

**STEEL REINFORCED POLYETHYLENE PIPE & FITTINGS FOR STORM DRAIN, IRRIGATION & SANITARY SEWER & IRRIGATION**

**739.1 GENERAL:**

This specification covers the requirements of Steel Reinforced Polyethylene Pipe (SRPE) pipe manufactured per ASTM F2562 for storm drains, irrigation and sanitary sewer systems. When noted on the plans or in the special provisions, storm drains, irrigation and sanitary sewers may be constructed using SRPE pipe. ~~The SRPE pipe approved will be of the sizes are~~ 24 inch diameter through 120 inch diameter. Trench excavation, backfilling and compaction for ~~this~~ flexible pipe shall be in accordance with Section 603. Construction and installation shall be in accordance with Section 618 for storm drain and irrigation water ~~or and~~ Section 615 for sanitary sewers.

~~The size of the SRPE pipe to be furnished shall be specified by the Engineer and shown on the plans or in the project specifications.~~ The pipe stiffness class shall be Class 1, per Table 1 of ASTM F2562, unless otherwise specified.

**739.2 MATERIALS:**

Pipe design is to comply with the AASHTO LRFD Bridge Design Specifications Section 12.

**739.2.1 Base Steel Materials:** Continuous high strength galvanized ribs shall be cold rolled steel meeting the requirements of either ASTM A1008 or ASTM A1011 with minimum yield strength of 80,000 psi. ~~The steel shall have a galvanized coating meeting the requirements of ASTM A653 with a G60 minimum coating weight.~~ Steel ribs shall be completely encased within the HDPE profile.

**739.2.2 HDPE Material Composition:** SRPE pipe HDPE material and fittings shall, in accordance with ASTM F2562, be made from HDPE plastic compound meeting the minimum requirements of cell classification 335464C or higher cell classification, in accordance with ASTM D3350.

**739.2.3 Gaskets:** Elastomeric gaskets shall comply with the requirements in ASTM F477 and be as recommended by the pipe manufacturer.

**739.2.4 Water Stops:** Elastomeric Water stop gaskets shall conform to the requirements of ASTM C923.

**739.2.5 Thermal Welding Material:** The material used for thermally welding of the pipe ~~material~~ shall be compatible with the ~~pipe's~~ base material.

**739.2.6 Lubricant:** The lubricant used for assembly shall comply with manufacturer's recommendations and have no detrimental effect on the gasket or pipe.

**739.3 JOINING SYSTEMS:**

**739.3.1 Gasket Type:** Steel reinforced bell and spigot joints for the piping system and fittings shall consist of an integrally formed bell and spigot gasketed joint. The joint shall be designed so that when assembled, the elastomeric gasket located on the spigot is compressed radially on the pipe or fitting bell to form a water tight seal. The joint shall be designed so to prevent displacement of the gasket from the joint during assembly and when in service. The elastomeric gasket shall meet the provision of ASTM F477. Gasketed watertight pipe joints shall meet a minimum laboratory test pressure of 10.8 psi when tested in accordance with ASTM D3212.

All pipes shall have a home mark on the spigot end to indicate proper penetration when the joint is made.

The bell and spigot configurations for ~~the~~ fittings shall be compatible to those used for the pipe.

Joints shall provide a seal against exfiltration and infiltration. All surfaces of the joint upon which the gasket may bear, shall be smooth and free of any imperfections, which would adversely affect ~~the seal ability~~. The assembly of the gasketed joints shall be in accordance with the pipe manufacturer's recommendations.

**739.3.2 Thermal Weld Type:** Thermal weld joints, when specified, shall utilize plain ended pipe welded together by internal pressure testable couplers. The internal couplers shall have a minimum wall thickness equal to or greater

than the pipe wall thickness as defined in ~~pipe specification~~, ASTM F2562. The assembly of the welded joints shall be in accordance with the manufacturer's recommendations. Thermal welded pipe joints shall meet a minimum laboratory test pressure of 10.8 psi ~~or 1.5 times the allowable pressure rating for the pipe, whichever is greater~~, when tested in accordance with ASTM D3212.

**739.3.3 Pipe To Concrete Structure Connections:** An approved flexible connector, mechanical seal or water stop shall be provided at manhole entry or concrete structure connection to reduce infiltration and exfiltration. When grouting is necessary at a water stop connection, non-shrink grout shall be used.

**739.4 FITTINGS:**

Fittings for SRPE pipe may include tees, elbows, manhole adapter rings, plugs, caps, adapters and increasers. Fittings shall be joined by gasket type or thermal weld type joints in accordance with Subsection [739.3](#).

**739.5 CERTIFICATION:**

The manufacturer shall furnish a certification that all ~~delivered~~ materials ~~delivered shall~~ comply with the ~~minimum~~ requirements of ASTM F2562. The certification shall also identify the steel as galvanized ~~with a G60 minimum coating weight~~, ~~with~~ 80,000 psi yield strength and the cell classification of the HDPE material as 335464C minimum.

**739.6 MARKINGS:**

Markings on pipe and fittings shall be per ASTM F2562. The markings shall be clearly shown on the pipe, at least, at the end of each length of pipe and spaced at intervals of not more than 10 feet. Markings shall include the following information: ASTM F2562, the nominal pipe size in inches, the pipe stiffness class, the manufacturer's name, trade name or trademark, the manufacturer's production code: identifying plant location, machine, and date of manufacture.

**739.7 CARE OF PIPE AND MATERIALS:**

All pipe, ~~fittings, gaskets and water stop~~ materials shall be manufactured, handled, loaded, shipped, ~~and~~ unloaded, ~~and installed~~ in such a manner as to be undamaged and in sound condition, in the completed work. Particular effort shall be exercised to protect the ends of the pipe. Repairs on damaged pipe shall be made to the satisfaction of the Engineer ~~otherwise they shall not be used in the work and shall be replaced with an equal pipe or special in an acceptance condition~~ or removed from the project site. ~~At all times, rubber~~ Elastomeric gaskets shall be covered in a factory applied protective wrap ~~or stored in a cool, dark place until ready for use~~.

- End of Section -

## SECTION 739

### STEEL REINFORCED POLYETHYLENE PIPE & FITTINGS FOR STORM DRAIN, IRRIGATION & SANITARY SEWER

#### 739.1 GENERAL:

This specification covers the requirements of Steel Reinforced Polyethylene Pipe (SRPE) pipe manufactured per ASTM F2562 for storm drains, irrigation and sanitary sewer systems. When noted on the plans or in the special provisions, storm drains, irrigation and sanitary sewers may be constructed using SRPE pipe. SRPE pipe sizes are 24 inch diameter through 120 inch diameter. Trench excavation, backfilling and compaction for this flexible pipe shall be in accordance with Section 603. Construction and installation shall be in accordance with Section 618 for storm drain and irrigation water or Section 615 for sanitary sewers.

The pipe stiffness class shall be Class 1, per Table 1 of ASTM F2562, unless otherwise specified. Pipe design is to comply with AASHTO LRFD Bridge Design Specifications Section 12.

#### 739.2 MATERIALS:

**739.2.1 Base Steel Materials:** Continuous high strength galvanized ribs shall be cold rolled steel meeting the requirements of either ASTM A1008 or ASTM A1011 with minimum yield strength of 80,000 psi. The steel shall have a galvanized coating meeting the requirements of ASTM A653 with a G60 minimum coating weight. Steel ribs shall be completely encased within the HDPE profile.

**739.2.2 HDPE Material Composition:** SRPE pipe HDPE material and fittings shall, in accordance with ASTM F2562, be made from HDPE plastic compound meeting the minimum requirements of cell classification 335464C or higher cell classification, in accordance with ASTM D3350.

**739.2.3 Gaskets:** Elastomeric gaskets shall comply with the requirements in ASTM F477 and be as recommended by the pipe manufacturer.

**739.2.4 Water Stops:** Elastomeric Water stop gaskets shall conform to the requirements of ASTM C923.

**739.2.5 Thermal Welding Material:** The material used for thermal welding of the pipe shall be compatible with the pipe's base material.

**739.2.6 Lubricant:** The lubricant used for assembly shall comply with manufacturer's recommendations and have no detrimental effect on the gasket or pipe.

#### 739.3 JOINING SYSTEMS:

**739.3.1 Gasket Type:** Steel reinforced bell and spigot joints for the piping system and fittings shall consist of an integrally formed bell and spigot gasketed joint. The joint shall be designed so that when assembled, the elastomeric gasket located on the spigot is compressed radially on the pipe or fitting bell to form a water tight seal. The joint shall be designed so to prevent displacement of the gasket from the joint during assembly and when in service. The elastomeric gasket shall meet the provision of ASTM F477. Gasketed watertight pipe joints shall meet a minimum laboratory test pressure of 10.8 psi when tested in accordance with ASTM D3212.

All pipes shall have a home mark on the spigot end to indicate proper penetration when the joint is made. The bell and spigot configurations for fittings shall be compatible to those used for the pipe.

Joints shall provide a seal against exfiltration and infiltration. All surfaces of the joint upon which the gasket may bear, shall be smooth and free of any imperfections, which would adversely affect the seal. The assembly of the gasketed joints shall be in accordance with the pipe manufacturer's recommendations.

**739.3.2 Thermal Weld Type:** Thermal weld joints, when specified, shall utilize plain ended pipe welded together by internal pressure testable couplers. The internal couplers shall have a minimum wall thickness equal to or greater than

the pipe wall thickness as defined in ASTM F2562. The assembly of the welded joints shall be in accordance with the manufacturer's recommendations. Thermal welded pipe joints shall meet a minimum laboratory test pressure of 10.8 psi when tested in accordance with ASTM D3212.

**739.3.3 Pipe to Concrete Structure Connections:** An approved flexible connector, mechanical seal or water stop shall be provided at manhole entry or concrete structure connection to reduce infiltration and exfiltration. When grouting is necessary at a water stop connection, non-shrink grout shall be used.

**739.4 FITTINGS:**

Fittings for SRPE pipe may include tees, elbows, manhole adapter rings, plugs, caps, adapters and increasers. Fittings shall be joined by gasket type or thermal weld type joints in accordance with Subsection 739.3.

**739.5 CERTIFICATION:**

The manufacturer shall furnish a certification that all delivered materials comply with the requirements of ASTM F2562. The certification shall also identify the steel as galvanized with a G60 minimum coating weight, 80,000 psi yield strength and the cell classification of the HDPE material as 335464C minimum.

**739.6 MARKINGS:**

Markings on pipe and fittings shall be per ASTM F2562. The markings shall be clearly shown on the pipe, at least, at the end of each length of pipe and spaced at intervals of not more than 10 feet. Markings shall include the following information: ASTM F2562, the nominal pipe size in inches, the pipe stiffness class, the manufacturer's name, trade name or trademark, the manufacturer's production code: identifying plant location, machine, and date of manufacture.

**739.7 CARE OF PIPE AND MATERIALS:**

All pipe, fittings, gaskets and water stop materials shall be manufactured, handled, loaded, shipped, unloaded, and installed in such a manner as to be undamaged and in sound condition, in the completed work. Particular effort shall be exercised to protect the ends of the pipe. Repairs on damaged pipe shall be made to the satisfaction of the Engineer or removed from the project site. Rubber Elastomeric gaskets shall be covered in a factory applied protective wrap.

*- End of Section -*