

SECTION 1440

FITTINGS, FLEXIBLE COUPLINGS AND REPAIR CLAMPS

1440.0100 GENERAL

1440.0101 Description of Work. The work under this section shall consist of furnishing all labor, materials, tools, equipment, and incidental items required for the installation of fittings, flexible couplings, and repair clamps in accordance with the details shown on the plans and the requirements of these specifications.

1440.0103 Submittals. In order to be accepted for incorporation into the work, the manufacturer's make and model of fittings, flexible couplings, and repair clamps shall appear on the list of Agency approved products found in Appendix A to the standard specifications.

1440.0104 Delivery, Storage and Handling. Fittings, flexible couplings, and repair clamps shall be delivered to the site, stored and handled in accordance with the manufacturer's instructions except as may be modified by the plans, special specifications, or as directed by the Engineer.

1440.0200 PRODUCTS

1440.0201 Materials.

(A) Fittings.

(1) Cast Iron and Ductile Iron Fittings. Cast iron and ductile iron fittings shall meet the requirements of AWWA C110 and AWWA C153 for compact fittings. Working pressure for fitting 24 inches in diameter and larger shall be as indicated on the plans or in the special specifications.

The interior surface of cast iron and ductile iron fittings shall be cement-mortar lined and sealed by the manufacturer in accordance with AWWA C104.

All plugs and caps used for stubouts shall be tapped for a 2 inch national pipe thread.

Connection bolts and nuts for mechanical joint fittings shall be manufactured of cor-ten steel or approved equal in accordance with ASTM A242. For flanged fittings, connection bolts and washers shall be manufactured of 316 stainless steel and nuts shall be manufactured of 316 stainless steel with a Xylan coating or approved equal. No anti-seize compound shall be applied on flange bolts.

(2) Fabricated Steel Fittings. Fabricated steel fittings shall meet the requirements of AWWA C208 and AWWA M11. The working pressure for steel fittings shall be as indicated on the plans or in the special specifications.

The interior surface of steel fittings shall be cement-mortar lined and sealed by the manufacturer in accordance with AWWA C104. Liquid-epoxy coating systems shall be in accordance with AWWA C210. Fusion-bonded epoxy coatings shall be in accordance with AWWA C213 as specified on the plans or in the special specifications.

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Restraining methods for fittings shall be in accordance with Section 1406.

(3) Polyvinyl Chloride (PVC) Pressure Fittings. Polyvinyl chloride pressure fittings shall conform to the requirements of with AWWA C907.

Restraining methods for PVC fittings shall be in accordance with Section 1406.

Restraining methods for HDPE shall be in accordance with Section 1406.

Field welding of ductile iron fittings shall not be allowed.

(B) Flexible Couplings. Couplings shall meet the requirements of AWWA C219. Joint harnesses, if shown on the plans or specified in the special specifications, shall be in accordance with AWWA M11.

Center sleeves may be manufactured from carbon steel, stainless steel, or ductile iron unless otherwise specified on the plans, special specifications, or as directed by the Engineer.

Bolts and washers for couplings shall be manufactured of 316 stainless steel and nuts shall be manufactured of 316 stainless steel with a Xylan coating or approved equal. No anti-seize compound shall be applied on flanged bolts.

Nuts and bolts for couplings 2 inch in diameter and smaller shall be stainless steel or cadmium plated. Nuts and bolts for couplings larger than 2 inches in diameter shall be stainless steel 18-8 type 303.

The minimum working pressure of the coupling shall be the same as the working pressure of the pipeline to which the coupling is to be installed.

Interior and exterior coatings shall be applied by the manufacturer in accordance with AWWA C550 unless otherwise specified on the plans or in the special specifications. The minimum dry coating thickness shall be 12 mils unless the lining thickness is limited by the working tolerance of the coupling components.

(C) Repair Clamps. Repair clamps shall only be utilized after obtaining written approval from the Engineer. When approved, repair damp shall meet the following minimum specifications:

Repair clamps 2 inch and larger shall be of the full circle type.

All repair clamp components shall be constructed of Type 316 stainless steel. The gasket shall consist of gridded rubber material having tapered ends suitable for the liquid in the pipeline.

Repair clamps smaller than 2 inch in diameter may have ductile iron or malleable iron lugs which shall be epoxy coated in accordance with AWWA C550.

1440.0300 EXECUTION

1440.0301 Installation.

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(A) **General.** Fittings, flexible couplings, and repair clamps shall be installed in accordance with the manufacturer's recommendations and AWWA C600, except as modified herein.

All fittings, valves, flexible couplings, and repair clamps which are to be buried shall be encased with 10 mil polyethylene in accordance with AWWA C105, Method C.

(B) **Workmanship.** The contractor shall provide personnel skilled and knowledgeable with regard to the installation procedures for the fittings, flexible couplings, and repair clamps as well as all incidental appurtenances being installed.