

SECTION 026206
DUCTILE IRON PIPE AND FITTINGS

1. DESCRIPTION

This specification shall govern all work necessary for furnishing all ductile iron pipe and fittings required to complete the project.

2. GENERAL

All ductile iron pipe shall conform to AWWA C151. The interior of pipe and fittings (excluding fittings for wastewater force mains) shall have a shop-applied cement-mortar lining (40 mils thick) in accordance with AWWA C104. The exterior of pipe and fittings shall have a coating of coal tar enamel of approximately 1 mil thick or as specified in AWWA C105. Ductile iron pipe shall be wrapped in two plies of 8-mil polyethylene in accordance with Section 026402 "Waterlines" of the City Standard Specifications.

3. FITTINGS

All fittings shall be ductile iron and in accordance with AWWA C153. Fittings shall have a pressure rating of 250 psi for sizes through 12" and 150 psi for 14" and larger sizes, unless shown differently on the drawings. Unless noted otherwise on the drawings, Mechanical Joints shall be used.

4. JOINTS

Joints for pipe shall be mechanical type or push-on type such as "Tyton Joint", or approved equal; joints for fittings shall be mechanical joints, unless shown otherwise on the drawings.

Mechanical joints shall conform to AWWA C153. Mechanical joints shall be furnished complete with joint material, Cor-ten nuts, Cor-ten bolts, glands and gaskets.

When restrained joints are indicated on the drawings, restrained joints for pipe and fittings of 12" diameter and less shall be mechanical joint with retainer gland Series 1100 by EBAA Iron or approved equal, with a minimum of 250 psi rated working pressure. Restrained joints for pipe and fittings over 12" in diameter shall be push on type with a retainer ring as LOK-RING or FLEX-RING by American Ductile Iron Pipe, or TR FLEX by U.S. Pipe, or approved equal.

Gaskets shall be of synthetic rubber. An analysis of the material used in each size gasket showing the type of synthetic rubber and that no natural rubber is present shall be supplied.

5. PIPE

Pressure class ductile iron pipe requirements:

<u>Diameter</u> (inches)	<u>Pressure Class</u> (psi)	<u>Wall Thickness</u> (inches)	<u>Range of Maximum Allowable Depth Cover</u> (feet) - (feet)
			A - B*
4#	350	0.25	60+
6	350	0.25	30 - 65
8	350	0.25	20 - 50
10#	350	0.26	15 - 45
12	350	0.28	15 - 44
14#	300	0.30	13 - 42
16	300	0.32	13 - 39
18	300	0.34	13 - 36
20	300	0.36	13 - 35
24	250	0.37	11 - 29
24+	x	x	x

* Range of maximum allowable depth of pipe where:

A = Ground water, or unstable bottom, or quick condition.

B = Ideal trench conditions, and sand encasement is at an average density in excess of 90% Standard Proctor density.

Pipe sizes not typically specified on City projects, but shown for reference.

x Requires special evaluation.

The face of bells shall be plainly marked by color coding for classes so as to be readily identified in the field.

6. CERTIFICATIONS

A certification shall accompany each order of pipe and fittings furnished to job site. Certification shall include the following items: indicate that pipe complies with Part 3 of this specification; indicate that fittings and joints comply with Part 4 of this specification (it should be noted that the supplier shall furnish sufficient technical material for the Engineer to determine whether or not push-on joints can comply with the "or equal" clause); and a copy of a laboratory analysis of the material used in each size gasket showing the type of synthetic rubber and that no natural rubber is present.

7. MEASUREMENT AND PAYMENT

Unless otherwise specified on the Bid Form, ductile iron pipe shall be measured by the linear foot along the centerline for each size of pipe installed. Measurement of pipe shall be up to, but not include, the fittings.

Ductile iron fittings shall be measured per each by the type and size, as indicated in the Bid Form.

Payment shall include all labor, materials, tools and equipment for the completed installation and testing of the waterline, together with all incidentals necessary to install the pipe and fittings complete in place.