

City of Milwaukee
Department of Public Works

Milwaukee Water Works

Material Specifications for
Butterfly Valves 12" Through 16"



City of Milwaukee Specification No. 30-B-6
Revised January 6, 2016

- I. **GENERAL REQUIREMENTS:** Vendors bidding through the Department of Administration – Business Operations Division, Procurement Services Section, shall comply with the latest version of City of Milwaukee Specification No. 70b-D-7, except as modified herein. **MATERIALS FURNISHED UNDER THIS SPECIFICATION SHALL COMPLY WITH THE PROVISIONS OF THE CITY OF MILWAUKEE ORDINANCE 310-18.9 AND THE AMERICAN IRON AND STEEL REQUIREMENT (AIS).**
- II. **TECHNICAL REQUIREMENTS**
- A. **Description** Butterfly valves, as described herein, shall be rubber seated, iron bodied valves suitable for direct burial type installation in a water distribution system and shall be capable of being installed with normal pipeline installation methods.
- B. **NSF 61 Approval** All valves provided shall be in compliance with NSF 61 Drinking Water System Components - Health Effects.
- C. **Standards** Unless otherwise stated, the valves shall conform to the latest revisions of the following American Water Works Standards:
1. AWWA C504 Standard for Rubber-Seated Butterfly Valves
 2. AWWA C111 Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
 3. AWWA C550 Standard for Protective Interior Coatings for Valves and Hydrants
 4. AWWA C110 Standard for Ductile-Iron and Gray-Iron Fittings
- D. **Valve Design** Butterfly valves shall be designed in accordance with the following requirements:
1. Class - All valves shall be Class 150B.
 2. Valve Body - The valve body and disc shall be of gray or ductile iron.
 3. Installation Type – Buried service.
 4. Valve Ends - Valve ends shall be as specified on the bid form, and shall conform to the following appropriate requirements.
 - a. Mechanical joint ends shall conform to AWWA C111 and **shall be furnished complete with mechanical joint accessories**, but excluding M.J. bolts and nuts. Glands shall be full body gray iron or ductile iron. Mechanical joint bells, glands and rubber gaskets shall be in accordance with AWWA C111. Bolt holes shall straddle the vertical centerline of the valve.
 - b. AWWA C111 tabulated mechanical joint dimensions **shall conform to AWWA C110; NOT AWWA C153.**

5. Valve Shaft - The valve shaft shall be 300 Series 18-8 stainless steel or approved equal corrosion resistant material.
6. Shaft Seals - Shall be the self-adjusting split V-Type, approved O-ring or other approved type, in conformance with Section 4.2.7 of AWWA C504.
7. Direction to Open - Valves shall open by turning the operating nut clockwise
8. Actuators - Butterfly valve actuators shall conform to the following requirements:
 - a. Type - Manual - Wrench nut
 - b. The actuator shall be furnished with a red standard 2" square operating nut to accept a manual wrench, and shall be positively secured to the actuator input shaft using a 300 series 18-8 stainless steel bolt or pin.
 - c. The actuator shall be self-locking and the disc shall not creep or flutter under service conditions.
 - d. The actuator shall be furnished with a factory set stop at each end of its travel; the disc shall be parallel to flow in the fully open position.
 - e. The actuator case shall be completely watertight, sealed by means of approved gaskets, gasket compounds, O-rings or threaded 300 Series 18-8 stainless steel plugs.
 - f. The actuator shall be filled with a suitable oil or grease at the factory. If the actuator lubricant is oil, suitable fill and drain plugs made of 300 Series 18-8 stainless steel, low zinc bronze or approved corrosion resistant material shall be provided.
9. Actuator Torque Strength - Actuators shall be designed and manufactured to withstand an input torque of 450 foot-pounds at the fully opened and fully closed positions without distortion of any kind.
10. Exterior Fasteners - All exterior bolts and nuts, plugs, pins and external accessories shall be made from low-zinc bronze, 300 Series 18-8 stainless steel or an approved equal corrosion resistant material.

- E. Coatings** The valve shall be lined and coated with one of the following acceptable options:
1. Each ferrous surface, which will be exposed to either water internally or the soil externally, shall receive at least 2 coats of a coating that complies with Section 4.4.1 of AWWA C504; or,
 2. Both inside and outside of the valve shall receive at least 6 mil thick fusion bonded epoxy coating in compliance with Section 5.1.2.2 of AWWA C550.

- F. Submittals After Award of Contract** The bidders are required to submit three (3) sets of certified drawings for each size and type of valve being furnished to the Superintendent of Milwaukee Water Works for approvals.

The drawings shall show the following information:

1. Internal construction details of the valve and actuator, overall dimensions, and the weight of the valve complete with accessories.
2. Material specifications for all components.
3. Manufacturer's name and actuator designation.
4. Rated output torque of the actuator.
5. Maximum input torque to develop the rated output torque of the actuator.
6. Number of turns of the operating nut to fully close the valve from the fully opened position.
7. Maximum input torque at the operating nut which the actuator will withstand without damage to the actuator or valve with the actuator at the stops.
8. Direction of rotation of the operating nut to open the valve.

One (1) set of drawings will be returned to the furnishing contractor marked "Reviewed – No Exceptions Taken", "Reviewed – Returned with Comments", "Reviewed – Revise and Resubmit", or "Rejected". All materials shall be furnished in accordance with these approved drawings.

- G. Manuals** After the bid opening, the successful bidder will be required to furnish four (4) copies of maintenance manuals and parts list to the Superintendent of Milwaukee Water Works for the valves being furnished.

H. Affidavit and Certification Upon request, the furnishing contractor shall submit in duplicate the following to the Superintendent of Milwaukee Water Works:

1. Manufacturer's affidavit of compliance in accord with Sec. 6.3 of AWWA C504.
2. Manufacturer's certification attesting to the valve being designed and manufactured to withstand the input torque at the fully opened and fully closed positions as required in this specification.

III. INSPECTION BY CITY:

- A. All required drawings, manuals and certifications shall be furnished before any materials will be inspected and accepted.
- B. The Superintendent of Milwaukee Water Works, or a duly authorized representative, shall inspect and test the valves furnished under this specification, in accordance with AWWA Standard C504.
- C. Testing will be done on ten (10) percent of the whole shipment and rejections will be based on the results of testing of these samples.
- D. Any valve found not conforming to this specification subsequent to acceptance and/or installation will be rejected and must be replaced at no cost to the City, including all freight costs.