

**State of Ohio**  
**Department of Transportation**  
**Supplemental Specification 939**  
**Precast and Cast-in-Place Trench Drain**

**April 20, 2007**

**939 Precast and Cast-in-Place Trench Drain.** This specification covers precast monolithic polymer concrete trench drain, precast high density polyethylene (HDPE) trench drain, or cast-in-place trench drain with an inside width of 4 inches (100mm) and an inside minimum depth of 11 inches (275mm).

Furnish monolithic polymer concrete trench drains made from a composition of aggregate and polyester resin meeting the following material properties:

<b>MATERIAL PROPERTY</b>	<b>ASTM TEST METHOD</b>	<b>TEST VALUES</b>
Minimum Tensile Strength, psi (MPa)	C 307	1,150 (8)
Minimum Compressive Strength, psi (MPa)	C 579	11,500 (80)
Minimum Bending Strength, psi (MPa)	C 580	2,000 (14)
Maximum Moisture Absorption, %	C 140	0.5
Chemical Resistance	C 267	Pass
Minimum Freeze/Thaw, number of cycles w/o weight loss	C 1262	1,600

Furnish HDPE trench drains containing 5% carbon black and meeting the following material properties:

<b>MATERIAL PROPERTY</b>	<b>ASTM TEST METHOD</b>	<b>TEST VALUES</b>
Minimum Density, lb/ft <sup>3</sup> (g/cc)	D-1505	58 (0.934)
Maximum Melt Index, oz (g/10 min)	D-1238	0.36 (10)
Minimum Flexural Modulus, ksi (MPa)	D-790	40,000 (275,000)
Minimum Tensile Strength @ yield, 2"/minute, psi (MPa)	D-638	1,200 (8)
Maximum Elongation @ Break 2"/minute (%)	D-638	10
Hydrostatic Design Basis	D-2837	Not Pressure Rated

Minimum Tensile Impact Strength, ft-lb/in <sup>2</sup> (kJ/m <sup>2</sup> )	D-256	0.70 (1.50)
---	-------	-------------

Furnish cast-in-place trench drains meeting the material requirements of Item 511.

Furnish the manufacturer's frame or one piece frame and grate. Furnish anchoring devices that are either welded or are securely attached by the manufacturer to the frame or one piece frame and grate. Ensure anchoring devices have a minimum diameter (nominal) of ¼ inch (6 mm) and are 304 stainless steel or epoxy coated reinforcing steel. Furnish a minimum of 4 anchoring devices per each individual frame or one piece grate and frame or furnish anchoring devices every 4 feet, whichever is less. Ensure a minimum of 2 inches of concrete cover on all anchoring devices. For monolithic polymer concrete trench drains and HDPE trench drains, furnish materials according to the Department's Qualified Products List (QPL).

**Designer Note:**

Provide supplemental specification 839 when using this specification. This specification replaces the plan note formerly used for Trench Drains. For Design criteria and guidance contact the Office of Structural Engineering, Hydraulics Section.