

SECTION 3

WATER MAIN CONSTRUCTION

FITTINGS AND COUPLINGS FOR WATER DISTRIBUTION

1. SCOPE: This section shall include the furnishing of all types of fittings and couplings and all other incidentals required for the construction of a complete water system as shown on the drawings and as specified herein. Unless otherwise noted, the materials listed below are acceptable to the District for use in water distribution systems. Should the Contractor desire to use other materials not listed in these specifications, written permission must be obtained from the District.

All material shall be free from defects impairing strength and durability and be of the best commercial quality for the purposes specified. It shall have structural properties sufficient to safely sustain or withstand strains and stresses to which it is normally subjected and be true to detail.

Valves supplied shall be of the designation and description indicated on the plans or described herein.

2. SUBMITTALS: The Engineer shall submit to the District three (3) copies of all submittal data for review and/or approval. Submittals shall include at a minimum: (1) The manufacturer's name, (2) type of material, (3) ASTM, ANSI, AWWA or other quality standard, and (4) pressure class. If the materials do not meet the quality standards specified, the submittals will be rejected and other materials submitted as specified. The Contractor must obtain approval of all fittings and couplings prior to commencing construction.

3. DELIVERY, STORAGE AND HANDLING OF FITTINGS AND COUPLINGS: Units shall be delivered, handled and maintained in a manner to avoid damage to the fittings. The material shall be stored in an open area on high, well drained land not subject to flooding, mud or other means of contamination.

4. DUCTILE IRON FITTINGS: Ductile iron fittings shall conform with ANSI A 21.10 (AWWA C-110), latest revision with the exception of the manufacturer's design dimensions and thickness. Fittings shall have a working pressure rating of 350 psi for fittings, 12 inch and under and 250 psi for fittings over 12 inch. Manufacturer of ductile iron fittings shall be at the discretion of the District.

Ductile iron shall conform with ASTM A-536, latest revision, Grade 70- 50-05.

A. Thickness Design: Nominal thickness of the fittings shall be equal to Class 51 ductile iron pipe as specified in ANSI A 21.51 (AWWA C-151).

B. Lining: Fittings shall have a cement mortar lining and seal coating conforming with ANSI A 21.4 (AWWA C-104), latest revision.

C. Exterior Coating: Fittings shall have an outside coating of bituminous material in accordance with the manufacturer' s specifications. The final coat shall be continuous and smooth being neither brittle when subjected to low temperatures nor sticky when exposed to hot sun. The coating shall be strongly adherent to the pipe at all temperatures.

D. Joints: Fittings shall have mechanical or flanged joints as specified herein.

1. Mechanical Joint: ANSI Specification A 21.11 (AWWA C-111), latest revision, for three inch pipe and larger. Bolted mechanical joint fittings shall be used with ductile iron pipe, PVC pipe, for all hydrant tees, and where specifically called for on the plans.

2. Push-on Joints: Single gasket push-on type joints shall conform with ANSI A 21.11 (AWWA C-111), latest revision. Push-on joint fittings may be used on PVC pipe or where mechanical joints are not specifically called for on the plans or specified above.

3. Flanged Joint: Flanged fittings shall be constructed of ductile iron with flanges drilled and faced per ANSI B 16.1 for both 125 Lb. or 250 Lb. working pressure.

5. PVC FITTINGS: PVC fittings are not acceptable for water mains three (3) inches or greater. Fittings for PVC pipe less than three (3) inches shall be solvent weld schedule 40 PVC.

6. COUPLINGS: Couplings may be used where applicable for completion of the work. Couplings supplied shall conform to the following:

A. Compression Sleeve Coupling: Units shall be Dresser style 38, Smith-Blair No.441, or approved equal.

B. Victaulic Couplings: Units shall be Victaulic Co., style 31, 41, or 44 or approved equal.

C. Gruvagrip Couplings: Units shall be Gustin-Bacon Division of Certainteed, Series 100, or approved equal.

D. Flanged Adaptors: Units shall be Dresser style 128, Smith-Blair No. 913 or approved equal.

7. MECHANICAL THRUST RESTRAINTS: All turns, fittings, etc., that induce pressure which would cause separation of pipe, breakage, etc., shall be mechanically restrained in such a manner that the pressure to be exerted at the point of restraint is transferred to the pipeline for a distance sufficient to prevent separation, breakage, etc., MJ fittings shall be restrained with restraints such as Romac Grip Ring or Ebba Iron Megalug restraints. Pipe joints shall be restrained with harness or bell restraints such as Ebba Iron Series 800 for slip joint DIP or Series 1500 and Series 1100 HV for PVC. Romac Grip Ring and Ebba Iron Megalug restraints are approved for use on DIP piping or PVC. Romac Grip Ring is for use with only PVC piping and Ebba Iron Megalug

for DIP piping. The District, at its sole discretion, may require concrete thrust blocking and/or adequate rodding behind all fittings where the District system has excessive pressure.

8. METHOD OF MEASUREMENT:

- A. Ductile Iron Fittings: Ductile iron fittings shall be measured on a per unit basis.
- B. PVC Fittings: PVC fittings are considered an incidental part of the pipe construction and shall be included in the price per linear foot of pipe.