500	TON		
7h	Pavement Marking - Crosswalks (Lane)	500	LF		
7i	Pavement Marking - Stop Bars (Lane)	250	EA		
7j	Pavement Marking - School Crossing/RR	50	EA		
7k	Pavement Marking - Turn, Straight, Combo Arrows	50	EA		
7l	Pavement Marking - Dashed (White, Yellow, or Double Yellow)	500	LF		
7m	Pavement Marking - Solid White	250	LF		
7n	Pavement Marking - Solid Double Yellow	250	LF		
7o	Pavement Marking - Solid Yellow	250	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
7p	Temporary Pavement Marking - Turn, Straight, Combo Arrows	250	EA		
7q	Temporary Pavement Marking - Dashed (White, Yellow, or Double Yellow)	250	LF		
7r	Temporary Pavement Marking - Solid White	250	LF		
7s	Temporary Pavement Marking - Solid Double Yellow	250	LF		
7t	Temporary Pavement Marking - Solid Yellow	250	LF		
7u	Remove and replace concrete curb and gutter (FDOT Type A)	750	LF		
7v	Remove and replace concrete curb and gutter (FDOT Type E)	750	LF		
7w	Remove and replace concrete curb and gutter (FDOT Type F)	750	LF		
7x	3000 psi Concrete	100	CY		
7y	Off Site Selected Fill	1,500	CY		
7z	Limerock Base Material	750	TON		
7aa	Crushed Concrete Base Material	750	TON		
7ab	Stabilized Subgrade	750	TON		
7ac	# 57 Washed Stone	750	TON		
7ad	Removal of unsuitable soil	300	TON		
7ae	Removal of buried concrete	50	CY		
7af	Removal of Hazardous	50	CY		
7ag	Rip Rap	300	TON		
7ah	Flowable Fill	100	CY		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
7ai	Brick Pavers	100	SY		
7aj	Brick Paver Level Sand	10	CY		
7ak	Geo Grid	80	SY		
7al	Shoring (4' to 6' deep)	12	EA		
7am	Shoring (6' to 10' deep)	12	EA		
7an	Steel Road Plates	12	EA		
<b>WELL POINT DEWATERING</b>					
8a	Well Point Dewatering	2,000	LF/DAY		
<b>GROUT FILL AND ABANDON MAIN</b>					
9a	2"-6"	7,500	LF		
9b	8"-12"	7,500	LF		
9c	16"-24"	5,000	LF		
9d	>30"	5,000	LF		
<b>REMOVE ABANDONED MAIN</b>					
10a	2"-6"	5,000	LF		
10b	8"-12"	5,000	LF		
10c	16"-24"	2,000	LF		
10d	>30"	500	LF		
<b>PRESSURE MAIN - TRENCHLESS INSTALLATION</b>					
<b>TEMPORARY WATER SERVICE</b>					
11a	2" Temporary HDPE Water Main (Including Tap Connections to Existing Main and Temporary Services)	20,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
11b	4" Temporary HDPE Water Main (Including Tap Connections to Existing Main and Temporary Services)	15,000	LF		
11c	6" Temporary HDPE Water Main (Including Tap Connections to Existing Main and Temporary Services)	5,000	LF		
<b>DIRECTIONAL DRILL (Inclusive of Fusing, MJ Adapters, Fused Fittings, etc)</b>					
12a	Furnish and Install 4" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	4,000	LF		
12b	Furnish and Install 6" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	4,000	LF		
12c	Furnish and Install 8" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	4,000	LF		
12d	Furnish and Install 10" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	2,000	LF		
12e	Furnish and Install 12" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	4,000	LF		
12f	Furnish and Install 16" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	2,000	LF		
12g	Furnish and Install 20" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
12h	Furnish and Install 24" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
12i	Furnish and Install 30" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
12j	Furnish and Install 36" HDPE by directional drill, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
12k	Furnish and Install 4" Restrained PVC by directional drill, DR 18 with Transitional Ends	4,000	LF		
12l	Furnish and Install 6" Restrained PVC by directional drill, DR 18 with Transitional Ends	4,000	LF		
12m	Furnish and Install 8" Restrained PVC by directional drill, DR 18 with Transitional Ends	4,000	LF		
12n	Furnish and Install 10" Restrained PVC by directional drill, DR 18 with Transitional Ends	2,000	LF		
12o	Furnish and Install 12" Restrained PVC by directional drill, DR 18 with Transitional Ends	4,000	LF		
12p	Furnish and Install 16" Restrained PVC by directional drill, DR 18 with Transitional Ends	2,000	LF		
12q	Furnish and Install 20" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
12r	Furnish and Install 24" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
12s	Furnish and Install 30" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
12t	Furnish and Install 36" Restrained PVC by directional drill, DR 18 with Transitional Ends	1,000	LF		
<b>PIPE BURSTING</b>					
13a	Furnish and Install 4" HDPE Perchlorinated Pipe Bursting, DR 11	5,000	LF		
13b	Furnish and Install 6" HDPE Perchlorinated Pipe Bursting, DR 11	5,000	LF		
13c	Furnish and Install 8" HDPE Perchlorinated Pipe Bursting, DR 11	5,000	LF		
13d	Furnish and Install 10" HDPE Perchlorinated Pipe Bursting, DR 11	500	LF		
13e	Furnish and Install 12" HDPE Perchlorinated Pipe Bursting, DR 11	2,500	LF		
13f	Furnish and Install 16" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		
13g	Furnish and Install 20" HDPE Perchlorinated Pipe Bursting, DR 11	1,000	LF		
13h	Furnish and Install 24" HDPE Perchlorinated Pipe Bursting, DR 11	500	LF		
13i	Furnish and Install 30" HDPE Perchlorinated Pipe Bursting, DR 11	500	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>SLIPLINE HDPE THROUGH EXISTING MAIN (Inclusive all Labor, Material, and Associated Restraints)</b>					
14a	Furnish and Install 4" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
14b	Furnish and Install 6" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
14c	Furnish and Install 8" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
14d	Furnish and Install 10" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
14e	Furnish and Install 12" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
14f	Furnish and Install 16" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
14g	Furnish and Install 20" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	1,000	LF		
14h	Furnish and Install 24" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	500	LF		
14i	Furnish and Install 30" HDPE by slipline, DR 11 with Transitional Ends with MJ Adapters	500	LF		
<b>JACK AND BORE</b>					
15a	Furnish and Install 4" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
15b	Furnish and Install 6" PVC or DI Pipe in 16" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		
15c	Furnish and Install 8" PVC or DI Pipe in 18" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		
15d	Furnish and Install 12" PVC or DI Pipe in 24" OD Steel Casing Pipe by Jack and Bore per city standard detail	750	LF		
15e	Furnish and Install 16" PVC or DI Pipe in 30" OD Steel Casing Pipe by Jack and Bore per city standard detail	750	LF		
15f	Furnish and Install 20" PVC or DI Pipe in 36" OD Steel Casing Pipe by Jack and Bore per city standard detail	750	LF		
15g	Furnish and Install 24" PVC or DI Pipe in 42" OD Steel Casing Pipe by Jack and Bore per city standard detail	500	LF		
15h	Furnish and Install 30" PVC or DI Pipe in 48" OD Steel Casing Pipe by Jack and Bore per city standard detail	300	LF		
15i	Furnish and Install 36" PVC or DI Pipe in 54" OD Steel Casing Pipe by Jack and Bore per city standard detail	150	LF		
15j	Furnish and Install 42" PVC or DI Pipe in 60" OD Steel Casing Pipe by Jack and Bore per city standard detail	150	LF		
<b>PRESSURE PIPE (Open Cut)</b>					

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>PVC (Inclusive all Labor, Material, and Associated Restraints)</b>					
16a	4" diameter (0' to 5')	500	LF		
16b	4" diameter (5.1' to 10')	100	LF		
16c	4" diameter (10.1' to 15')	100	LF		
16d	4" diameter (15.1' to 20')	50	LF		
16e	6" diameter (0' to 5')	500	LF		
16f	6" diameter (5.1' to 10')	100	LF		
16g	6" diameter (10.1' to 15')	100	LF		
16h	6" diameter (15.1' to 20')	50	LF		
16i	8" diameter (0' to 5')	500	LF		
16j	8" diameter (5.1' to 10')	100	LF		
16k	8" diameter (10.1' to 15')	100	LF		
16l	8" diameter (15.1' to 20')	50	LF		
16m	10" diameter (0' to 5')	200	LF		
16n	10" diameter (5.1' to 10')	200	LF		
16o	10" diameter (10.1' to 15')	50	LF		
16p	10" diameter (15.1' to 20')	30	LF		
<b>DUCTILE IRON (Inclusive all Labor, Material, and Associated Restraints)</b>					
17a	4" diameter (0' to 5')	500	LF		
17b	4" diameter (5.1' to 10')	200	LF		
17c	4" diameter (10.1' to 15')	100	LF		
17d	4" diameter (15.1' to 20')	50	LF		
17e	6" diameter (0' to 5')	500	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
17f	6" diameter (5.1' to 10')	200	LF		
17g	6" diameter (10.1' to 15')	100	LF		
17h	6" diameter (15.1' to 20')	50	LF		
17i	8" diameter (0' to 5')	500	LF		
17j	8" diameter (5.1' to 10')	200	LF		
17k	8" diameter (10.1' to 15')	100	LF		
17l	8" diameter (15.1' to 20')	50	LF		
17m	10" diameter (0' to 5')	500	LF		
17n	10" diameter (5.1' to 10')	200	LF		
17o	10" diameter (10.1' to 15')	100	LF		
17p	10" diameter (15.1' to 20')	50	LF		
17q	12" diameter (0' to 5')	500	LF		
17r	12" diameter (5.1' to 10')	200	LF		
17s	12" diameter (10.1' to 15')	100	LF		
17t	12" diameter (15.1' to 20')	50	LF		
17u	14" diameter (0' to 5')	100	LF		
17v	14" diameter (5.1' to 10')	50	LF		
17w	14" diameter (10.1' to 15')	20	LF		
17x	14" diameter (15.1' to 20')	20	LF		
17y	16" diameter (0' to 5')	500	LF		
17z	16" diameter (5.1' to 10')	200	LF		
17aa	16" diameter (10.1' to 15')	50	LF		
17ab	16" diameter (15.1' to 20')	30	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
17ac	18" diameter (0' to 5')	50	LF		
17ad	18" diameter (5.1' to 10')	50	LF		
17ae	18" diameter (10.1' to 15')	20	LF		
17af	18" diameter (15.1' to 20')	20	LF		
17ag	20" diameter (0' to 5')	500	LF		
17ah	20" diameter (5.1' to 10')	200	LF		
17ai	20" diameter (10.1' to 15')	50	LF		
17aj	20" diameter (15.1' to 20')	30	LF		
17ak	24" diameter (0' to 5')	500	LF		
17al	24" diameter (5.1' to 10')	200	LF		
17am	24" diameter (10.1' to 15')	50	LF		
17an	24" diameter (15.1' to 20')	30	LF		
17ao	30" diameter (0' to 5')	100	LF		
17ap	30" diameter (5.1' to 10')	50	LF		
17aq	30" diameter (10.1' to 15')	20	LF		
17ar	30" diameter (15.1' to 20')	20	LF		
17as	36" diameter (0' to 5')	100	LF		
17at	36" diameter (5.1' to 10')	50	LF		
17au	36" diameter (10.1' to 15')	20	LF		
17av	36" diameter (15.1' to 20')	20	LF		
<b>HDPE (Inclusive all Labor, Material, and Associated Restraints)</b>					
18a	4" diameter (0' to 5')	500	LF		
18b	4" diameter (5.1' to 10')	200	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
18c	4" diameter (10.1' to 15')	100	LF		
18d	4" diameter (15.1' to 20')	50	LF		
18e	6" diameter (0' to 5')	500	LF		
18f	6" diameter (5.1' to 10')	200	LF		
18g	6" diameter (10.1' to 15')	100	LF		
18h	6" diameter (15.1' to 20')	50	LF		
18i	8" diameter (0' to 5')	500	LF		
18j	8" diameter (5.1' to 10')	200	LF		
18k	8" diameter (10.1' to 15')	100	LF		
18l	8" diameter (15.1' to 20')	50	LF		
18m	10" diameter (0' to 5')	200	LF		
18n	10" diameter (5.1' to 10')	200	LF		
18o	10" diameter (10.1' to 15')	50	LF		
18p	10" diameter (15.1' to 20')	30	LF		
18q	12" diameter (0' to 5')	500	LF		
18r	12" diameter (5.1' to 10')	200	LF		
18s	12" diameter (10.1' to 15')	100	LF		
18t	12" diameter (15.1' to 20')	50	LF		
18u	16" diameter (0' to 5')	500	LF		
18v	16" diameter (5.1' to 10')	200	LF		
18w	16" diameter (10.1' to 15')	100	LF		
18x	16" diameter (15.1' to 20')	50	LF		
18y	18" diameter (0' to 5')	500	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
18z	18" diameter (5.1' to 10')	200	LF		
18aa	18" diameter (10.1' to 15')	100	LF		
18ab	18" diameter (15.1' to 20')	50	LF		
18ac	20" diameter (0' to 5')	500	LF		
18ad	20" diameter (5.1' to 10')	200	LF		
18ae	20" diameter (10.1' to 15')	100	LF		
18af	20" diameter (15.1' to 20')	50	LF		
18ag	24" diameter (0' to 5')	500	LF		
18ah	24" diameter (5.1' to 10')	200	LF		
18ai	24" diameter (10.1' to 15')	100	LF		
18aj	24" diameter (15.1' to 20')	50	LF		
18ak	30" diameter (0' to 5')	500	LF		
18al	30" diameter (5.1' to 10')	200	LF		
18am	30" diameter (10.1' to 15')	100	LF		
18an	30" diameter (15.1' to 20')	50	LF		
18ao	36" diameter (0' to 5')	500	LF		
18ap	36" diameter (5.1' to 10')	200	LF		
18aq	36" diameter (10.1' to 15')	100	LF		
18ar	36" diameter (15.1' to 20')	50	LF		

**DUCTILE IRON FITTINGS (Tees, Crosses, 90, 45, 22.5, 11.25, Sleeve, and inclusive all necessary restraints)**

19a	4" diameter	2	TON		
19b	6" diameter	2	TON		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
19c	8" diameter	2	TON		
19d	10" diameter	2	TON		
19e	12" diameter	2	TON		
19f	14" diameter	2	TON		
19g	16" diameter	2	TON		
19h	18" diameter	2	TON		
19i	20" diameter	2	TON		
19j	24" diameter	2	TON		
19k	30" diameter	2	TON		
19l	36" diameter	2	TON		

#### APPURTEANCES

#### GATE VALVES WITH 3-PIECE VALVE BOX

20a	4"	50	EA		
20b	6"	50	EA		
20c	8"	50	EA		
20d	10"	10	EA		
20e	12"	30	EA		
20f	14"	10	EA		
20g	16"	10	EA		
20h	18"	10	EA		
20i	20"	5	EA		
20j	24"	5	EA		
20k	30"	5	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
20l	36"	5	EA		
<b>BUTTERFLY VALVES WITH VALVE BOX</b>					
21a	12"	5	EA		
21b	16"	5	EA		
21c	18"	5	EA		
21d	20"	5	EA		
21e	24"	5	EA		
21f	30"	5	EA		
<b>SERVICE SADDLES REPLACEMENT</b>					
22a	3/4"	300	EA		
22b	1"	300	EA		
22c	1.5"	300	EA		
22d	2"	100	EA		
22e	4"	10	EA		
22f	6"	10	EA		
22g	8"	10	EA		
22h	10"	10	EA		
22i	12"	10	EA		
22j	14"	10	EA		
22k	16"	10	EA		
22l	18"	10	EA		
22m	20"	10	EA		
<b>TAPPING SLEEVES AND TAPPING VALVES</b>					

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
23a	4"	25	EA		
23b	6"	25	EA		
23c	8"	25	EA		
23d	10"	10	EA		
23e	12"	10	EA		
23f	14"	3	EA		
23g	16"	3	EA		
23h	18"	3	EA		
23i	20"	3	EA		
23j	24"	3	EA		
23k	30"	3	EA		
23l	36"	3	EA		

#### **INSERT VALVES**

24a	4"	40	EA		
24b	6"	40	EA		
24c	8"	20	EA		
24d	10"	10	EA		
24e	12"	20	EA		

#### **LINE STOPS**

25a	4"	10	EA		
25b	6"	10	EA		
25c	8"	10	EA		
25d	10"	10	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
25e	12"	15	EA		
25f	14"	15	EA		
25g	16"	15	EA		
25h	18"	15	EA		
25i	20"	15	EA		
25j	24"	10	EA		
25k	30"	3	EA		
25l	36"	3	EA		
<b>REPAIR CLAMP</b>					
26a	2"	15	EA		
26b	4"	15	EA		
26c	6"	15	EA		
26d	8"	15	EA		
26e	10"	15	EA		
26f	12"	15	EA		
26g	14"	5	EA		
26h	16"	5	EA		
26i	18"	5	EA		
26j	20"	5	EA		
26k	24"	5	EA		
26l	30"	5	EA		
26m	36"	5	EA		
<b>RESTRAINED JOINT FOR EXISTING MAIN</b>					

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
27a	2" Restrained Joint	50	EA		
27b	4" Restrained Joint	100	EA		
27c	6" Restrained Joint	100	EA		
27d	8" Restrained Joint	100	EA		
27e	10" Restrained Joint	100	EA		
27f	12" Restrained Joint	100	EA		
27g	16" Restrained Joint	50	EA		
27h	18" Restrained Joint	50	EA		
27i	20" Restrained Joint	20	EA		
27j	24" Restrained Joint	20	EA		
27k	30" Restrained Joint	20	EA		
<b>FIRE HYDRANT ASSEMBLY</b>					
28a	Remove and Replace Fire Hydrant Assembly With Valve (5-1/4")	40	EA		
28b	Remove and Replace Fire Hydrant Assembly Without Valve (5-1/4")	10	EA		
28c	Install New Fire Hydrant Assembly With Valve (5-1/4")	10	EA		
28d	Remove Existing Fire Hydrant	5	EA		
<b>SERVICE CONNECTIONS</b>					
29a	Furnish and Install 5/8" Service Connection (corp to meter including meter box) and 2" PVC Casing	150	EA		
29b	Furnish and Install 3/4" Service Connection (corp to meter including meter box) and 2" PVC Casing	500	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
29c	Furnish and Install 1" Service Connection (corp to meter including meter box) and 2" PVC Casing	500	EA		
29d	Furnish and Install 1-1/2" Service Connection (including brass ball valve to meter box) and 3" PVC Casing	75	EA		
29e	Furnish and Install 2" Service Connection (including brass ball valve to meter box) and 3" PVC Casing	50	EA		

#### **OTHER ITEMS**

30a	Bollard	30	EA	
30b	Aboveground ARV Assembly (Inclusive of fittings and enclosure)	10	EA	
30c	ARV Only Assembly (Inclusive of fittings)	10	EA	
30d	Temporary Blowoff Assembly	10	EA	
30e	4" Blowoff Assembly	10	EA	
30f	Pipe Exterior Coating	100	SF	

#### **WATER MAIN DISINFECTION**

31a	Cleaning and Disinfection of 2" to 6" Potable Water Main	7,000	LF	
31b	Cleaning and Disinfection of 8" to 12" Potable Water Main	5,000	LF	
31c	Cleaning and Disinfection of 14" to 20" Potable Water Main	5,000	LF	
31d	Cleaning and Disinfection of 24" to 36" Potable Water Main	5,000	LF	

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
31e	Cleaning and Disinfection of 2" to 6" Reclaimed Water Main	5,000	LF		
31f	Cleaning and Disinfection of 8" to 12" Reclaimed Water Main	5,000	LF		
31g	Cleaning and Disinfection of 14" to 20" Reclaimed Water Main	2,000	LF		
31h	Cleaning and Disinfection of 24" to 36" Reclaimed Water Main	2,000	LF		

**GRAVITY SANITARY SEWER PIPE REPAIR (Incidental to Water or Reclaimed Water Trenchless)**

**PVC GRAVITY MAIN (Inclusive all Labor, Material, and Associated Restraints)**

32a	6" diameter	500	LF		
32b	8" diameter	500	LF		
32c	10" diameter	500	LF		
32d	12" diameter	500	LF		
32e	14" diameter	100	LF		
32f	16" diameter	100	LF		
32g	18" diameter	100	LF		
32h	20" diameter	100	LF		
32i	24" diameter	100	LF		

**WASTEWATER MANHOLE**

33a	Manhole - 4 feet Diameter	100	VF		
33b	Manhole - 5 feet Diameter	50	VF		
33c	Manhole - 6 feet Diameter	50	VF		
33d	Adjust Existing Manhole Frame and Cover (paved areas)	10	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
33e	Adjust Existing Manhole Frame and Cover (unpaved areas)	10	EA		
33f	Replace Existing Manhole Frame and Cover (paved areas)	10	EA		
33g	Replace Existing Manhole Frame and Cover (unpaved areas)	10	EA		
<b>WASTEWATER SERVICE LATERAL</b>					
34a	Install/Repair/Replace 4" Sanitary Sewer Lateral	10	EA		
34b	Install/Repair/Replace 6" Sanitary Sewer Lateral	10	EA		
<b>TOTAL</b>					

#### OWNER'S CONTINGENCY

10% of the subtotal of lines 1-34b in Group B above.

Line Item	Description	Unit of Measure	Unit Cost
35	GROUP B: Water and RCW Trenchless Pipe Installation 10% Contingency	LS	

#### **25-0027-UT WATER, RECLAIMED WATER AND WELL REPAIR & IMPROVEMENTS (GROUP C - ASPHALT MILLING AND RESURFACING)**

All bid items, unless otherwise specified, shall be inclusive of furnishing all material and labor for the complete installation of the bid item, inclusive of any necessary removal. Installation shall be completed in accordance with the specifications. The quantities provided are estimated per year for bidding purposes and may vary based on the actual work throughout the duration of the contract. The City of Clearwater (City) is not obligated to purchase any minimum or maximum amount during the life of the contract. Unit costs for all bid items shall not be changed in the event of overruns or underruns. All groups do not need to be priced however, all items within a group need to be completed in order to be considered for award of that group.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>GROUP C: ASPHALT MILLING AND RESURFACING</b>					

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>*Mobilization shall be per work order as defined by the City. Each work order may include more than one individual project. The unit price for non-emergency mobilization shall not exceed \$6,000 and the unit price for emergency mobilization shall not exceed \$7,000</b>					
1a	Non-Emergency Mobilization/ Demobilization including General Conditions and Traffic Control	40	LS		
1b	Emergency Mobilization/ Demobilization including General Conditions and Traffic Control	20	LS		
2a	Full Width Milling Only (Up to 2")	20,000	SY		
2b	Full Width Milling Only (2" to 4")	20,000	SY		
2c	Asphalt Patch	1,000	SY		
2d	Complete Removal and Replacement of Asphalt Pavement	2,000	SY		
3a	Remove and Replace Limerock Base Only	2,000	SY		
3b	Remove and Replace Crushed Concrete Base Only	2,000	SY		
4a	Sodding	45,000	SF		
4b	Brush Removal	40	TON		
4c	Tree protection	15	EA		
4d	Tree Removal (<6" Trunk Diameter)	5	EA		
4e	Tree Removal (6"-12" Trunk Diameter)	3	EA		
4f	Tree Removal (13"-18" Trunk Diameter)	3	EA		
4g	Tree Removal (>18" Trunk Diameter)	3	EA		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
5a	Pavement Marking - Crosswalks (Lane)	500	LF		
5b	Pavement Marking - Stop Bars (Lane)	250	EA		
5c	Pavement Marking - School Crossing/RR	50	EA		
5d	Pavement Marking - Turn, Straight, Combo Arrows	50	EA		
5e	Pavement Marking - Dashed (White, Yellow or Double Yellow)	500	LF		
5f	Pavement Marking - Solid White	250	LF		
5g	Pavement Marking - Solid Double Yellow	250	LF		
5h	Pavement Marking - Solid Yellow	250	LF		
5i	Temporary Pavement Marking - Turn, Straight, Combo Arrows	250	EA		
5j	Temporary Pavement Marking - Dashed (White, Yellow or Double Yellow)	250	LF		
5k	Temporary Pavement Marking - Solid White	250	LF		
5l	Temporary Pavement Marking - Solid Double Yellow	250	LF		
5m	Temporary Pavement Marking - Solid Yellow	250	LF		
<b>TOTAL</b>					

#### OWNER'S CONTINGENCY

10% of the subtotal of lines 1a-5m in Group C above.

Line Item	Description	Unit of Measure	Unit Cost
6	GROUP C: Asphalt Milling and Resurfacing 10% Contingency	LS	

**25-0027-UT WATER, RECLAIMED WATER AND WELL REPAIR & IMPROVEMENTS (GROUP D - CONCRETE APRONS, SIDEWALK AND CURB)**

All bid items, unless otherwise specified, shall be inclusive of furnishing all material and labor for the complete installation of the bid item, inclusive of any necessary removal. Installation shall be completed in accordance with the specifications. The quantities provided are estimated per year for bidding purposes and may vary based on the actual work throughout the duration of the contract. The City of Clearwater (City) is not obligated to purchase any minimum or maximum amount during the life of the contract. Unit costs for all bid items shall not be changed in the event of overruns or underruns. All groups do not need to be priced however, all items within a group need to be completed in order to be considered for award of that group.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>GROUP D: CONCRETE APRONS, SIDEWALK AND CURB</b>					
<b>Mobilization shall be per work order as defined by the City. Each work order may include more than one individual project. The unit price for non-emergency mobilization shall not exceed \$6,000 and the unit price for emergency mobilization shall not exceed \$7,000</b>					
1a	Non-Emergency Mobilization/ Demobilization including General Conditions and Traffic Control	40	LS		
1b	Emergency Mobilization/ Demobilization including General Conditions and Traffic Control	20	LS		
2a	Milling Removal	2,500	SY		
2b	Removal and Replacement of Concrete Apron	20,000	SY		
2c	Removal and Replacement of Concrete Sidewalk	20,000	SY		
2d	Remove and replace concrete curb and gutter (City Standard Detail Straight Curb)	10,000	LF		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
2e	Remove and replace concrete curb and gutter (City Standard Detail Type I Curb)	10,000	LF		
2f	Remove and replace concrete curb and gutter (City Standard Detail Valley Curb)	10,000	LF		
2g	Remove and replace concrete curb and gutter (City Standard Detail Pin/Dowelled Curb)	10,000	LF		
3a	Remove and Replace Limerock Base Only	1,500	CY		
3b	Remove and Replace Crushed Concrete Base Only	1,500	CY		
4a	Sodding	35,000	SF		
4b	Brush Removal	40	TON		
4c	Tree protection	15	EA		
4d	Tree Removal (<6" Trunk Diameter)	5	EA		
4e	Tree Removal (6"-12" Trunk Diameter)	3	EA		
4f	Tree Removal (13"-18" Trunk Diameter)	3	EA		
4g	Tree Removal (>18" Trunk Diameter)	3	EA		
<b>TOTAL</b>					

#### OWNER'S CONTINGENCY

10% of the subtotal of lines 1a-4g in Group D above.

Line Item	Description	Unit of Measure	Unit Cost
5	GROUP D: Concrete Aprons, Sidewalk and Curb 10% Contingency	LS	

**25-0027-UT WATER, RECLAIMED WATER AND WELL REPAIR & IMPROVEMENTS (GROUP E - WELL MAINTENANCE)**

All bid items, unless otherwise specified, shall be inclusive of furnishing all material and labor for the complete installation of the bid item, inclusive of any necessary removal. Installation shall be completed in accordance with the specifications. The quantities provided are estimated per year for bidding purposes and may vary based on the actual work throughout the duration of the contract. The City of Clearwater (City) is not obligated to purchase any minimum or maximum amount during the life of the contract. Unit costs for all bid items shall not be changed in the event of overruns or underruns. All groups do not need to be priced however, all items within a group need to be completed in order to be considered for award of that group.

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
<b>Mobilization shall be per work order as defined by the City. Each work order may include more than one individual project. The unit price for non-emergency mobilization shall not exceed \$6,000 and the unit price for emergency mobilization shall not exceed \$7,000</b>					
<b>PUMP REPAIR/REPLACEMENT SERVICES</b>					
1a	Mobilization/Demobilization	15	EACH		
1b	Remove & Reinstall Well Head & Pumping Equipment	15	EACH		
1c	Perform Pump Repair	150	HOUR		
1d	Well disinfection with a sodium hypochlorite solution following reinstallation of the pump, prior to electrical reconnection	15	EACH		
<b>WELL ACIDIZATION SERVICES</b>					
2a	Mobilization/Demobilization	15	EACH		
2b	Perform Pre-acidizing Specific Capacity Test	15	EACH		
2c	Remove and Re-install Production Pump	15	EACH		

Line Item	Description	Quantity	Unit of Measure	Unit Cost	Total
2d	Provide & Install Acidization Well Head Flange Plate	15	EACH		
2e	Provide 32 Percent Inhibited Hydrochloric Acid	4,000	GALS		
2f	Acidize Well	150	HOUR		
2g	Provide and Set Test Pump and Pump Well	15	EACH		
2h	Well Disinfection	15	EACH		
<b>WELL EVALUATION</b>					
3a	Mobilization/Demobilization	15	EACH		
3b	Perform Specific Capacity Test with Production Pump	15	EACH		
3c	Set Test Pump & Perform Specific Capacity Test	15	EACH		
3d	Remove & Reinstall Well Head & Pumping Equipment	15	EACH		
3e	Provide & Install Test Pump for Geophysical Logging	15	EACH		
3f	Perform Geophysical Logging	15	EACH		
3g	Perform Video Survey	15	EACH		
<b>MECHANICAL INTEGRITY TESTING</b>					
4	Perform Mechanical Integrity Testing	10	EA		
<b>ADDITIONAL/MISCELLANEOUS SERVICES</b>					
5a	Hourly Rate for Miscellaneous Services	100	HOUR		
<b>TOTAL</b>					

## OWNER'S CONTINGENCY

10% of the subtotal of lines 1a-5a in Group E above.

Line Item	Description	Unit of Measure	Unit Cost
6	GROUP E: Well Maintenance 10% Contingency	LS	

## SUBMITTAL REQUIREMENTS

### 1 Certified Business\*

Are you a Certified Small Business or a Certified Minority, Woman or Disadvantaged Business Enterprise?

Yes  
 No

\*Response required

When equals "Yes"

#### *Certified Business Type\**

Pick one of the following

*Select all that apply*

Certified Small Business  
 Certified Minority, Woman, or Disadvantaged Business Enterprise

\*Response required

When equals "Yes"

#### *Certifying Agency\**

List the Agency that provided your certification.

\*Response required

When equals "Yes"

#### *Certification Documentation\**

Provide a copy of your certification

\*Response required

### 2 Vendor Certification\*

By submitting this response, the Vendor hereby certifies that:

- A. It is under no legal prohibition on contracting with the City of Clearwater.
- B. It has read, understands, and is in compliance with the specifications, terms and conditions stated herein, as well as its attachments, and any referenced documents.
- C. It has no known, undisclosed conflicts of interest.

- D. The prices offered were independently developed without consultation or collusion with any of the other vendors or potential vendors or any other anti-competitive practices.
- E. No offer of gifts, payments or other consideration were made to any City employee, officer, elected official, or consultant who has or may have had a role in the procurement process for the commodities or services covered by this contract. The Vendor has not influenced or attempted to influence any City employee, officer, elected official, or consultant in connection with the award of this contract.
- F. It understands the City may copy all parts of this response, including without limitation any documents or materials copyrighted by the Vendor, for internal use in evaluating respondent's offer, or in response to a public records request under Florida's public records law (F.S. Chapter 119) or other applicable law, subpoena, or other judicial process; provided that the City agrees not to change or delete any copyright or proprietary notices.
- G. It hereby warrants to the City that the Vendor and its subcontractors will comply with, and are contractually obligated to comply with, all federal, state, and local laws, rules, regulations, and executive orders.
- H. It certifies that Vendor is not presently debarred, suspended, proposed for debarment, declared ineligible, voluntarily excluded, or disqualified from participation in this matter from any federal, state, or local agency.
- I. It will provide the commodities or services specified in compliance with all federal, state, and local laws, rules, regulations, and executive orders if awarded by the City.
- J. It is current in all obligations due to the City.
- K. It will accept all terms and conditions as set forth in this solicitation if awarded by the City.
- L. The signatory is an officer or duly authorized representative of the Vendor with full power and authority to submit binding offers and enter into contracts for the commodities or services as specified herein.

Please confirm

\*Response required

**3 E-Verify System Certification\***

**PER FLORIDA STATUTE 448.095, CONTRACTORS AND SUBCONTRACTORS MUST REGISTER WITH AND USE THE E-VERIFY SYSTEM TO VERIFY THE WORK AUTHORIZATION STATUS OF ALL NEWLY HIRED EMPLOYEES.**

The affiant, by virtue of confirming below, certifies that:

- A. The Contractor and its Subcontractors are aware of the requirements of Florida Statute 448.095.
- B. The Contractor and its Subcontractors are registered with and using the E-Verify system to verify the work authorization status of newly hired employees.
- C. The Contractor will not enter into a contract with any Subcontractor unless each party to the contract registers with and uses the E-Verify system.
- D. The Subcontractor will provide the Contractor with an affidavit stating that the Subcontractor does not employ, contract with, or subcontract with unauthorized alien.

- E. The Contractor must maintain a copy of such affidavit.
- F. The City may terminate this Contract on the good faith belief that the Contractor or its Subcontractors knowingly violated Florida Statutes 448.09(1) or 448.095(2)(c).
- G. If this Contract is terminated pursuant to Florida Statute 448.095(2)(c), the Contractor may not be awarded a public contract for at least 1 year after the date on which this Contract was terminated.
- H. The Contractor is liable for any additional cost incurred by the City as a result of the termination of this Contract.

Please confirm

\*Response required

**4            Scrutinized Company Certification\***

Please download the below documents, complete, notarize, and upload.

- [SCRUTINIZED COMPANIES AND B...](#)

\*Response required

**5            Compliance with Anti-Human Trafficking Laws\***

Please download the below documents, complete, and upload.

- [Compliance with 787.06 form...](#)

\*Response required

**6            Section V - Contract Documents\***

Please download the below documents, complete, and upload.

- [Section V - Contract Docume...](#)

\*Response required

**7            W-9\***

Upload your current W-9 form. (available at <https://www.irs.gov/pub/irs-pdf/fw9.pdf>)

\*Response required

