

SECTION 02553
WATER SERVICES, WATER METER SETTINGS, AND VAULTS

1.0 GENERAL

A. Description

Water Services, Water Meter Settings, And Vaults shall include, but not necessarily be limited to, furnishing and placing water services with appurtenant meter housings and connection to the water main in accordance with the Contract Documents.

B. Related Work Included Elsewhere

1. Trench Excavation, Backfill, and Compaction: Section 02250
2. Water Main Installation and Chlorination: Section 02551
3. Water Valves and Appurtenances: Section 02552
4. Cast-In-Place Concrete: Section 03300
5. Precast Concrete Utility Structures: Section 03400

C. Quality Assurance

The Commission will inspect all materials before and after installation to ensure compliance with the Contract Documents.

2.0 MATERIALS

A. General

1. Materials shall be furnished in accordance with the Contract Documents.
2. To minimize the number of joints, only standard manufacturer's length of pipe shall be furnished and installed for all water services unless otherwise indicated on the Plans, or as approved by the Commission.

B. Materials Furnished by the Commission

The Contractor may purchase 5/8-inch and 3/4-inch water meters and remote readouts for water service connections directly from the Commission. Meters larger than 3/4-inch shall be purchased from a Commission-specified vendor.

C. Contractor's Options

Refer to Standard Details.

D. Detailed Material Requirements

1. Water Meters

- a. Water meters shall be as shown on the Standard Details and the Contract Documents and shall be installed by a licensed plumber.

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- b. Water meters shall meet the requirements of AWWA C700, C701, C702 and C703 (proportional type only). The maincase and cover shall be cast from an ANSI/NSF 61 certified no lead high copper alloy containing a minimum of 85% copper. The size, model, and arrows indicating direction of flow shall be cast in raised characters on the maincase and cover. The cover shall contain a stainless steel calibration vane for the purpose of calibrating the turbine measuring element while the meter is in-line and under pressure.
2. Water Service
- a. Water services less than 3-inches in diameter shall be Type K, annealed copper tubing and shall meet the material, chemical and mechanical requirements of ASTM B 88 or SDR 21 gasketed PVC water pipe that meets the requirements of ASTM D 2241 and ASTM D 1784: PVC 1120. The pipe is to have an integral bell that utilizes a gasket for sealing that meets the requirements of ASTM F477. Water services less than 3 inches in diameter may also be HDPE meeting the requirements of ASTM D 3035 or ASTM F 714. There shall be no joints in HDPE services between the meter and building being served. Tracer wire shall be installed following the requirements in Section 02551.
 - b. Water services 3-inches in diameter and larger shall be as specified in Section 02551.
 - c. Water service saddles shall be brass or bronze alloy meeting ASTM B62 or B584 and AWWA C800.
3. Gate valves, roadway valve boxes, curb boxes and tapping sleeves for water services shall be as specified in the Standard Details and Section 02552.
4. All service line valves and fittings shall be manufactured in accordance with AWWA C800. Connection to service lines shall be compression type.
5. Meter vaults for 12-inch or larger service lines shall have aluminum access hatches designed to withstand an H-20 wheel load. Door leaf shall be 3-inch aluminum diamond or safety tread pattern plate. Channel frame shall be 3-inch aluminum with concrete anchor flange around the perimeter, bituminous coated where in contact with concrete, and a 12-inch drainage coupling. Doors shall be equipped with stainless steel hinges and an automatic hold-open arm with release handle. The door shall have a locking mechanism and snap lock with a removable handle. The door shall be operable by a force not to exceed 30 pounds. Fixed ladders shall be equipped with an aluminum LadderUp safety post or approved equal.
6. Tapping saddles shall be manufactured of stainless steel. Saddles shall be furnished with Type 304 stainless steel straps with a minimum 2 inch wide bearing area and a rubber gasket suitable for potable water.
7. Pipe wall penetrations shall be as specified in the Standard Details.
8. Meter vaults shall be of the size indicated on the Standard Details furnished and installed as specified in Section 03400.
9. All water services and/or fire service lines shall be equipped with approved backflow prevention devices.

10. Detector Tape

Visual Detection Tape shall be 3 inches wide (minimum) nonmetallic blue plastic tape lettered "water" in yellow graphics.

11. Location Lumber

Lumber for marking meter box locations shall be minimum 2-inch x 6-inch boards of sufficient length to extend from the plug at the end of the house connection to a height of 4 feet, more or less, above finished grade, painted blue above finished grade.

12. Tracer Wire for Nonmetallic Pipelines

Tracer wire shall be #12 AWG solid continuous copper wire with a 45 mil polyethylene insulation. The wire shall be blue, have UL markings and suitable for direct bury applications. All underground splicing shall be with butt splice connectors and shrink tubing or split bolt connectors with a water proof binder and underground electrical tape.

3.0 EXECUTION

A. Preparation

1. Trench excavation, backfill, and compaction, bedding and haunching shall be as specified in Section 02250.
2. Prior to start of utility installation, all rights-of-way shall be graded to within 0.2 feet of the proposed subgrade in paved areas and finished grade in unpaved areas.
3. Trench Water: The service trench excavation shall be dewatered sufficiently to allow pipe joints to be made under dry conditions. No joint shall be made under water.
4. Laying Service in Freezing Weather: No service shall be laid upon a foundation into which frost has penetrated, nor at any time when there is danger of ice formation or frost penetration at the bottom of the excavation. In freezing weather, open trench length shall be kept to a minimum and the excavation promptly backfilled after the service has been installed.
5. Pipe Bedding: Each service shall be bedded on a solid foundation acceptable to the Commission and in accordance with the Standard Details. When aggregate bedding is required, bedding shall be installed to grade prior to laying pipe.

B. WATER SERVICES, WATER METER SETTINGS, AND VAULTS

1. Water Services, Water Meter Settings, And Vaults shall be installed in accordance with the approved manufacturer's written instructions, Commission Standards, Contract Documents, and as specified herein.
2. Equipment for Handling Pipe: Proper and suitable tools and appliances as approved for safe and convenient handling and joining of pipes shall be used.
3. Water services shall be jacked or driven under paving unless otherwise directed by the Commission. In case jacking or driving house services under any type of paving cannot be made, the Commission with approval of the pertinent agency may permit the Contractor to open cut. In the case of an open cut in paving,

trench widths shall not exceed 18 inches or the requirements noted in the utility permit, whichever is most stringent.

4. House services installed in areas other than paving areas shall be open cut or driven at the Contractor's option.
 5. All services shall be laid to the grade and lines in accordance with the Contract Documents or as directed by the Commission. Special care shall be taken to insure that the services are well bedded. Any defects resulting from settlement shall be repaired by the Contractor at his expense.
 6. Copper service pipe shall be cut square to the run of the pipe and free from burrs. Pipe 3/4-inch to 1-inch can be cut with a disc-type pipe cutter or hacksaw. An abrasive wheel will not be allowed. Copper services larger than 12-inches can be cut with a disc type cutter or an abrasive wheel. Care shall be taken not to deform pipe end.
 7. All services shall be thoroughly flushed with potable water at the time the main is tapped. All PVC services and services 3-inch diameter and larger shall be installed, chlorinated and tested as specified in Section 02551.
 8. The pipe and fittings shall be thoroughly cleaned before being installed, and shall be kept clean until the acceptance of the completed work.
 9. All meter vaults 24-inch in diameter and smaller shall be set at a minimum depth of two feet, eight inches (2' - 8"). They shall be set on brick or precast concrete rings and bedded on firm undisturbed earth.
 10. Tracer Wire: All nonmetallic water services shall have tracer wire secured with duct tape to the top of the pipe at ten (10) foot centers. The tracer wire shall be continuous for the full length of the pipeline. Continuous conductivity shall be maintained and tested. Underground splice connections shall be made with solderless split bolt connectors and taped.
 11. Detector Tape: Install visual detection tape 12 inches below final grade on all water service pipe.
- C. Connections to Water Mains
1. All service taps in PVC pipe, existing mains and in ductile iron mains 6-inches and smaller shall have service saddles.
 2. Service taps 2-inch and smaller for 8-inch and larger ductile iron mains shall be direct wet taps.
 3. Service taps larger than 2-inch in ductile iron mains shall have service saddles, tapped tees, and threaded boss or tapping sleeve and valve.
 4. Corporation taps or tapping sleeves shall be installed on new water mains under operating pressure after the water mains have been chlorinated and tested in accordance with the Contract Documents.
 5. Service connections to existing water mains shall be made as noted in this section only where authorized by the Commission.

6. The Commission reserves the right to require a saddle on any water main service connection where the integrity of the connection or appurtenances is in question.

4.0 METHOD OF MEASUREMENT

- A. Measurement for water services will be made per each type and size of service installed.
- B. Measurement for meter settings and vaults or curb stops will not be made as it will be incidental to water service installation.

5.0 BASIS OF PAYMENT

A. General

1. Payment will be made at the unit price bid. The price bid shall include furnishing all labor, tools, equipment, and materials necessary to satisfactorily complete the work as shown and specified in strict accordance with the Contract Documents.
2. The prices bid for furnishing and installing water services shall included the following:
 - a. Trench excavation, backfill, compaction, and incidental items as specified in Section 02250.
 - b. Tapping the main or furnishing and inserting saddles or fittings in the main with appropriate buttresses, and furnishing and installing corporation stops or valves at the main.
 - c. Furnishing and installing cast-in-place or precast concrete or plastic meter vaults with frames and covers and access hatches as per the Contract Documents.
3. Payment will be made for contingent items when approved by the Commission.

B. Water Services

Payment for furnishing and installing water services will be made per each type and size of service installed. The price(s) bid shall include traffic control furnishing and installing the pipe or tubing, fittings, driving sleeves, curb stops, curb stop valve boxes, meter yoke/meter setting, bypass lines, temporary paving, and incidental items to complete the work.

C. Meter Settings and Vaults

Payment for furnishing and installing meter settings and vaults will not be made for it will be incidental to water service installation.

****END OF SECTION 02553****