

REHABILITATION MANHOLE & WETWELL

INSTALLATION INSTRUCTIONS



CONTAINMENT
SOLUTIONS®

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1. INTRODUCTION

- 1.1. Containment Solutions (CSI) Fiberglass Rehabilitation Manholes and Wetwells can be installed within existing concrete, brick or precast manholes and wetwells to provide a long-term and cost-effective solution to manhole and wetwell rehab.
- 1.2. CSI Rehabilitation Manholes and wetwells resist the attack of hydrogen sulfide while withstanding H-20 traffic loads.
- 1.3. They meet or exceed the requirements of ASTM D-3753 "Standard Specification of Glass Fiber-Reinforced Polyester Manholes and Wetwells".
- 1.4. Rehabilitation manholes and wetwells are available in lengths from 3' to 50' in half foot increments and are manufactured as one integral piece in 36", 42", 48", 54", 60", 66", and 72" diameters.
- 1.5. **Safety**
 - 1.5.1. These instructions should not be interpreted in any way to put one's health at risk, or to harm property and/or the environment.
 - 1.5.2. The following definitions will serve as a guide when reading this manual:

⚠️ WARNING

Indicates a potentially hazardous situation, which if not avoided could result in death or serious injury.

⚠️ CAUTION

Indicates a potentially hazardous situation, which if not avoided may result in minor or moderate injury.

NOTICE

Indicates a potentially hazardous situation, which if not avoided may result in property damage.

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1.6. Important Information

- 1.6.1. Proper installation of each rehabilitation manhole or wetwell is essential to ensure the safety of all the individuals involved in the installation; to prevent rehabilitation manhole/wetwell damage and/or failure, which could lead to product loss and environmental contamination.

1.7. Important Reminders

- 1.7.1. Fiberglass rehabilitation manholes and wetwells must be installed according to these instructions (MAN 4046) as well as any required supplemental instructions and all applicable Federal, State, Local, or Provincial, construction, safety and environmental codes and regulations.
- 1.7.2. Any variances or deviations which are in direct conflict with these published installation instructions must be approved in writing prior to the installation by Containment Solutions Technical Support.
- 1.7.3. The presence of any Containment Solutions representative at the job site does not relieve the contractor of responsibility to follow these installation instructions.

1.8. Rehabilitation Manhole and Wetwell Limited Warranty Activation

- 1.8.1. These instructions must be followed.
- 1.8.2. Any variances or deviations which are in direct conflict with these published installation instructions must be approved in writing by CSI prior to the installation.
- 1.8.3. These instructions, and any correspondence related to the rehabilitation manhole installation must be retained by the owner and provided to CSI, only at the time of a claim, to validate any future limited warranty service request.
- 1.8.4. The limited warranty in effect at the time of delivery will apply and is available from Containment Solutions.
- 1.8.5. The CSI limited warranty applies only to a manhole or wetwell installed according to these instructions.

1.9. Before You Begin

⚠️ WARNING

To prevent fire or explosion hazard, Containment Solutions recommends air driven tools whenever possible. Do not use electrical power tools where flammable vapors or liquids exist. Also, when electric hand tools are used, be aware of potential shock hazards. Wear protective clothing and eye protection.

Do not enter rehabilitation manhole or excavation unless following OSHA guidelines for confined space entry. Failure to follow OSHA guidelines could result in death or serious injury.



ASPHYXIATION



FIRE



EXPLOSION

- 1.9.1. Read, understand and follow these instructions.
- 1.9.2. Barricade the work area.
- 1.9.3. If you have questions on other rehabilitation manhole installation details, call CSI Technical Support.

2. SELECTING HEIGHTS

2.1. Height of rehabilitation manhole or wetwell required is 1' less than nearest ½' distance from concrete base to finish grade. This will allow sufficient clearance for at least one grade ring to adjust ring and cover to finish grade.

2.1.1. See Figure 2-1 for Manholes.

2.1.2. See Figure 2-2 for Wetwells.

Figure 2-1

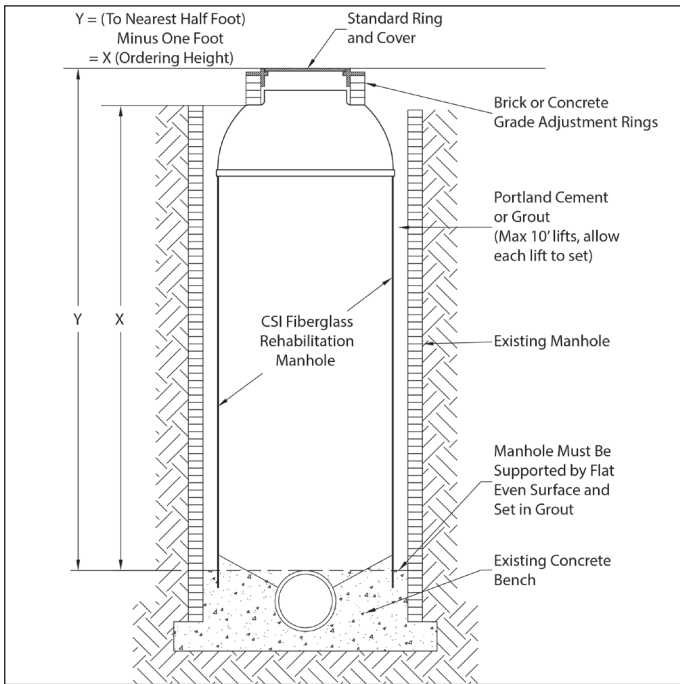
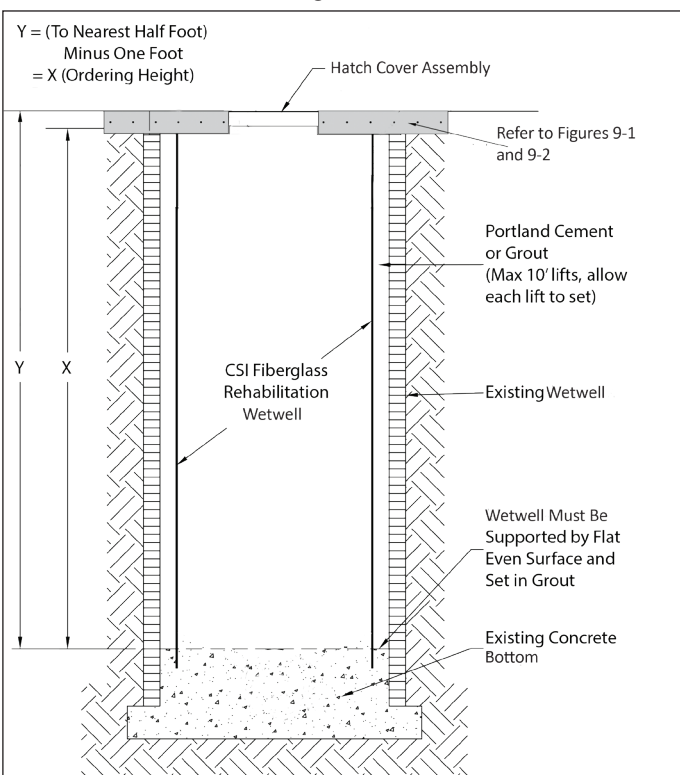


Figure 2-2



3. HANDLING & PREPARATION

⚠ CAUTION

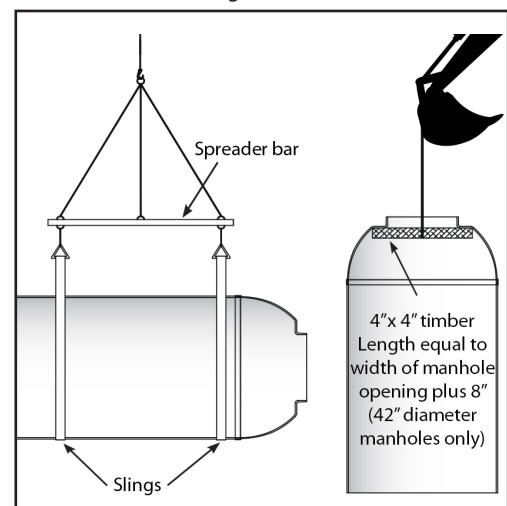
Do not stand on or under rehabilitation manhole while it is being lifted. This could result in injury or death.

⚠ WARNING

Do not allow driver to release straps securing the rehabilitation manhole to the truck until the rehabilitation manhole is safe to offload. Failure to do so could result in death or serious injury.

- 3.1. Upon rehabilitation manhole or wetwell delivery and when lifting the rehabilitation manhole, visually inspect entire exterior surface for shipping or handling damage.
- 3.2. If damage exists, contact CSI prior to installation.
- 3.3. Do not drop or impact rehabilitation manhole or wetwell.
- 3.4. Rehabilitation manholes or wetwells should be stored horizontally and chocked, using only appropriate materials such as sandbags, tires, or other soft or pliable materials.
- 3.5. The contractor is responsible for rigging, unloading and securing the rehabilitation manhole or wetwell.
- 3.6. Always lift, never roll, slide or push a rehabilitation manhole or wetwell.
- 3.7. When lifting the rehabilitation manhole in the horizontal position, use two slings with a spreader bar.
- 3.8. Only a pliable strap or rope should contact the rehabilitation manhole, do not use chains, steel cables or hard metallic slings.
- 3.9. Do not wrap chain or cable around the rehabilitation manhole.
- 3.10. For 42" diameter rehabilitation manholes up to 20' length, use a 4" x 4" timber inserted through the top access opening for vertical positioning. Timber should be 8" longer than the rehabilitation manhole opening. All other rehabilitation manholes should be offloaded with slings or in some instances, lifting lugs (see Figure 3-1).

Figure 3-1



- 3.11. Larger rehabilitation manholes are rotated on the truck for shipping purposes. These manholes may have lifting lug(s) to aid in the loading/unloading process.
- 3.12. Larger rehabilitation wetwells may have lifting lugs that are situated on top of the manhole in its rotated position. Use a minimum of two lift lugs when pivoting the rehabilitation manhole from horizontal to vertical.
- 3.13. To install rehabilitation wetwells with lift lugs, carefully rotate the rehabilitation manhole to its upright position and then use all lifting lugs situated on top of the rehabilitation manhole in its upright position.

4. EXCAVATION

- 4.1. Excavate an area around the top of the existing manhole sufficiently wide and deep for removal of old casting (ring and cover) and reducer (cone) section or wetwell top slab.

5. REHABILITATION MANHOLE & WETWELL PREPARATION

- 5.1. The bottom of the rehabilitation manhole or wetwell must be cut to fit existing manhole or wetwell bench or wetwell top slab as closely as possible.
- 5.2. This procedure is critical when it must support H-20 wheel loads for both manholes and wetwells.
- 5.3. Make cuts in rehabilitation manhole or wetwell wall to accommodate existing inlets, drops and cleanouts.
- 5.4. Cuts should be precisely made with an electric or gasoline saw fitted with a masonry-type blade or with a jigsaw using carborundum or tungsten carbide blade.
- 5.5. Apply grout on the existing bench/bottom to form a flat surface on which the manhole or wetwell will sit.

6. BOTTOM SEAL

- 6.1. Lower the rehabilitation manhole or wetwell into existing brick or concrete manhole or wetwell and set rehabilitation manhole or wetwell bottom into quick-setting grout mixture or non-shrink epoxy grout.
- 6.2. A good bottom seal must be obtained in order to prevent loss of grout from the annular space between the outside of the rehabilitation manhole or wetwell and the interior surface of the old manhole or wetwell.
- 6.3. The installer should place a 6" height of quick-setting grout above the initial bottom seal in the annular void area between the rehabilitation manhole or wetwell and existing brick or concrete manhole or wetwell to ensure the adequacy of the bottom plug or seal.

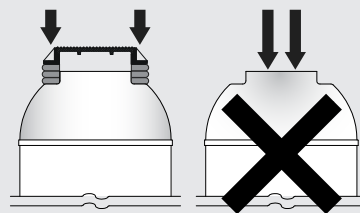
7. GROUTING

- 7.1. Fill the annular void between the rehabilitation manhole or wetwell and existing brick or concrete manhole or wetwell with an economical Portland Cement and sand grout.
- 7.2. The use of Modified Portland Cement (Type II) and sand grout is desirable since it possesses moderate sulfate resistance and characteristics.
- 7.3. Fill evenly around rehabilitation manhole or wetwell in 10' lifts, allowing each lift to set.

8. FINISHING REHABILITATION MANHOLE TO GRADE

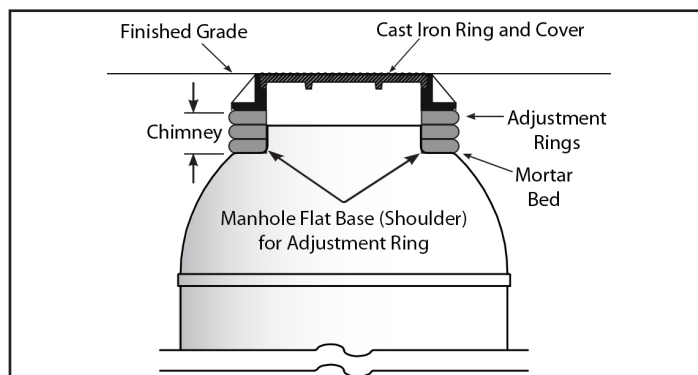
CAUTION

Only load rehabilitation manholes on the flat shoulder using adjustment rings and cast-iron covers. Never directly load a manhole.



- 8.1. Construct a chimney on the manhole flat base, also referred to as the shoulder, using adjustment rings.
- 8.2. Place a mortar bed on the shoulder for the first adjustment ring.
- 8.3. The chimney is used to support the ring and cover (see Figure 8-1).
- 8.4. Do not place cast iron ring directly on manhole .

Figure 8-1



9. FINISHING REHABILITATION WETWELL TO GRADE

- 9.1. The wetwell is designed to support the dead weight of an 8" thick square pad 24" larger than the diameter of the wetwell (centered on the wetwell) along with a dynamic HS-20 traffic load as long as the pad is designed to distribute the loads on the wetwell perimeter and not on the interior of the lid.
- 9.2. If the static load will exceed the 8" pad weight or the traffic load will exceed HS-20, the pad must be 48" larger than the wetwell diameter (centered on the wetwell) and all of the pad and / or traffic loads must be supported by the soil around the wetwell and not by the wetwell itself.
- 9.3. Fiberglass flat tops 36" through 96" diameter are designed to support 8" concrete pads without internal supports while the concrete cures.
- 9.4. Fiberglass flat tops greater than 96" diameter or concrete pads thicker than 8" must have internal bracing to support the top until the concrete cures. Brace internally with 2" x 10" lumber on 24" centers supporting the top from the underside to carry the load while the concrete cures. The concrete pad must be designed to be self supporting after cured. After the concrete pad is cured, remove the bracing.

9.5. The pad shall be specified by the Engineer Of Record.

9.6. Open Top Wetwells Without Traffic Load

9.6.1. See Figure 9-1.

9.6.2. Concrete pads can be either precast or cast on site. The pad must be larger than the wetwell a minimum of 12" in all directions.

9.6.3. Maximum 8" concrete pad thickness.

9.6.4. Precast top pads must have a reasonably smooth, flat bottom to provide a seal between the pad underside and wetwell top edge when using a gasket, tar, or other sealing material.

9.7. Fiberglass Flat Tops Without Traffic Load

9.7.1. See Figure 9-1.

9.7.2. The pad must be larger than the wetwell a minimum of 12" in all directions.

9.7.3. Maximum 8" concrete pad thickness.

9.8. Fiberglass Flat Tops With Traffic Load

9.8.1. See Figure 9-2.

9.8.2. The pad must be larger than the wetwell a minimum of 24" in all directions.

9.8.3. The Engineer Of Record shall specify the pad strength and reinforcement so that the static weight of an 8" thick square pad (no more than 24" larger than the diameter of the wetwell centered on the wetwell) along with a dynamic HS-20 traffic load must be distributed on the wetwell perimeter and not on the interior of the lid.

9.8.4. If either the static pad load or the dynamic traffic load is exceeded, all of the pad and / or traffic loads must be supported by the soil around the wetwell and not by the wetwell itself.

Figure 9-1

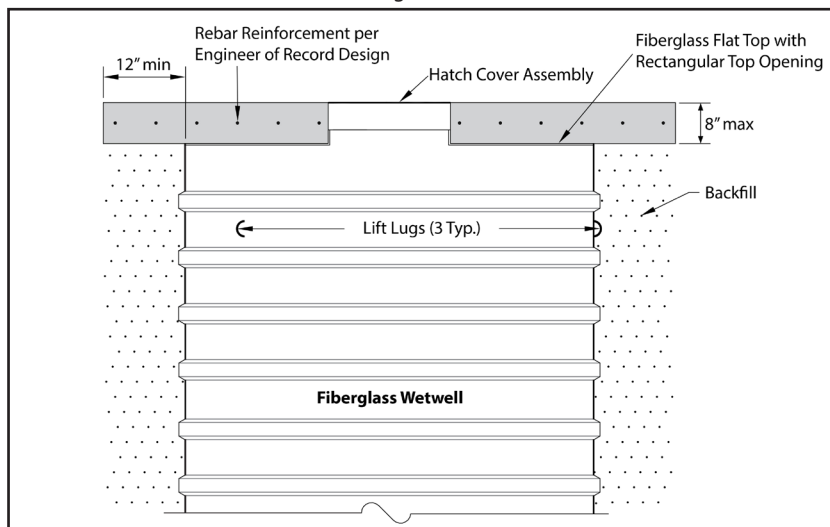


Figure 9-2

