

## SECTION 02610

## DUCTILE IRON PIPE AND FITTINGS

## PART 1 GENERAL

## .01 SECTION INCLUDES

- A. Ductile iron pipe and fittings for water mains, wastewater force mains, encasements, and gravity sanitary sewers.

## .02 UNIT PRICES

- A. Payment will be made for Ductile Iron pipe on a linear foot basis.
- B. No separate payment will be made for ductile iron or PVC fittings under this Section. Include cost in unit price for water mains, force mains, gravity sanitary sewers, and storm sewers.

## .03 SUBMITTALS

- A. Conform to requirements of all sections and provisions of these specifications.
- B. Submit shop drawings showing design of new pipe and fittings indicating alignment and grade, laying dimensions, fabrication, fitting, flange, and special details. Show station numbers for pipe and fittings corresponding to Drawings.
- C. Production of pipe and fittings prior to review by the Owner's Representative is at Contractor's risk.

## .04 QUALITY CONTROL

- A. Provide manufacturer's certifications that all ductile iron pipe and fittings meet provisions of this Section and have been hydrostatically tested at factory and meet requirements of ANSI A21.51.
- B. Provide certifications that all pipe joints have been tested and meet requirements of ANSI A21.11.

## PART 2 PRODUCTS

## .01 DUCTILE IRON PIPE

- A. Ductile iron pipe barrels: ANSI A21.15, ANSI A21.50 or ANSI A21.51; bear mark of Underwriters' Laboratories approval; pressure classes as shown on the Drawings and/or Bid Proposal.

- B. Provide pipe sections in standard lengths, not less than 18 feet long, except for special fittings and closure sections as indicated on shop drawings and/or Bid Proposal.

.02 JOINTS

- A. Joint types: ANSI A21.11 push-on; ANSI A21.11 mechanical joint; or ANSI A21.15 flanged end. Provide push-on joints unless otherwise indicated on the Drawings or required by these specifications. For bolted joints, bolts shall conform to requirements of AWWA C111.
- B. Where restrained joints for buried service are required by Drawings, provide Series 1100 (MEGALUG) by EBAA Iron Inc., or equal.
- C. Threaded or grooved type joints which reduce pipe wall thickness below minimum required are not acceptable.
- D. Provide for restrained joints designed to meet test pressures required under Section 02676- Hydrostatic Testing of Pipelines or Section 02731 - Sanitary Sewage Force Mains, as applicable.
- E. Where ductile iron water main is cathodically protected from corrosion, bond rubber gasketed joints as shown on Drawings to provide electrical continuity along entire pipeline, except where insulating flanges are required by Drawings.

.03 GASKETS

- A. Furnish, when no contaminant is identified, plain rubber (SBR) gasket material; for flanged joints 1/8-inch thick gasket in accordance with ANSI A21.15.
- B. Pipes to be installed in potentially contaminated areas, especially where free product is found near the elevation of the proposed pipeline, shall have the following gasket materials for the noted contaminants:

Contaminant	Gasket Material Required
Petroleum (diesel, gasoline)	Nitrile Rubber
Other contaminants	As recommended by the pipe manufacturer

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.04 FITTINGS

- A. Use fittings of same size as pipe. Reducers are not permitted to facilitate an off-size fitting. Reducing bushings are also prohibited. Make reductions in piping size by reducing fittings. Line and coat fittings as specified for pipe they serve.
- B. Push-on Fittings will not be allowed.
- C. Flanged Fittings: ANSI A21.10; ANSI B16.1 cast or ductile iron. Flanges: ANSI B16.1, Class 125; pressure rated at 250 psig.
- D. Mechanical Joint Fittings: ANSI A21.10 (AWWA C110); pressure rated at 250 psi.
- E. Ductile Iron Compact Fittings for Water Mains: ANSI A21.53 (AWWA C153); 4-inch through 12-inch diameter; fusion bonded epoxy-lined or cement-mortar lining; conform to requirements of Section 02630 - Polyethylene Wrap.

.05 COATINGS AND LININGS

- A. Water Main Interiors: ANSI A21.4, cement lined with seal coat.
- B. Sanitary Sewer and Force Main Interiors:
  - 1. Preparation: Commercial blast cleaning conforming to SSPC-SP6.
  - 2. Liner thickness: Nominal 40 mils, minimum 35 mils, for pipe barrel interior; minimum 6 - 10 mils at gasket groove and outside spigot end to 6-inches back from end.
  - 3. Testing: ASTM G62, Method B for voids and holidays; provide written certification.
  - 4. Acceptable Lining Materials:
    - a. Virgin polyethylene conforming to ASTM D1248, with inert fillers and carbon black to resist ultraviolet degradation during storage heat bonded to interior surface of pipe and fittings; APolyline@ by American Cast Iron Pipe Company; or equal.
    - b. Polyurethane: Corro-pipe II by Madison Chemicals.
    - c. Ceramic Epoxy: Protecto-401 by Enduron Protective Coatings.
- C. Sanitary Sewer Point Repair Pipe: For pipes which will be lined with high density polyethylene liner pipe or cured-in-place liner, provide cement-lined with

seal coat in accordance with ANSI A21.4. For pipes which will not be provided with named liner, provide pipe as specified in Paragraph 2.05B.

1. Water Lines
  - a. Auger Holes: Conform to requirements of Section 02629 - Polyurethane Coatings on Steel or Ductile Iron Pipe.
  - b. Above Ground (or Exposed): Conform to the following:

Provide a 3-coat epoxy/polyurethane coating system as designated below.

Surface Preparation	SSPC SP10 Near White Blast Clean 2.0 to 3.0 mils surface profile
Prime Coat 2.0 to 4.0 mils DFT	ACRO 4422 Inhibitive Epoxy Primer, or approved equal
Intermediate Coat 4.0 to 6.0 mils DFT	ACRO 4460 Chemical Resistant Epoxy, or approved equal
Finish Coat 1.5 to 2.0 mils DFT	ACRO 4428 Polyurethane, Or approved equal

- c. Total minimum allowable dry film thickness for system: 10 mils.
  - d. All materials shall be from same manufacturer.
  - e. Color of paint shall be in accordance with the City's standard.
2. Sanitary Sewers: Prime coat and outside asphaltic coating conforming to ANSI A21.10, ANSI A21.15, or ANSI A21.51 for pipe and fittings in open cut excavation and in casings.

- c. Total minimum allowable dry film thickness for system: 10 mils.
  - d. All materials shall be from same manufacturer.
  - e. Color of paint shall be in accordance with the City's standard.
2. Sanitary Sewers: Prime coat and outside asphaltic coating conforming to ANSI A21.10, ANSI A21.15, or ANSI A21.51 for pipe and fittings in open cut excavation and in casings.

**.06 GRADE**

A. Unless otherwise specified on Drawings, install ductile iron pipe for water service to clear utility lines with following minimum cover:

B.

Diameter	Depth of Cover
<u>(Inches)</u>	<u>(Feet)</u>
16 and 24	5
12 and smaller	3.5

**3.03 FIELD REPAIR OF COATINGS**

- A. Polyurethane: Conform to requirements of Section 02629 - Polyurethane Coatings for Steel or Ductile Iron Pipe.
- B. Fusion Bonded Epoxy: Conform to requirements for new fittings in ANSI A21.16.

**END OF SECTION**