8.2 MATERIALS

A. Pipe:

**General:** Pipe for water mains shall be Polyvinyl Chloride (PVC) or ductile iron with push on joints as specified on the plans or in the Detailed Specifications. Water pipe 18 in. and larger shall be ductile iron pipe unless indicated otherwise on the drawings or in the specifications.

1. **PVC pressure pipe, 4 inches through 12 inches,** shall conform to the requirements of AWWA Specification C-900, Class 150 or Class 200, (C.I.O.D.) and meet one of the below standards.
   a. PVC pipe shall have bell ends with elastometric gaskets. Pipe joints shall use the Rieber joining system, which has the gasket formed into the pipe during the pipe manufacturing process. Installation procedures shall conform to AWWA C-605 Standards or
   b. PVC pipe shall be Certa-Lok C900/RJ Restrained Joint PVC Pipe manufactured by CertainTeed Corporation or equal. Pipe joints shall utilize non-metallic couplings with locking splines. High strength, flexible thermoplastic splines shall be inserted into mating, precision machined grooves in the pipe and coupling to provide full 360° restraint with evenly distributed loading. Couplings shall be designed for use at or above the pressure class of the pipe with which they are utilized, and shall incorporate twin elastomeric sealing gaskets meeting the requirements of ASTM F 477. Joints shall be designed to meet the zero leakage test requirements of ASTM D 3139. Every pipe and coupling shall pass the AWWA C900 hydrostatic proof test requirements of 4 times the pressure class for 5 seconds. Pipe and Couplings shall meet all approvals per Certa-Lok C900/RJ Restrained Joint PVC Pipe manufactured by CertainTeed Corporation and all pipe and couplings shall be marked in accordance with the requirements established for Certa-Lok C900/RJ Restrained Joint PVC Pipe manufactured by CertainTeed Corporation.

2. **PVC pressure pipe, 14 inches through 36 inches,** shall conform to the requirements of AWWA Specification C-905, Pressure Rated 165psi, DR 25 (C.I.O.D.) unless otherwise specified. PVC pipe shall have bell ends with elastometric gaskets. Pipe joints shall use the Rieber joining system, which has the gasket formed into the pipe during the pipe manufacturing process. Installation procedures shall conform to AWWA C-605 Standards.

3. **Ductile iron pipe** shall conform to the requirements of AWWA Specifications C-150 and C-151, Pressure Class 350 for 3 inches through 12 inches diameter, Pressure Class 250, or greater for 14 inches through 20 inches diameter, and Pressure Class 200, or greater for 24 inches and larger diameter, unless specified otherwise on the plans or Detailed Specifications. Ductile iron pipe shall be coated on the outside with a bituminous coating 1-mil thick, minimum,
and shall be cement-mortar lined in accordance with AWWA Specification C-104. Linings shall be full thickness to the end of the spigot and to the seat of the bell, or shall be tapered for a length of not more than two inches.

Rubber gasket joints for all Ductile Iron pipe shall meet the requirements of AWWA C-111. Installation procedures shall conform to AWWA C-600 Standards.

4. Water service pipe

1 inch through 2 inches diameter shall be Type "K" soft copper tubing; 4 inches and larger service pipe shall be PVC or ductile iron pressure pipe as specified for water pipes, above.

Type K soft copper tubing shall be US Government Type K Soft Tubing in 60 – foot single or double pancake coils for 1 inch and 1 ½ inch diameter material. The minimum center coil diameter shall not be less than 16 inches.

Tubing material for 2 inches material shall be supplied in 20 – foot lengths with ends of tubing to be cut off evenly. Two (2) Inches coiled material will not be accepted.

Water service pipe larger than 2 inches shall meet the specifications above for PVC pressure pipe or ductile iron pipe.

B. Fittings:

1. Water main fittings:

General: Fittings used with ductile iron pipe shall be ductile iron. Fittings 12 inches and smaller, used with PVC pipe shall be ductile iron or PVC.

All bolts and nuts shall conform to AWWA C111 and ASTM – A325 Type 3. The bolts and nuts shall be Cor-Blue, fusion bonded epoxy, Series 300 stainless steel or approved equal. Coated bolts and nuts shall be “near white” or “white” metal with 8 to 10 mil minimum coating thickness. Fitting types applicable to this specification consist of bends, crosses, tees, reducers/increasers, plugs, caps, couplings, and sleeves.

a. Ductile Iron water main fittings: Fittings shall be ductile-iron with 350-psi pressure rating and rubber gasket joints meeting all applicable requirements of the latest edition of AWWA C110, C111, and/or C153 Specifications. All internal and external ferrous surfaces shall be coated with a minimum 6 mil thick fusion bonded epoxy coating applied electrostatically and at a minimum shall meet the requirements of AWWA C116.

Unless specified otherwise on the plans or Detailed Specifications the following fitting joint shall be provided: