

SECTION 02634**HIGH DENSITY POLYETHYLENE (HDPE) PIPE****PART 1 GENERAL****1.01 SUMMARY**

A. This Section covers furnishing and installation of 36-inch buried solid wall high density polyethylene (HDPE) pipe for the MWRA dewatering drain line. HDPE pipe shall be furnished and installed complete with all fittings, jointing materials, and other necessary appurtenances.

B. Pipe trenching, bedding, and backfill are covered in Section 02200 – Earthwork.

1.02 RELATED SECTIONS

A. Section 02612 – Reinforced Concrete Pipe

B. Section 03450 – Precast Structures

1.03 CODES AND STANDARDS

A. Except as modified or supplemented herein, all HDPE pipe shall conform to the applicable requirements of ANSI/AWWA C906, latest edition.

B. The supplementary information required in the foreword of the governing standard is as follows:

1. Affidavit of Compliance (Sec. 6.3)	Required
2. Plant Inspection by Purchaser (Sec. 5.8)	Not required
3. Markings (Sec. 6.1)	Required
4. Shipping (Sec. 6.2)	Required
5. Verification (Sec. 5)	Required

1.04 SUBMITTALS

A. General Submittals

1. Drawings and data shall be submitted in accordance with the Submittals Procedures section. Drawings and data shall include, but shall not be limited to, the items listed in this Section.

B. Pipe and Joint Data

1. Details of joints and connections.
2. Pipe section length.
3. Pipe Dimension Ratio.

C. Certifications

1. Affidavit of Compliance (ANSI/AWWA C906, Sec. 6.3).
2. Verification, including Quality Assurance Testing (ANSI/AWWA C906, Sec. 5).

1.05 QUALITY ASSURANCE**A. Qualifications**

1. The pipe manufacturer shall provide the services of an experienced, competent, and authorized representative to visit the site of the Work to advise and consult with Contractor during joining and installation of the pipe. The manufacturer's representative shall not directly supervise Contractor's personnel, and Contractor shall remain responsible for the pipeline work.

B. Fusion

1. Fusion joints shall be made by qualified fusion technicians who shall demonstrate fusion experience on projects completed within a year of the Bid date which included similar or larger installation lengths, similar pipe sizes (+/- 2 pipe sizes) and similar DRs (+/- 2 DRs).

1.06 QUALIFICATIONS (NOT USED)**1.07 DELIVERY, STORAGE AND HANDLING**

- A.** Storage and handling shall be in accordance with Chapter 7, Transportation, Handling and Storage of Pipe and Fittings of AWWA Manual M55, to ensure installation in sound, undamaged conditions. Pipe shall not be stored uncovered in direct sunlight.

1.08 PROJECT/SITE CONDITIONS (NOT USED)**1.09 DEFINITIONS (NOT USED)****1.10 TOLERANCE (NOT USED)**

PART 2 PRODUCTS**2.01 PERFORMANCE AND DESIGN REQUIREMENTS****A. Dimensions**

1. Dimensions shall be as specified in the materials paragraph.
2. The dimension ratios (DRs) of HDPE pipe shall be as indicated in the following table:

Nominal Size (inches)	DR
36	13.5

2.02 MATERIALS

Pipe	ANSI/ AWWA C906; material designation (ASTM D3350) PE3608 or PE4710, minimum cell classification 344464C. Pressure class and wall thickness of DR 13.5. Thermal butt fusion joints, ASTM D3261. Blue striped.
Joints	Butt fusion joints, ASTM D3261; manufactured by injection molding; pressure class of the pipe or greater.
Fittings	
Electrofusion Type	ASTM F1055 having pressure class equivalent to the pipe or greater as required.
Molded or Fabricated Type	Meet applicable AWWA C906 requirements; pressure class and cell class equivalent to the pipe or greater as required.
Other Types	Subject to review by the Authority.

PART 3 EXECUTION**3.01 INSPECTION**

- A.** Pipe and fittings shall be carefully examined for cracks and other defects immediately before installation, with special attention to pipe ends. All defective pipe and fittings shall be removed from the site of the Work.

3.02 INSTALLATION

A. Laying Pipe

1. Pipe shall be protected from lateral displacement by pipe embedment material installed as specified in Section 02200 - Earthwork. Pipe shall not be laid in water or under unsuitable weather or trench conditions, and shall be protected against entry of foreign matter.
2. During freezing weather, particular care shall be taken in handling and laying pipe to prevent damage by impact.
3. Whenever pipe laying is stopped, the open end of the line shall be closed with a tight-fitting end board to keep out sand and earth. The end board shall have several perforations near its center to admit water into the pipe, to prevent flotation in the event the trench is flooded. Any standing water shall be removed from the trench before the end board is removed.
4. Pipe shall be protected from extended exposure to sunlight, shall be kept as cool as possible during installation, and shall be covered with backfill immediately after installation.
5. Conductive tracer shall be buried above the center line of all HDPE pipe, not more than 18 inches below the ground surface unless otherwise directed by the Authority.

B. Cleaning

1. The interior of all pipe and fittings shall be thoroughly cleaned before installation and shall be kept clean until pipe has been installed and all Work is complete.

C. Alignment

1. Piping shall be laid to the lines and grades indicated on the Contract Drawings. Pipelines or runs intended to be straight shall be laid straight. Deflections from a straight line or grade shall not exceed the maximum deflection specified by the manufacturer.
2. Unless otherwise specified or indicated on the Contract Drawings, and subject to acceptance of the Authority, either shorter pipe sections or fittings shall be installed as required to maintain the indicated pipeline alignment or grade.

D. Cutting Pipe

1. Cutting shall be in accordance with the pipe manufacturer's recommendations. Cuts shall be smooth, straight, and at right angle to the pipe axis. After cutting, the

end of the pipe shall be dressed to remove all roughness and sharp corners and shall be beveled in accordance with the manufacturer's instructions.

E. Jointing

1. Jointing of pipe and fittings shall be performed in accordance with the instructions and recommendations of the pipe manufacturer and in accordance with ASTM F2620 and PPI TR 33. Sections of HDPE pipe shall be joined above ground into continuous lengths by the thermal butt fusion method.
2. Saddle fusion shall be performed in accordance with ASTM F2620 or PPI TR 41 and the fitting manufacturer's recommendations.
3. Where required, electrofusion shall be performed in accordance with ASTM F1290, PPI TN 34, and the manufacturer recommended procedure.
4. Socket fusion and extrusion welding or hot gas welding will not be acceptable.
5. All jointing procedures shall be acceptable to the Authority.

3.03 TESTING

- A. Television inspection shall be required by the Contractor. A NASSCO-certified inspection report shall be submitted to the Authority. Any defects identified by the inspection shall be repaired/remedied by the Contractor at no additional cost to the Authority.
- B. To the extent possible, all work that can be visually inspected shall be so inspected after the work is completed.

3.04 CCTV INSPECTION

- A. Once all proposed pipelines have been installed and backfilled, the Contractor shall be required to inspect the infrastructure per NASSCO Requirements. Any defects found shall be corrected by the Contractor at its expense. Inspection results and data shall be made available to the Authority within 14 days of inspection.

3.05 RECORD PLAN INFORMATION

- A. Furnish assistance to the Authority in securing ties, depths, distances and/or other reference dimensions for all pipelines, manholes, wye branches, service connections and markers to facilitate the Authority's development of RECORD PLAN DATA. Any pipeline or appurtenance that is backfilled prior to obtaining the aforementioned information shall be uncovered by the Contractor at its own expense.

**** END OF SECTION ****