

**DIVISION V**  
**WATER DISTRIBUTION**

**SECTION 50**

**MATERIAL**

**50.1 GENERAL**

These specifications cover the pipe, fittings, and accessory items used for potable water, reclaimed water, and raw water transmission facilities.

Pipe used in water distribution systems shall be either polyvinyl chloride (PVC), or ductile iron pipe (DIP).

The CONTRACTOR shall be responsible for all materials furnished and storage of same, until the date of substantial completion. He shall replace at his expense all materials found to be defective or damaged in handling or storage. The CONTRACTOR shall, if requested by the CITY, furnish certificates, affidavits of compliance, test reports, and/or samples for check analysis for any of the materials specified herein. All pipe delivered to the project site for installation is subject to random testing for compliance with the designated specifications.

**50.2 PIPE INSPECTION AND TESTING**

Requirements specified in Section 40.5 shall apply.

**50.3 POLYVINYL CHLORIDE PIPE AND FITTINGS**

**50.3.1 PVC PIPE**

All PVC pipe of nominal diameter four (4) inches through twelve (12) inches shall be manufactured in accordance with AWWA standard C900, latest edition. The PVC pipe shall have a minimum working pressure rating of 150psi and shall have a dimension ratio (DR) of 18. Pipe shall be the same outside diameter as ductile iron pipe.

**50.3.2 JOINTS**

PVC pipe shall have integral bell push on type joints conforming to ASTM D3139.

**50.3.3 FITTINGS**

Fittings used with PVC pipe shall conform to Section 50.4.

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**50.4 DUCTILE IRON PIPE AND FITTINGS**

**50.4.1 DUCTILE IRON PIPE**

All ductile iron pipe shall be manufactured in accordance with ANSI/AWWA A21.51/C151 and have a minimum 350 pressure class rating.

**50.4.2 FITTINGS**

Fittings shall be ductile iron compact fittings manufactured in accordance with ANSI/AWWA A21.53/C153 and have a minimum 350 pressure class rating.

**50.4.3 JOINTS**

Joints for ductile iron pipe and fitting joints shall be push-on, or mechanical for pipe diameters of 12 inch and above, joints conforming to ANSE/AWWA A21.11/C111. Where called for in the plans, restrained or flanged joints shall be provided. Flanged joints shall conform to ANSI Standard B 16.1-125 LB. Restrained joints shall conform to Sections 34.3 and 34.4.

**50.4.4 COATINGS AND LININGS**

Where ductile iron pipe and fittings are to be below ground or installed in a casing pipe, the coating shall be a minimum 1.0 mil thick in accordance with ANSI/AWWA A21.51/C151. Where ductile iron pipe and fittings are to be installed above ground, pipe, fittings, and valves shall be thoroughly cleaned and given one field coat of a rust inhibitor primer with a minimum 1.5 mils dry thickness. Intermediate and finished field coats of oil based paint with a minimum 1.5 mils dry thickness shall also be applied by the CONTRACTOR. Primer and field coats shall be compatible and shall be applied in accordance with the manufacturer's recommendations. See Appendix C.

All ductile iron pipe and fittings for potable water applications shall have an interior protective lining of cement-mortar with a seal coat of asphaltic material in accordance with ANSI/AWWA A21.4/C104.

All ductile iron pipe and fittings for sanitary sewer applications shall have a interior protective lining of polyethylene in accordance with ASTM A746.

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**50. 4. 5**                    **POLYETHYLENE ENCASEMENT**

The pipe shall be polyethylene encased (8 mil) where shown on the DRAWINGS or required by the CITY in accordance with ANSI/AWWA A21.51/C105.

**50. 5**    **SERVICE PIPE, STOPS, FITTINGS, AND SERVICE SADDLES**

**50. 5. 1**                    **SERVICE MATERIAL**

- a)    Type "K" seamless 1", 1-1/2", or 2" copper water tubing shall conform to ASTM B88.
  
- b)    Polyethylene 1", 1-1/2", or 2" tubing shall have a pressure rating of 200psi. at 73.4 degrees Fahrenheit, a copper tubing outside diameter per ASTM D 2737, a standard dimension ratio of 9, a Plastic Pipe Institute rating of PE 3408, and manufactured according to ASTM D 1248. The ultra violet inhibited color shall be blue for potable water and purple for reclaimed water.

**50. 5. 2**                    **STOPS**

Corporation stops shall be 1, 1-1/2, or 2 inch brass, equipped with connections compatible with copper tubing and threaded in accordance with specifications in AWWA C800 and AWWA C901. Curb stops shall be sized to match the meter size and conform to the specifications in AWWA C800 and AWWA C901.

**50. 5. 3**                    **FITTINGS**

Brass fittings shall be cast and machined in accordance with specifications in AWWA C800 and AWWA C901 with compatible copper tubing connections.

**50. 5. 4**                    **SERVICE SADDLES**

A service saddle shall be used for all service line taps up to two (2) inches. Service saddles shall be double strap, anchored by a minimum four (4) bolt pattern on a ductile iron saddle body. Service saddles for PVC pipe shall have the double strap sized exactly to the pipe outside diameter. Sealing gaskets shall be BUNA-N rubber. Straps shall have a ductile iron body with electro-galvanized steel hardware and a heavy coat of corrosion resistant metal primer. An all bronze service saddle may be utilized as approved by the DIRECTOR.