

City of Milwaukee
Department of Public Works

Milwaukee Water Works

Material Specifications for
Ductile Iron Pipe, Centrifugally Cast,
for Water, 3" Through 54"



City of Milwaukee Specification No. 30-D-1d
Revised May 24, 2019

I. **GENERAL REQUIREMENTS:** Vendors bidding through the Department of Administration – Purchasing Division, 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 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. **TECHNICAL REQUIREMENTS**

A. **Description:** Ductile iron pipe as described herein shall consist of pipe centrifugally cast having a bell designed for a push-on or mechanical joint, a standard cement mortar lining and both internal and external bituminous seal coats.

B. **Standards:** Ductile iron pipe and accessories furnished shall conform to the latest revisions of the following American Water Works Standards, except as modified or supplemented herein:

1. AWWA C104 American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
2. AWWA C111 American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
3. AWWA C151 American National Standard for Ductile Iron Pipe, Centrifugally Cast

C. **Design Features:**

1. Laying Length 18 or 20 feet nominal
2. Diameter As stated on the bid form or plans
3. Thickness Shall be per AWWA C-151 Table 2 for Push-on and Mechanical Joint pipe. Diameters 4” through 54” shall be Class 55 minimum; pipe with a diameter of 3” shall be Class 53 minimum.
4. Cement-Mortar Lining: Each pipe shall have a standard thickness cement mortar lining in accordance with Section 4.8 of AWWA C104. Each pipe shall have an asphaltic seal coat in accordance with Section 4.12 of AWWA C104.
5. Coating: The exterior surface of each pipe shall have asphaltic coating in accordance with Sec. 4.4.1 of AWWA C151.
6. Push-on joints shall conform to AWWA C111.
 - a. A rubber gasket shall be furnished for each bell end of pipe.

- b. Sufficient joint lubricant shall be furnished for each joint.
 7. Mechanical joints for 4-24 inch diameter pipe shall conform to AWWA C111 as modified herein.
 - a. Plain rubber gaskets shall be furnished for each mechanical joint unless otherwise specified.
 - b. Full body glands shall be furnished in conformance with Fig. 1 and Table 2 of AWWA C111 for mechanical joint bells.
 - c. Nuts and Bolts for all joints shall be furnished in conformance with figure 3 and Tables 5 and 6 of AWWA C111.
 8. Restrained joints shall include all required accessories for every joint supplied.
 9. Gauging: A minimum of 10% of the 16" through 54-inch diameter pipe shall be gauged for diameter and roundness to ensure that satisfactory joints may be made with cut pipe. **All pipe that is purchased by the City of Milwaukee shall be 100% gauged.** Pipe shall be gauged in accordance with AWWA C151. The pipe shall be suitably marked that it has been gauged prior to delivery.
 10. Marking of Pipe: The pipe shall be indelibly factory marked on or near the bell in accordance with Section 4.7 of AWWA C151. Improper, illegible, or incomplete markings will be cause for rejection of the pipe. The weight and casting period shall be clearly shown on each pipe.
- D. Certification by Manufacturer:** The vendor or furnishing contractor shall submit manufacturer's certification data in accordance with Section 5.1.1.2 of AWWA C151 representing each pipe length furnished. The certifications shall be submitted in duplicate to the Superintendent of Milwaukee Water Works and shall include the following:
1. Casting: The foundry acceptance tests and low temperature impact tests for each casting period in which the pipe was cast.
 2. Hydrostatic Test: The hydrostatic test requirements in accordance with Section 5.2.1 of AWWA C151.
 3. Chemical Composition Certification: Upon request, the furnishing contractor will be required to submit manufacturer's certification in duplicate (in addition to the above) to the Superintendent of Water Works, indicating the chemical composition of ductile iron pipe supplied.
 4. All certifications required for AIS compliance.

III. INSPECTION BY CITY

- A. All certifications required under Section II.D. shall be submitted before any pipe will be inspected.
- B. The Water Engineering Division shall be notified at least four (4) working days prior to installation for material inspection.
- C. The Superintendent of Milwaukee Water Works or a duly authorized representative will inspect all materials furnished under this specification.
- D. At the time of inspection, the contractor shall be prepared to provide pipe samples for physical laboratory tests.
- E. Approval of the pipe is contingent upon the sample test results conforming to the specified physical properties.
- F. Rejection of pipe testing below physical standards will be in accordance with Section 5.7 of AWWA C151.
- G. Any material found not conforming to this specification will be rejected.
- H. Replacement materials shall conform to all the requirements of this specification.