SECTION 02430
WATER TAP AND SERVICE LINE INSTALLATION

PART I: GENERAL

1.1 GENERAL REQUIREMENTS

A. Tapping existing mains and furnishing and installing new service lines for water.

B. Relocation of existing small water meters.

C. The Technical Specifications identify requirements for both small-diameter [less than or equal to twenty inches (20 In)] water lines and large-diameter [greater than twenty inches (20 In)] water lines. When the Specifications for large-diameter water lines differ from those for small-diameter water lines, paragraphs for large-diameter water lines shall govern for large-diameter pipe.

1.2 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. Payment for water taps and service lines three-quarters inch (3/4 In) through one inch (1 In) is on a unit price basis for each installation. Separate measurements shall be made for "short side", "long side" and "extra long side" connections as defined in Paragraph 1.4, Definitions.
2. Payment for water taps and service lines one and one-half inch (1-1/2 In) through two inch (2 In) is on a unit price basis for each installation. Separate measurements shall be made for "short side", "long side" and "extra long side" connections as defined in Paragraph 1.4, Definitions.
3. Payment for "short side", "long side" and "extra long side" includes locating water line, tap installation and connection to meter and restoring site.
4. Payment for each small meter includes labor, materials, and equipment to relocate existing small meter.
5. No additional payment shall be made for bedding, backfill, compaction, push under pavement, etc.
6. Refer to Section 01270 – Measurement and Payment for unit price procedures.

B. Stipulated Price (Lump Sum):

1. If Contract is Stipulated Price Contract, payment for work in this Section is included in Total Stipulated Price.

1.3 REFERENCES

A. AWWA – American Water Works Association.

1. AWWA C800 – Standard for Underground Service Line Valves and Fittings.

2. AWWA C900 – Standard for Polyvinyl Chloride (PVC) Pressure Pipe, four inch (4 In) through twelve inch (12 In), for Water Distribution.

B. CFTS – City of Friendswood Technical Specifications.

1.4 DEFINITIONS

A. Short Side Connection: Service line connecting proposed curb stop, located inside water meter box, to water line on same side of street.

B. Long Side Connection: Service line connecting proposed curb stop, located inside water meter box, to water line on opposite side of street or from center of streets where supply line is located in street center such as boulevards and streets with esplanades. Distance for long side connection shall not exceed sixty linear feet (60 Lf) at right angles to water line.

C. Extra-Long Side Connection: Service line connecting proposed curb stop, located inside water meter box, to water line on opposite side of street or from center of street where supply line is located in street center such as boulevards and streets with esplanades. Distance for extra-long side connection is greater than sixty linear feet (60 Lf) at right angles to water line.

PART II: PRODUCTS

2.1 MATERIALS

A. Service Lines:

1. Copper Tubing: In accordance with Section 02205 – Copper Tubing.
2. Polyethylene Tubing (PE): In accordance with Section 02230 – Polyethylene Plastic Tubing (PE).
3. Polybutylene tubing is not permitted.

B. Corporation Stops: AWWA C800 as modified in this Section:

1. Inlet End: AWWA standard thread.
2. Valve Body: Tapered plug type, O-ring seat ball type, or rubber seat ball type.
3. Outlet End: Compression connection for use with Type K, soft copper or compression type fitting.

C. Provide taps for water line types and sizes in as specified in TABLE 4.1 – PIPE TAPPING SCHEDULE in this Section.

D. Dual Strap Saddles: Red brass body and straps; ductile-iron; vinyl-coated body and straps; or ductile-iron, vinyl-coated body and stainless-steel straps.

E. Taps for PVC Water Lines: Use dual-strap or single, wide-band strap saddles which provide full support around circumference of pipe and bearing area of sufficient width along axis of pipe, two inches (2 In) minimum, ensuring that pipe shall not be distorted when saddle is

tightened. Provide approved stainless-steel tapping saddle with AWWA standard thread.

F. Taps for Steel Pipe: Not allowed.

G. Curb Stops and Brass Fittings: AWWA C800 as modified in this Section.
   1. Inlet End: Compression-type fitting
   2. Valve Body: Straight-through or angled, meter-stop design equipped with following:
      a. O-ring seal straight plug type.
      b. Rubber seat ball type.
   3. Outlet End: Female, iron-pipe thread or swivel-nut, meter-spud thread on three-quarters inch (3/4 In) and one inch (1 In) stops and two (2) hole flange on one and one-half inch (1-1/2 In) and two inch (2 In) sizes.
   4. Fittings: Provide approved fittings. Use same size open end wrenches and tapping machines as used with respective fittings.
   5. Factory Testing of Brass Fittings:
      a. Submerge in water for ten seconds (10 sec) at eighty-five pounds per square inch (85 psi) with stop in both closed and open positions.
      b. Reject fitting that shows air leakage: The Project Manager may confirm tests locally. Entire lot from which samples were taken shall be rejected when random sampling discloses unsatisfactory fittings.

H. Angle Stops: In accordance with AWWA C800; ground-key, stop type with bronze lockwing head stop cap; inlet and outlet threads conform to application tables of AWWA C800; and inlets flared connection or compression.
   1. Outlet for three-quarter inch (3/4 In) and one inch (1 In) size: Meter swivel nut with saddle support.
   2. Outlet for one and one-half inch (1-1/2 In) through two inch (2 In) size: O-ring sealed meter flange, iron pipe threads.

I. Fittings: In accordance with AWWA C800 and following:
   1. Castings: Smooth, free from burrs, scales, blisters, sand holes, and defects which would make them unfit for intended use.
   2. Nuts: Smooth cast and has symmetrical hexagonal wrench flats.
   3. Flare-Joint Fittings: Smooth cast. Machine seating surfaces for metal-to-metal seal to proper taper or curve, free from pits or protrusions.
   4. Thread fittings, of all types, shall have N.P.T. or AWWA threads, and protect male threaded ends in shipment by plastic coating, or approved equal.
   5. Compression tube fittings shall have Buna-N beveled gasket.
   6. Stamp of manufacturer's name or trademark and of fitting size shall be on the body.

PART III: EXECUTION

3.1 GENERAL

A. For service lines and lateral connections larger than those allowed in Pipe Tapping Schedule, branch connections and multiple taps may be used. Space corporation stops a minimum of two feet (2 Ft) apart.

B. Tapped collars of appropriate sizes: Approved in new construction only provided they are set at right angles to proposed meter location.

C. Use tapping machine manufactured for pressure tapping purposes for two inch (2 In) and smaller service taps on pressurized water lines.

D. For new meter or when existing meter is in conflict with proposed pavement improvements, locate water meters one foot (1 Ft) inside the City right-of-way, or when this is not feasible, one foot (1 Ft) on curb side of sidewalk if sufficient right-of-way is available. Contact the Project Manager when major landscaping or trees conflict with service line and meter box location. No additional payment shall be made for work on customer side of meter.

E. New location and installation of existing small meter shall conform to requirements of this Section.

3.2 SERVICE INSTALLATION

A. Set service taps at right angles to proposed meter location and locate taps in upper pipe segment within forty-five degrees (45°) of pipe springline.

B. Install service lines in open-cut trench in accordance with Section 02125 – Excavation and Backfill for Utilities. Install service lines under paved roadways, other paved areas and areas indicated on the Drawings in bored hole.

C. Lay service lines with minimum of thirty inches (30 In) of cover as measured from top of curb or in absence of curbs, from centerline elevation of crowned streets or roads. Provide minimum of eighteen inches (18 In) of cover below flow line of ditches to service lines.

D. Service lines across existing street (push-unders): Pull service line through prepared hole under paving. Use only full lengths of tubing. Take care not to damage copper tubing when pulling it through hole. Compression-type union shall be permitted only when span underneath pavement cannot be accomplished with a full standard length of tubing. Use only one (1) compression-type union for each full length of tubing.

E. Maintain service lines free of dirt and foreign matter.

F. Install service lines so that top of meter shall be eight inches (8 In) to twelve inches (12 In) below finished grade.

G. Anticipate existing sanitary sewers to have cement-stabilized sand backfill to bottom of pavement. Include cost of such crossings in the unit price for services.

3.3 CURB STOP INSTALLATION

A. Set curb stops or angle stops at outer end of service line inside of meter box. Secure opening in curb stop to prevent unwanted material from entering. In close quarters, make S-curve in field. Do not flatten tube. In three-quarter inch (3/4 In) and one inch (1 In) services, install meter coupling, swivel-nut, or curb stop ahead of meter. Install straight meter coupling on outlet end of meter.

3.4 SEQUENCE OF OPERATIONS

A. Open trench for proposed service line in accordance with Section 02125 – Excavation and Backfill for Utilities.
B. Install curb stop on meter end of service line.
C. With curb stop open and prior to connecting service line to meter in slack position, open corporation stop and flush service line thoroughly. Close curb stop, leaving corporation stop in full-open position.
D. Check service line for apparent leaks. Repair leaks before proceeding.
E. Schedule inspection with the Project Manager prior to backfilling. After inspection, backfill in accordance with Section 02125 – Excavation and Backfill for Utilities.
F. Install meter box centered over meter with top of lid flush with finished grade. Meter box: Refer to Section 02440 – Valve Boxes, Meter Boxes, and Meter Vaults.

PART IV: TABLES

TABLE 4.1 – PIPE TAPPING SCHEDULE

PIPE TAPPING SCHEDULE				
WATERLINE TYPE AND DIAMETER	SERVICE SIZE			
	3/4”	1”	1-1/2”	2”
4” Cast Iron or Ductile Iron	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
4” Asbestos Cement	WBSS	WBSS	DSS, WBSS	DSS, WBSS
4” PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6” and 8” Cast Iron or Ductile Iron	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6” and 8” Asbestos Cement	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
6” and 8” PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
10” and 12” Cast Iron or Ductile Iron	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
10 “ and 12” Asbestos Cement	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
10” and 12” PVC (AWWA C900)	DSS, WBSS	DSS, WBSS	DSS, WBSS	DSS, WBSS
16” and UP Cast Iron and Ductile Iron	DWBSS	DWBSS	DWBSS	DWBSS
16” and UP Asbestos Cement	DWBSS	DWBSS	DWBSS	DWBSS
16” and UP PVC (AWWA C900)	DWBSS	DWBSS	DWBSS	DWBSS

DSS – DUAL STRAP SADDLES
WBSS – WIDE BAND STRAP SADDLES
DWBSS – DUAL WIDE BAND STRAP SADDLES

END OF SECTION