

SECTION 15102**TAPPING SLEEVES AND TAPPING VALVES****PART 1 GENERAL****1.01 SCOPE**

- A. The Contractor shall furnish and install tapping sleeves and tapping valves, as shown on the Plans and/or as specified herein. All items not specifically mentioned in these specifications or noted on the Drawings, but which can be reasonably inferred as necessary to make a complete working installation, shall be included.
- B. Tapping sleeves, where shown on the Plans, shall fit the existing pipe to be tapped and the Contractor shall determine the outside diameter and type of pipe before ordering the sleeve. Field verification of dimensions is directed since actual locations, distances and levels will be governed by actual conditions. The Contractor shall adjust his work to conform to said field conditions.
- C. The Contractor is responsible for having the work properly scheduled, location excavated in accordance with Trench Safety requirements, pipe restrained, excavation dewatered and all conditions ready for the tap to be made.
- D. The Contractor is responsible for evaluating if a tapping connection can be accomplished at a specific site, final decision is made by the Engineer.

1.02 RELATED WORK SPECIFIED ELSEWHERE

Section 15100 "Valves, General"
Section 15120 "Gate Valves"

1.03 MANUFACTURE

- A. All valves shall be the products of domestic manufacturing firms which have been regularly engaged in the production of valves for at least 5 years. All valves specified herein shall be tested at the factory in accordance with the AWWA Standard Leakage and Hydrostatic Test as modified herein and a certified test report shall be furnished for each valve upon request.

1.04 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for all tapping sleeves and valves not on Pre-Approved products List.
- B. Complete technical data and information on tapping sleeves for pipe other than cast iron shall be submitted to the Department for approval on an individual basis.

1.05 DESIGN AND STANDARD OPERATING PROCEDURES, CUT-IN CONNECTIONS

- A. All Tapping Connections shall be one size smaller than the existing water or sewer main being tapped. Same Size tapping connections are no longer an acceptable connection method in the Water and Sewer Department system due to leaks and long-term maintenance problems.
- B. The options available to connect mains of the same size for Potable Water Mains are as follows:
 - 1. Perform a cut-in connection under the supervision of a Licensed Water Distribution Operator and in coordination with WASD Operations to limit any service interruptions. This would include dewatering the excavation to prevent the entry of groundwater into the water main. The Contractor cutting the existing main and installing a tee with restraint glands and valve. Disinfecting the fitting and valve above ground prior to installation. Testing the cut-in connections at system pressure once the main is activated. Only WASD are allowed to operate existing valves. The Licensed Water Distribution Operator (Water Distribution personnel Licensed as a Water Distribution Operator that can certify the connection) shall be on-site to ensure Health Department requirements are followed and the cut-in connection is acceptable per regulations. Donation projects will need to pay for the Licensed Water Distribution Operator.
 - 2. Tapping connection one size less than the existing main then increasing the main to the original size.
 - 3. Coordinate with WASD forces to cut-in an insert valve up to 16-inches if needed due to service interruptions or lack of operable valves. The Department has a valve insertion machine that can cut the top half of the existing main and construct a new valve without placing the main out of service. The Department forces can evaluate in a cut-in valve is feasible for the cut-in installation proposed by the Contractor. The Contractor will have to locate all utilities, excavate, determine operator location and install a support slab prior to the WASD forces constructing the insert valve at the designated location.
- C. The options available to connect mains of the same size for Sanitary Sewer Force Mains are with the added component of having to dewater the sewer from the existing force main as part of a cut-in connection. There Licensed Water Distribution Operator is not needed for a sewer connection.

PART 2 PRODUCTS

2.01 TAPPING SLEEVES

- A. Tapping saddles approved for use by the Department are shown on Sheet 6.0 Tapping Sleeves of the Pre-Approved Product List.
- B. Tapping sleeves with MJ outlets to connect MJ gate valves shall be constructed of 316 stainless steel. This shall apply to both water and sewer applications unless otherwise

approved by the Department. These units shall be manufactured of AISI Type 316 stainless steel passivated after welding or Type 316L. Threaded fasteners shall be Type 316 and gasketing shall be Neoprene, EPDM, or Nitrile for sanitary sewer use and SBR for potable water. A standard resilient-seated gate valve shall be attached to the MJ outlet of the sleeve.

- C. Cast Iron tapping sleeves shall be designed to withstand a working pressure of at least 150 psi. Cast iron tapping sleeves shall be used with a flanged tapping valve.
- D. Tapping saddles for concrete pipe sewer mains 42-inches and larger may use a fusion bonded epoxy carbon steel saddle with 316 stainless steel straps. Large diameter saddles shall be individually approved by the Department on a case by case basis.
- E. Each mechanical joint on the tapping sleeve shall be furnished complete with tee-head bolts and nuts complying with ANSI/AWWA C111/A21.11 "Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings" (latest edition). Tee-head bolts and hex nuts shall be of high strength cast iron. Bolts and nuts to join the two halves of the sleeve together shall be standard carbon steel, hex, or tee-head bolts and nuts which have been galvanized.
- F. The tapping sleeves, including outlet flanges shall be as dimensioned and thicknesses shall be as required by AWWA/ANSI C110/A21.10. The tapping sleeves shall be mechanical joint ended, on the run, and shall have a connecting flange outlet, with centering groove (for all valves size 12-inch and below and for valves above 12-inch if available from the manufacturer), for connecting to the tapping valve. For tapping sleeves with outlets 12 inches and smaller, the connecting flange joint between the tapping sleeve and the tapping valve shall be in compliance with all applicable provisions of MSS Standard Practice SP60, latest revision, as developed and approved by the Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street N.E. Vienna, VA. 22180. For tapping sleeves with outlets larger than 12 inches, the connecting flange must provide a matching fit with tapping valves by other manufacturers.
- G. Each tapping sleeve shall be furnished complete with all necessary split end gaskets, longitudinal gaskets and two-piece (split) steel glands (follower glands held in place by set screws not acceptable). Gasket shall be shipped separately in suitable protective containers. Material for split end gaskets shall conform to ANSI/AWWA Standard C111/A21.11. Material for longitudinal gaskets shall be rubber conforming to ANSI/AWWA Standard C111/A21.11.
- H. Each tapping sleeve shall be furnished complete with all necessary split end gaskets, longitudinal gaskets and two-piece (split) steel glands (follower glands held in place by set screws not acceptable). Gasket shall be shipped separately in suitable protective containers. Material for split end gaskets shall conform to ANSI/AWWA Standard C111/A21.11. Material for longitudinal gaskets shall be rubber conforming to ANSI/AWWA Standard C111/A21.11.
- I. The sleeves shall be suitable for use with ductile iron pipe conforming to ANSI/AWWA Standard C151/A21.51, "Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids", with wall thickness and outside diameter as specified in Table 51.4 and 51.5. The sleeves shall also be suitable for use with other cast

iron pipe with differing outside diameters and other types of pipe where required.

- J. Each tapping sleeve shall be Factory Hydrostatically tested on pipe to verify proper fit and weld integrity with zero leakage.

2.02 TAPPING VALVE

- A. Resilient-seated tapping valves shall have a mechanical joint outlet end conforming to ANSI/AWWA Standard C111/A21.11-00, "Rubber Gasket Joints of Ductile-iron and Gray-Iron Pressure Pipe and Fittings," for connection to new piping and a flange inlet with centering ring, for connecting to the tapping sleeve.
- B. The tapping valves shall conform to the requirements listed for gate valves, including bypass valve when applicable, shall be furnished complete with all joint materials. Joint materials for the flanged inlet shall be ANSI-sized and approved and shall include a 1/8-inch thick full-faced neoprene gasket, and hot dipped galvanized carbon steel bolts and nuts with internal threads tapped or retapped after galvanizing. The flange inlet gaskets shall conform to the gasket material and property requirements set forth in ANSI/AWWA Standard C111/A21.11-00. All gaskets and seals shall be neoprene, Buna-N, or approved equal, but not natural rubber. The mechanical joint outlets shall include the necessary joint materials conforming to the requirements of joint materials for mechanical joint ended gate valves as specified in Section 5.07.3 "Valves - Resilient Seated Gate Valves." Bolt holes in the flanges of the mechanical joint shall be equally spaced and shall straddle the vertical centerline. Gaskets shall be shipped separately in suitable protective containers. Resilient-seated tapping valves shall be as manufactured by U.S. Pipe and Foundry Co., American Flow Control, Mueller, or approved equal.

PART 3 EXECUTION

3.01 GENERAL

- A. Taps 20-inches and smaller for water mains will be made by Department forces. Taps of any size into concrete mains shall be done by a tapping specialist with credentials acceptable to the Department.
- B. Taps of any size into concrete or PCCP water mains shall be made by a tapping specialist with credentials acceptable to the Department.
- C. Tap of any size to sewage force mains shall be made by a tapping specialist with credentials acceptable to the Department.
- D. The tapping specialist shall be from any of the following:
 - a. Rangeline Tapping Service, Inc.
 - b. Hydra-Stop, a division of ADS LLC.
 - c. Advanced Tapping, LLC

- d. T.D.W. Services Inc.
 - e. or approval equal
- E. The Contractor shall notify the Engineer at least seven days in advance of when he will be ready to make the connection and shall have the tapping valve installed on the existing main with the new equipment satisfactory pressure tested and sufficient excavated work areas prepared for the Department forces when they arrive to make the tap.
- F. The Contractor shall furnish and install a mechanical joint plug on the free end of the tapping valve, and shall pressure test the tapping sleeve and valve after installation on the main, but prior to tapping operations. No leakage will be permitted at any joint in either the tapping sleeve or tapping valve. The tapping sleeve and valve shall be filled with water and then pressurized at design test pressure. Duration of the test shall be determined by the Department. The test shall be conducted in the presence of the Engineer, who will notify Department forces of the satisfactory conclusion of the test, and arrange a definite time and date for them to arrive at the site to make the tap. No leakage shall be permitted at any joint in either the tapping sleeve/saddle or valve.
- G. The tapping valve requires the installation of a cast iron riser pipe complete with valve box and cover, centered over the operator, and set in concrete.
- H. All necessary sheeting, shoring, dewatering, excavation, backfill and compaction, surface repairs, and other items and work appurtenant to or incidental to the work shall be performed by the Contractor.
- I. For Concrete mains the tapping saddle shall be tested after installation at a pressure of 5 psi lower than the operating pressure of the pipeline at the time of the test. A pressure reading shall be taken from an air release valve prior to performing the pressure test on the saddle.
- J. The Contractor shall pressure test the tapping sleeve and valve after installation on the main, but prior to tapping operations. The test shall be conducted in the presence of the Department's Inspector. No leakage will be permitted at any joint in either the tapping sleeve or tapping valve.
- K. When the invert of the tapping valve is under water, interlocking sheeting and tremie concrete shall be used, unless otherwise approved by the Department. Seal the perimeter of all pipes passing through the sheeting below the water table. Only minimum seepage will be permitted. The cofferdam must be designed and sealed by a State of Florida, P.E. No work will be permitted within the cofferdam until it is demonstrated to the Department to be dry. Approval to remove the initial water in the cofferdam must be obtained from the Department and other governmental agencies jurisdiction over the work.

3.02 TAP BY DEPARTMENT FORCES

- A. The Contractor shall notify the Department at least 48-hours in advance of when he will be ready to make the tap and shall have the tapping sleeve and valve installed on the existing main and satisfactorily tested as specified below, with a sufficient excavated work area prepared for the Department forces when they arrive to make the tap.
- B. The Contractor shall furnish and install a mechanical joint plug on the free end of the tapping valve, and shall pressure test the tapping sleeve and valve after installation on the main, but prior to tapping operations. No leakage will be permitted at any joint in either the tapping sleeve or tapping valve. The tapping sleeve and valve shall be filled with water and then pressurized to the required test pressure. Duration of the test shall be determined by the Department. The test shall be conducted in the presence of the Department's Inspector, who will notify Department forces of the satisfactory conclusion of the test, and arrange a definite time and date for them to arrive at the site to make the tap.
- C. A crane or other suitable equipment as approved by the Department, shall be furnished by the Contractor to unload the tapping machine, position it in the trench for bolting to the valve, and to reload it after the tapping operation has been completed.
- D. Department forces will connect the tapping machine to the valve, and disconnect it after the tap is complete; however, the Contractor shall furnish suitable devices or material to support the machine in the trench for proper alignment, as required by the Department. The Contractor shall aid the Department's forces whenever and to whatever extent necessary for the tapping operation to be performed efficiently and without any undue time lost.

3.03 TAPPING BY NON-DEPARTMENT FORCES

- A. The Contractor shall comply with all applicable provisions of Subsections 3.01 and 3.02, above, including installation and pressure testing of tapping sleeve and valve in the presence of the Department's Inspector.
- B. Since cutting equipment used for this type of installation is of a special design, the Contractor shall make provisions for furnishing a tapping specialist to perform actual tapping operation. The qualifications of the tapping specialist shall be forwarded to the Department prior to any tapping work. The Contractor shall also furnish all incidental equipment necessary to operate the tapping machine and perform a complete operation to the satisfaction of the Engineer.
- C. The tapping valve shall be installed in the horizontal position with the operator in the vertical position, and shall include a valve box cover. Tapping valves shall be left in the closed position.
- D. All tapping operations shall be conducted under the direct supervision of the previously approved tapping specialist. All operations shall have prior approval of the Department.

3.03 COORDINATION

- A. The Design Engineer is responsible for determining the optimal connection method that meets the long-term needs of the Department. All work of utility location, lay length determinations, restraint and planning shall be done as part of the plan preparation phase of the project. Scheduling work with Licensed Plant Operators on-site shall be done well in advance of the actual construction.
- B. The Contractor is required to have all work ready for Department forces to arrive at the site and perform the tapping, valve insert of Water Plant Operator work (for cut-in connections) immediately upon arrival. Department forces will leave and cancel the work if conditions are not ready for the scheduled task.

3.04 RECORD DRAWINGS

- A. Record Drawings shall be prepared in accordance with Section 01720.
- B. The location and elevation for each valve, tapping outlet, fitting, service line and other appurtenances along the pipeline shall be recorded by the Contractor's Florida Registered Surveyor and Mapper.

END OF SECTION