

SECTION 3230 - RESTRAINED JOINT 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.

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
- C. Ductile Iron Sewer Force Main: Section 3210

PART 2 - PRODUCTS

2.1 RESTRAINED JOINT DUCTILE IRON PIPE AND FITTINGS:

- A. When joint restraint for push-on joint pipe installation is required by the specifications or indicated on the plans, restrained push-on joint pipe and restrained mechanical joint fittings utilizing ductile iron components shall be provided. Pipe and fittings shall meet requirements of Section 3210 in addition to those specified below. Pipe and fittings shall have restrained push-on joints for lengths, as directed by the Engineer or pipe manufacturer, sufficient to withstand the test pressure with no thrust blocking. Calculations shall be based on the worst case soil type to be encountered on the project with Type I laying conditions. Use of the "Thrust Restraint Design for Ductile Iron Pipe" computer program by Ductile Iron Pipe Research Association, Birmingham Alabama, to determine restraint distances is suggested. Concrete thrust blocking may only be used by direction of the Engineer when connecting to existing piping that does not have sufficient thrust restraint.
- B. Restrained joint pipe shall be ductile iron manufactured in accordance with the requirements of AWWA C151 ANSI (A21.51) push-on joints for such pipe shall be in accordance with AWWA C111 (ANSI A21.11). 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. Pipe shall be standard push-on joint pipe, U.S. Pipe TR FLEX pipe, American Flex-Ring pipe, or equal. Restraint for push-on joint pipe shall consist of Field-Lok gaskets or approved equal. Retainer glands of any style are **not** acceptable for pipe-to-pipe joints.
- C. Restrained joint fittings shall be ductile iron 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. All fittings shall have mechanical joints meeting the requirements of AWWA C111 (ANSI A21.11).
- D. Lining for pipe and fittings shall be in accordance with Section 3240. Bituminous outside coating shall be in accordance with AWWA C151 (ANSI A21.51) for pipe and AWWA C110 (ANSI A21.10) for fittings.
- E. Restrained push-on joints for pipe and fittings shall be designed for water operating pressure of 350 psi in sizes 4-inches through 24-inch.
- F. Restrained push-on joint pipe and fittings shall be capable of being deflected after assembly.
- G. Field fabricated restrained joints for pipe-to-fitting joints shall utilize Mega-Lug, MJ Field Lok, or approved equal. All other joints shall be fabricated at the place of manufacture only.

PART 3 - BASIS OF PAYMENT

Payment for furnishing and installing the restrained joint 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, installation of pipe, 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.

Restrained joint ductile iron sewer force main required by the plans or specifications will be paid for at the same unit price as standard ductile iron sewer force main. The Bidder shall adjust his prices appropriately.

END OF SECTION