

Special Specification 7210

Special Specification for Water Main Replacements and Adjustments



1. DESCRIPTION

Furnish, install, or replace water pipe, water valves, water meters and boxes, water service connections, fire hydrant assemblies, pipe fittings, encasement pipes for water lines, and supporting materials in conformance with the North Central Texas Council of Governments (NCTCOG) and details shown on the plans. All work must be completed in accordance with the NCTCOG technical specifications unless otherwise noted on the plans authorizing in writing by the Engineer. All work must conform to the City of Waxahachie requirements and details shown on the plans. Obtain necessary permits; provide testing as necessary, and request inspection of the completed water and sewer lines prior to being placed in service.

Provide and install a complete water main system in accordance with the plans and specifications and in compliance with the local utility owner's policies, if any, and the Department's Utility Accommodation Policy (UAP)(Title 43, T.A.C., Sections 21.31-21.55). The water mains shall be of the sizes, materials and dimensions shown on the plans and shall include all pipe, all joints and connections to new and existing pipes, all valves, fittings, fire hydrants, pipe joint restraint systems, blocking, and incidentals, as may be required to complete the work.

The abbreviations AWWA, ASA, ASTM, and ANSI, as used in this specification, refer to the following organizations or technical societies:

- AWWA - American Water Works Association
- ASA - American Standards Association
- ASTM - American Society for Testing and Materials
- ANSI - American National Standards Institute
- NSF - National Science Foundation

Where reference is made to specifications of the above organizations, it is to be construed to mean the latest standard in effect on the date of the proposal.

2. PREQUALIFICATION

In addition to TxDOT's prequalification, water and sewer utility improvements included in this project must be performed by a Contractor acceptable to the City of Waxahachie.

In order to be considered for award of this bid, bidders must be able to demonstrate that they are qualified by experience and capability to successfully construct the project within the Contract Time and for the Contract Amount. At a minimum each bidder must demonstrate the following:

- 2.1. Firm experience of at least 5 yr. in the construction of public water and sanitary sewer projects.
- 2.2. Financial capability to prosecute the work as supported by an audited financial statement for the previous year.
- 2.3. List of equipment capable of performing the work.

3. BIDDING

- 3.1. **Project documents.** Respondents are advised that the plans, specifications, and other documents on file constitute all the information which TxDOT and the City will furnish.
- 3.2. **Project documents review.** Respondents are required, prior to submitting any response, to review the plans, read the specifications, exhibits, contract, and bond forms carefully.
- 3.3. **Site Visit and Research.** Respondents are required, prior to submitting any response, to visit the site of the work; to examine carefully the local conditions; to inform themselves with their independent research, tests, and investigations of the difficulties to be encountered and judge for themselves the accessibility of the work and all attending circumstances affecting the cost of doing the work or the time required for its completion and to obtain all information required to make an intelligent bid.

4. MATERIALS

- 4.1. Furnish all materials in accordance with the requirements shown on the plans or pick-up materials furnished by the utility companies and deliver to the project site. See Article 7, "Measurement," Table 1 in this document.
- 4.2. Submit five (5) copies of information to the City from all manufacturers for materials and equipment to be used on the project. This information must include:
- Product specifications sufficient to allow the City to determine whether the materials and equipment conform to the design concepts and project specifications.
 - Information on all warranties provided by the manufacturer.
 - All submittals must be stamped by the manufacturer indicating that the manufacturer has checked the submittal for compliance with the specifications. Unstamped or uncertified submittals will be returned to the manufacturer unprocessed. Contact the City for a pre-approved list of manufacturers and products.
 - Submittals must be provided to the City before or at the preconstruction meeting. Construction will not be allowed to proceed until all submittals have been approved or a written waiver is given by the City.
- 4.3. Submit plans and shop drawings demonstrating proposed methods of maintaining water service to properties and businesses. Methods may include providing temporary service lines from active mains, line stops, or jumpers from active fire hydrants, or combinations. Provide a shop drawing submittal to the City of Waxahachie for each waterline requiring temporary measures to maintain water service to properties.

5. PERMITS, TESTING, AND INSPECTION

- 5.1. **Permits.** Acquire all necessary permits from the City of Waxahachie to perform the work. Please contact the following as needed:
- James Gaertner, PE, CFM, City Engineer, or
 Jeff Chambers, Public Works Director
 401 S. Rogers St.
 Waxahachie, TX 75165
 Office: 469-309-4303
- 5.2. **Testing.** Provide testing for water and sewer improvements in conformance with NCTCOG and the City of Waxahachie requirements or as directed by the Engineer. In general, perform the following testing as minimum:
- For water mains: hydrostatic test, poly pigging, and sterilization test.
 - Reference Specification "Purging and Disinfection of Water Conduits."
 - For sewer lines: Television inspection, deflection testing, and manhole vacuum testing.
 - Reference City of Waxahachie Amendments to NCTCOG Item 507.5

- 5.3. Inspection. All water mains and appurtenances will be inspected by a representative of the City of Waxahachie. These representatives' decision of acceptability of the installation will be final. The City of Waxahachie will hold three final inspections, one at water completion, one at sewer completion, and the third at roadway completion for final utility grade adjustments.
- 5.4. For all tie-ins to the city water system, City of Waxahachie personnel must be present. City of Waxahachie personnel will perform all live tap connections to existing water mains including all tapping saddles, tapping sleeves and valves, and insertion valves. City personnel will also operate valves in order to isolate sections of the water system. Refer to notes on the drawings for specific locations and requirements.

6. CONSTRUCTION

Protect all water mains, vaults and appurtenances at all times during the construction. Promptly repair, at no additional cost to the Owner, any damage to the existing water or sewer system and any interruption to the services such as line stoppages or breakage caused by the Contractor's operation.

6.1. Specifications.

Perform work in a manner consistent with current City of Waxahachie standards and specifications, the construction documents, Specifications for Public Works Construction – North Central Texas Governments (4th Edition, dated October 2004) standard details and specifications, and TxDOT standard details and specifications.

Where reference is made in these specifications to specifications compiled by others, such reference is made for expediency and standardization from the material supplier's point of view, and such specifications referred to are hereby made a part of these specifications.

- 6.2. **Plans.** A current set of City approved plans and specifications must be in the possession of the Contractor on the first day of the project. These must be shown to the State and City of Waxahachie Inspectors before any work is allowed to proceed on that project. A legible set of plans must be retained by the Contractor throughout the project until its completion.

- 6.3. **Preconstruction Meeting.** A preconstruction meeting is required before any project commences in the City of Waxahachie or its jurisdiction limits. Required meeting representatives, as applicable, must be:

- TxDOT Engineer
- City of Waxahachie representatives
- Contractor's representatives
- Affected utilities in the construction area represented

This meeting will consist of reviewing the plans with all the representatives present to discuss proposed construction methods and utility adjustment, to discuss project management and administrative procedures and to clear up any doubts about the plans and specifications. The Contractor will be required to present a proposed project schedule at the meeting. Location of the meeting will be at a location designated by the City. Call City of Waxahachie for specifics at least 48 hr. in advance of the meeting.

6.4. **Priority Contract Documents** (first having highest priority)

1. Construction Drawings
2. North Central Texas Council of Governments Details, Specifications, and Special Provisions
3. Texas Department of Transportation Details, Specifications and Special Provisions

7. BID ITEM REFERENCES

7.1. Polyvinyl Chloride (PVC) Water Main. NCTCOG reference: Item 501 and 506.

The following waterline pipe is acceptable for this project in accordance with the assigned NCTCOG Standard Specifications for Polyvinyl Chloride (PVC) Water Pipe (NCTCOG 501.14):

- AWWA C-900 PVC, DR 14, 6" or less.
- AWWA C-900 PVC, DR 18, 8" and 12"

7.2. Polyethylene (PE) Plastic Tubing for Water Services.

Water Service Pipe shall be 2-Inch seamless 250 psi blue colored polyethylene ASTM D2737, SDR 9, CTS water service pipe, NSF61 approved.

Polyethylene (PE) Plastic Tubing for Water Services Water is subsidiary to water services unless specific length of poly is called out in the plans.

7.3. Steel Casing for Water - NCTCOG reference: Items 501.9, 503.2 and 503.3.

Steel Casing Pipe – 2-Inch and 4-Inch

Provide ASME/ANSI B 36.10 Welded and Seamless Wrought Steel Pipe, Schedule 40 shown in Table 7.3.1.

**Table 7.3.1
Casing Pipe**

Casing Pipe Size (in.)	Outside Diameter (in.)	Min. Wall Thickness (in.)	Approx. Weight Uncoated (lb./ft.)
2	2.375	0.154	3.65
4	4.500	0.237	10.79

Steel Casing Pipe – 6-Inch to 42-Inch

Provide minimum wall thicknesses in accordance with those shown in Table 7.3.2 for HS-20 live loads and depths of bury of up to 16 ft.

**Table 7.3.2
Casing Pipe**

Casing Pipe Size (in.)	Outside Diameter (in.)	Min. Wall Thickness (in.)	Approx. Weight Uncoated (lb./ft.)
6	6.625	0.219	14.97
8	8.625	0.219	19.64
10	10.750	0.219	24.60
12	12.750	0.219	29.28
14	14.000	0.219	32.00
16	16.000	0.219	36.86
20	20.000	0.250	52.73
24	24.000	0.250	63.41
30	30.000	0.250	79.43
36	36.000	0.250	95.45
42	42.000	0.250	111.50

Note: It is the design Engineer's responsibility to review the design for conditions more extreme than those indicated by this specification and to design accordingly. Do not use a thickness of the pipe wall less than that defined in Table 1.

Supply the pipe in double random lengths, of at least 16 ft. and at most 40 ft., unless otherwise shown on the plans. Bevel the ends of the pipe for field butt welding. Provide welder qualification in accordance with AWWA C206.

Furnish steel casing pipe coated with coal-tar enamel externally and with polyamide epoxy internally.

7.4. **Concrete Encasement** - NCTCOG reference: Item 504.5.2.13 Class "G" Embedment.

7.5. **Trench Safety for Waterlines** - NCTCOG reference: Item 107.19.3.

7.6. **Connection to Existing Waterline** - NCTCOG reference: Item 506.6.

Connections to existing facilities which are in service shall be thoroughly planned, and all required equipment, materials, and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock if necessary) to complete connections in the minimum time. Operations of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the City of Waxahachie.

7.7. **Gate Valves** –NCTCOG reference: Item 502.6.2

Resilient-Seated Gate Valves for Ordinary Water Works Service

Unless otherwise approved in writing, all Gate Valves for direct buried service in the City's distribution system, 2 inches through 12 inches in diameter, shall be Resilient Seated Gate Valves that conform strictly with the latest specification C-509 of the American Water Works Association Standards and must comply with the following supplementary details, changes or additions.

- a. **Body:** Gate valves shall be iron body designed for a working pressure of 250 psi. All valves shall be hydrostatically tested at 200 psi and shell tested at 500 psi. Any leakage during testing shall be cause for rejection. For ease of repair the body, bonnet and stuffing box shall be flanged together with ASTM Grade B bolts and nuts. Each valve shall have the maker's initials, pressure rating, and year in which manufactured cast in the body.
- b. **Stems:** Stems shall be machined from manganese bronze rod with an integral forged thrust collar machined to size. The stems shall be non-rising and equipped for nut operation, which shall be opened by turning to the left.

- c. Stem Seals: The seals shall consist of two "O" rings above and one "O" ring below the thrust collar. An anti-friction washer shall be located above and below the thrust collar for operating torque.
- d. Stem Nut: The stem nut shall be ASTM'B-62 bronze.
- e. Resilient Wedge: The wedge shall be cast iron, fully encapsulated in molded rubber complying with ASTM D2000. Wedge must have molded wedge guides preventing the disc from tilting downstream during operation. Protective guide cap bearings made of polymer bearing material to provide a bearing interface between the wedge guide and valve interior.
- f. Paint and Protective Coatings: All valves furnished under these specifications shall be painted on the exterior as specified in AWWA C509 with asphalt varnish.

All ferrous metal surfaces in the internal part of the valve shall be protected with a fusion epoxy coating to a nominal thickness of 10 mils for corrosion protection and shall be of a color that is easily identified as an epoxy coating.

The proguard fusion epoxy coating shall fully comply with AWWA C550 and certified NSF 61. The coating shall be non-toxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the Food & Drug Administration Document Title 21 of the Federal Regulations of Food Additives, Section 121.2514 entitled Resins and Polymeric Coatings. The coating shall have a satin finish and shall be suitable for field overcoating and touchup with the same coating material without sanding or special surface preparation, or application of heat in excess of room temperature.

- g. Experience and Certification: Valves, furnished under these specifications, shall be manufactured by a firm that has been producing valves of this general type continuously for the past five (5) years. Each company or manufacturer supplying valves under these specifications shall have on file, with the City of Waxahachie, approved records of experience and detailed drawings of the proposed valves. Drawings shall cover the specific valve to be furnished for installation and shall show all dimensions including metal thickness, construction details and materials used in all parts of the valve together with ASTM Designation and Structural properties of these materials.

The manufacturer shall furnish to the City of Waxahachie, a Certification that the valve complies with the specifications without any exceptions. This certification shall apply to specific valves being installed within the City water distribution system. The certification shall state (1) the number of valves covered by the certifications, (2) the Addition where valves are being installed or the Project Name, and (3) name of Contractor installing valves.

The City may require the Manufacturer, Supplier or Contractor to dismantle valves at any time to determine compliance with these specifications. Location of any valve within the City system, installed after adoption of these specifications, that does not meet the specifications completely shall be cause for prohibiting the future use of any valves from the same manufacturer.

- h. Tapping Sleeves: The materials for tapping sleeve bodies shall be cast-iron or ductile-iron in accordance with AWWA Standard CI 10 (ANSI 21.10), in two sections, or halves to be bolted together with high-strength, corrosion resistant, low alloy steel bolts conforming to AWWA Standard C111 (ANSI 21.11).

Cast iron and ductile-iron sleeve shall be mechanical joint, or as specified, or dimensions to secure, proper fit on the type and class of pipe on which they are to be used. Each sleeve shall be furnished with a 3/8-inch test opening so that tests can be made prior to tapping. Opening shall be provided with a 3/8-inch bronze plug.

7.8. **Air Release Valve** - NCTCOG reference: Item 502.6.3

7.9. **Blow-Off Valve** - NCTCOG reference: Item 502.6.

7.10. **2" Flushing Hydrant** – NCTCOG reference: Item 502.10.

7.11. **Fire Hydrant** - NCTCOG reference: Item 502.3.

All fire hydrants furnished shall conform strictly with the latest specification C-502 of the American Water Works Association Standards for dry barrel fire hydrants and must comply with the following supplementary details and changes or addition.

- a. **Inlet Connection:** Unless otherwise specified the inlet, connection shall be a six (6) inch standard mechanical joint complete with all joint accessories. The inlet shoe shall be cast of the same or stronger metal than the lower barrel to prevent impact damage of the shoe. The interior of the shoe, including the lower valve plate and/or cap nut shall have a protective epoxy coating of at least 4 mils applied in the shop. If a cap nut is utilized, it must be locked in place with a stainless-steel lock washer or similar non-corrosive device and all machined surfaces must be protected from water intrusion to prevent corrosion and assure ease of field teardown or maintenance.
- b. **Main Valve:** The main valve shall be reversible compression type, closing with the pressure and shall be not less than 5-1/4" in diameter. Composition of the main valve shall be molded rubber or neoprene having a durometer hardness of 90 +/- 5 and shall be not less than 1" thick to protect against hydrant chatter and give long term durability.
- c. **Outlet Nozzles:** All hydrants shall be "three way", equipped with two hose nozzles and one pumper nozzle.
- d. **Diameter Outlet Nozzles:** The hydrant shall have two hose nozzles, two and one-half (2-1/2") inches nominal I.D., and one pumper nozzle four and one-half (4-1/2") inches nominal I.D. with Natural Standard Hose Threads.
- e. **Nozzle Attachment:** All nozzles shall be mechanically connected into the barrel and have "O" Ring pressure seals to provide a positive seal between nozzles and hydrant barrel. A suitable nozzle lock shall be provided and shall be stainless steel or bronze. Nozzles shall not be caulked in.

Nozzle caps shall be furnished with pentagon nut the same size as the operating nut. They shall be furnished with interior rubber gaskets that will seat against bronze nozzles. All caps shall be secured to hydrant barrel by heavy duty non-kinking chains with a chain loop on each cap that permits free turning of the cap, for speed and ease of removal by fire fighters.

- f. **Operating Nut:** The operating nut shall be non-rising, pentagonal shape, measuring 1-1/8" at the top and 1-1/4" at the base from point to flat. Pentagon shall have a depth of at least one and one-quarter inch (1-1/4"). The hydrant shall be constructed in such a manner that the operating nut, "O" Rings and washers can be removed and replaced without removing the bonnet. All bearing surfaces of the operating nut shall be bronze.
- g. **Holddown Nut:** Holddown nut must have integral weather seal. Resilient seal between holddown nut and operating nut shall prevent debris entry to protect operating nut from damage.
- h. **Lubrication Reservoir:** The hydrant shall have a completely "O" Ring sealed oil reservoir with a minimum of two (2) "O" Ring pressure seals to prevent contamination of the oil around the operating parts of the hydrant. The oil reservoir shall be cast in such a manner that all operating parts shall be repairable without removal of the bonnet to facilitate repairs and shall be of a design that all bearing surfaces and threaded parts will be automatically lubricated upon each operation of the hydrant. If bearing surfaces are not lubricated, the design shall keep operating friction to a minimum. A high wear resistant thermoset plastic anti-friction washer shall be in place above the thrust collar to minimize operation torque and facilitate long term ease of operation- The operating threads must be sealed against contact with water to all times regardless of open or closed position of main valve. The hydrant shall have the

capability of field personnel to visually check oil level and add additional oil if needed. Filler and inspection plug shall be recessed or flush type.

- i. Traffic Feature: Hydrants shall be "traffic model" having upper and lower barrel joined approximately two inches (2") above the groundline by a breakable "swivel" flange providing 360 degree rotation of the upper barrel for nozzle positioning and must be capable of rotating barrel with line pressure on. The groundline shall not be less than eighteen inches (18") below the centerline of the lowest nozzle and shall be clearly marked in a permanent manner on the lower barrel. A breakable stainless steel stem coupling shall join the two-piece stem adjacent to the ground line flange. Screws, clevis pins, fasteners or bolts used in the coupling shall be Series 300 stainless steel. The weakened portion of the stem coupling shall be located to divert pressure from the stem coupling directly to the upper and lower stems when torque is applied in seat ring removal.

Design of the coupling shall be such that when the coupling is broken, no part of the coupling will shatter or come loose and fall into hydrant and the break will not occur through the pins or bolts holding the coupling to the stem.

- j. Drain Valve Assembly: Hydrants shall be equipped with two drain valves which drain the barrel when the hydrant is closed, and seal shut when the hydrant is in the open position. The upper valve plate, seat ring and drain ring (shoe bushing) must be bronze and work in conjunction to form an all bronze drain way. Upper valve plate if not bronze, must be epoxy coated.

The bronze seat ring shall be a minimum 5-1/4" inside diameter and shall thread into a bronze drain ring forming an all bronze drain way with two (2) drain outlets for double protection against drain clogging and corrosive damage. All bronze components shall have less than 16% zinc alloy, Grade A to give high corrosion resistance as recommended in Section 2.1, Table I of American Water Works Association Standard C-502. Seat ring seals shall be "O" Rings. Hydrant shall be designed so that during opening and closing operation(s), water pressure force flushes the drain valve and drain openings to prevent clogging, thus allowing barrel drainage.

- k. Repair: All internal operating parts shall be removable from above ground level with a lightweight stem wrench.
- l. Provisions for Extension: All hydrants shall be capable of being extended to accommodate future grade changes without excavation. Extension of the hydrant shall be made by adding at the groundline flange a new coupling and stem section equal to the length of the extension. This must facilitate easy field grade adjustment.

Stem extensions made by adding new section of stem to the threaded section of the stem at the top of the hydrant will not be accepted. Extension kits must be available from manufacturer in six-inch (6") increments.

- m. Pressure Loss and Working Pressure: Pressure loss through one (1) four and one-half inch (4-1/2") nozzle at 1000 GPM shall not be more than 5.0 psi.
- n. Fire Hydrant Lead shall conform to Item 9.1. Polyvinyl Chloride (PVC) Water Main.

7.12. **Remove & Salvage Existing Fire Hydrant**

"Remove & Salvage Existing Fire Hydrant" shall include: removal and salvage of fire hydrant, delivery to City, pavement removal, excavation, hauling, disposal of excess materials, furnishing, placement and compaction of backfill, and Clean-up.

7.13. **Ductile Iron Pressure Pipe and Fittings - NCTCOG reference: Item 501.7.**

Minimum design thickness for all Ductile-Iron Pipe installed shall be Class 50 on sizes 12 inches and smaller, and Class 51 on sizes 14 inches and larger.

7.14. **Water Service Connection** - NCTCOG reference: Item 502.10.3.

Water Service Connection includes adjustments, relocations and reconnecting exist meter boxes and meters and includes furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the work, including excavation, concrete encasement, if required, disposal of excess material, backfill, embedment, concrete blocking, paving and sod, all in accordance with the plans and specifications.

7.15. **Traffic Control** - NCTCOG reference: Item 107

This item shall include furnishing, a traffic control plan in conformance with the latest edition of the Texas Manual of Traffic Control Devices.

7.16. **Pavement Repair** -. NCTCOG reference: Item 402.4.

7.17. **Erosion Control Measures** -. NCTCOG reference: Item 201.

This item shall include furnishing, installing, maintaining and removing silt fences, inlet protection, stone outlet sediment trap, construction entrances, and all required erosion control devices.

Measurement and payment shall be made on the basis of the bid price per Month (Mo.) and shall be the total compensation for furnishing all labor, materials and equipment necessary to complete the work. No additional time or compensation will be provided under this pay item for construction delays, unless approved by change order.

7.18. **Water Line Abandonment (3"-12")**

The Contractor is to accomplish all cutting, capping, plugging, and blocking necessary to isolate those existing mains retained in service from those abandoned. The open ends of abandoned mains and all other openings or holes in such mains occasioned by cutting or removal of outlets are to be blocked off by manually forcing cement grout or concrete into and around the openings in sufficient quantity to provide a permanent substantially watertight seal.

Valves abandoned in the execution of the work are to have the valve box and extension packed with sand to within 8-in. of the finished surface. The remaining 8-in. are to be filled with 2,500 psi concrete or an equivalent sand-cement mix and finished flush with the adjacent pavement or ground surface. The valve covers are to be salvaged and returned to the Water System Company. Abandoning old mains and valves is to be considered subsidiary to the installation and will not be paid for directly.

8. WORKMANSHIP, WARRANTIES, AND GUARANTEES

Unless otherwise expressly provided in the Contract drawings or specifications, the work must be performed in accordance with the best modern practice with materials and workmanship of the highest quality and suitable for their purpose. The Owner will judge and determine the CONTRACTOR'S compliance with these requirements.

Promptly correct or replace all work rejected by the Owner as defective or as failing to conform to the Contract documents whether observed before or after substantial completion and whether or not fabricated, installed or completed. The CONTRACTOR will bear all costs of correcting such rejected work, including costs incurred for additional services made necessary thereby.

If within two years after final acceptance of the work by the Owner, as evidenced by the final certificate of acceptance or within such longer or shorter period of time as may be prescribed by law or by the terms of any other applicable special warranty on designated equipment or portions of work as required by the

Contract documents, any of the work is found to be defective or not in accordance with the Contract documents, the CONTRACTOR must correct it promptly after receipt of a written notice from the Owner to do

so. This obligation will survive termination of the Contract. The Owner will give such notice promptly after discovery of the condition.

Remove all portions of the work from the site which are defective or nonconforming and which have not been corrected unless removal is waived in writing by the Owner.

All subcontractors', manufactures' and suppliers' warranties and guarantees, express or implied, respecting any part of the work and any materials used therein, will be obtained and enforced by the CONTRACTOR for the benefit of the Owner without the necessity of separate transfer or assignment thereof, provided that if directed by the Engineer, the CONTRACTOR will assign such warranties and guarantees in writing to the Owner.

Any work repaired or replaced, pursuant to this section, will be subject to the provisions of this section to the same extent as work originally performed.

The rights and remedies of the Owner provided in this section are in addition to, and do not limit, any rights or remedies afforded to the Owner by law or any other provision of the Contract documents, or in any way limit the Owner's right to recovery of damage due to default under the Contract.

9. PROTECTION OF PERSONS AND PROPERTY

Should CONTRACTOR cause damage to the work or property of any separate CONTRACTOR at the site, or should any claim arise out of CONTRACTOR'S work, CONTRACTOR must promptly attempt to settle with such other CONTRACTOR by agreement, or to otherwise resolve the dispute by arbitration or at law. Should a separate contractor cause damage to the work or property of CONTRACTOR or should the performance of work be any separate contractor at the site give rise to any other claim, CONTRACTOR must not institute any action, legal or equitable, against Engineer or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Engineer on account of any such damage or claim.

Work will not be allowed until trench safety plans are submitted and approved. The preparation and approval of these documents are also included in the total contract time and should be completed expeditiously by the CONTRACTOR.

10. EXISTING UTILITIES AND SERVICE LINES

The CONTRACTOR will be responsible for the protection of all existing utilities and service lines crossed or exposed by the construction operations. Where existing utilities and service lines are cut, broken or damaged, the CONTRACTOR must replace the utilities and service lines with the same type of original construction, or better, at his own cost and expense.

If it is necessary to change or move the property of any owner or of a public utility, such property will not be moved or interfered with until authorized by the ENGINEER. The right is reserved to the owner of any public utility to enter upon the limits of the project for the purpose of making such changes or repairs of their property that may be made necessary by the performance of this contract.

11. MEASUREMENT

Utility replacement items will be measured as follows:

Description Code	Bid Item Description	Unit
6001	12" PVC Water Line (DR-18) by Open Cut	LF

6002	8" PVC Water Line (DR-18) by Open Cut	LF
6003	6" PVC Water Line (DR-18) by Open Cut	LF
6004	2" Poly Water Line by Open Cut	LF
6005	20" Stl. Enc. Pipe(1/4" Thk) Open Cut	LF
6006	12" Stl. Enc. Pipe(1/4" Thk) Other	LF
6007	1" WTR SVC LINE (2" STL ENC)(OPEN CUT)	LF
6008	1" WATER SVC LINE (2" STL ENC)(OTHER)	LF
6009	Concrete Encasement by Open Cut	LF
6010	Trench Excavation Protection	LF
6011	Conn. to Existing Water Line (3"-12")	EA
6012	12" Gate Valve and Box	EA
6013	8" Gate Valve and Box	EA
6014	6" Gate Valve and Box	EA
6015	2" Gate Valve and Box	EA
6016	3" Air Release Valve	EA
6017	4" Blow-off Valve	EA
6018	2" Flushing Hydrant	EA
6019	Fire Hydrant w/Lead & 6" Gate Valve	EA
6020	Remove & Salvage Existing FH	EA
6021	Ductile Iron Fittings	TN
6022	Water Service Connection	EA
6023	Relocate/Reconnect Exist Meter & Box	EA
6024	Traffic Control	MO
6025	Temporary Pavement Repair	SY
6026	Permanent Pavement Repair	SY
6027	Erosion Control Measures	MO
6028	Water Line Abandonment (3"-12")	LF

12. PAYMENT

The work performed, and materials furnished in accordance with this Item and measured as provided by under "Measurement," will be paid for at the unit price bid for the various items specified on the plans. This price is for full compensation for furnishing all equipment, materials, tools, labor, permits, testing, and incidentals necessary to satisfactorily complete the work as detailed on the plans including excavation, embedment, and backfill.

Items required to complete respective construction items that are not specified to be paid for separately, will be considered subsidiary to other pay items.

12.1. Trench Excavation, Embedment and Backfill - Excavation, embedment and backfill will not be measured for payment for pipeline trenches but will be considered subsidiary to the various bid items.

- Backfill. NCTCOG reference: Items 504.5.3 and 504.6.
The material used in the backfill shall be pulverized to the extent necessary to produce, a free-flowing material free of clay balls larger than 6" diameter.
- Pipe Embedment. NCTCOG reference: Item 504.5.2.15. Class "H" Embedment
On PVC Pipe 18 inches through 27 inches in diameter the crushed stone shall be brought up in uniform layers to a point nine inches over the top of the pipe when compacted.

Water System - Testing and disinfection of water lines will not be measured but will be considered subsidiary to the various bid items. For water services, no separate payment will be made for the connection to the main or private line, corporation and curb stop, which are subsidiary to the water service pay item.

Before being accepted, all ductile iron, C-900 PVC or concrete cylinder water mains shall be tested with a hydraulic test pressure of not less than four hours. Concrete pressure pipe shall be tested with a hydraulic test pressure of 120 percent of the design pressure. Steel pressure pipe shall be tested with a hydraulic test pressure not to exceed 150 percent and not less than 120 percent of the designed working pressure. The rate of leakage of all pipe tested shall not exceed the amounts shown in the tables titled "Hydrostatic Test-C-900 PVC, Steel or Ductile Iron Water Mains" or "Hydrostatic Test-Concrete Cylinder Water Mains". Water lines of material in combination shall be tested for the type of pipe (material) with the least stringent hydraulic test pressure and maintained over a period of not less than four hours.

On all waterlines installed in the City of Waxahachie the Contractor shall be responsible for Purging, Testing and Sterilization of the completed lines.

- 12.2. **Disposal of materials** - Disposal of materials will not be measured for payment but will be considered subsidiary to the various items. NCTCOG reference: Item 107.25.