SECTION 02420
TAPPING SLEEVES AND VALVES

PART I: GENERAL

1.1 GENERAL REQUIREMENTS
- A. Tapping sleeves and valves for connections to existing water system.

1.2 MEASUREMENT AND PAYMENT
- A. Unit Prices:
  1. Payment is on a unit price basis for each tap installed.
  2. Refer to Section 01270 – Measurement and Payment for unit price procedures.
  3. For water lines four inches (4 In) and greater, no payment shall be made until coupon (cut out portion of pipe tapped) is delivered to the City.
- 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. ASTM – American Society for Testing and Materials.
  1. ASTM A240 – Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels.
  2. ASTM A193 Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
  3. ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service.
- B. AWWA – American Water Works Association.
  1. AWWA C110 – Standard for Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in., for Water and other Liquids.
  2. AWWA C200 – Standard for Steel Water Pipe – 6 in. and Larger.
  3. AWWA C207 – Standard for Steel Pipe Flanges for Waterworks Service – Sizes 4 in. through 144 in.
  4. AWWA C223 – Standard for Fabricated Steel and Stainless Steel Tapping Sleeves.
  5. AWWA C500 – Standard for Metal Seated Gate Valves, for Water Supply Service.
- C. CFTS – City of Friendswood Technical Specifications.

1.4 SUBMITTALS
- A. Conform to requirements of Section 01330 – Submittal Procedures.
- B. Submit results of tapping sleeves NPT test opening.

C. Submit manufacturer's affidavit as required in Section 02410 – Gate Valves.

1.5 DELIVERY, STORAGE AND HANDLING

A. Ship steel sleeves in wooden crates that provide protection from damage to epoxy coating during transport and storage.

PART II: PRODUCTS

2.1 MATERIALS

A. Tapping Sleeves:
   1. Tapping Sleeve Bodies: AWWA C223 stainless steel, full circumference to be bolted together with high-strength, corrosion-resistant, low-alloy steel bolts with mechanical joint ends.
   2. Branch Outlet of Tapping Sleeve:
      a. Flanged, machined recess, AWWA C207, Class D, ANSI 150 pound drilling.
      b. Gasket: Affixed around recess of tap opening to prevent rolling or binding during installation.

B. Stainless Steel tapping-sleeve bodies and flange shall be used for following sizes and with following restrictions:
   1. Flange: ASTM A240 Stainless Steel, Type 304, ANSI 150 pound drilling.
   2. Gasket: Full circumferential, affixed around recess of tap opening to prevent rolling or binding during installation, compounded for water and sewer service.
   3. Stainless Steel sleeves are restricted to use on pipe sizes four inches (4 In) and larger.
   4. Body: ASTM A240 Stainless Steel, Type 304.
   5. Bolts: ASTM A193 Stainless Steel, Type 304.
   6. Nuts: ASTM A194 Stainless Steel, Type 304.
   7. Branch Outlet: Heavy Stainless Steel Pipe
   8. Provide approved stainless steel tapping sleeves.
   9. Do not use stainless steel sleeves for taps greater than seventy-five percent (75%) of pipe diameter.

C. Welded-steel tapping-sleeve bodies may be used in lieu of cast or ductile iron bodies for following sizes and with following restrictions:
   1. Flange: AWWA C207, Class D, ANSI 150 pound drilling.
   2. Gasket: Affixed around recess of tap opening to prevent rolling or binding during installation.
   3. Steel sleeves are restricted to use on pipe sizes six inches (6 In) and larger.
   4. Body: Heavy, welded-steel construction; top half grooved to retain neoprene O-ring seal permanently against outside diameter of pipe.

5. Bolts: AWWA C500 Section 3.5; coated with one hundred percent (100%) vinyl resin or corrosive resistant material.
6. Steel Sleeves Finish: Fusion-bonded epoxy coated to minimum twelve (12) mil thickness.
7. Finished Epoxy Coat: Free of laminations and blisters; and remain pliant and resistant to impact with non-peel finish.
8. Provide approved steel tapping sleeves.
9. Tapping Sleeves: Provide with three-quarters inch (3/4 In) NPT test opening for testing prior to tapping. Provide three-quarters inch (3/4 In) bronze plug for opening.
10. Do not use steel sleeves for taps greater than seventy-five percent (75%) of pipe diameter.

D. Tapping Valves: Meet requirements of Section 02410 – Gate Valves with following exceptions:
   1. Inlet Flanges:
      a. AWWA C110; Class 125.
      b. AWWA C110; Class 150 and higher: Minimum eight (8) hole flange.
   2. Outlet: Standard mechanical or push-on joint to fit any standard tapping machine.
   3. Valve Seat Opening: Accommodate full-size shell cutter for nominal size tap without contact with valve body; double disc.
   4. Valves must be open left (counterclockwise).

F. Valve Boxes: Standard Type "A" valve boxes conforming to requirements of Section 02440 – Valve Boxes, Meter Boxes and Meter Vaults.

PART III: EXECUTION

3.1 APPLICATION

A. Install tapping sleeves and valves at locations and of sizes shown on the Drawings. Install sleeve so valve is in horizontally level position unless otherwise indicated on the Drawings or approved by the Project Manager.

B. Clean tapping sleeve, tapping valve and pipe prior to installation and in accordance with manufacturer's instructions.

C. When tapping concrete pressure pipe, size on size, use shell cutter one (1) standard size smaller than water line being tapped.

D. Do not use Large End Bell (LEB) increasers with next size tap unless existing pipe is asbestos-cement.

3.2 INSTALLATION

A. Verify outside diameter of pipe to be tapped prior to ordering sleeve.

B. Tighten bolts in proper sequence so that undue stress is not placed on pipe.

C. Align tapping valve properly and attach to tapping sleeve. Insert

insulation sleeves into flange holes of tapping valve and pipe. Make insertions of sleeves on pipe side of tapping valve. Do not damage insulation sleeves during bolt tightening process.

D. Make tap with sharp, shell cutter:
   1. For twelve inch (12 In) and smaller tap, use minimum cutter diameter one-half inch (1/2 In) less than nominal tap size.
   2. For sixteen inch (16 In) and larger tap, use manufacturer's recommended cutter diameter.

E. Withdraw coupon and flush cuttings from newly-made tap.

F. Wrap:
   1. For twelve inch (12 In) and smaller tap, wrap completed tapping sleeve and valve in accordance with Section 02260 – Polyethylene Wrap.
   2. For sixteen inch (16 In) and larger tap, apply coal tar epoxy around completed tapping sleeve and valve. The coal tar epoxy shall be applied with minimum of two (2) coats. Each coat of coal tar epoxy shall have minimum dry film thickness of sixteen (16) mils.

G. Place concrete thrust block behind tapping sleeve (not over tapping sleeve and valve).

H. Request inspection of installation prior to backfilling.

I. Backfill in accordance with Section 02125 – Excavation and Backfill for Utilities.

END OF SECTION