



BANGOR WATER DISTRICT

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Material Specifications

The Bangor Water District reserves the right to accept or reject materials when in the best interests of the District.

Any reference to a particular standard shall mean the latest revision.

THESE NOTES SHALL APPLY TO ALL BRASS FITTINGS PURCHASED FOR USE WITHIN THE BANGOR WATER DISTRICT'S DISTRIBUTION SYSTEM.

Standards for all brass fittings will conform to the following:

- 1.) All fittings will be made of No Lead Brass, (.25% lead or less brass), such as Enviro Brass or approved equal.
- 2.) If the fittings are not currently manufactured with No Lead Brass, they will meet NSF61 certification.
- 3.) If the fitting is Not made in No Lead Brass or NSF61 Certified Brass, they can be of standard Brass manufacture.

1. **BLANK FLANGES**

250 lbs. Class 125 bolt hole (C115/A21.15)

2. **BRASS FITTINGS FOR TYPE "K" COPPER TUBING AND HDPE (CTS)**

3/4-inch through 2-inch brass fittings shall, **have a lead content as low as possible for the fitting in question, (see above notes). The vendor shall supply the District with the lead content of the fittings**, conforming to ANSI/AWWA C800 for type "K" soft copper shall be compression fitting on the copper end.

A. **BRASS GOODS (MISCELLANEOUS)**

Shall be 125 lbs., brass shall, **have a lead content as low as possible for the fitting in question, (see above notes). The vendor shall supply the District with the lead content of the fittings**, with iron pipe threads when used for connecting water services. Items included are bushings, couplings, elbows, nipples, plugs, and tees. Manufactured by Lee, Wheeler, Nibco, Hayes, Ford, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

B. CORPORATION STOPS

3/4-inch and 1-inch shall, **have a lead content as low as possible for the fitting in question, (see above notes).** The vendor shall supply the District with the lead content of the fittings, ball valve type construction with inlet CC thread and compression pack joint on the outlet, heavy patterns, and conforming to AWWA/ANSI C800.

1 1/4-inch to 2-inch shall, **have a lead content as low as possible for the fitting in question, (see above notes).** The vendor shall supply the District with the lead content of the fittings, with inlet iron pipe thread and compression pack joint on the outlet, heavy patterns, and conforming to AWWA/ANSI C800. Manufactured by Ford, Hayes, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

C. CURB STOPS

Shall, **have a lead content as low as possible for the fitting in question, (see above notes).** The vendor shall supply the District with the lead content of the fittings, ball valve type, or approved equal with compression pack joints on either end. Open left, no drain, heavy patterns, and conforming to AWWA/ANSI C800. Manufactured by Ford, Hayes, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

3. COPPER TUBING

Shall be type "K" soft copper (ASTM B88).

4. COPPER METER SETTERS

Meter setters for 5/8 x 3/4 -inch and 3/4-inch meters shall have compression pack joint connections on the inlet and outlet ends suitable for 3/4-inch copper tubing. Meter setters for one-inch meters shall have female iron pipe thread connections on the inlet and outlet ends. Two meter gaskets shall be supplied with each horn (**see above notes.**) Manufactured by McDonald EB2, Cambridge Brass, or approved equal.

5. DUC LUGS AND TIE BOLTS

Tie bolts with hexagonal nuts shall be Star Supply Corp. or approved equal.

Duc lug bolts shall be Star Supply Corp. or approved equal.

6. FLANGED ADAPTERS

Flanged adapter couplings shall have either a ductile iron ASTM A536 or gray iron ASTM A126 body. Bolt circle, bolt size, and spacing shall conform to ANSI 150 lbs. flange drilling. Grade 30 gasket with either a malleable iron ASTM A47 or ductile iron ASTM A536

follower. Anchor studs shall be installed for a minimum working pressure of 125 psi. Bolts and nuts shall be ductile iron ASTM A536, Rockwell 912, or approved equal.

7. HIGH DENSITY POLYETHYLENE PIPE

High Density Polyethylene (HDPE) pipe may be used on the owner's side of the service line after the curb stop outside the right of way. The HDPE must be copper tubing size (CTS) and conform to AWWA standard C901-02 (PE 3408 Pressure Class 160) and be clearly marked. Stainless steel inserts and compression fittings must be used at all joints.

8. HYDRANTS

Shall be compression type conforming to AWWA/ANSI C502. Hydrants approved are Eddy F2640, Mueller Super Centurion 200, or US Pipe Metropolitan 250, model 250, AVK Series 2780 meeting the following requirements:

1. Break flange construction
2. 5 1/4-inch main valve
3. Non self-draining - drain hole plugged
4. Two 2 1/2 inch hose nozzles (National Standard Thread)
5. One 4 1/2 inch pumper nozzle (National Standard Thread)
6. Inlet connection - mechanical joint
7. Inlet connection size - six inch
8. Direction of opening - right
9. Operating nut - 1 1/2 inch pentagon pattern (National Standard)
10. Trench depth - as specified
11. Hydrant color – yellow
12. Packing - "O" ring
13. Nozzle cap chains
14. Stainless steel nuts and bolts
15. Supplied with mechanical joint accessories, high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111/A 21.11.

Hydrants shall be given a primer coat of paint and an enamel finish coat, both of a type specified for metal finishes. Hydrants shall be yellow with silver nozzle caps and cover.

Silver Paint: California oil based paint, number 211-10 or approved equal.

Yellow Paint: California oil based paint, number 211-63 or approved equal.

9. PIPE

Pipe shall be either ductile iron or approved plastic (**PVC mains requires BWD approval prior to use**).

Ductile iron: (2-inch diameter and larger). Pipe shall be ductile iron centrifugally cast with push-on joints conforming to AWWA/ANSI C151/A21.51. Pipe shall be Class 52, double cement lined and bituminous coated conforming to AWWA/ANSI C104/A21.4. Ten (10) percent of the pipe shall be suitable for field cutting and marked as such.

Plastic: (AWWA) (4-inch to 12-inch diameter). **Requires District approval before using.** Pipe shall be polyvinyl chloride (PVC) AWWA pressure pipe with push-on joints conforming to ANSI/AWWA C900. Pipe shall be Class 150 meeting the requirements of DR 18. Standard laying lengths shall be 20 feet for all sizes. At least 80 percent of the total footage of pipe of any size shall be furnished in standard lengths. The remaining 15 percent can be random lengths at least 15 feet long. All pipe shall be clearly marked with one-inch letter "WATER" at 12-inch intervals two sides 180 degrees apart the entire length.

Magnetically traceable tape shall be placed over all plastic pipe.

10. PIPE COUPLINGS

Sleeve shall be epoxy coated ductile iron ASTM A536, and shall have smooth inside taper for uniform gasket seating. Gasket shall be grade 30. Follower flanges shall be ductile cast iron ASTM A536. Bolts shall be 316 stainless steel with heavy, 316 stainless steel hexagon nuts to ANSI/AWWA C111/A21.11 standards. **OD range shall be approved by the Bangor Water District.** Ford coupling or approved equal.

11. PIPE FITTINGS

Pipe fittings shall have mechanical joint ends conforming to ANSI/AWWA C1/A21.11, double cement lining and bituminous coating conforming to ANSI/AWWA C104.A21.4.

Fittings shall be supplied with mechanical joint accessories unless specified others, with high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111.A21.11.

Long body fittings shall be Class 350 ductile iron conforming to ANSI/AWWA C110/A21.10.

Compact body fittings shall be Class 350 ductile iron conforming to ANSI/AWWA C153/A21.53.

12. REPAIR SLEEVES

Shall have single band of 304 stainless steel with malleable iron ASTM A47 grade 32510 lugs, grade 30 gasket and high strength low ally steel bolts with heavy semi-finished hexagon nuts conforming to AWWA/ANSI C111.A.21.11 or 3904 stainless steel bolts and nuts as manufactured by Rockwell or approved equal.

13. RETAINER GLANDS

Mechanical joint retainer glands shall be heavy duty ductile iron body, UL or FM approved, and shall have a minimum working pressure rating as follows:

4-inch	350 psi
6-inch	350 psi
8-inch and larger	250 psi

Set screws shall be either "Cor-Ten" steel, ductile iron, or approved equal. The number of set screws shall be equal to or greater than the number of the nominal diameter of the gland (i.e. four-inch, four sets of screws; six-inch, six set of screws). Locking rings and megalugs are acceptable replacements for retainer glands, but are not a replacement for thrust blocks.

14. SERVICE BOXES, COVERS, AND RODS

Service boxes shall be Erie style with arch pattern, one-inch in diameter, constructed from SC #40 Black Steel, adjustable in length from five feet to six feet, and have 5/8-diameter stainless steel rod 36-inches in length with heavy brass pins. One-inch caps shall be extra heavy with brass pentagon plug and coarse "rope" thread to fit a one-inch Erie style box. Two-inch caps shall be a #3 cover, cast iron with brass bushing and bras pentagon plug to fit a two-inch Erie style box. All caps shall have the word "WATER" clearly cast in top and be constructed of a magnetic material.

15. SERVICE BOX FOOT PIECE

Service box foot pieces shall be cast iron and fit all standard one-inch Erie style service boxes and fit over curb stops larger than one inch.

16. SERVICE SADDLES

Shall be constructed of ductile iron with epoxy coating and with stainless steel bands, nuts, and washers. Body casting shall be wrap-around design of high tensile ductile iron conforming to ASTM A536. Gasket shall be of 3 1/2-inch diameter and constructed of Buna-N, and grooved to conform to the pipe surface, bonded in place for easy installation. Finish shall be epoxy coated. Ford FC202 or approved equal.

17. TAPPING SLEEVES

Mechanical joint tapping sleeve: shall have mechanical joint end seals conforming to AWWA C111, with outlet flange conforming to AWWA C207, class D with ANSI 150 lb. drilling recessed for tapping valve. Tapping sleeve shall fit AWWA standard of 1908, Class AB-CD cast iron pipe. Manufactured by Clow, Mueller, or approved equal. Acceptable for cast iron and ductile iron pipe.

Stainless steel tapping sleeve: shall be 304 stainless steel, outlet flange conforming to AWWA C207 Class D, ANSI 150 lb. drilling recessed for tapping valve. Bolts shall be high strength 18-8 stainless steel with heavy hexagon nuts conforming to ANSI/AWWA C111 / A21.11.

Gasket material shall be grade 30 or approved equal, and shall have a smooth inside taper for uniform seating. Acceptable for ductile iron pipe.

Note 1: **All size on size taps require full body Ductile Iron MJ tapping sleeves.**

18. TAPPING VALVES

Tapping valves shall be epoxy coated with 200 psi working pressure, non-rising stem, "O" ring, open left, flanged end conforming to AWWA C207, Class D, ANSI 150 lb. drilling, mechanical joint end conforming to AWWA C111, two-inch ductile iron operating nut with stainless steel bolt, resilient seated gate valve conforming to ANSI/AWWA C509, manufactured by Waterous Series 500, American Darling CRS 80, Mueller A2360, AVK series 25, or approved equal.

Tapping valves shall be supplied with mechanical joint accessories, high strength low alloy steel bolts, and heavy hexagon nuts conforming to ANSI/AWWA C111/A21.11.

Tapping valve seal plates and bonnets shall have either all silicone bronze or 316 stainless steel bolts and nuts.

19. VALVES

Valves shall be epoxy coated and supplied with mechanical joint accessories, high strength alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111.A21.11.

Valve seal plate and bonnet shall have either all silicone bronze or 316 stainless steel bolts and nuts.

Butterfly Valve: (16 inch diameter and larger). Shall be a valve with a steady state working pressure of 150 psig, and a maximum steady-state differential pressure of 150 psi, open left, mechanical joint ends, non-rising stem, two-inch ductile iron operating nut with stainless steel bolt, conforming to AWWA/ANSI C504. Manufactured by, Clow, Dresser, Mueller, or Pratt.

Gate Valve: (12-inch diameter or less): Shall be 200 psi working pressure, non-rising stem, "O" ring, open left, mechanical joint, two-inch ductile iron operating nut with stainless steel bolt, resilient seated gate valve conforming to ANSI/AWWA C509, manufactured by Waterous Series 500, American-Darling CRS 80, Mueller A 2360, AVK series 25, or approved equal.

20. VALVE BOXES

Shall be cast iron, **manufactured in USA or Canada**, two piece, sliding type with a non-flange top section, no inside stops, and an outside shaft diameter of six inches. Bottom section shall be belled base. Length of top section shall be minimum of 24 inches. Middle and bottom section length as needed. Boxes shall have the word "WATER" clearly cast into the cover.