

# FIBERGLASS MANHOLES

SANITARY SEWER LINES



**CONTAINMENT**  
SOLUTIONS®

Fiberglass manholes are quickly becoming more common in new installations than concrete. Sanitary sewer lines create an incredibly corrosive environment which causes leaks in concrete manholes and even worse, infiltration. Infiltration allows ground water to enter the waste line overburdening the system and increasing costs. Municipalities across the nation are investing billions in the rehabilitation of failing concrete manholes.

Fiberglass' non-reactive nature to sewer gas, and our monolithic manufacturing process, makes our fiberglass manholes a great candidate for any treatment system. Infiltration and exfiltration are common in concrete treatment systems, as sewer gas prematurely corrodes concrete, particularly where two separate pieces join. The monolithic design of our manholes eliminates this problem. Made in lengths from 3' to 50' (or more upon request), the possibility of infiltration and exfiltration is drastically reduced by using fiberglass as compared to an equivalent manhole made of concrete.



▲ MAINTENANCE FREE, HIGH GLOSS, INNER SURFACE

Lightweight and structurally sound to withstand H-20 axle loads, our manholes are easy to install, taking only a small crew and a few hours, and are very reliable once in the ground. With over 25 years of successful installations, fiberglass manholes from Containment Solutions, Inc (CSI) are non-corrosive, watertight, economical and an effective solution to your wastewater system needs.

Fiberglass is simply the superior choice in manholes.

## MANHOLE DESIGN

Quality is built into each manhole. We start with a time-proven design which distributes loads evenly to reduce stress.

CSI manholes are fabricated using high quality resin, and glass, specifically designed to improve corrosion resistance and overall performance. This laminate matrix is centrifugally fused through a computer automated process from the inside-out using rotating mandrels. This manufacturing process produces a smooth, high gloss, inner surface that is maintenance free. Most importantly, fiberglass is virtually impervious to the increasingly hostile environment common in sewers.



▲ VARIOUS DIAMETERS WITH LENGTHS UP TO 50'

## EASE OF INSTALLATION

Fiberglass manholes are approximately 10% of the weight of concrete manholes so they are easier and safer to handle. This also allows for a safer and less costly installation because there is no need for heavy equipment and less manpower is required to move the manhole.

## REDUCE INFILTRATION

In most cases, ordinary concrete manholes are installed in sections, otherwise they would be too heavy to move. This creates a joint — the source of most leaks — every three feet. CSI manholes have no joints. They are available in standard one-piece lengths which prevents infiltration or exfiltration.

## WILL NOT FLOAT

CSI manholes are installed in a concrete base (6' X 6' X 6" for 42" and 48" – refer to Manhole Installation Instructions for proper installation procedures). The combination of anti floatation ring, manhole weight, slab weight, and weight of the soil wedge on the protruding 12" of slab more than offset buoyancy.



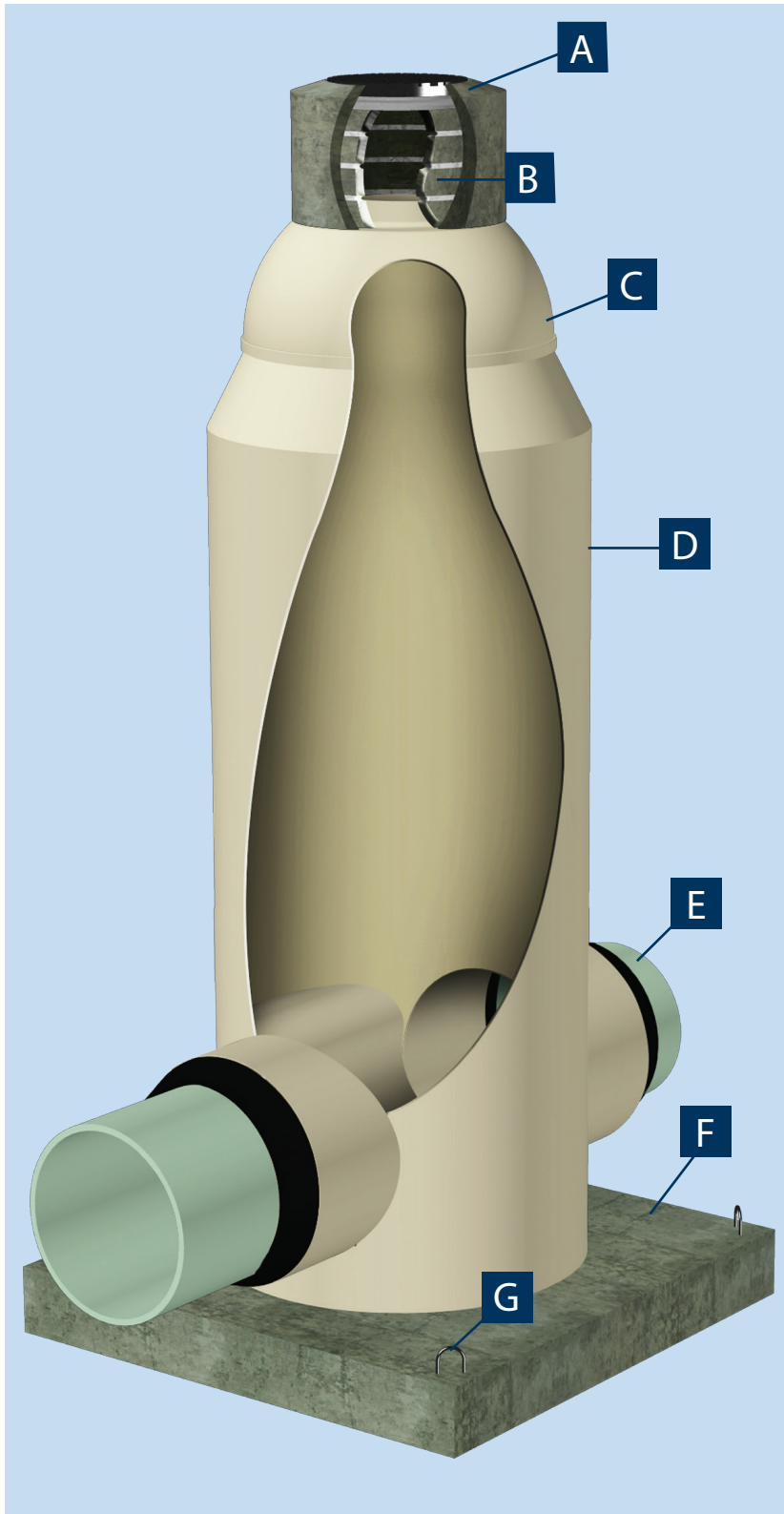
ADHESIVE JOINT MODELS AVAILABLE ▼



## FEATURES & BENEFITS

- H2O Load Rated
- Corrosion resistance
- Structural strength
- Lightweight
- Monolithic design
- ASTM D 3753
- Diameters (42", 48", 54", 60", 66", 72", 96", 120")
- Lengths 3' to 50' (Custom lengths available)
- Cone openings (Concentric 22 1/2", 32", 38" Eccentric - 22 1/2")
- Corrosion and structural limited warranty





## CSI FIBERGLASS MANHOLE

**A. Standard H20 Ring and Cover**  
Accepts most common rings and covers

**B. Adjustment Rings**  
Built to finished grade with standard materials

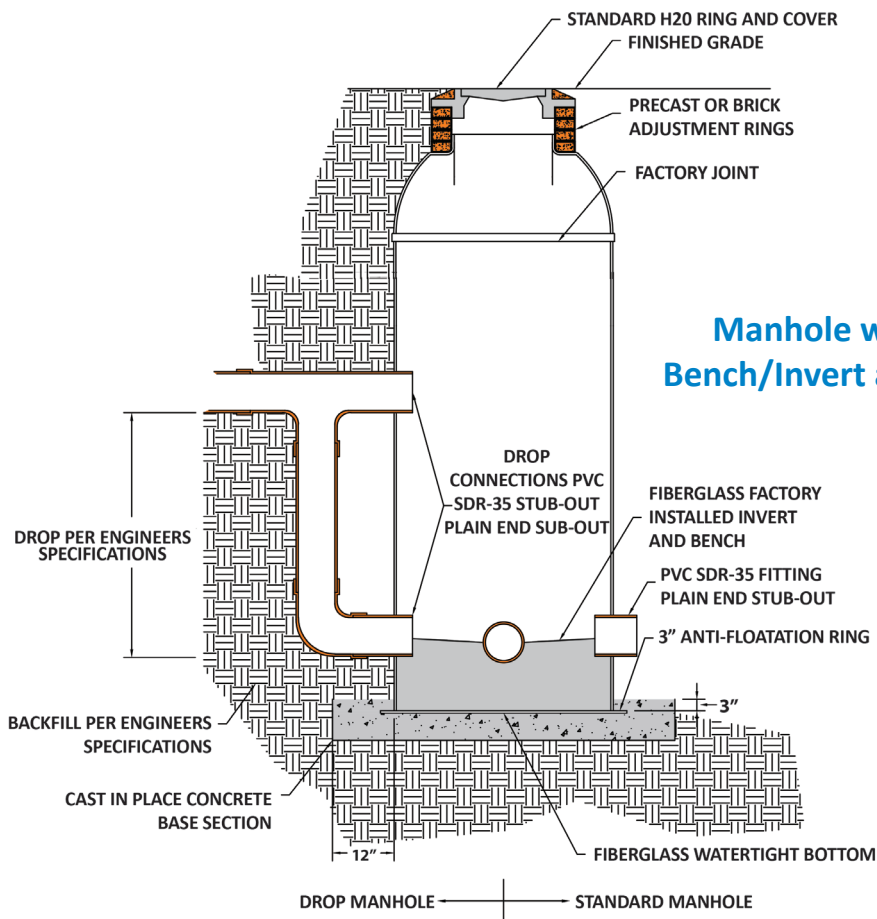
**C. Manhole Cone**  
Exceeds H-20 wheel loads

**D. Manhole Barrel/Cylinder**  
Lengths from 3' in half foot increments, frictionless inner surface, diameters available from 42" - 120"

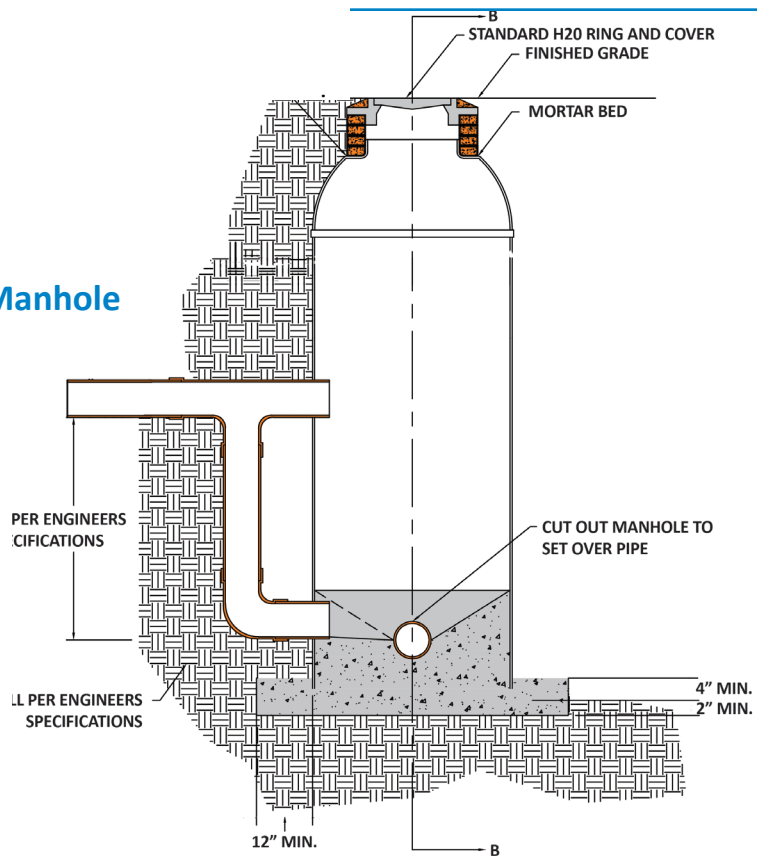
**E. Piping**  
Options include:  
PVC, fiberglass, clay, steel, and more

**F. Concrete Slab**  
Optional factory fabrication for quick installation

**G. Lift Lugs**  
Aid in the loading and unloading process



### Open Bottom Fiberglass Manhole



## ACCESSORIES AVAILABLE FOR CUSTOM MANHOLE FABRICATION

- PVC stubouts
- Flexible rubber boots
- Fiberglass watertight bottoms
- Fiberglass benches and inverts
- Factory installed concrete slab
- Bottom flanges



## STRUCTURALLY SOUND – EXCEEDS H-20 LOAD RATING

Manhole failures mean that fluids can enter or exit a system. If the manhole leaks out into a body of water the environmental liability can be catastrophic. On the other hand, if a manhole is allowing ground water to enter the sewer line, the additional volume flowing through the system has a ripple effect that causes structural instability and exponentially increases management costs.

CSI manholes are designed to withstand the rigid requirements of ASTM D3753 and must withstand a minimum eccentric load of 40,000 pounds. CSI manholes exceed the AASHTO H-20 Axle Load rating by two and a half times.

CSI manholes resist structural fatigue, will not crack, crumble, or leak during normal design life. Concrete or brick manholes can be weakened due to movement caused by traffic shifting soil, temperature changes, and cyclical groundwater loading.

CSI manholes are built in a watertight monolithic design absent of potential leaks. CSI manholes arrive to the site ready for installation saving significant time and money.





## CORROSION RESISTANT

As our cities expand outward, millions of gallons of hydrogen sulfide rich effluents must spend long periods of time in our sewer systems before they reach a treatment plant. The combination of these effluents, a warm humid atmosphere and long retention times create perfect conditions for microbiologically induced corrosion (MIC).

Corrosion is the mortal enemy of ordinary manholes, but not of fiberglass. CSI fiberglass manholes are not susceptible to MIC corrosion, thus have much longer service lives and street closings, service disruption, and costly repairs can be avoided. While concrete and brick manholes were once believed to last 50 years, many fail within the first 5-10 years.

## THE PROVEN SOLUTION

Thousands of our manholes have been installed over a wide area, in many different types of soil, and many different effluents. CSI fiberglass manholes have been in service for more than forty-five years and many of these installations are in busy streets.

Actual experience has proven to city managers, public works officials, and hundreds of others who are responsible for municipal wastewater collection systems, that CSI manholes are the very best you can put in the ground.







## ASTM STANDARDS

CSI manholes are constructed and tested in accordance with the following ASTM standards and test methods (Independent, third party test result documentation with ASTM D-3753 verify compliance are available upon request):

**ASTM D-3753**— Standard Specification of Glass-Fiber Reinforced Polyester Manholes

**ASTM C-581**— Practice for Determining Chemical Resistance of Chemical Thermosetting Resins Used in Glass-Fiber Reinforced Structures Intended for Liquid Service

**ASTM D-2412**— Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading

**ASTM D-695**— Test Methods for Compressive Properties of Rigid Plastics

**ASTM D-2584**— Test Method of Ignition Loss of Cured Reinforced Resins

## PROPERTIES OF CSI MANHOLES

Diameter of fiberglass manholes available:

42", 48", 54", 60", 66", 72", 96", 120"

Lengths:

3' to 50' (Custom lengths available)

Cone Openings:

Concentric 22½", 32", 38"

Eccentric – 22½"



Fiberglass manholes are easier and safer because they are lightweight.



## MANHOLE SHORT FORM SPECIFICATION

Glass-Fiber Reinforced Polyester Manholes shall be a one-piece monolithic designed unit constructed of glass-fiber reinforced, supplier certified, unsaturated commercial grade polyester resin. FRP manholes shall be manufactured in diameters of 36" through 120" with lengths up to 50'. Manholes will be manufactured by Containment Solutions, Inc.

### MANHOLES SHALL CONFORM TO THE FOLLOWING DESIGN CRITERIA:

- A. **ASTM D-3753:** Standard Specification for Glass-Fiber Reinforced Polyester Manholes.
- B. **ASTM C-581:** Practice for Determining Chemical Resistance of Chemical Thermosetting Resins Used in Glass-Fiber Reinforced Structures Intended for Liquid Service.
- C. **ASTM D-2412:** Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading.
- D. **ASTM D-695:** Test Methods for Compressive Properties of Rigid Plastics.
- E. **ASTM D-2584:** Test Method for Ignition Loss of Cured Reinforced Resins.
- F. **ASTM D-790:** Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and electrical Insulating Materials.
- G. **ASTM D-2583:** Test Method for Indentation Hardness of Rigid Plastics by means of a Barcol Impressor.
- H. **AASHTO H-20:** Axle Loading.

### SUBMITTALS:

- A. Catalog Data: Submit copies of manufacturer's literature
- B. Installation Instructions: Submit copies of manufacturer's instructions

### STUBOUTS AND CONNECTIONS:

Several methods may be used to connect primary and secondary lines when installing fiberglass manholes

- A. Make piping cutouts in the manhole and setting over the pipe and grout
- B. Use flexible resilient rubber connectors in the manhole wall
- C. Install appropriate PVC pipe to bell/spigot connections on manhole

Fiberglass manholes are easy to work with which allows for a wide variety of other connection possibilities.

### INSTALLATION INSTRUCTIONS:

Refer to CSI Fiberglass Manhole Installation Instructions (Pub. No. MAN4033)

### HANDLING AND STORAGE:

Do not drop or impact the fiberglass manhole. Lift manhole with two slings on spreader bar in horizontal position or an appropriately sized timber or steel beam, 8" longer than the cone top opening, inserted crosswise inside the manhole to the underside of the collar with a rope or chain attached to backhoe or other lifting device. Manhole may be rolled, however, ensure that ground is smooth and free of rocks, debris, etc. Use of chains or cables in contact with manhole surface is prohibited.

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**CONTAINMENT SOLUTIONS MANUFACTURES:**

Fiberglass Manholes and Wetwells

Underground Fiberglass Storage Tanks

Aboveground Steel Storage Tanks

Automotive Oil and Lubricant Storage Tanks

Oil/Water Separators and Interceptors

Flowtite® Water Tanks

Chemical Storage Tanks

Field Service



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