

ITEM 802 VALVES AND APPURTENANCES

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802.01 Description. Provide all work necessary for furnishing and installing valves of the type, sizes and locations shown on the plans and as herein specified. Install all valves with the factory-coated carbon steel bolts coated with an approved bitumastic paint and wrap with an approved polyethylene wrap or wrap with an approved wax-tape, or petrolatum-based tape coating system as included in the current Approved Materials List.

802.02 Gate Valves. Provide gate valves conforming to AWWA C509 or AWWA C515 except as modified herein. Provide Division of Power and Water approved double disc, parallel seats or resilient seated; non-rising stem, left hand open (counter-clockwise), valves with rubber "O" rings, packing seals and mechanical joint ends unless otherwise specified or approved by the Engineer. Provide butterfly valves for valves 20 inch and larger, with the exception of tapping valves.

Provide vertical design, without by-pass, gate valves for valves 16 inch and smaller.

Provide horizontal design, with by-pass, gate valves for valves 20 inch and larger used for tapping valves. Provide horizontal, totally enclosed valves with enclosed extended gear cases designed for buried service.

Ensure that mechanical joint ends shall conform to the requirements of Item 801. Provide flanged joint ends, where specified, that conform to requirements of AWWA C509 or C515. with factory-coated carbon steel bolts and nuts as included in the current Approved Materials List and full face rubber sheet gaskets. When specified, furnish and install hub and bell and spigot joints with all necessary jointing material .

802.03 Butterfly Valves. Provide butterfly valves that conform to the AWWA Standard Specification for Rubber-Seated Butterfly Valves; Designation AWWA C504 except as herein specifically modified. The Administrator, Division of Power and Water must approve Bonded Seat Butterfly Valves for use from the current Approved Materials List.

- 1. Design.** AWWA Class 150B valves designed for 150 non-shock shut-off pressure and a velocity of 16 feet per second. Provide valves and appurtenances, including operators, suitable for buried and submerged service.

Provide valves for use with ductile iron pipe with mechanical joint ends or push-on ends. Provide ends with factory-coated carbon steel tee head bolts, factory-coated carbon steel hex nuts, retainer glands, and rubber gaskets.

Provide valves with flanged joint ends for use with prestressed concrete and steel pipe. .

2. **Bodies.** Either cast iron conforming to ASTM A126, Class B or ASTM A48, Class 40 or ductile iron conforming to ASTM A536, Grade 65-45-12.
3. **Shafts.** Unless otherwise approved, stainless steel, or monel, in accordance with AWWA C504, Class 150B. Provide a disc to shaft connection of Type 304 stainless steel or Monel squeeze pin or taper pin held by means of a nut. Indicate the disc position on the valve shaft with a scribed line or other approved method.
4. **Discs.** Provide valves designed to seat at 90 degrees to the pipe axis with a disc of the flow-through design for 30 inches and larger. Provide all discs with a Type 304 stainless steel edge.
5. **Seats.** Designed for and installed in the valve body. Provide 20 inch valves with seats bonded to the valve body in accordance with AWWA C504. Provide valves 24 inches and larger with seats retained in a dove tail groove by an epoxy cast retaining ring or mechanical fasteners or other approved method. Aircraft wire all internal seat retainers when using mechanical fasteners.
6. **Operators.** Suitable for buried and submerged service and installed by the valve manufacturer, and tested in accordance with AWWA C504. Provide operators designed to deliver an output torque sufficient to operate the valve under the design conditions.

Provide operators designed to produce the specified output torque with a maximum input torque of 150 foot-pounds applied to the operating nut. Provide worm gear or traveling nut type operators or as approved by the Administrator, Division of Power and Water. Provide operators designed to accept 450 foot-pounds of input torque without damage to the operator.

Provide operators that require no less than 30 turns , applied to the wrench nut, to completely open (close) the valve from completely closed (open) position.

Provide only left-hand (counter clockwise) opening operators.. When installing butterfly valves, set the operator on either the south or east side of the proposed water main.

802.04 Insertion Valves. Do not use insertion valves, unless otherwise ordered by the Division of Power and Water.

802.05 Valves 2 Inch and Smaller. Curb stop type conforming to requirements of Section 805.04 or a 2 inch gate valve.

802.06 Extension Stems. Provide an extension to bring the top of the operating nut to within 24 inches of finished grade elevation when the top of the operating nut

802.07

measures more than 7 feet below finished grade.. Include the extension stem costs under Item 802.

802.07 Not Used.

802.08 Valve Boxes. Unless otherwise noted on the plans or directed by the Engineer provide Columbus Standard Heavy Duty Three Piece Valve Boxes for all valves 16 inch and larger, and valves within traveled areas. Provide Columbus Standard Regular Duty Three Piece Valve Boxes for all other valves 3 inch and larger. Provide valve boxes approved for use in the current Approved Materials List. Provide both standard and heavy duty boxes that conform to the requirements of 804. Mark covers for the regular duty boxes "WATER." Install all boxes to finished grade.

Provide a Buffalo Type box per Section 805.04 where installing 2 inch and smaller curb stops in the water line and outside traveled areas. For curb stops installed within traveled areas, replace the top section of the valve box with a Columbus Standard Ferrule box and cover.

Install all valve boxes centered vertically over the valve operating nut so that the box provides maximum cover of the operating housing. Install valve boxes plumb and ensure that valve keys operate unimpeded. Include the cost of the valve boxes in the unit price bid for the various valve types and sizes.

802.09 Valve Supports. Provide concrete piers or supports of the size shown on the Standard Detail Drawing L-6306 under all valves. Provide valve restraints if necessary. Use valve restraint materials in accordance with the current Approved Materials List. Included the cost of valve restraints in the unit price bid for the various valve types and sizes.

802.10 Operation. The Division of Power and Water personnel only will operate valves that affect the flow of water through water lines in service, or any valves installed against a City of Columbus main.. The City will not guarantee water tight valve shuts.. Coordinate all valve shuts with Division of Power and Water personnel. The Division of Power and Water will require a minimum of 72 hours notice prior to a valve shut. If not prepared for the valve shut upon arrival of Division of Power and Water personnel, reschedule the work.

802.11 Basis of Payment. The City will pay for all work performed under this item at the unit price as bid and will consider the unit price as full compensation for furnishing and installing the various types and sizes of valves specified including concrete valve supports, restraints, and valve boxes.

The City will make payment at the contract price for:

Item	Unit	Description
802	Each	____ Inch Valve and Appurtenances
802	Each	____ Inch Butterfly Valve and Appurtenances