

**City of Milwaukee**  
**Department of Public Works**

**Milwaukee Water Works**

**Material Specifications for**  
**Gate Valves 3" - 12"**  
**Resilient Seated**



City of Milwaukee Specification No. 30-B-22  
Revised December 17, 2019

- 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 in the technical requirements as described herein. **MATERIALS FURNISHED UNDER THIS SPECIFICATION SHALL COMPLY WITH AND BE CERTIFIED WITH THE PROVISIONS OF THE CITY OF MILWAUKEE ORDINANCE 310-18.9 AND THE AMERICAN IRON AND STEEL REQUIREMENT (AIS) OF THE DRINKING WATER STATE REVOLVING FUND (DWSRF).**
- II. **WARRANTY:** The warranty requirements specified in Section II of the Specification 70b - D - 7 are modified here to include 100% Parts and Labor to remain in effect for a minimum of three (3) years from date of acceptance or two (2) years from date of installation, whichever occurs first. Under this provision, the furnishing contractor agrees to repair or replace, within a reasonable time (not to exceed 4 weeks), any valve or accessories found to be defective during the warranty period at no cost to the City including all freight costs.
- III. **TECHNICAL REQUIREMENTS:**
- A. **Description:** Gate valves, as described herein, shall be resilient seated type with non-rising stems, fully encapsulated rubber gates, epoxy coated, made of ductile or cast iron, rated for 250 psi working pressure, and suitable for direct burial.
- B. **Standards:** Unless otherwise stated, the valves shall conform to the latest revisions of the following American Water Works Association (AWWA) and NSF Standards:
1. AWWA C509 Standard for Resilient-Seated Gate Valves for Water Supply Service
  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
  5. NSF 61
- C. **Valve Design:** Resilient wedge gate valves and tapping valves shall be designed in accordance with the following requirements:
1. Valve Ends - Valve ends shall be as specified on the bid form:
    - a. Mechanical joint ends shall conform to section 4.4.1.4.2 of AWWA C509 and shall be furnished complete with all mechanical joint accessories except 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.
    - b. AWWA C111 tabulated mechanical joint dimensions shall conform to AWWA C110; NOT AWWA C153.

- c. Flange ends shall conform to Section 4.4.1.4.1 of AWWA C509.
  - d. Push-on joints shall conform to AWWA C111 and shall be furnished with suitable gaskets and sufficient lubricant.
  - e. Tapping valve inlet end shall conform to Sec. 4.4.1.4.4 of AWWA C509 with the face finished in accordance with MSS SP-60, and shall be furnished with a suitable gasket. Tapping valve shall be furnished with bolts and nuts of 300 series 18-8 stainless steel or approved equal for the inlet end.
  - f. Tapping valve outlet end shall have mechanical joint and shall be capable of accommodating a Mueller Machine for tapping the pipe. Accessories shall be furnished in accordance with the above paragraph.
2. Exterior Fasteners – All exterior fasteners, including all bonnet and seal plate bolts and nuts, plugs and external accessories, shall be made from 300 series 18-8 stainless steel or approved equal corrosion resistant material. All exterior fasteners shall be hex head in accordance with ASME B18.2.1.
  3. Stem Seal – The valve stem seal shall be O – rings in conformance with Section 4.4.6 of AWWA C 509 and shall be so designed that the O – ring above the stem collar can be replaced while the valve is under working pressure and in the fully open position.
  4. Valve Stem – Valve stem, stem nut and stem collar shall be made of low zinc bronze (zinc content not to exceed 6%), or approved equal material, and shall be designed in accordance with Section 4.4.5 of AWWA C509. Valve stem shall have an integral thrust collar. Thrust collar bearings shall be designed to withstand maximum torque without distortion. Valve stem material shall be capable of withstanding the torque requirements as mentioned in Section III. C.7 of this specification. Stainless steel stems shall have a suitable anti-seize coating in compliance with NSF 61.
  5. Gate and Valve Seats – Gate material may be gray iron, ductile iron or bronze. The valve gate shall be fully encapsulated in rubber, which shall be bonded or vulcanized to the gate in compliance with Section 4.4.2.1.1 of AWWA C 509. Mechanical means of attaching the valve seat to the gate are not permitted. The gate and the rubber encapsulation shall be so designed as to provide a positive stop without damaging rubber encapsulation or the epoxy.
  6. Guides – Valve shall have guides in compliance with Section 4.4.3 of AWWA C 509. Guide ‘Inserts’ made of suitable material are optional.
  7. Torque Strength – Valves 3” and 4” in diameter shall be designed for an input torque of 300 foot pounds at the fully opened or fully closed positions, without distortion of any kind to the valve or its components.

Valves 6" thru 12" in diameter shall be designed for an input torque of 450-foot pounds at the fully opened or fully closed positions, without distortion of any kind to the valve or its components.

Valves will be tested at these torque inputs.

8. Direction to open – The valves shall open by turning the operating nut to the right (clockwise).
  9. Throttling Service - Valve shall be capable of being used for throttling without chatter, vibration or wear to the valve or to the water main.
- D. Coating:** Both inside and outside of the valve shall receive a minimum 6 mil thick fusion bonded epoxy coating in compliance with AWWA C550.
- E. Drawing submittals:** 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
2. Overall dimensions
3. Weight of the valve complete with accessories
4. Material specifications for all components
5. Maximum input torque strength at the fully open or fully closed positions.
6. Number of turns of the operating nut to fully close the valve from the fully opened position.

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.

- F. 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.
- G. 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 accordance with Section 6.3 of AWWA C509.
  2. Manufacturer's Certifications attesting to:

- a. Valve is capable of having a bubble-tight seal at twice the rated working pressure in the fully open and closed positions.
  - b. Valve has been cycle tested 1,000 times without loss of bubble tight seal.
  - c. Valve is capable of having a bubble-tight seal with full flow in the main at working pressure of 250 psi in the upstream end and with the velocity reaching 16 ft. /sec. in the downstream side of the valve.
  - d. Valve is designed and manufactured to withstand the input torque, as indicated in Section III.C.7, at the fully open and fully closed position.
3. Certification of compliance with provisions of the American Iron and Steel Act shall be furnished with every order.

**IV. ACCEPTABLE BRANDS:** The following brands and model numbers are acceptable to the City of Milwaukee:

U.S. Pipe & Foundry model A-USP2 with optional ASTM B98 - C66100/HO2 Stem  
Kennedy Valve model 8571, "Ken Seal II" with optional "NDZ" bronze stem and "NDZ" bronze stem nut  
Kennedy Valve model 8571, "Ken Seal II" with optional stainless-steel stem and "NDZ" bronze stem nut  
Mueller Co. Model A-2362 Series with optional ASTM B98 - C66100/HO2 Stem  
Clow Valve model 2639 and 2640, with optional "NDZ" bronze stem and "NDZ" bronze stem nut  
Clow Valve model 2639 and 2640 with optional stainless-steel stem and "NDZ" bronze stem nut

Bids for other brands and models will only be accepted if they can be pre-tested by the Milwaukee Water Works and comply with Section XIV, **VENDOR QUALIFICATIONS AND PRE-BID APPROVAL** of the latest revision of Specification 70b-D-7.

**V. 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 C509.
- 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.