Milwaukee
Water Works
Safe, Abundant Drinking Water

City of Milwaukee
Department of Public Works

Milwaukee Water Works

Material Specifications for Dry-Barrel Fire Hydrant

City of Milwaukee Specification No. 30-E-20
Revised July 20, 2018

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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 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:** In addition to the warranty requirements specified in Section IV of specification 70b-d-7, the following terms shall apply: If four or more hydrants furnished under the same contract develop or exhibit similar defects after installation, the furnishing contractor shall also pay all of the labor, equipment and material costs incurred by the Milwaukee Water Works in replacing the fourth and subsequent defective part or hydrant, total cost not to exceed $3,500 per hydrant.

Under this provision, the furnishing contractor also agrees to repair or replace, within a time period not to exceed 4 weeks, any hydrant or accessories found to be defective during the warranty period at no cost to the City, including all freight costs.

III. **REPAIR PARTS:** The bidder must be capable of providing repair parts to the City within 10 days of receiving an order.

Upon delivery of the first shipment of hydrants, the parts required for the City to perform the following work must be available for purchase:

A. Replace 10 complete nozzle sections, including the breakaway assembly, complete with frangible coupling and associated necessary components such as gaskets, rods, pins, nuts and bolts.

B. Replace 10 standpipes including the lower rod, breakaway assembly complete with frangible coupling and associated necessary components such as gaskets, pins, nuts and bolts and the bottom flange and associated necessary components such as gaskets, clamps, lock rings, nuts and bolts.

C. Replace 10 seat assemblies complete to include the main valve and retaining washers, plates or nuts, valve seat and insert, complete drain assembly and associated necessary components such as O-rings, pins and gaskets.

D. Install barrel extension kits in the following quantities and lengths complete with stem extension, stem coupling with fasteners and flange assembly complete with associated necessary components such as gaskets, clamps, lock rings, nuts and bolts:

1. 15 each - 6 inch length
2. 15 each - 12 inch length
3. 5 each - 18 inch length

4. 5 each - 24 inch length

E. Replace 15 breakaway assemblies complete with frangible coupling and associated necessary components such as gaskets, pins, nuts and bolts.

F. Furnish 20 operating nuts, material of which shall be either ductile iron conforming to ASTM A536 or hardened bronze conforming to ASTM B-584, copper alloy, C86300 or C86200.

IV. **BID SUBMITTAL DATA:** Upon request, bidders must submit the following data with their bid:

A. Cross Sectional drawings of the hydrant, showing the overall dimensions.

B. Material specifications for all components.

C. Maintenance manual, to include literature and descriptions of assembly and disassembly and special tools.

D. Weight of each bury length hydrant with accessories.

E. Statements confirming that all hydrants of the same make and model bid, regardless of the year manufactured, shall have interchangeable component parts and that the parts availability and delivery schedule shall remain firm for a minimum of a ten-year period.

F. Statement confirming that the manufacturer's or furnishing contractor's local supplier will have on hand a satisfactory inventory of replacement component parts of the hydrant, he or she intends to furnish, as may be necessary for the Milwaukee Water Works to properly repair and maintain the hydrant in a timely manner.

Note: If not provided with the bid but requested by the DOA, Business Operations Division, Procurement Services Section, the missing information, documentation and/or drawings detailed above must be submitted within three working days of receiving a request or the bid will be rejected.

V. **SHIPPING AND DELIVERY:** In addition to the shipping and delivery requirements specified in Section X of Specification 70b-D-7, the hydrants shall be shipped on a flat bed truck. The hydrants are to be secured in place, in such a manner as to prevent damage to the hydrant components or coatings during shipment.

VI. TECHNICAL REQUIREMENTS

A. **Description:** A hydrant, as described herein, is a discharge pipe made of ductile or cast iron, or a combination thereof, with a self-contained valve and threaded brass nozzles at which water may be drawn from the water main for the prime purpose of extinguishing fires. It shall be so constructed as to reduce damage due to traffic impacts and keep repair time to a

minimum by breaking at the designated point of failure, a frangible section, on impact.

B. **Standards:** Unless otherwise stated, the hydrant shall conform to latest revisions of the following ANSI approved American Water Works Association Standards:

1. AWWA C502 Dry-Barrel Fire Hydrants
2. AWWA C110 Ductile-Iron and Gray-Iron Fittings
3. AWWA C111 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

C. **Design Features:**

1. Traffic Model: As specified in Section 4.5.6 of AWWA C502 except which is modified to permit a complete 360° rotation or any increment thereof.

2. Size of Main Valve Opening: 5-1/4 inch diameter.

3. Working Pressure: Rated for 250 psig.

4. Bury Length: Hydrants bury lengths shall be as stated in the bid form. The standpipe may be furnished either as a single piece or in two sections.

5. Extension: All extensions shall be made for insertion below the breakable flange. Extensions shall be made from the same material as that of the barrel. The hydrant must be designed to allow the use of barrel extension kits, which allow the raising of the hydrant to a new grade while retaining the "Safety Coupling and Breakable Flange" traffic collision feature at the new grade. Extension kits are to be in 6" increments, with the shortest being 6" long.

6. Nozzle Arrangement: Hydrant shall have one 4-1/2" pumper nozzle and two 2-1/2" hose nozzles with National Standard Threads as described in Appendix 'A' of AWWA C502. All nozzles shall be at the same elevation. Nozzle shall be capable of being threaded into the upper barrel and shall be mechanically locked in place.

   The distance from the base of the operating nut to the center of the pumper nozzle shall not be less than 7-1/8". The distance between the ground and the center of the pumper nozzle shall not be less than 15 inches nominal dimension.

7. Inlet Connection: The hydrant inlet shall be an oversize mechanical joint with an internal diameter of 7.20", (+0.05",-0.0") which is designed to be installed on ductile iron pipe of 6.90" nominal O.D., and Class C-D cast iron pipe of 7.10" nominal O.D. The mechanical joint accessories shall include HSLA MJ bolts and nuts and an oversize-gray iron or ductile iron gland and rubber gasket to fit ductile iron and cast iron pipe as described above.

The oversize M.J. gland shall have uniform thickness in accordance with AWWA-C110. M.J. T-head bolts and nuts shall be made of high strength low alloy steel, in compliance with Section 4.4.5 of AWWA C111. Hydrant oversize M.J. shoe shall come assembled with all the M.J. accessories including bolts and nuts and oversize M.J. gland and gasket.

8. Lugs: Hydrant shoe shall be lugged to accept 3/4" rods.

9. Valve Seat Connection: Drain ring and seat ring shall be bronze.

10. Valve Closure: Valve shall be designed to provide full contact with the entire sealing face of the main valve rubber and open against main pressure.

11. Direction of Operation: Open counter-clockwise.

12. Operating Nut and Nozzle Cap Nut: 1 ½" Pentagon design shall conform to Section 4.6.4.5 of AWWA C502. Material of the operating nut shall be either hardened bronze conforming to ASTM B-584, copper alloy, C86300, C86200 or ductile iron.

13. Corrosion Resistant Bolts and Nuts: All exterior fasteners, including all bolts and nuts, plugs, pins and external accessories shall be made from low zinc bronze or 300 series 18-8 stainless steel or other approved equal corrosion resistant material.

14. Lubrication: The lubrication shall be nontoxic and suitable for a temperature range of -30°F to +120°F. Lubrication shall be approved for use in contact with potable water where such contact occurs.

15. Color and Paint: The top section of the hydrant shall be painted Red. Painting shall be in accordance with Section 4.13 of AWWA C502. Top coat of paint shall be applied over a base coat of primer. All external repair parts that are part of the top section of the hydrant, such as operating nut and breakaway assembly, shall also be painted as described above.

16. Drain Outlets: Drain outlets shall be tapped with an IP thread to receive a drain plug.

D. Drawings:

1. The successful bidder shall, within 15 calendar days after the award of the contract, submit to the Superintendent of Milwaukee Water Works for approval, three (3) sets of certified drawings for the model hydrant being furnished and also shop drawings for each component part.

2. The drawings shall show the following information:

   a. Construction details
   b. Overall dimensions
   c. Weight of the hydrant for all bury lengths, complete with accessories
   d. Materials specifications for all components
   e. Number of turns to open

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

4. After making any corrections and notations, the bidder shall resubmit four (4) sets of drawings to the Superintendent of Milwaukee Water Works for record and distribution.

5. All work shall be done and all hydrants shall be furnished in accordance with these certified approved drawings. For any change in the design of the hydrant or a component part during the life of the contract, the manufacturer shall be required to submit a drawing showing the change(s) in detail. The change shall be approved by the Superintendent of Milwaukee Water Works before shipping. Failure to adhere to this procedure will be cause for rejection of the hydrants and/or cancellation of the contract.

6. The successful bidder shall also submit three (3) sets of shop drawings for the different component parts being used for the following:

   a. Breakable Flange Repair Kit
   b. Valve Seat Repair Kit
   c. Barrel Extension Repair Kit
   d. Nozzle Section Repair Kit
   e. Stand Pipe Repair Kit

   Upon request, the successful bidder shall submit the manuals and procedures required for the above-mentioned repair kits.

E. Production Testing: Shall be performed by the manufacturer as specified in Section 5.1 of AWWA C502. Additionally, the following tests should also be performed as noted:

1. Torque testing of the Hydrant – Each assembled hydrant (all bury lengths) shall be torque tested as specified in Sections 4.5.5 and 5.2.2 of AWWA C502.

F. **Manuals:** Prior to inspection by the City, the manufacturer shall furnish four (4) copies of maintenance manuals and parts lists to the Superintendent of Milwaukee Water Works for the hydrants being furnished.

G. **Certification Requirements:** Upon shipment of the hydrants, the manufacturer shall furnish, upon request, an Affidavit of Compliance in accordance with Section 6.3 of AWWA C502, in duplicate, to the Superintendent of Milwaukee Water Works for the hydrants being furnished.
The manufacturer shall provide, for every hydrant order placed, certification of compliance with the American Iron and Steel Act (AIS) as required by the Drinking Water State Revolving Fund (DWSRF)
The furnishing contractor is also required to submit the following certificates for each hydrant being furnished.

1. Hydrostatic and Leakage tests

2. Torque test – Each assembled hydrant of all bury lengths shall be torque tested as per Section 5.2.2 of AWWA C502.

VII. **ACCEPTABLE BRANDS:** The following brands and model numbers have been approved in accordance with City of Milwaukee Specification No. 70b-D-7 and are acceptable to the City of Milwaukee.

Mueller Co. model "Super Centurion" stop in bonnet A-473

Manufacturers may request approval from the City of Milwaukee in accordance with City of Milwaukee Specification No. 70b-D-7.

VIII. **INSPECTION BY THE 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 hydrants furnished under this specification, in accordance with AWWA Standard C502.

C. Any hydrant 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.

IX. **TRAINING AIDS:** *Upon request*, the successful bidder shall furnish as training aids one (1) cutaway model of the hydrant bid, and/or two sets of tools necessary for repairs and maintenance. The training aids shall allow complete assembly and disassembly as well as the repair of the head, shoe,

extension, breakaway section, seat and any other repairs normally associated with the model bid. The training aids shall be delivered within 30 calendar days of *date requested* and will become the property of the City of Milwaukee. The cost of furnishing the training aids shall be included in the price bid for the hydrants.

X. **TRAINING:** *Upon request*, the successful bidder shall provide a minimum of two (2) - two (2) hour training sessions to be given to City personnel in Milwaukee, WI at a site designated by the Superintendent of Milwaukee Water Works. *Training may be requested at any time during the contract period including contract extensions.* Training shall be provided by factory training personnel and shall include trouble-shooting and repairs.

The number of City personnel to be trained shall be determined by the Superintendent of Milwaukee Water Works. Training shall be provided within 45 days *of request* and will be subject to the availability of Water Works personnel as determined by the Superintendent. A 15% retainer shall be imposed on all payments to the vendor pending completion of the training unless delays are imposed by the City.

XI. **PARTS AVAILABILITY:** Repair and replacement parts for the hydrants bid must be available for a minimum of 10 years. Confirmation of parts availability must be provided with the bid in the form of a statement from the manufacturer and co-signed by the bidding vendor if applicable.