The City Of
San Angelo, Texas
72 West College Avenue – Zip 76903
Department of Water Utilities Phone: 325-657-4209 Fax: 325-655-6397

ADDENDUM NO. 2

Date: **May 1, 2014**

Project: **WU-01-14**
2014 Trench Repair

Location: **San Angelo, Texas**

Bid Date: **Thursday, May 8, 2014 @ 2:00 pm**

The following changes and/or additions are hereby made to the specifications and contract documents for the above referenced project:

5. TECHNICAL SPECIFICATIONS:

5.0 – Utility Trench Repair Bid Sheet General Guidelines: Update the following sections:

34	8" Water Main Extension	See Technical Specification 5.1 OWNER will provide plans for work. Bid item shall include two tie-ins (one on each end of the extension **and shall be eight inch (8") tap saddles, tap valves, and wet taps**), all materials, and the cost to lay pipe according to the plans. Excavation, bedding, backfill, services, fire hydrants, and final paving will be paid in accordance with corresponding bid items. All extensions under this bid item will be a minimum of 100' and a maximum of 500'.

5.1 – General Notes: Add Specification Below:

5.1.22 Completed permits shall be submitted to OWNER's inspector as they are completed. CONTRACTOR shall not hold completed permits for processing until the end of the month, but rather turn them in daily as they are completed.

5.7.4.2 – Method A – Hot Mix Asphaltic Concrete Pavement, b) Prime Coat: Modify paragraph 3 as follows:
The OWNER will select the temperature of application based on the temperature-viscosity relationship. The recommended range for the viscosity of the asphalt is 100 to 125 centistokes. **Hot Mix cannot be produced at more than 300° F.** The CONTRACTOR shall apply ~~the asphalt at a temperature within 150° F of the temperature selected~~ **to roadway before it reaches 260° F.**

5.9 – Polyvinyl Chloride (PVC) Pressure Pipe: Add Specification 5.9 Attached to Addendum

5.16.18 – Cold Weather Concreting: Modify the last paragraph the following:
Do not place concrete in contact with any material coated with frost or having a temperature of thirty-two degrees (32°F) or lower. Do not place concrete when the ambient temperature in the shade is below forty degrees (40°F) and falling unless approved. Concrete may be placed when the ambient temperature in the shade is thirty-five (35°F) and rising or above forty degrees (40°F). When placed, heated concrete shall not be warmer than eighty degrees (80˚F). ~~When freezing temperatures may be expected during the curing period, the concrete shall be maintained at a temperature of at least fifty degrees (50˚F) for five (5) days or seventy degrees (70˚F) for three (3) days after placement.~~ **Maintain temperature of all other concrete, including the bottom slabs (footings) of culverts, placed on or in the ground above thirty-two degrees (32° F) for seventy-two (72) hours from the time of placement.** Concrete and adjacent form surfaces shall be kept continuously moist. Sudden cooling of concrete shall not be permitted.

5.16.20 – Testing: Modify title from "Testing" to "Batch Plant Testing" and modify first paragraph as follows:
Field control tests, including aggregate gradation tests, slump tests, air content tests, and making compression test cylinders, shall be performed by ~~the OWNER or~~ testing laboratory personnel. The ~~CONTRACTOR~~ **testing laboratory** shall provide all facilities and the services of one or more employees as necessary to assist with the field control testing activities. As stipulated in the quality control section, tests required during the progress of the work shall be made at the expense of the ~~OWNER~~ **CONTRACTOR**. The frequency hereinafter specified for each field control test is approximate. A greater or lesser number of tests may be made, as required by the OWNER.

5.23.1 – Material Specifications: Modify the first sentence of the first paragraph as follows:
PVC Gravity Pipe shall conform to the latest revision of ASTM D3034 SDR 35 for ~~four~~ **six** inches ~~(4")~~ **(6")** through fifteen inches (15") diameter and latest revision of ASTM F679 PS 46 for diameters greater than fifteen inches (15") in diameter.

5.23.1 – Material Specifications: Modify the last sentence of the second paragraph as follows:
Fittings used with PVC pipe shall be ~~ductile iron and comply with requirements as stated in Technical Specification 5.12, "Ductile Iron Pipe and Fittings" section~~ **PVC gasketed fittings**.

5.23.3 – Embedment and Bedding Material: Modify the second sentence as follows:
Piping with less than thirty inches (30") of cover at finished grade shall have ~~Type V~~ **"Concrete Cap"** embedment **as shown on drawing W-BED-1** unless otherwise noted in the plans and/or specifications ~~(unless a concrete cap is provided)~~.

5.27.1.2 – Polyvinyl Chloride (PVC) Pipe: Add the following to the end of the first paragraph:
For new main installation, service saddle fitting shall be PVC gasketed tee. For sewer service installation on existing main, PVC tap saddle may be used for four inch (4") sewer service only. Six inch (6") sewer service or large requires a manhole for tie-in.

5.28.1.2 – Pneumatic Exfiltration Test for Pipe: Add the following calculations below the first paragraph:

$$T = \frac{0.085 \times D \times K}{Q}$$

T = Time for Pressure to Drop 1.0 Pound per Square Inch Gauge in Seconds
$K = 0.000419 \times D \times L$, But Not Less than 1.0
D = Average Inside Pipe Diameter in Inches
L = Length of Line of Same Pipe Size Being Testing, in Feet
Q = Rate of Loss, 0.0015 Cubic Feet per Minute per Square Foot Internal Surface Shall be Used

5.35.3.4 – Manhole Tie-Ins: Modify as follows:
All lines entering or exiting manholes shall be fully encased in 3,000 p.s.i. concrete, bedding condition ~~Type VI~~ **"Concrete Encasement"** as shown ~~in the Plans~~ **on drawing W-BED-1**, for a minimum distance of ~~two feet (2')~~ **one foot (1')** from the exterior surface of the manhole wall.

5.55.1.1 – AMR Installation Process: Add additional bullet points under the "Please note:" section:

- CONTRACTOR shall provide notification (i.e. door-tags) on each home or business prior to any work being performed on meter. CONTRACTOR must submit a sample of the notification for approval by OWNER prior to the commencement of work.
- AMR installations will only be allowed from 8:00am to 7:00pm on Monday through Friday, excluding city holidays.
- OWNER's inspector is not required to be present during all AMR installations. The OWNER reserves the right to perform random inspection of installation work at the OWNER's discretion. If random inspection occurs after 5:00pm, the CONTRACTOR is subject to overtime inspection costs.
- CONTRACTOR is responsible for any or all damages to the customer's service line, city's service line, meter, meter box, etc. that may occur during the AMR installation. If damage occurs to the customer's service line, the CONTRACTOR is required to hire a licensed plumber to make repairs at the sole expense of the CONTRACTOR. If damage occurs to the city's service line, the CONTRACTOR is required to contact Water Distribution to make the repairs which may be subject to a fee that will be the responsibility of the CONTRACTOR to pay. CONTRACTOR shall not proceed to next location until the customer's service has been restored.
- The person performing the AMR installation is not required to have a Class D water license or higher. See Technical Specification 5.1.13 for work requiring a Class D water license or higher.

This addendum becomes a part of and shall be included with the above referenced specifications.

Authorized by: Kevin W. Krueger, PE
Assistant Water Utilities Director
Date: May 1, 2014

Signature: Kevin W Krueger

Purchasing Dept.: _____

5.9 - Polyvinyl Chloride (PVC) Pressure Pipe

5.9 General

5.9.1 Scope

This section covers the furnishing and installation of all PVC pipe. The Plans show the sizes and general arrangement of all pipes; however, the responsibility for furnishing exact lengths of the various pipes for proper "make-up" rests with the CONTRACTOR.

5.9.2 Material Specifications

PVC Pipe shall be the integral bell, elastomeric seal-type and meet the following requirements:

Nominal Diameter	
(in.)	**Requirements:**
2"	Schedule 40
4" ≤ d ≤ 12"	AWWA C900 CIOD, DR18
12" < d < 36"	AWWA C905 CIOD, DR18

PVC pressure pipe is to be manufactured from Class 12454 virgin compound as defined in ASTM D1784. All pipe shall bear the National Sanitation Foundation (NSF) seal for potable water pipe. In addition, C900 and C905 shall be listed with Underwriters Laboratories, Inc. (UL).

Pipe joints shall be spigot and integral wall section bell with a solid cross section elastomeric or rubber ring gasket conforming to the requirements of the latest revisions of ASTM D3139 and ASTM F477. Gaskets shall be factory-assembled and secured in place to prevent displacement. Lubricant shall be as recommended by the pipe manufacturer and shall not adversely affect the potable qualities of the water to be transported. Pipe and fittings shall be assembled with a non-toxic vegetable soap lubricant which also meets the pipe manufacturer's specifications. Joints shall meet the applicable sections of the latest revision of AWWA C111. Each length of pipe shall be clearly marked with the manufacturer's trade name, the size and class, and the specifications that it meets. Fittings used with PVC pipe shall be ductile iron and comply with requirements as stated in Technical Specification 5.12,"Ductile Iron Pipe and Fittings."

5.9.3 General Installation

PVC pipe, fittings and specials are to be installed at locations shown on Plans. The trench bottom should be smooth and free from stones greater than two inches (2") in diameter and large dirt clods. If the trench bottom is rocky or hard, as in shale, a four inch (4") layer of embedment material shall be placed to provide a cushion for the pipe. All pipe, fittings, and specials shall be lowered into the trench by some suitable means, and shall not be rolled or dumped into trench. All dirt or trash shall be removed from the ends of the pipe. Any damaged, defective or unsound material shall be suitably repaired or replaced before use. Where it becomes necessary to deflect the pipe to avoid obstructions, the deflection of each joint must be approved by the OWNER and shall be within acceptable limits as suggested by the manufacturer. The pipe is to be kept clean during the laying operation and free of all sticks, dirt and trash, and at the close of each operating day, the open end of the pipe is to be effectively sealed against the entrance of all obstructions and especially water. Any pipe that becomes contaminated before or after installation shall be removed and replaced unless a method to clean the pipe is approved by the OWNER.

5.9.4 Bedding Material for Water Pipe

Unless designated otherwise on the Plans, bedding shall be Type II as detailed in the project drawings. Bedding material shall be a granular material that will remain firm and not permit displacement of the pipe either during pipe laying and backfilling or following completion of construction. The material shall consist of crushed gravel meeting the requirement of ASTM C33, Gradation 67 (3/4” to No. 4); Crushed stone or naturally round gravel meeting TxDOT Grade 5 gradation as per Tex-200-F, Part I; or other materials approved by the OWNER (such as Turner Pit ‘D’ Bedding).

5.9.5 Cutting and Beveling

When necessary, PVC pipe may be cut to properly locate appurtenances. Pipe may be cut with a fine toothed hacksaw, handsaw or portable skill-saw with a steel blade or abrasive discs. The pipe shall be marked around its entire circumference prior to cutting to assure a square cut. After the pipe is cut, the cut end shall be beveled. A factory beveled-end guide shall be used to determine the angle and length of the taper. The end may be beveled using a pilot plastic pipe beveling tool, coarse file, rasp or abrasive disc.

5.9.6 Joint and Pipe Testing

See Technical Specification 5.11, "Pressure Pipe Testing and Disinfection."

5.9.7 Blocking and Restraints

Concrete blocking shall be placed at bends, valves, tees, crosses and plugs in the pipe lines. The concrete blocking shall be placed so as to rest against firm, undisturbed trench walls, normal to the thrust. The supporting area for each block shall be at least as great as that indicated on the Plans or directed by the OWNER and shall be sufficient to withstand the thrust, including water hammer which may develop. The blocking shall, unless otherwise directed, be placed so that the pipe and fitting joints will be accessible for repair.

Mechanical restraints shall meet the requirements of AWWA C605, latest revision. Mechanical restraints (in addition to concrete blocking) shall be installed in the locations shown in the Drawing detail sheets. The devices shall meet the test requirements of the latest version of ASTM F1674 (formerly UNI-B-13) "Standard Test Method for Joint Restraint Products for use with PVC Pipe."

5.9.8 Wrapping of Ductile Iron Fittings

All sub-surface pipe and fittings shall be wrapped in two (2) layers of linear low-density polyethylene (LLDPE) film with a minimum thickness of eight millimeters (8mm). Wrapping shall precede placement of any required concrete (blocking, etc.). LLDPE film and installation shall meet the requirements of ANSI/AWWA C105/A21.5.

5.9.9 Connections with Existing Facilities

Where connections are made between new work and existing piping, such connections shall be made using fittings suitable for the conditions encountered. Each connection with an existing pipe shall be made at the time and under conditions which will least interfere with service to customers affected thereby, and as authorized by the OWNER. Facilities shall be provided for proper dewatering and for disposal of all water removed from the dewatered lines and excavations without damage to adjacent property.

Couplings shall be of a gasketed, sleeve type. Each coupling shall consist of a steel middle ring, two (2) steel followers, two (2) rubber compounded wedge section gaskets, and sufficient track head stainless steel bolts to properly compress the gaskets. Couplings shall be of the type to match piping on which installed. Couplings shall be Smith-Blair Type 442 or Mueller MaxiFit-Xtra. All mechanical joints shall be installed with EBBA iron "Mega Lug" pipe restrainers or equal as approved by the OWNER. All transition couplings or solid sleeves shall be long barrel (minimum of twelve inches (12")).

5.9.10 Measurement and Payment

The measurement of pipe for payment purposes will be the horizontally measured length of the line along its main axis from center of fitting to center of fitting or end of pipe, without deduction for the length of intermediate fittings or valves. Payment will include full compensation for furnishing, hauling and laying pipe, fittings, testing, disinfection, etc., in accordance with the specifications, Plans, and/or instructions of the OWNER at the price stipulated on the bid sheet. Payment for excavation, embedment, backfill, separation of excavated material for backfill according to the specifications, asphalt/concrete repair, surface restoration (unless specified elsewhere), etc. will be paid in accordance with corresponding bid items.