

SECTION 15220

EFFLUENT SPRAY FIELD – HDPE PIPE

PART 1: GENERAL

- 1-1 DESCRIPTION: The work in this section consists of providing High Density Polyethylene (HDPE) pipe and fittings.
- 1-2 RELATED WORK SPECIFIED ELSEWHERE: Utility Trenching and Backfilling – Section **XXXXX**. Piping Accessories – Section **XXXXX**. Valves – Section **XXXXX**. Disinfection – Section **XXXXX**. Testing – Section **XXXXX**.
- 1-3 QUALITY ASSURANCE: References, American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), Federal Specifications (FS), International Standards Organization (ISO), and manufacturer's printed recommendations.
- 1-4 SUBMITTALS: Material list naming each product to be used identified by manufacturer and type number, in accordance with Section 01300.
- 1-5 PRODUCT HANDLING: Handle pipe and fittings to insure delivery in a sound undamaged condition.
- 1-6 JOB CONDITIONS: Do not lay pipe when trenches or when weather conditions are not suitable for such work.

PART 2: MATERIALS

- 2-1 PIPE:
- A. Pipe shall be manufactured from a PE 3608 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material will meet the specifications of ASTM D 3350 with a cell classification of 345464C. Pipe shall have a manufacturing standard of ASTM F 714. Pipe shall be DR 17 (100psi WPR) unless otherwise specified on the plans. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material.
- 2-2 FITTINGS:
- A. Butt Fusion Fittings – Fittings shall be PE3608 HDPE, minimum cell classification of 345464C as determined by ASTM D 3350. Molded butt fusion fittings shall be in accordance with ASTM D 3261. Fabricated fittings shall be manufactured using a McElroy Datalogger to record fusion pressure and temperature. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained as part of the quality control.

- B. Electrofusion Fittings - Fittings shall be PE3608 HDPE, minimum cell classification of 345464C as determined by ASTM D 3350 and be the same base resin as the pipe. Butt Fusion Fittings shall have a manufacturing standard of ASTM F1055. Fittings shall be DR 17 unless otherwise specified on the plans.
- C. Flanged and Mechanical Joint Adapters - Flanged and Mechanical Joint Adapters shall be PE 3608 HDPE, minimum cell classification of 345464C as determined by ASTM D3350. Flanged and mechanical joint adapters shall have a manufacturing standard of ASTM D 3261. All adapters shall be pressure rated to provide a working pressure rating no less than that of the pipe.
- D. Mechanical restraint for HDPE may be provided by mechanical means separate from the mechanical joint gasket sealing gland. The restrainer shall provide wide, supportive contact around the full circumference of the pipe and be equal to the listed widths. Means of restraint shall be machined serrations on the inside surface of the restrainer equal to or greater than the listed serrations per inch and width. Loading of the restrainer shall be by a ductile iron follower that provides even circumferential loading over the entire restrainer. Design shall be such that restraint shall be increased with increases in line pressure.

Serrated restrainer shall be ductile iron ASTM A536 with a ductile iron follower; bolts and nuts shall be corrosive resistant, high strength alloy steel.

The restrainer shall have a pressure rating of, or equal to that of the pipe on which it is used or 150 PSI which ever is lesser. Restrainers shall be JCM Industries, Sur-Grip or pre-approved equal.

Nominal Size	Restraint Width	Serrations per inch
4", 6"	1-1/2"	8
8" 10 & 12"	1-3/4"	8

Pipe stiffeners shall be used in conjunction with restrainers. The pipe stiffeners shall be designed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel to the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE. Stiffeners shall be by JCM Industries or pre-approved equal.

PART 3: EXECUTION

3-1 GENERAL:

- A. Pipe and Fittings: Size as indicated on the plans. Install as shown in accordance with manufacturer's recommendations.
- B. Spray Riser Assemblies: All Spray risers shall be 1" IPS OD pipe conforming to this specification. All riser pipe shall be attached to the distribution main through the use of a branch saddle and side wall fusion. The spray riser shall extend to a height of approximately 48" above the groundline. All spray risers shall be attached to angle iron for stabilization. All angle iron stabilizers shall be 2" angle carbon steel six feet long and shall extend to a height of approximately 42" above the groundline. The riser pipe shall be attached to the stabilizer with heavy duty nylon cable ties. All risers shall have a ball valve. All ball valves shall be made of UV & corrosion resistant engineering grade thermoplastic. All valves shall have a minimum pressure rating of 200 PSI (at 68 degrees F) and a minimum burst pressure of 1200 PSI. All valves shall have one compression end and one female IPS threaded end for connection to one-inch diameter pipe and one-inch diameter sprinkler head, respectively. The compression connection shall be achieved by the use of a compression nut that, when tightened, forces an O-ring to seal against the exterior wall of the pipe and collapses a grip ring preventing pipe pull out. All valve stems shall be fitted with double O-ring seals for added protection against leaks. All valves shall be stock # BV-100-IPS-FMI as manufactured by CEPEX, Inc. and distributed nationally by The Lateral Connection Corp.
- C. Spray heads

3-2 EXCAVATION AND TRENCHING: Section 02221.

- 3-3 HAULING, UNLOADING and DISTRIBUTING PIPE: During loading, transportation and unloading, every precaution shall be taken to prevent injury to the pipe. No pipe shall be dropped from cars or trucks, or allowed to roll down slides without proper retaining ropes. During transportation each pipe shall rest on suitable pads, strips, skids or blocks securely wedged or tied in place. Any pipe damaged shall be replaced.

3-4 FUSION:

- A. Sections of polyethylene pipe should be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to,

temperature requirements of 400-450 degrees Fahrenheit, alignment, and an interfacial fusion pressure of 75 PSI. The butt fusion joining will produce a joint weld strength equal to or greater than the tensile strength of the pipe itself. All field welds shall be made with fusion equipment equipped with a Data Logger. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the Quality Control records.

- B. Sidewall fusions for connections to outlet piping shall be performed in accordance with HDPE pipe and fitting manufacturer's specifications. The heating irons used for sidewall fusion shall have an inside diameter equal to the outside diameter of the HDPE pipe being fused. The size of the heating iron shall be ¼ inch larger than the size of the outlet branch being fused.
- C. Bolted joining may be used where the butt fusion method cannot be used. Flange joining will be accomplished by using a HDPE flange adapter with a ductile iron back-up ring. Mechanical joint joining will be accomplished using either a molded mechanical joint adapter or the combination of a Sur-Grip Restrainer and Pipe Stiffener as manufactured by JCM Industries, Inc. Either mechanical joint joining method will have a ductile iron mechanical joint gland.
- D. Socket fusion, hot gas fusion, threading, solvents, and epoxies will not be used to join HDPE pipe.

3-3 INSPECTION: Inspect the pipe for defects before installation and fusion. Defective, damaged or unsound pipe will be rejected.

3-4 TESTING: Hydrostatic testing shall be in accordance with Section XXXXX.

PART 4: MEASUREMENT AND PAYMENT

4-1 HDPE PIPE, FITTINGS AND ACCESSORIES: Payment will be included under the bid item to which the work relates.

END
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