

SECTION 3210 - DUCTILE IRON SEWER FORCE MAIN

PART 1 - GENERAL

1.1 SCOPE OF WORK:

Provide all labor, materials, equipment and services required for furnishing and installing all piping and appurtenances specified herein. All sewer force main and fittings shall be ductile iron. No other pipe will be accepted as equal.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Trench Excavation for Sewer Force Mains: Section 3725
- B. Bedding and Backfill for Sewer Force Mains: Section 3735

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS:

A. Pipe:

1. Ductile Iron Pipe shall be push-on joint type with metal designations 60/42/10 in accordance with ASTM Specifications A-339-55. Rockwell Hardness shall be 88+2. Pipe shall conform to AWWA C151 (ANSI A21.51), and shall be centrifugally cast pipe. For sizes up to and including 18" nominal diameter, pipe shall be minimum thickness Class 53. Pipe larger than 18" nominal diameter shall be at least Pressure Class 350.
2. The interior of the pipe shall be lined in accordance with Section 3240. The exterior of all pipe, unless otherwise specified, shall receive either coal tar or asphalt base coating a minimum of 1 mil thick.
3. Each piece of pipe shall bear the manufacturer's name or trademark, the year in which it was produced and the letters "DI" or word "DUCTILE". The pipe manufacturer shall furnish a notarized certificate of compliance to the above AWWA or ANSI specifications.
4. Ductile iron pipe to be installed in casing pipe bored and jacked under highway and railroad shall be restrained joint type.
5. Pipe shall be furnished in manufacturer's standard lengths, not to exceed 20 foot lengths.

B. Fittings:

1. All fittings shall be ductile iron only. No grey cast iron fittings will be allowed.
2. Fittings shall be Class 350 ductile iron fittings in accordance with AWWA C153 (ANSI A21.53) or AWWA C110 (ANSI A21.10) and shall conform to the details and dimensions shown therein with the exception of the manufacturer's proprietary design dimensions and thicknesses. Fittings shall have all bell ends (unless otherwise shown on the plans or permitted by the ENGINEER) with mechanical joints meeting the requirements of AWWA C111 (ANSI A21.11). Fittings shall have interior lining as specified in Section 3240. The exterior shall be coated with an asphaltic coating or coal tar epoxy.
3. Plugs or caps, where required, shall be ductile iron mechanical joint dished or flat plugs or caps in accordance with AWWA C153 or C110. Joints for plugs and caps shall be restrained with the use of ductile iron mechanical joint retainer glands (Mega-Lug, MJ Field Lok, or approved equal).

4. Only factory welded tees will be allowed. Field fabricated outlets will **not** be accepted.
- C. Joints for Pipe and Fittings:
1. The joints for ductile iron pipe shall be push-on type conforming to AWWA C111 (ANSI A21.11). Joints for fittings shall be mechanical joint conforming to AWWA C111 (ANSI A21.11).
 2. Push-on type joints shall have an annular recess in the pipe socket to accommodate a single rubber gasket. Plain ends shall be suitably beveled to permit easy entry into the bell. Plain ends shall have home marks to indicate when the spigot is fully seated in the bell. The gasket and annular recess of the socket shall be so designed and shaped that the gasket is located in place against displacement as the joint is assembled. Push-on joints shall be of a type that employs a single elongated groove gasket to effect the joint seal such as "Tyton" (US Pipe), "Fastite" (American Cast Iron Pipe Company), "Super Bell-Tite" (James B. Clow & Sons), or approved equal.
 3. Mechanical joints shall be bolted and of the stuffing box type and shall consist of a bell, with exterior flange and interior recess for the sealing gasket, a pipe plain end, a sealing gasket, a follower gland, tee-head bolts and hexagon nuts. All joints for fittings shall be restrained with "Mega-Lug" retainer glands, MJ Field Lok, or approved equal.
 4. The cleaning and assembly of pipe and fitting joints shall be in accordance with these specifications, the manufacturer's recommendations and AWWA standards.
 5. Mechanical joint bolts shall be of Cor-Ten® Steel only, conforming to AWWA C-111, 11-7.5 and ANSI A21.11.

PART 3 - BASIS OF PAYMENT

Payment for furnishing and installing the ductile iron sewer force main will be made at the Contract unit price per linear foot, complete in place, which price shall include compensation for furnishing, hauling, excavation (including rock), bedding, laying, jointing, testing, backfilling, surface restoration (except pavement replacement), and cleanup. The quantity of sewer force main to be paid for shall be the length of the complete force main measured along the centerline without any deduction for lengths of fittings, valves or other appurtenances.

END OF SECTION