



# Sewer Shield Composites

## Corrosion-Resistant Manholes

**(H20 LOAD CERTIFIED)**

**DESCRIPTION:** SEWER SHIELD MANHOLES are made out of SEWER SHIELD 100 and/or 150 epoxy resins reinforced with fiberglass to provide maintenance-free, long-lasting protection to access municipal sewer systems. The Sewer Shield epoxy resins have been used for many years providing excellent service in the coating of concrete and brick manholes. We have evolved this technology to incorporate the use of glass fibers to provide a structure for the resin so that composite manholes can be installed in place of concrete or brick, designed to withstand ground and traffic pressures.

Based on using proven materials in the wastewater environment, and proven technology in the fiberglass-reinforced resin industry, we have developed a product that incorporates a corrosion-resistant resin (SEWER SHIELD 100 and 150) throughout the structure of the manhole so that the manhole is not subject to failure from external contamination, nor is the corrosion resistance affected by scrapes or cutting of the manhole walls.

<b>Material Properties at 75° F.</b>	
<b>Tensile Modulus</b>	<b>1.57 x 10<sup>6</sup></b>
<b>Shear Modulus</b>	<b>0.362 x 10<sup>6</sup></b>
<b>Poisson's Ratio</b>	<b>0.22</b>
<b>Tensile Strength, psi</b>	<b>18,700</b>
<b>Flexural Strength, psi</b>	<b>32,000</b>
<b>Density, lb/in<sup>3</sup></b>	<b>.054</b>

The Sewer Shield 100 is used as a corrosion barrier 125 mils thick on the smooth interior of the insert and is backed up by the Sewer Shield 150 reinforced with fiberglass throughout the structure. The 100 product will withstand sulfuric acid in concentrations up to 98% where the insert is exposed to the gases coming from the sewer system, the 150 product will withstand sulfuric acid in concentrations up to 50% to provide a completely corrosion-resistant product throughout the structure. Alternatively, the Sewer Shield 150 can be used as the corrosion barrier, with a standard epoxy resin that provides protection against weaker sulfuric acid.

The design of the manholes was prepared by a Professional Engineer (Conlisk Engineering) who is on both ASME design and construction standards committees for composite structures. Through careful lamination analysis and finite element analysis, a design was developed to meet or exceed the requirements of buried manholes up to 40 ft. deep. The manholes are built by professionals who are solely dedicated to the fabrication of corrosion-resistant composite equipment, carefully following the design prepared by Conlisk Engineering.

**USES:** SEWER SHIELD MANHOLES, when properly installed, are free-standing and incorporate exterior ribs that provide both compression strength as well as anti-flotation capabilities. Over time they will not be affected by ground-water or other chemical attack from inside or outside of the insert.

**SURFACE PREPARATION:** None required.

**INSTALLATION PROCEDURE:** SEWER SHIELD MANHOLES are easy to install. Bell & spigot assembly allows for easy alignment of the sections, and the adjustment section and walls can be readily cut with carbide-edged power tools to adjust the heights or allow for penetrations. **SEWER SHIELD 150 or 100** is applied as a putty between the bell and spigot sections, as well as for bonding the inserts to existing piping systems. Since no single section weighs over 600 lbs., they can easily be set into place with a small crane.

To install the new manhole the lock ring is set on the concrete pad at the bottom of the manhole opening and filled with Environmental Coating Grout. While the grout is still wet, the lower section is set into the lock ring and leveled. Once the grout in the lock ring has cured, the appropriate cutouts are made for piping and the piping is bonded to the manhole with Sewer Shield materials. The area around the lower section is then backfilled. Next the bell at the top of the installed section and the exterior of the following section are covered with Sewer Shield putty and the sections are assembled. Within 3 feet of grade, measurements are taken and the adjustment section is cut to adjust the overall height of the manhole. This adjustment section is then installed in the same fashion as the standard section. Once the sections are assembled and the adjustment ring has been installed, the composite Sewer Shield top manhole access section (flat or domed) is nested on top of the vertical insert wall.

The composite Sewer Shield spacer ring and steel manhole cover are then set in place, the top is backfilled, the pavement is repaired, and the manhole is ready for service.

**PACKAGING:** SEWER SHIELD manholes come in three basic parts:

Cover section (concentric, eccentric or flat)  
Riser sections (can be made in stackable bell & spigot sections or in continuous sections up to 22 feet long.)

Sewer Shield slurry, grout, and putty

The bottom section is specially designed for cutouts without losing the structural strength required to support applied loads.



Adjustment section with cover



Computerized filament winder,  
Reinforcing ribs added to  
freestanding manholes

**CUSTOMER SERVICE:** For any questions you may have in regard to SEWER SHIELD manholes and manhole inserts, please contact:

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