

**Section 02532****HIGH DENSITY POLYETHYLENE (HDPE) SOLID WALL PIPE****1.0 GENERAL****1.01 SECTION INCLUDES**

- A High Density Polyethylene (HDPE) pipe for gravity sewers and drains, including fittings.
- B HDPE pipe for sanitary sewer force mains, including fittings.
- C References to Technical Specifications:
  - 1. Section 01200 – Measurement and Payment Procedures
  - 2. Section 01350 – Submittals
  - 3. Section 02630 – Storm Sewers
  - 4. Section 02530 – Gravity Sanitary Sewers
- D Referenced Standards:
  - 1. American Society for Testing and Materials (ASTM)
    - a. ASTM F 714, “Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter”
    - b. ASTM D 2657, “Standard Practice for Heat Fusion Joining and Polyolefin Pipe and Fittings”
    - c. ASTM D 1248, “Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable”
    - d. ASTM D 350, “Standard Test Method for Flexible Treated Sleeving Used for Electrical Insulation”
    - e. ASTM F 477, “Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe”
    - f. ASTM D 618, “Standard Practice for Conditioning Plastics for Testing”
    - g. ASTM D 3212, “Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals”

**1.02 MEASUREMENT AND PAYMENT**

- A Unless indicated as a Bid Item, no separate payment will be made for HDPE pipe under this Section. Include cost in Bid Items for gravity sanitary sewers and storm sewers.
- B If HDPE pipe is included as a Bid Item, measurement will be based on the units shown in Section 00300 – Bid Proposal and in accordance with Section 01200 – Measurement and Payment Procedures.

**1.03 SUBMITTALS**

- A Make Submittals required by this Section under the provisions of Section 01350 – Submittals.
- B Submit Shop Drawings showing design of pipe and fittings indicating alignment and grade, laying dimensions, fabrication, fittings, flanges, and special details.
- C Submit product quality, material sources, and field quality information in accordance with this Section.

**1.04 PRODUCT QUALITY CONTROL**

- A Provide the manufacturer’s certificate of conformance to the Technical Specifications.

**2.0 PRODUCTS**

**2.01 APPROVED AND PREAPPROVED PRODUCTS**

- A Provide HDPE pipe as follows:

WALL TYPR	MANUFACTURER	PRODUCT OPTIONS	ASTM DESIGNATION	PIPE STIFFNESS (MIN)	DIAMETER RANGE (INCHES)
Solid Wall	Drisco 1000	Approved	F 714	115 psi	8 to 10
	Drisco 8600 Quail Pipe Poly Pipe Plexco			46 psi	12 to 48

- B Solid wall pipe shall be produced with plain end construction for heat-joining (butt fusion) conforming to ASTM D 2657. Utilize controlled temperatures and pressures for joining to produce a fused leak-free joint.

**2.02 MATERIALS**

- A Pipe and Fittings: High density, high molecular weight polyethylene pipe material meeting the requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D 1248. Material meeting the requirements of cell classification in accordance with ASTM D 350 are also suitable for making pipe products under these specifications.
- B Gaskets
  - 1. Use gaskets meeting requirement of ASTM F 477. Use gasket molded into a circular form or extruded to the proper section and then spliced into circular form. When no contaminant is identified, use gaskets of a properly cured, high-grade elastomeric compound. The basic polymer shall be natural rubber, synthetic elastomer, or a blend of both.

2. Pipes to be installed in potentially contaminated areas, especially where free product is found near the elevation of the proposed sewer, 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

- C Lubricant. Use a lubricant for assembly of gasketed joints which has no detrimental effect on the gasket or on the pipe, in accordance with manufacturer's recommendations.

### 2.03 WORKMANSHIP

- A Furnish pipe and fittings that are homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other injurious defects. Provide pipe as uniform as commercially practical in color, opacity, density, and other physical properties.

### 2.04 INSPECTIONS

- A The Engineer reserves the right to inspect pipes or witness pipe manufacturing. Such inspection shall in no way relieve the manufacturer of the responsibilities to provide products that comply with the applicable standards and these Specifications.
- B Manufacturer's Notification to Customer. Should the Engineer wish to witness the manufacture of specific pipes, the manufacturer shall provide the Engineer with adequate advance notice of when and where the production of those specific pipes will take place.
- C Failure to Inspect. Approval of the products or tests is not implied by the Engineer's decision not to inspect the manufacturing, testing, or finished pipes.

### 2.05 TEST METHODS

- A Conditioning. Conditioning of samples prior to and during tests are subject to approval by the Engineer. When referee tests are required, condition the specimens in accordance with Procedure A in ASTM D 618 at 73.4 degrees F plus or minus 3.6 degrees F (23 degrees C plus or minus 2 degrees C) and 50 percent relative humidity plus or minus 5 percent relative humidity for not less than 40 hours prior to test. Conduct tests under the same conditions of temperature and humidity unless otherwise specified.
- B Flattening. Flatten three specimens of pipe, prepared in accordance with Paragraph 2.05A, in a suitable press until the internal diameter has been reduced to 40 percent of the original inside diameter of the pipe. The rate of loading shall be uniform and at 2-inches per minute. The test specimens, when examined under normal light and with

the unaided eye, shall show no evidence of splitting, cracking, breaking, or separation of the pipe walls or bracing profiles.

- C Joint Tightness. Test for joint tightness in accordance with ASTM D 3212, except replace the shear load transfer bars and supports with 6-inch-wide support blocks that can be either flat or contoured to conform to the pipe's outer contour.
- D Purpose of Tests. The flattening and the joint tightness tests are not intended to be routine quality control tests, but rather to qualify pipe to a specified level of performance.

## **2.06 MARKING**

- A Mark each standard and random length of pipe meeting the requirements of this Section with the following information:
  1. Pipe size
  2. Pipe class
  3. Production code
  4. Material designation

## **3.0 EXECUTION**

### **3.01 INSTALLATION**

- A Conform to requirements of the following Sections:
  1. Section 02630 – Storm Sewers
  2. Section 02530 – Gravity Sanitary Sewers
- B All HDPE installations shall be bedded and backfilled to top or pipe zone with cement stabilized sand.
- C All HDPE pipe must terminate in manholes, concrete headwalls, or safety and treatment structures.
- D Install pipe in accordance with the manufacturer's recommended installation procedures.

END OF SECTION