



City of Alamogordo

Engineering Department

1376 E. Ninth Street, Alamogordo, New Mexico 88310

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ENG-005-2018

February 20, 2018

Via: e-mail

To: All Bidders/Plan Holders

Re: **Addendum No. 1**
STREET MAINTENANCE PROGRAM FY2017
Public Works Bid No. 2017-010, EN1701

Addendum Number 1 is issued to provide changes and/or clarifications to the above referenced Bid as per the following:

General Items:

1. The work will consist of installing 6-inch, 8-inch and 10-inch water line, valves, water connections, new water services and fire hydrants, remove and replace concrete sidewalk, driveway aprons, curb/gutter, and concrete paving, construct accessible (ADA) curb ramps, earthwork, asphalt milling, asphalt paving, asphalt paving patch work, pavement marking and traffic control and appurtenances, as specified and/or shown on the construction documents, complete, in place, all within the city limits of Alamogordo, New Mexico.
2. The bid will be received not later than **2:00 p.m. (MST), March 20, 2018**, at which time the Bid Opening and reading of the Bids received will be in the Commission Chambers at 1376 E. Ninth Street, Alamogordo, NM.
3. Alamogordo, NM is not guaranteed next day delivery service for Fed-Ex, U.P.S. or U.S.P.S.
4. **A Non-Mandatory Pre-Bid Conference** will be held **at 10:00 a.m. (MST), February 28, 2018**, in the Commission Chambers, 1376 E. Ninth Street, Alamogordo, New Mexico
5. The City of Alamogordo's 10% bid preference for local contractors is applicable to this project.
6. INTERPRETATIONS AND ADDENDA; Refer to Section 2, Part 3.0 (Sec. 2-Pg 2). All questions about the meaning or intent of the Contract Documents shall be submitted via fax (575) 439-4117 or e-mail bpyeatt@ci.alamogordo.nm.us **Questions received after 12:00 p.m. on the March 8, 2018 will not be answered.** Submitted questions will be answered by formal written addenda and will be binding. Oral clarification will not be binding.

EN1701 Street Maintenance Program FY2017
Additive Alternative No. 1

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7. The Option of Probable Construction Cost is approximately \$7,500,000.00 to \$8,200,000.00.
8. The length of the contract for the Base Bid is **THREE-HUNDRED AND FOURTY-FIVE (345)** calendar days to substantial completion plus **THIRTY (30)** calendar days to final completion.
 - a. If awarded to the contract **ADDITIVE ALTERNATE No. 1**, the contract time will increase by **ONE-HUNDRED AND FIVE (105)** calendar days.
 - b. If awarded to the contract **ADDITIVE ALTERNATE No. 2**, the contract time will increase by **FORTY (40)** calendar days.
 - c. If awarded to the contract **ADDITIVE ALTERNATE No. 3**, the contract time will increase by **FORTY (40)** calendar days.
 - d. If awarded to the contract **ADDITIVE ALTERNATE No. 4**, the contract time will increase by **FORTY (40)** calendar days.
9. The additive alternatives will be awarded in the best interest of the project, not in sequential order.
10. Submission of bids: Sec 2, Part 17.0 (Sec 2-Pg 5) lists the items that must be submitted in the bid package. All forms listed must be submitted with the bid.
11. Items that are not specifically specified as part of a bid item, but need to be completed in order to complete the project shall be considered incidental to the work that they are associated with and no separate payment will be made.
12. Reclaimed water shall be used for earth work and dust control. Contact Nichole Sierra at 575.439.4261 for reclaimed water rates.
13. No BIDDER may withdraw their Bid within sixty (60) days after the actual date of the bid opening thereof. This change is in the advertisement and Section 2, 22.0 Bids to remain subject to acceptance.
14. The quantities referenced in Section 3 – Bid Schedule are APPROXIMATE. The Contractor shall be compensated for work complete-in-place. No payment shall be made for excess materials/products/components.

Questions Received:

Q: Why are the drawings different sizes?

A: Project plan drawings with the file names EN1701 Project Drawing Base Bid and EN1701 Project Drawings Additive Alternates have mixed sized drawing sheets, 32"x22" (full size prints) and 11"x17" (half size prints), please note that the drawings are to a scale. To help minimize confusion, as part of this Addendum No. 1, the project plans have been redone, **EN1701 Addendum No 1 Project Drawings Base Bid** and **EN1701 Addendum No 1 Project Drawings Additive Alternative** so that all printed drawing sheet sizes are 32"x22" (full size prints).

- Q: Drawing sheet RC15.1, Abbott Avenue Road Construction Plan, Station 0+00 to 8+45, is mission for the, EN1701 Project Drawings Additive Alternates, drawing file.
- A: Drawing sheet RC15.1, Abbott Avenue Road Construction Plan, Station 0+00 to 8+45, has been incorporated into **EN1701 Addendum No 1 Project Drawings Additive Alternative**, drawing file.
- Q: The quantities listed on drawing sheet Q1.0 do not match the quantities listed in Section 3, Bid Schedule.
- A: The quantities listed in Section 3, Bid Schedule will govern.

Technical Specifications:

The following Technical Specifications have been revised and/or new specification incorporated:

Technical Specification Order of Preference.

Article 01-002.4 - Product Option.

Article 01-022.5 – Product Substitution.

Article 02-026.1 – Water System.

All other provisions of the Contract Documents shall remain unchanged. This addendum is hereby made part of the Contract Documents to the same extent as though contained in the original documents and itemized listings thereof.

Each bidder is required to acknowledge receipt of each addendum in Section 3 of the Bid Proposal, failure to do so could render the bid non-responsive.

Sincerely,



Edward Balderrama,
Project Manager

Enclosure

cc: File

TECHNICAL SPECIFICATIONS

This project shall be built in accordance with the New Mexico State Department of Transportation Standard Specifications for Highway and Bridge Construction State Construction Bureau, Current Edition and all applicable Supplemental Specifications and Revisions to the New Mexico State Department of Transportation Standard Specifications for Highway and Bridge Construction State Construction Bureau, as published by the New Mexico Department of Transportation except as modified by the City of Alamogordo "Specifications," and "Special Provisions to the Contract Documents."

The Contract Documents will govern in the following order of importance:

1. City of Alamogordo Front End Documents, Section 1 thru Section 13
2. City of Alamogordo Specifications
3. Special Provisions to the City of Alamogordo Specifications
4. Project Plan Drawings
5. NMDOT Standard Specifications, Division 200 thru Division 900
6. NMDOT Supplemental Specifications
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CITY OF ALAMOGORDO SPECIFICATION STANDARDS

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Article 01-002.4 - PRODUCT OPTIONS

PART 1 – GENERAL

1.1 SUMMARY

- A. This section includes requirements for product options and substitution procedures.

1.2 PRODUCT OPTIONS

- A. For products specified by reference standards or by description only, provide products meeting those standards or description as approved by the Engineer/Owner.
- B. For products specified by naming one or more manufacturers with the designation that no substitutions are allowed, provide only named products.
- C. For products specified by naming one or more manufacturers, provide named products or approved substitute products.
 - 1. Requests to use unspecified products shall be made in accordance with the “Substitution Request Procedures” as specified herein

1.3 SUBSTITUTION REQUESTS

- A. Where products are specified by naming specific products of one or more manufacturers, these products shall establish a minimum acceptable level of quality and performance.
- B. Prior Approval: The Engineer/Owner will consider requests made during bidding to use unspecified products only when indicated in individual specification sections.
 - 1. When substitution requests are allowed during bidding by individual specification sections, requests shall be made in accordance with the “Substitution Request Procedures” as specified herein.
 - 2. If product is acceptable, Engineer/Owner will provide approval by addendum issued to known recipients of Bidding Documents
- C. After signing of Agreement between Owner and Contractor, Engineer/Owner will consider written requests for substitutions.
 - 1. Requests shall be made in accordance with “Substitution Request Procedures” as specified herein.
 - 2. Engineer/Owner will determine acceptability of proposed substitutions and notify Contractor of decision in writing.
 - 3. Substitutions will not be considered when indicated or implied on shop drawings and product data submittals.

- D. Request for substitution and use of approved substitution shall constitute representation that Contractor.
1. Has investigated product and determined it meets or exceeds quality level of specified product.
 2. Will provide same warranty for substitution as for specified product.
 3. Will coordinate installation and make changes to other work required to accommodate accepted substitution and complete Work.
 4. Waives claims for additional costs or time extensions related to substitutions which later become apparent.

1.4 **SUBSTITUTION REQUEST PROCEDURES**

- A. Submit separate request for each substitution with Form 016213 "Substitution Request Form".
1. Copy of form follows this Section.
- B. Submit 3 copies of request for substitution and Include the following:
1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 2. For products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature containing product description, performance and test data, and reference standards.
 - c. Samples as required.
 3. For construction methods:
 - a. Detailed description of proposed method.
 - b. Drawings illustrating methods.
 4. Itemized comparison of proposed substitution with product specified.
 5. Data relating to changes in construction schedule
 6. Give cost data comparing proposed substitution with specified product.
 7. For substitution requests made after signing Agreement, include proposed changes to Contract Amount and Time if substitution is accepted.

END OF ARTICLE 01-002.4

Article 01-002.5 - PRODUCT SUBSTITUTIONS

Read **ARTICLE 01-002.4 “PRODUCT OPTIONS”** prior to submission of this form.

The undersigned requests that the following product be accepted for use in the Project.

Product: _____

Model No: _____

Manufacturer: _____

Address: _____

The above product would be used in lieu of:

Product: _____

Specified in: _____ Section: _____ Paragraph: _____

Reason for substitution request: _____

Attached are the following items:

Product description including specifications, performance and test data, and applicable reference standards

- Drawings
- Photographs
- Samples
- Tabulated comparison with specified product
- For items requiring color selections, full range of manufacturer's color samples
- Documentation of reason for request.
- Cost data for comparing proposed substitution with specified product
- Other: _____

The undersigned certifies that the following statements are correct. Explanations for all items which are **not** true are attached.

1. Proposed substitution has been thoroughly investigated and function, appearance, and quality meet or exceed that of specified product. True False

- 2. Same warranty will be provided for substitution as for specified product. True False
- 3. **No** aspect of Project will require re-design. True False
- 4. Use of substitution will **not** adversely affect:
 - a. Dimensions shown on Drawings. True False
 - b. Construction schedule and date of completion. True False
 - c. Work of other trades. True False
- 5. Maintenance service and replacement parts for proposed substitution will be readily available in the New Mexico area. True False
- 6. Proposed substitution does **not** contain asbestos in any form. True False
- 7. All changes to Contract Sum related to use of proposed substitution are included in price listed below. Contractor waives claims for additional costs related to acceptance of substitution which may subsequently become apparent. True False
- 8. Costs of modifying project design caused by use of proposed substitution which subsequently become apparent will be paid for by Contractor. True False

If substitution requested after signing of Agreement between Owner and Contractor is accepted:

Contract Sum will be [decreased] [increased] by \$ _____

Contract Time will be [decreased] [increased] by _____ calendar days.

Submitted By: _____

Company: _____

Address: _____

Telephone Number: _____

Name: _____ Date: _____

Signature: _____

END OF ARTICLE 01-002.5

Article 02-026.1 WATER SUPPLY SYSTEMS

1.0 DESCRIPTION

This Work consists of furnishing all of equipment, materials and labor to perform all operations in connection with the installation of potable and reclaimed water lines and appurtenances. This section defines required characteristics and properties of Poly Vinyl Chloride (PVC), High Density Polyethylene (HDPE), and Ductile Iron Pipe (DIP), valves, valve boxes, adapters, couplings, fire hydrants, materials, fittings, appurtenances and construction practices.

CONTRACTOR shall provide, in place, all valves, adapters, couplings, and appurtenances necessary to meet the requirements of this Project, whether shown in the Project Plans or not.

At all times, the new main shall be isolated from the active distribution system by physical separation until disinfecting water has been flushed out and satisfactory bacteriological testing has been completed in accordance with AWWA standard C651. Water needed to fill the new main for testing and flushing purposes shall only be potable City water supplied through a temporary connection protected by a backflow device.

The backflow device must be tested and certified after installation on-site. A copy of the Certification shall be given to the ENGINEER and a copy shall be kept on-site with the device. Testing must be completed by a certified testing facility.

2.0 MATERIALS

2.1 GENERAL

Pipe and accessories shall be new and unused. Pipe shall be color-coded (blue for potable water, green for sanitary sewer, purple for reclaimed water). Detectable Marking Tape shall be installed as provided in the Contract Documents.

When PVC pipe is stored outside and exposed to prolonged periods of sunlight, an obvious discoloration of the pipe can occur. This is an indication of reduced pipe impact strength, and any particular length of pipe that is discolored will be rejected. All pipe rejected will be removed from the job site.

2.2 PVC PIPE

PVC pipe four (4) inches through twelve (12) inches shall be not less than DR18, Class 235 and in conformance with AWWA C900, latest revision. Pressure class of PVC pipe shall be as required by Appendix A of AWWA C900. PVC pipe over twelve (12) inches shall be no less than DR25, Class 165 and in conformance with AWWA C905, latest revision.

All PVC pipe shall be approved for use in potable water systems by an agency such as NSF Testing Laboratory.

Joints: For pipe six (6) inches through twelve (12) inches, elastomeric gasket bell push-on type ends shall be used in accordance with ASTM F 477.

Specials and Fittings: For pipe six (6) inches through twelve (12) inches, specials and fittings for PVC pipe shall conform to the requirements of AWWA C153 and shall be cement mortar lined in accordance with AWWA C04. Fitting types shall include restrained mechanical joints and concrete thrust block where required. Restraining, standard mechanical joints, and fittings shall be submitted for ENGINEER approval.

2.3 DUCTILE IRON PIPE

Ductile iron pipe shall be in accordance with ANSI/AWWA C151/A21.51 and Federal Specification WW-P-421d, latest revision. All ductile iron pipe shall be minimum class 150, unless otherwise indicated in the Contract Documents. Ductile iron pipe fittings shall be pressure rated at three hundred fifty (350) psi and be in accordance with ANSI/AWWA C153/A21.53 and ANSI/AWWA C111/A21.11.

All ductile iron pipe and fittings shall be internally mortar lined in accordance with ANSI A21.4, latest revision, and shall have an exterior coating in accordance with ANSI A21.6, A21.8, or A21.51.

All ductile iron pipe and ductile iron fittings shall have a polyethylene encasement in accordance with ANSI/AWWA C105/A2 1.5, latest revision.

The ductile iron pipe shall be push-on type joints, unless indicated otherwise on the plans, and the fittings shall conform to the requirements of AWWA C153 and shall be cement mortar lined in accordance with AWWA C104. Fitting types shall include standard flange fittings and mechanical joints.

2.4 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

HDPE pipe shall not be less than DR11.0, Class 160 and in conformance with AWWA C901 or AWWA C906.

Joints: Pipe shall be joined together by heat fusion method and shall be performed as per manufacturer's safety instructions.

Specials and Fittings: Specials and Fittings for HDPE shall conform to the requirements of AWWA C906 and used in accordance with ASTM D 3350, and F 714. Fitting types shall include restrained mechanical joints where required. Transition gaskets for HDPE pipe shall be used when mechanical joints are used. Restraining, standard mechanical joints, and fittings shall be submitted for ENGINEER approval.

2.5 ADAPTERS AND COUPLINGS

All adapters, pipe couplings, tap and sleeves, or mechanical type couplings required for any of the piping systems shall be of the type manufactured for the specific purpose of the use intended, and shall be installed in strict compliance with the manufacturer's specifications, and to the satisfaction of the ENGINEER and/or Public Works Inspector. Factory-made adapters shall be furnished for connecting transition material to the mechanical joint fittings and valves, where required, including plastic to steel and plastic to DIP.

Mechanical and/or flexible couplings shall be manufactured by Romac, or approved equal, and shall be sized and styled in accordance with the requirement for the particular coupling, and used in accordance with the manufacturer's recommendations for the diameter, thickness and type of pipe to be connected. The mechanical and/or flexible couplings shall be provided with an acceptable joint harness to prevent separation of the joint where required due to pressure or change in direction of fittings. Couplings shall be polyethylene wrapped.

2.6 GATE VALVES: FOUR (4) INCH AND LARGER

All gate valves shall be resilient seated gate valves conforming to AWWA C515 rated for one hundred fifty (150) psi working pressure. Valves shall have a standard two (2) inch operating nut that opens counter clockwise. The wedge shall be constructed of ductile iron and shall be fully encapsulated in synthetic rubber except for the guide and wedge nut areas. The wedge shall seat against seating surfaces that are inclined to the vertical at a minimum angle of thirty-two (32) degrees when stem is in vertical position to eliminate abrasive wear. The non-rising stem shall be sealed by at least two (2) O-rings. The waterway shall be smooth and shall have no depressions or cavities. The valve body and bonnet shall be epoxy coated, inside and out, and wrapped with polyethylene sheet encasement. Joints shall be restrained mechanical joint ends. Valve shall be as manufactured by Waterous Company, or approved equal.

2.7 VALVE BOXES

Valve boxes shall be deep skirted, adjustable cast iron two (2) piece screw type, Series 6850 as manufactured by Tyler Pipe, Tyler Corporation, or approved equal. The valve boxes shall be five and one-quarter (5-1/4) inch diameter and the two (2) pieces shall overlap at least six (6) inches. The drop lid shall have a depth of two (2) inches, shall weigh thirteen (13) pounds, and shall have the word "WATER" embossed on top.

2.8 FIRE HYDRANTS

Fire hydrants and extensions shall be in accordance with AWWA C502, traffic type, Fire hydrants shall have two (2) two and one-half (2-1/2) inch hose nozzle connections, and one (1) four and one-half (4-1/2) inch steamer nozzle. All nozzle connections shall be National Standard Fire Hose Coupling screw threads. Fire hydrants shall have a bronze or cast iron pentagon operating nut. The main inlet shall be six (6) inch restricted mechanical joint type. All fire hydrants shall be rated for one hundred fifty (150) psi working pressure. Any marks or scratches on new fire hydrants shall be corrected to the satisfaction of the City Engineer and/or Public Works Inspector. Extensions will be used, when required, to bring the bottom of the break-off flange three (3) to six (6) inches above the top of the surrounding finished grade. All fire hydrants shall be American Darling Model 62B or Mueller Centurion, Model A-423, or approved equal. All fire hydrants shall be fire engine red.

2.9 WATER SERVICES

Polyethylene Service Lines: Polyethylene water service line tubing shall be fabricated from new polyethylene, PE 3406, SDR-9, 200 psi, manufactured in accordance with ASTM D 2737, latest revision, and be the size called for in the Project Plans.

Water Meter: Water meter shall be positive displacement (compound), reading in cubic feet (cf) and acceptable for use with **ZENNER STEALTH READER SYSTEM (NO SUBSTITUTIONS)**. It is the sole responsibility of the Contractor to verify compatibility of the water meters with the **ZENNER STEALTH READER SYSTEM**.

Prior approval is a part of these specifications and any bidder or manufacturer wishing to obtain approval to use unspecified products shall submit a written request. The request shall be received, by the ENGINEER, not later than **seven (7) days** prior to the bid opening date.

Request shall clearly describe the product for which approval is asked, including all data necessary to demonstrate acceptability. If the product is acceptable, the ENGINEER will approve it in an Addendum issued to all plan holders. Otherwise, the specified product or item shall be used. The burden of proof is the sole responsibility of the Contractor.

Meters shall comply with **AWWA C700 Standard** for Cold-Water Meters, Displacement Type, Bronze Main Case, of the latest revision. Meters shall also comply with the Safe Drinking Water Act and ANSI/NSF 61 requirements.

Meter Register housing and lid shall be plastic and the main case, bottom, shall be non-breakable plastic.

The size, model, and direction of flow through the meter shall be cast permanently into the outer case of the meter. The manufacturer's meter serial number shall be imprinted on the outer case and lid.

The meter connections shall be; 5/8" x 3/4" or the size called for in the Project Plans or Contract Documents, and shall have standard male meter thread. Meter connections 1-1/2" and larger shall have flanged ends.

Registers shall be an Encoder-Type register for use in AMR, drive-by or fixed network systems. They shall meet the requirements of the **AWWA C707 Standard**, for Encoder-Type remote registers, of the latest revision. The encoded register shall be preassembled to the meter and supplied with a wire assembly, at least 16-inches in length. The wire assembly connections to the register will be sealed to prevent any water/moisture damage. The pigtail supplied must have enough leads to interface with **ZENNER STEALTH READER SYSTEM** unit. Each encoded register must have its own unique identification number, either external or internal.

All encoded registers will have a 6 wheel odometer.

A letter of certification from the meter manufacturer, certifying that the product supplied will work properly with the **ZENNER STEALTH READER SYSTEM** units.

Existing water meters will be salvaged to OWNER.

Service (Tapping) Saddles: Service (tapping) saddles shall be pre-approved by City. Acceptable saddles shall have two (2) double straps or one (1) large, wide, single strap secured by four (4) bolts and shall be the size called for in the Project Plans.

Corporation Stops: Corporation stops shall be ball valve type, rated for 150 p.s.i. (minimum) working pressure. Corporation stops shall be per the size called for in the Project Plans or Contract Documents, CC or IP threaded inlet with compression fitting or Mueller Insta-Tite connection, or pre-approved equal.

Curb stop: Curb stop shall be ball valve type, rated for 150 p.s.i. (minimum) working pressure. Corporation stops shall be per the size called for in the Project Plans or Contract Documents.

Copper meter resetters (meter yoke): Copper meter resetters (meter yoke) shall be pre-approved by City. Acceptable coppersetters shall be 5/8" x 3/4" copper or the size called for in the Project Plans or Contract Documents, with a lock wing and angle dual check backflow preventers/device.

Existing copper meter resetters (meter yoke) will be salvaged to OWNER.

Water Meter Cans: All water meter cans for this Project shall be the size called for in the Project Plans or Contract Documents. The diameter and height for each installation shall be as shown in the Project Plans. Cutouts for the water service lines shall be neatly cut and trimmed to allow one (1) inch clearance on all sides of the water service line.

Specification is based on use of "DFW PLASTICS, INC." by DFW Plastics, Inc., 901 E Industrial Avenue, Saginaw TX 76131, with attributes as described below. **Equal products of other water meter can manufactures may be acceptable when pre-approved by OWNER.** Pre-Approved equal, Substitutions under Article 01-002.4.

This product is designed to withstand loading in non-deliberate and incidental traffic. Not to be installed in roadway. Meter pit lid shall be BLACK and constructed out of modified polyethylene material for maximum durability and corrosion resistance. The BLACK material is for maximum UV protection. The BLACK material shall be uniform throughout the meter pit lid for maximum longevity and **not have** a foaming agent that creates air pockets within the polymer lid.

Vertical and Lateral Load Rating:

- Compliant with AASHTO, Design Load of H-10; ASTM C857-16, Design Load of A-8, 8,000 lbs. transferred through a 10" x 10" steel plate centered in the cover and body.
- Compliant with AASHTO, Design Load of H-20; ASTM C857-16, Design Load of A-16, 16,000 lbs. transferred through a 10" x 20" steel plate centered on the cover and body.
- This product is designed to withstand H-10 and H-20 loading in non-deliberate or incidental traffic areas.

NOT INTENDED TO BE INSTALLED IN ROADWAYS.

Polymer Lid

- The polymer lid shall have a molded key hole and Plastic Lock underneath lid - *as illustrated*.
- The polymer lid shall have one (1) molded slide mount for placement of AMR/AMI device - *as illustrated*.
- The polymer lid shall seat securely and evenly inside the meter pit and shall not overlap the top edge of the meter pit.
- The polymer lid shall have molded tread-pattern for skid resistance - tread dimensions shall be 0.188" x 0.938" x 0.150" deep.
- The polymer lid shall have "WATER METER" molded into the lid - Font shall be Std Fadal CNC Font with 1" characters x 0.150" deep.
- The polymer lid shall be BLACK and have a molded recycled emblem with a minimum of 50% Post Consumer Recycled and 50% Post Industrial/ Pre Consumer Recycled Content- Verified with a **Leed Product Documentation**.

Polymer Body

- The polymer body shall be BLACK and have a **minimum** of 3/8" wall thickness - *as illustrated*.
- The polymer body shall have **minimum** inside working room of (23-1/4") - *as illustrated*.
- The polymer body shall have crush resistant ribbing along the outside of the box with 1-5/8" base footing located at the bottom of the meter pit to help eliminate sinking or floating once installed.
- The polymer body shall have a straight wall design and not be flared as to allow for adjustment to grade after installation.
- The polymer body shall have one pipe slot molded on each end of the body that measures (3" x 5-3/4").
- The polymer body shall have a molded recycled emblem with a minimum of 35% Post Industrial/ Pre Consumer Recycled Content - Verified with a **Leed Product Documentation**.

Whenever in the specifications, any particular materials, process and/or equipment is indicated or specified by patent, proprietary, or brand name, or by name of manufacturer, such wording shall be deemed to be used for the purpose of facilitating description of the material, process, and/or equipment desired, and shall be deemed to be followed by the words "or equal". The lists of acceptable material are not intended to be comprehensive lists, or in any order of preference. The bidder may offer any material, process, and/or equipment which comply with the governing specifications which the bidder considers to be equivalent to that which is indicated or specified.

Temporary Service: CONTRACTOR shall maintain service to all connections during construction to minimize time water will be unavailable. CONTRACTOR shall complete Work on new services and testing and disinfecting of new waterlines prior to removing service from existing waterline. CONTRACTOR shall submit a plan for temporary service for City approval prior to construction of new waterline.

2.10 STAINLESS STEEL TAPPING SLEEVE

Body: 18-8 Type 304 Stainless Steel. All welds shall be fully passivated to restore stainless characteristics.

Bolts: 18-8 Type 304 Stainless Steel. Heavy hex nuts and washer are coated to prevent galling.

Flange: 18-8 Type 304 Stainless Steel Flange with recess per MSS-SP60 to accept standard tapping valve. Flange conforms to AWWA C207 Class D ANSI 150 lb. drilling.

Outlet: 18-8 Type 304 Stainless Steel. Scheduled 10 for 3" and 4" outlets. Scheduled 5 for all outlets larger than 4".

Test Plug: 18-8 Type 304 Stainless Steel in test outlet.

Gasket: Sleeve shall have a full wide gasket of Nitrile Butadiene Rubber (NBR, Buna-N) per ASTM D2000 with hydromechanical activated lip, captured in a recessed groove around the outlet. Gasket shall be suitable for water, salt solutions, mild acids, bases, and sewage.

Service Rating: 2"-12" outlets: 175 p.s.i.

2.11 DETECTABLE (UNDERGROUND) WARNING TAPE

Detectable warning tape shall be 6" wide, 5 mil overall thickness, with a .35 mil solid foil coil. A.P.W.A. Color coded with imprint of underground utility installed.

Wire shall be 14 Ga. Solid copper tracer wire from non-metal pipe, A.P.W.A. color code.

3.0 CONSTRUCTION REQUIREMENTS

3.1. TRENCH EXCAVATION

Pipe trenches shall be excavated along straight lines to the dimensions shown in the Project Plans. All trenching Work shall be done in a safe manner, and the trenches shall be rendered safe for the workmen by complying with the applicable safety standards, and by practicing safety measures consistent with good construction methods.

All excavations shall be adequately barricaded and secured in accordance with current New Mexico Department of Transportation Standards.

Unless trench banks are cut back on a stable slope, sheet and brace the trenches as necessary to prevent caving or sliding, to provide protection for the workmen and the pipe. All trenching Work shall comply with OSHA safety requirements.

If over excavation occurs the area shall be refilled with suitable material at optimum moisture and compacted to ninety (90) percent density per ASTM D 1557 in unpaved areas and ninety-five (95) percent density in paved areas.

Access shall be maintained for all residences within the Project area. CONTRACTOR shall submit a construction plan that presents the sequence of construction that will allow for residential access to the ENGINEER for approval before beginning construction.

3.2. BEDDING

Trenches shall be excavated to the depth indicated in the Project Plans. The trench bottom shall be smooth and hand graded uniformly throughout. If rock or other unyielding material is encountered or if the trench is over excavated, pipe bedding material complying with Technical Specification, ARTICLE 02-022.2., TRENCHING AND BACKFILL shall be added, compacted, and graded to a smooth uniform surface. The compacted bedding shall support the pipe throughout its entire length, except at bells or couplings which shall not rest on the bedding. After the bell or coupling holes are excavated and after the pipe pieces are connected and properly aligned and graded, successive layers of backfill material complying with Technical Specification, ARTICLE 02-022.2., TRENCHING AND BACKFILL shall be placed and compacted, until the pipe is covered, as shown in the Contract Documents. CONTRACTOR shall use due care to maintain proper alignment and grade during the bedding process. Any bent, cracked, chipped or damaged pieces of pipe shall be removed and replaced at CONTRACTOR's expense. Compaction tests on the pipe bedding will be required.

3.3 PIPE LAYING

Pipe shall be laid true to the line and grade indicated in the Project Plans or as established by the ENGINEER.

The pipe shall be protected during handling against impact shocks and free fall. Do not permit hooks, chains, cables, or handling equipment to come in contact with the pre-molded or pre-formed end surfaces.

Handle the pipe having pre-molded end surfaces or pre-formed end surfaces so that no weight, including the weight of the pipe itself, will bear on or be supported by the jointing material or surfaces. Do not drag the end of the pipe on the ground or allow them to be damaged by contact with gravel, crushed stone, or any other hard objects.

No damaged or deformed pipe will be incorporated in the Work.

The interior of the pipelines shall be kept free from dirt and other foreign material as the Work progresses and shall be clean upon its completion. Tight stoppers or bulkheads shall be securely placed in the ends of all pipelines when the Work is stopped temporarily, or at the end of the work day.

Immediately prior to jointing, both pipe ends shall be thoroughly cleaned and a lubricant shall be applied according to the manufacturer's recommendations. For push-on type joints, sufficient pressure shall be applied in making up joints to insure proper seating of the joints.

The full length of each section of pipe shall rest solidly upon the bed, with recesses excavated to accommodate bells and joints. Any pipe that has the grade or joint disturbed after laying shall be taken up and re-laid. Pipe shall not be laid in water or when trench or weather conditions are unsuitable for the Work except by permission of the ENGINEER. Minimum depth of cover over top of pipe shall be three feet, unless otherwise approved by the ENGINEER.

All nuts and bolts utilized in underground pipe connections shall be stainless steel, high strength cast iron or high strength wrought iron. Carbon steel nuts and bolts may be

used except that they shall be protected by "cocoon" type protective coating of coal-tar and felt in accordance with AWWA Standard C 203.

Where connections are made between new work and existing lines, the connections shall be made using specials and fittings as recommended by pipe manufacturer and approved by the ENGINEER. Couplings may be either cast iron or steel with bolts as stated above. If steel couplings are used, they will be cocoon wrapped as specified herein.

Water lines shall not be laid closer along horizontal dimensions than TEN (10) feet from sewer lines, and with the water line at a higher elevation than the sewer. If this is not possible, and if concurrence from the ENGINEER is obtained by the CONTRACTOR, separate trenches will be required and the water line shall be at least two (2) feet above the sewer or concrete encased. When water and sewer lines cross each other, the water line shall be at least two (2) feet above the sewer or concrete encased, with no joint closer than three (3) feet of the crossing.

Water lines shall not be constructed under walkways, sidewalks, curbs and gutters, drive pads, or similar concrete structures by tunneling underneath. The CONTRACTOR will cut these concrete structures by using a concrete saw to the closest control joint or, at his option, may remove the section of the concrete structure to the nearest full expansion joint or edge.

Encasement shall be performed as shown in the Contract Documents at shallow crossings or other instances in which piping may be exposed or susceptible to excessive surface loading. DIP shall be used for these crossings with push-on or M.J. type connections, blocked with curved / conforming cinder blocks underneath, installed in prepared trench of adequate width to house pipe diameter and encasement. Trench excavation shall have ninety-five (95) percent relative compaction or shall be in freshly excavated native material, and as approved by the ENGINEER may suffice with adequate dimensions to omit use of form Work for encasement concrete placement. Encasement concrete shall be aggregate and Type II cement meeting or exceeding 3000 psi compressive strength. Rebar shall be placed as shown in the Contract Documents, shall be new and unused, and tied with minimum six (6) inch lap distances, with minimum two (2) inches of concrete cover on outside dimensions.

All valves shall be set true, level, vertical and plumb. All valves shall have and be supported by a concrete thrust block, have retainer rods, and shall comply with the details shown in the Project Plans. Backfill shall be compacted to ninety-five (95) percent density under pavement, ninety (90) percent in unpaved areas, ASTM D 1557.

The CONTRACTOR shall remove the valve box from all existing valves that are to be abandoned. The resulting excavation shall be backfilled and compacted to ninety-five (95) percent density, ASTM D 1557. The top six (6) inches of the excavation shall receive new base course placed to the above stated density. The pavement shall be sawcut to form a square opening. The cut faces of the existing asphalt shall be thoroughly coated with prime coat and new asphalt pavement shall be placed and densified to ninety-five (95) percent density, ASTM D 1557.

Cast iron valve boxes shall be set vertical and plumb centered over the operating nut. All valve boxes shall be adjusted to proper elevation, providing the minimum overlap of six (6) inches of the two (2) pieces, and a concrete collar shall be built around the top of

each valve box. The concrete collar shall be of the size, shape, and dimensions shown in the Detail Drawings. The concrete shall be 3000 psi at twenty-eight (28) days with one (1) inch aggregate and finished with a light broom finish. All concrete shall be removed from the top of the valve box and lid while it is still wet and they shall be left clean. Backfill shall be compacted to ninety-five (95) percent density under pavement, ninety (90) percent in unpaved areas, ASTM D 1557.

Adapters and couplings shall be installed in strict compliance with the manufacturer's recommendations. CONTRACTOR shall provide, in place, all additional straps, rods, and harness required to make a secure water-tight connection.

Fire Hydrants within the project, there are existing fire hydrants to be removed and salvaged. The existing fire hydrant valve and lateral shall be abandoned in place. The existing valve box shall be removed and the resulting excavation backfilled. There will be new fire hydrants installed at places shown on the Project Plans. The existing sidewalk, curb and gutter shall be removed and replaced to facilitate installation and insure proper compaction. The edges of the sidewalk, curb and gutter, to be removed, shall be saw-cut, along pre-marked lines. In no case shall the CONTRACTOR be allowed to tunnel under the existing curb and gutter or sidewalk (if applicable)

The ENGINEER and/or Public Works Inspector shall have the privilege of checking the pipe for line and grade by any method that he wants to use after the pipe is laid, and before backfilling begins. The ENGINEER and/or Public Works Inspector shall also have the privilege of checking each pipe joint with a gauge or by any means that he deems necessary in order to be assured that the gaskets are in place and properly seated. Any run of pipe that is found to be appreciably off of line or grade shall be removed from the trench, the trench bedding shall be re-graded and compacted, and the pipe shall then be laid accurately on line and grade. Any joint that is found to be improperly gasketed and/or seated shall be un-jointed and correctly reassembled. If any gasket is found to be damaged, the entire pipe section containing the damaged gasket shall be replaced with a new one.

CONTRACTOR shall furnish any tools, gauges, and all items required for the checking of the gaskets and joints, and he shall check every joint to be sure that the gaskets are seated and located in the correct place to avoid leakage at the joints.

3.4 THRUST BLOCKS

Thrust blocks shall be poured at all bends, valves, tees, reducers and fittings, where changes in pipe diameter, alignment or grade occur, and as indicated in the Contract Documents or as required by ENGINEER. The minimum size of concrete thrust blocks shall be as shown in the Contract Documents or as directed by the ENGINEER. The material of thrust blocks shall be concrete composed of concrete aggregates and shall have a compressive strength of no less than two thousand five hundred (2,500) psi in twenty eight (28) days for standard cement Type II and shall be placed between solid, undisturbed ground and the fitting to be anchored. The area of bearing on the fitting and on the ground shall in each instance be that required by the ENGINEER. Unless otherwise directed by the ENGINEER the thrust blocks shall be placed so that the pipe and fitting joints will be accessible for repair. Metal harness or tie rods, of the size and type shown in the Project Plans, shall be used.

3.5 BACKFILLING TRENCHES

After the pipe has been laid and bedded, it shall be inspected and approved by the ENGINEER and/or Public Works Inspector. Refer to Technical Specification ARTICLE 02-022.2, TRENCHING AND BACKFILL.

4.0 FLUSHING AND DISINFECTION

4.1 DESCRIPTION

This Work includes materials and procedures for flushing and disinfection of water mains by the continuous feed method and by the slug method. The tablet method to disinfect pipelines shall not be used. Disinfect piping in accordance with AWWA C651 as modified below.

At all times, the new main shall be isolated from the active distribution system by physical separation until disinfecting water has been flushed out and satisfactory bacteriological testing has been completed in accordance with AWWA Standard C651. Water needed to fill the new main for testing and flushing purposes shall only be potable City water supplied through a temporary connection protected by a backflow device.

The backflow device must be tested and certified after installation on-site. A copy of the certification shall be given to the ENGINEER and a copy shall be kept on-site with the device. Testing must be completed by a certified testing facility.

4.2 JOB CONDITIONS

Disposal of the chlorinated disinfection water and the flushing water is the CONTRACTOR's responsibility. The chlorinated disinfection water shall be properly disposed of by either pumping the water into a tank truck or directly into the sewer system. An air gap of two (2) times the hose diameter must be provided to prevent cross contamination. The CONTRACTOR shall notify Public Works and the Waste Water Treatment Plant twenty-four (24) hours prior to disposal into the sewer system. Schedule the rate of flow and locations of discharges in advance to permit review and coordination with the City. Use potable water for chlorination. Submit request for use of water from waterline of the City forty-eight (48) hours in advance.

4.3 MATERIALS

Liquid Chlorine: Inject with a solution feed chlorinator and a water booster pump. Use an experienced operator and follow the instructions of the chlorinator manufacturer.

Calcium Hypochlorite (Dry): Dissolve in water to a known concentration in a drum and pump into the pipeline at a metered rate.

Sodium Hypochlorite (Solution): Further dilute in water to desired concentration and pump into the pipeline at a metered rate.

Chlorine Residual Test Kit: For measuring chlorine concentration, supply and use a medium range, drop count, titration kit or an orthotolidine indicator comparator with wide range color discs. Products: Hach Chemical or Helliege. Maintain kits in good working order available for immediate test of residuals at point of sampling.

4.4 EXECUTION

Continuous Feed Method for Pipelines: Introduce potable water into the pipeline at a constant measured rate. Feed the chlorine solution into the same water at a measured rate. Proportion the two rates so that the chlorine concentration in the pipeline is maintained at a minimum concentration of 50 mg/1. Check the concentration at points downstream during the filling to ascertain that sufficient chlorine is being added.

Slug Method for Pipelines: Introduce the water in the pipeline at a constant measured rate. At the start of the test section, feed the chlorine solution into the pipeline at a measured rate so that the chlorine concentration created in the pipeline is three hundred (300) mg/1. Feed the chlorine for a sufficient period to develop a solid column or "slug" of chlorinated water that will, as it passes along the line, expose all interior surfaces to a concentration of at least three hundred (300) mg/1 for at least three (3) hours.

Disinfection of Valves and Appurtenances: During the period that the chlorine solution or slug is in the section of pipeline, pen and close valves to obtain a chlorine residual at hydrants and other pipeline appurtenances.

Disinfection of Connections to Existing Pipelines: Disinfect per AWWA C651, Section 9. Flush with potable water until discolored water, mud, and debris are eliminated. Swab interior of pipe and fittings with a one (1) percent sodium hypochlorite solution. After disinfection, flush with potable water again until water is free of chlorine odor.

After the chlorine solution applied by the continuous feed method has been retained in the pipeline for twenty-four (24) hours. Confirm that a chlorine residual of fifty (50) mg/1 minimum exists along the pipeline by sampling at air valves and other points of access.

With the slug method, confirm by sampling as the slug passes each access point and as it leaves the pipeline. After confirming the chlorine residual, flush the excess chlorine solution from the pipeline until the chlorine concentration in the water leaving the pipe is within 0.5 mg/1 of the existing potable water system.

Pipeline Flushing: After confirming the chlorine residual, flush the excess chlorine solution from the pipeline until the chlorine concentration in the water leaving the pipe is within 0.5 mg/l of the replacement water.

Bacteriologic Tests: Collect two (2) samples, deliver to a certified laboratory within six (6) hours of obtaining the samples, and obtain a bacteriologic quality test to demonstrate the absence of coliform organisms in each separate section of the pipeline after chlorination and refilling. The Public Works Inspector shall observe while samples are taken.

Repetition of Procedure: If the initial chlorination fails to produce required residuals and bacteriologic tests, repeat the chlorination and retesting until satisfactory results are obtained.

Test Facility Removal: After satisfactory disinfection, replace air valves, restore the pipe coating, and complete the pipeline where temporary disinfection or test facilities were installed.

5.0 HYDROSTATIC TESTS

The CONTRACTOR shall be required to test all piping and other lines and appurtenances in the presence of the Public Works Inspector. Test reports shall be required for each test and submitted to the Public Works Inspector. Testing of lines shall be done without being connected to existing lines. If such connections are allowed it is with the understanding that the CONTRACTOR assumes any and all responsibility in case of damage, failure and/or contamination to the existing system. The new water pipe will be tested before the backfilling is done. After the pipe is laid, earth cover shall be placed over the middle of the pipe joints, leaving the corp stops, valves, service taps and laterals uncovered. The pipe will be filled with water, and the pressure in the pipeline shall be raised by means of a motor-driven water pump to a hydrostatic pressure of one hundred fifty (150) psi at the lower end of the pipe section. This pressure shall be maintained for a period of at least two (2) hours for pipe sizes up to eight (8) inches, four (4) hours for pipe sizes ten (10) inches to twenty (20) inches, pipe sizes above twenty (20) inches shall be determined by the ENGINEER. If any leaks appear in the pipe they shall be repaired to the satisfaction of the Public Works Inspector, and the test shall be performed until the pipe holds the prescribed pressure. As an alternative, the CONTRACTOR may opt to test the pipeline in sections between mainline valves or as approved by the ENGINEER.

All testing shall be conducted in accordance with AWWA Standard C600 and those portions of the above standard related to hydrostatic tests shall apply to any type of water main construction. Test pressure shall be one hundred fifty (150) psi.

All taps, gauges and necessary equipment shall be provided by the CONTRACTOR; however, the Public Works Inspector may utilize gauges provided by the City at his discretion.

Leakage Defined: Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within five (5) psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. If the pressure drops more than five (5) pounds in thirty (30) minutes, the pipe has failed to pass the test. If the pressure drop is less than five (5) pounds in thirty (30) minutes, water shall be added to the pipe section to maintain the one hundred fifty (150) psi test pressure and the volume of water added shall be duly recorded. This procedure shall be repeated at each thirty (30) minute interval for the test period. The total volume of water added to the pipe section to maintain the one hundred fifty (150) psi test pressure shall represent the total leakage during the test

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

$$L = \frac{ND\sqrt{P}}{7400}$$

where L is the allowable leakage, in gallons per hour, N is the number of rubber gasketed joints in the test section; D is the nominal diameter of the pipe, in inches, and P is the average test pressure during the leakage test, in pounds per square inch gauge.

When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/h/in. (0.0012 L/h/mm) of nominal valve size shall be allowed.

When hydrants are in the test section, the test shall be made against the closed hydrant.

Acceptance of Installations: Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid disclosed leakage greater than specified the CONTRACTOR shall, at the CONTRACTOR's expense, locate and make repairs as necessary until the leakage is within the specified allowance.

All visible leaks are to be repaired regardless of the amount of leakage.

The CONTRACTOR shall be notified of any leaks that may occur during the two (2) year warranty period, and shall make immediate arrangements after he is notified to return to the job site and repair any leaks that may develop in the pipeline.

6.0 METHOD OF MEASUREMENT (REFER TO SECTION 3, BID SCHEDULE FOR MEASUREMENT)

Valves not associated with new fire hydrants and waterline connections as called for in the Project Plans shall be measured per Each, in place, including valve box and concrete collar.

All existing valves to be abandoned shall be measured. The removal shall be measured per Each of the existing valve box and concrete collar.

New fire hydrants shall be measured per Each, in place, including removal and replacement of the sidewalk, curb and gutter, valves, valve box, concrete collar, pavement patching, pipe, fittings, appurtenances, and couplings.

Existing fire hydrants to be removed shall be measured per Each including valve, valve box, concrete collar and the required patch.

No separate measurement shall be made for adapters, fittings, or couplings, which shall be incidental to the associated item(s).

7.0 BASIS OF PAYMENT (REFER TO SECTION 3, BID SCHEDULE FOR PAYMENT)

Valves not associated with new fire hydrants and waterline connections as called for in the Project Plans shall be paid per Each, in place, including valve box and concrete collar.

All existing valves to be abandoned shall be paid per Each. The removal of the existing valve boxes, including the required pavement patch, shall be considered incidental to the associated item(s).

New fire hydrants shall be paid per Each, in place, including removal and replacement of the sidewalk, curb and gutter, valve, valve box, concrete collar, pipe fitting, appurtenances and couplings.

Existing fire hydrants to be removed shall be paid per Each including valve, valve box, concrete collar and the required patch.

No separate payment shall be made for adapters, fittings or couplings, which shall be incidental to the associated item(s).

END OF ARTICLE 02-026.1