

METROPOLITAN UTILITIES DISTRICT OF OMAHA
OMAHA, NEBRASKA

SPECIFICATIONS FOR DRY-BARREL FIRE HYDRANTS

Sec. 1.1 Scope

This specification is numbered according to AWWA C502-05. Hydrants shall feature compression shut-off, be manufactured in the United States and conform to the latest version of AWWA C502, except as superseded and/or supplemented herein. If these specifications and AWWA C502 contradict, these specifications shall govern.

*1.1.2 The District approves the following hydrants for use:

Mueller Super Centurion 250 Fire Hydrant
Clow Medallion Fire Hydrant

Sec. 4.3 Data to Be Supplied by the Manufacturer

At time of bid, furnish all data described in Section 4.3 of AWWA C502-05 as well as paint samples and data sheets, the number of turns to open the hydrant and a detailed parts list.

After award of bid, furnish updates on all data requested above associated with design and/or manufacturing changes.

Sec. 4.4 Materials

4.4.2 *Physical and Chemical Properties of Components.*

4.4.2.1 Gray iron shall meet or exceed the requirements of ASTM A126, class B.

4.4.2.2 Ductile iron shall meet or exceed the requirements of ASTM A536, grade 60-42-10.

4.4.2.5 Copper alloys that come in contact with potable water shall contain no more than 2% aluminum, 2% manganese and 16% zinc. Copper alloys used in hydrants shall comply with sections 4.4.2.5.1 through 4.4.2.5.7 of AWWA C502-05 as applicable.

Sec. 4.5 General Design

4.5.1 *Working Pressure.* Hydrants shall be designed for a minimum working pressure of 200 psig.

** 4.5.6 *Traffic Model Components.* The hydrant shall be designed so that damage from vehicular impact occurs aboveground only. Hydrants shall be supplied with a frangible flange and stem coupling near the ground line. The frangible stem coupling shall be iron, bronze, stainless steel, or galvanized steel without rolled pins. Extension kits shall feature the same frangible components as hydrants. Frangible bolts are an unacceptable alternative to a frangible flange.

Sec. 4.6 Detailed Design

4.6.2 *Barrel sections.* Disassembly of the frangible flange near the ground line shall allow for 360° rotation of the upper barrel section (nozzle section) of the hydrant without the disassembly of any other hydrant component. A ridge cast on the barrel or a white line painted around it shall

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indicate the ground line. The ground line shall be at least 18" from centerline of the pumper nozzle.

4.6.3 *Outlet Nozzles.*

4.6.3.1 *Nozzle.* Nozzles shall feature National (American) Standard Threads per NFPA 1963. Hydrants shall feature two 2½" hose nozzles and one 4½" pumper nozzle. The hose nozzles shall be 180° from each other and the pumper nozzle shall be 90° from the hose nozzles and 180° from the inlet to the hydrant. The nozzle shall be fastened to the upper barrel section (nozzle section) by mechanical means. For screw in nozzles, the nozzle pin shall have a positive stop and shall penetrate the nozzle to prevent nozzle turning or backing out. If the pin penetrates the waterway, the hole shall be sealed against leakage. For quarter-turn or cam-type nozzles, a nozzle set screw shall be provided. The set screw shall thread into the upper barrel section (nozzle section) and prevent turning or backing out of the nozzle. Friction style stops are unacceptable.

Nozzles shall not be "leaded-in".

4.6.3.2 *Caps* shall be fastened to the upper barrel section (nozzle section) with a corrosion resistant chain or cable. Cap nuts shall conform to MUD Drawing 416009-1 included within these specifications.

4.6.4 *Bury.* Depth of bury shall be 5'-6".

4.6.5 *Operating Mechanism.* The operating mechanism including the threads shall be isolated and sealed in a lubricant housing from the upper barrel section (nozzle section). The housing shall have the ability to be refilled with lubricant without removing the hydrant bonnet. The operating mechanism shall be lubricated using NSF 61 food grade oil or grease. Lubricant shall not contain calcium acetate. The penetration of the stem through the housing shall be sealed with o-rings to prevent mixing of the lubricant and water.

4.6.5.2 *Turns.* No fewer than 10 complete turns shall close the hydrant valve.

4.6.5.5 *Opening shape.* The operating nut shall conform to MUD Drawing 416009-1 included within these specifications. The opening between the operating nut and the top of the bonnet shall be protected from rain, snow, dirt or other contaminants by skirting the operating nut, installing a seal ring or using other method commonly used in the hydrant manufacturing industry.

Sec 4.7 Hydrant Inlet

4.7.1 *Connection.* Furnish a 6" mechanical joint hydrant inlet. Do not furnish mechanical joint accessories (gland, bolts, nuts and gasket).

Sec. 4.8 Valves

4.8.1 *Main Valves.*

4.8.1.1 *Interface.* If the valve nut is integral with the lower valve plate, the assembly shall be made of a copper alloy or epoxy coated iron. Otherwise, the valve nut shall be made of a copper alloy and a rubber seal or o-ring shall be installed between the valve nut and the lower valve plate. The lower valve plate shall be flat to provide for a good seal with and easy removal of the main valve.

4.8.1.2 *Main valve.* The main valve shall be natural rubber, nitrile, urethane, styrene butadiene rubber (SBR) or approved equal. The material shall have a Type A Durometer hardness of 95 ± 5.

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4.8.1.4 Valve-seat ring. Rubber o-ring seals shall be provided around the seat ring.

4.8.1.4 Valve opening. The diameter of the main valve opening shall be 5¼".

4.8.2 *Barrel Drain Outlet*

4.8.2.1 Drain. The hydrant shall be manufactured with two (2) drain valves unless a drain ring routes water from a single drain valve to two (2) drain outlets. Drain rings shall be made of a copper alloy, copper alloy lined iron or epoxy-coated iron. The drain valve shall be faced with resilient rubber designed for long life without deterioration and shall have a copper alloy seat.

4.8.2.2 Location. Drain outlets shall be a minimum diameter of ¼".

4.8.2.3 Integral part material. Drain outlets integral to the drain ring shall be made of a copper alloy or lined with a copper alloy.

4.8.2.4 Nonintegral part material. If the drain outlet is not an integral part of the drain valve, it shall be bushed with a copper alloy to the outside of the hydrant.

Sec. 4.10 Seals

4.10.4 *Gaskets*. Gasket material shall be rubber. Paper or other fibrous gaskets are unacceptable.

Sec. 4.13 Painting

4.13.2 *Shop Coating of Hydrant Top Section*. The exterior of the upper barrel section (nozzle section) shall be coated with a minimum of 3 mils dry film thickness of primer and top coated with a minimum of 3 mils dry film thickness of high gloss paint. Primer and paint shall be durable and suited for use outdoors. The upper barrel section (nozzle section) shall be painted bright yellow, the bonnet shall be painted Iowa Paint #762 Flambeau Orange or approved equal and the nozzle caps shall be painted bright white.

4.13.4 *Interior Coating of Surfaces*. All interior ferrous surfaces, except machined surfaces, such as the threaded portion of the stem, which must fit closely with the adjacent parts, shall be coated. Coating shall be fusion bonded epoxy or two-part liquid epoxy meeting AWWA C550 and NSF61. Fusion bonded epoxy shall have a 10 mil dry film thickness. Liquid two-part epoxy shall be applied in two (2) 4 to 5 mil dry film thickness coats. Coating shall be cured for immersion in potable water.

Sec. 5.1 Production Testing

5.1.3 *Hydraulic Test*. Each assembled hydrant shall be subjected to two shop tests under a hydrostatic pressure of 400 psig or twice the rated operating pressure, whichever is greater.

Sec. 5.2 Prototype Testing

5.2.1 *Hydraulic Test*. Loss of head caused by friction, in pounds per square inch, corrected for inlet and outlet velocity head shall not exceed 2 psi at 600-gpm flow through the 4½" nozzle.

Sec. 6.3 Affidavit of Compliance

An affidavit stating that the hydrants and materials used in their construction conform to the applicable requirements of AWWA C502 and these specifications shall be provided with each shipment. The affidavit for the shipment shall include individual hydrant serial numbers or other documentation to enable cross referencing of hydrants to the affidavit. The affidavit shall also

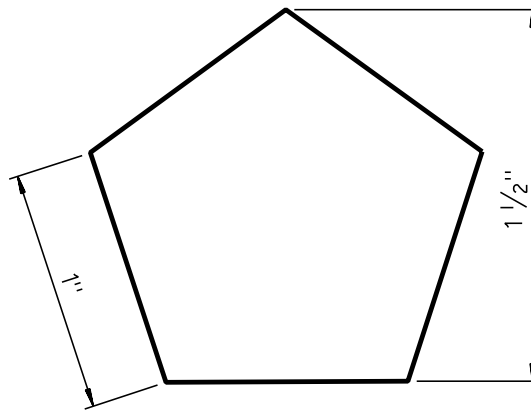
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state that specified tests have been performed and that test requirements have been met for each hydrant.

Sec. 7.1 Warranty

The manufacturer shall warrant hydrants for ten (10) years after installation. Within this period of time, costs accrued by the District for replacement and installation of parts found to have defects in material and workmanship and/or not complying with AWWA C502, these specifications and/or the manufacturer's approved drawings, including costs for repairing/replacing a defective installed hydrant, shall be the responsibility of the manufacturer.

OPERATING OR CAP NUT



NOTE

PENTAGONAL MEASURING 1/2" FROM POINT TO FLAT AT THE BASE OF THE NUT AND 1/16" AT TOP. FACES SHALL TAPER UNIFORMLY AND THE HEIGHT OF THE NUT SHALL NOT BE LESS THAN 1". THE POINT TO FLAT DIMENSION OF THE PENTAGON SHALL BE MEASURED TO THE THEORETICAL POINT WHERE FACES WOULD INTERSECT AS IF THERE WERE NO ROUNDING OFF AT CORNERS.

METROPOLITAN UTILITIES DISTRICT OMAHA, NEBRASKA		SCALE NO SCALE	REVISIONS 4-22-91 BDC
		DRAWN BY S.A.M.	
		DATE 1-20-95	
DESCRIPTION OPERATING OR CAP NUT AND		REVISED BY	
DIMENSIONS FOR FIRE HYDRANTS.		CHECKED BY	
		APPROVED BY	PAGE NO. 1 OF 1 FILE NO. 416009-1

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