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FIVE FOOT DIAMETER TANKS



**Underground Installation Instructions
Anchor Kit Assembly and Warranty Information**

TABLE OF CONTENTS

Limited Warranty	1-2
• Warranty Registration Form – retention copy	
Introduction	3
• Owner responsibilities	
General	4
Handling	4
• Tank Inspection	
• Unloading Tank	
Excavation Parameters	4-5
• Stable Soil Condition	
• Unstable Soil Condition	
Placing Tank in Hole	5
Bed and Backfill Material	5-6
• Approved Backfill Material	
Cover	7
• Minimum Cover—No Traffic	
• Minimum Cover—Traffic Loads	
Installation—Dry Hole	7-8
Backfill Bed	
Side/end of Tank	
Top of Tank	
Installation—Wet Hole	8-9
Water Level, Pumping, Bed	
Ballasting	
Backfilling	
Installation—Freezing Weather	10
Anchoring	10-11
General	
Use of Deadmen	
Use of Anchor Pad	
Hold Down Straps	
Tie-Down Kit Content	
Number of Kits Required	
Recommended Tank Anchor Weight By Volume	
Warranty Registration Form – Submission copy	12



LIMITED WARRANTY

Manufacturer's Warranty applies only to products manufactured by FRP/Mocoat Fiberglass Ltd.

FRP/Mocoat Fiberglass Ltd (FRP) fibreglass tanks are warranted against defects in material and workmanship and will perform according to our specifications provided that assembly and installation has proved satisfactory to FRP or agents. Should any part (or parts) prove defective within five (5) years from the date of purchase, (proof of purchase required) it will be replaced or repaired by FRP without charge. Permission must be obtained from the factory prior to any warranty work being done. Transportation to and from a dealer or factory will be at the owner's expense. No allowance will be made for labour or other charges in replacement of defective parts. Consequential damages, if any, are specifically excluded from this warranty.

What is not covered?

This warranty does not cover:

1. A product which has been repaired or altered without written authorization from the manufacturer or authorized Dealer or Distributor as to affect its use or operation.
2. Equipment or accessories, which are not manufactured by FRP, whether or not warranted by other manufacturers.
3. Leakage from customer tanks that have been improperly assembled or improperly installed.
4. Product that has been abused, mishandled, accidentally damaged or operated contrary to printed instructions provided.
5. Loss of time, inconvenience, travel expense or other matters not covered hereunder.
6. Excavation, landscaping, or other installation/removal costs.
7. Products not paid in full per terms of sale.
8. Any act of God.

No oral or written information or advice given by Dealers, representatives, agents, or employees shall create a warranty or in any way increase the scope of this warranty. The manufacturer does not authorize any person to extend the time of this warranty or to create or assume for it any other obligation or liability with respect to its products. No person, including Dealers and Distributors is authorized to make repairs or replacements under this warranty without the prior written approval from the Manufacturer. This warranty is not transferable or assignable.

THE MANUFACTURER SHALL NOT BE LIABLE FOR CONSEQUENTIAL, SPECIAL OR INCIDENTAL DAMAGE RESULTING FROM A BREACH OF THE EXPRESSED OR IMPLIED WARRANTY WHICH IS NOT DISCLAIMED HEREIN NOR ANY OTHER LOSS OR DAMAGE, EXCEPT AS SET FORTH ABOVE.

CONTACT INFORMATION FOR ANY WARRANTY INQUIRIES:

PHONE: (866) 722-6246 or (306) 329-4884 FAX: (306) 329-4886

EMAIL: quotes@frpmocoat.com



FRP/MOCOAT FIBERGLASS LTD WARRANTY REGISTRATION FORM			
Complete at the time of installation and return to FRP/Mocoat Fiberglass Ltd. within ten (10) days of installation.			
Customer Details			
Name		Phone No.	
Address	STREET ADDRESS / BOX NO. CITY PROV / STATE		
Site Location		Site Phone No.	
Product Details			
Tank Model Number		Invoice No.	
Purchased From			
Contractor / Installer			
Name		Phone No.	
Address	STREET ADDRESS / BOX NO. CITY PROV / STATE		
Pre-Installation		Completed By	
Read Burial Instructions on tank			
Visual Inspection: No evidence of physical damage to the tank. Check for holes, cracks, etc. If any physical damage is found do not install the tank! Contact FRP/Mocoat Fiberglass Ltd.			
Backfill Material: Backfilling material must be pea gravel or crushed stone. Any other type of backfill must be pre-approved by FRP/Mocoat Fiberglass Ltd. Failure to use specified backfill will void Warranty.			
Excavation: Hole dimensions meet requirements from installation instructions			
Hole Condition: Indicate condition of hole: <input type="checkbox"/> Dry Hole. Water is not anticipated to reach tank. Area is not subject to flooding. <input type="checkbox"/> Wet Hole. Excavation may trap water. Area is subject to flooding. (If wet hole, please see special wet hole instructions)			
During Installation		Completed By	
Backfill material bed must be minimum of 12"			
Inspect tank for physical damage after setting into hole			
Backfill layers pushed and probed under tank and between ribs to eliminate all voids			
Tank is properly ballasted during installations (Wet-hole installation only)			
Indicate final backfill depth over tank			
Piping connections are flexible connections where required			
I CERTIFY THE INSTALLATION OF THE ABOVE TANK AT THE ABOVE LOCATION TO MEET ALL INSTALLATION REQUIREMENTS OF FRP/MOCOAT FIBERGLASS LTD AND ALL INFORMATION IN THIS INSTALLATION FORM IS TRUE.			
Signature of Owner			Date:
Signature of Installer			Date:

CONTACT FRP/MOCOAT FIBERGLASS LTD FOR ANY TECHNICAL INQUIRIES
 PHONE: 866-722-6246 or 306-329-4884 – EMAIL: quotes@frpmocoat.com
 Return Form by Mail: PO Box 220, Asquith SK S0K0J0 or Email: quotes@frpmocoat.com

1. INTRODUCTION

It is the responsibility of the owner, installer, and the operator to follow all requirements contained in this Installation Manual. In addition, they must comply with all Local, Provincial/State and Federal safety regulations that may apply to tank installations and operations.

Instructions or procedures in the Installation Manual should not be interpreted to place any person's health or safety at risk. Working in and around excavations can be dangerous!

2. GENERAL

Follow the directions provided by this Manual for safe and proper installation of fibreglass underground tanks. Failure to follow these instructions will *void* the tank warranty and may cause tank failure.

Local Provincial/State and Federal Codes/Regulations always take precedence over FRP/Mocoat Fiberglass Ltd requirements/recommendations.

It is necessary to retain all correspondence regarding variations to installation requirements for a valid warranty claim. Pictures are required.

Your tank Warranty Registration Form must be completed and returned to FRP/Mocoat Fiberglass Ltd within the time specified. Retain a copy of the completed form for your records. (See Appendix).

All product returns must have an RMA (Return Material Authorization) as approval from FRP/Mocoat Fiberglass Ltd. Returned goods must be delivered or shipped prepaid and will be subject to a 25 percent restocking fee. Special made-to-order fibreglass products and/or components are non-refundable.



3. HANDLING

Tank Inspection

Before the tank and/or components are unloaded, visually inspect the entire exterior surface of the tank, and components to ensure that shipping or handling damage has not occurred. You may then sign the shipping document to accept the tank as delivered. However, if you discover damage to the tank, do not attempt repairs. Instead, contact your Factory Sales Representative.

Unloading

Warning – Do not release the ratchet straps etc. securing the tank and/or components to the truck or flatbed trailer etc. until the lifting equipment is properly secured to the tank or components. Failure to do so could result in serious injury.

Be sure to use equipment that is rated to handle the load.

Lift the tank using the lift lugs provided on the tank.

Do not drop, impact, or roll the tank. Handle the tank with care!

Storing Tank

Select a solid, level area to place the tank. Make sure the area is clear of rocks and debris.

Anchor the tank at each end with a rope to prevent it from rolling away.

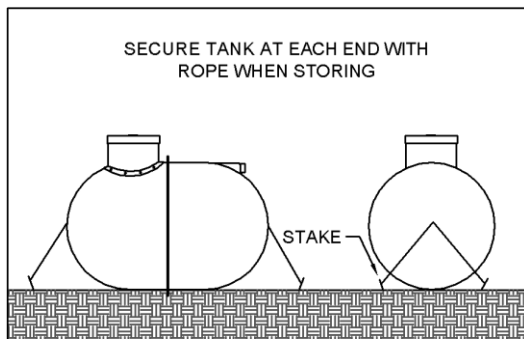


FIGURE 4-17

4. EXCAVATION PARAMETERS

A standard tank is designed to have a maximum burial depth of seven feet of cover over top of the tank. Call FRP/Mocoat Fiberglass Ltd for a special quotation for a made-to-order H/D tank if the burial depth is to be greater than seven feet.

The following are the minimum required tank spacings. The spacings must be increased as needed to accommodate deadmen or anchor slabs.

Stable Soil Condition

Holes must be large enough to allow for the minimum required distance between the tank ribs and the ends of the tank to the walls of the excavation as specified in Provincial/State Legislation.

Under no circumstances should the distance between the tank and the hole's walls be less than 18 inches.

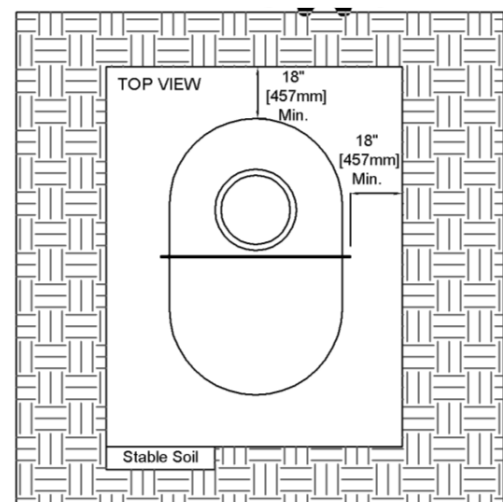


FIGURE 5-1

Determine the tank's hole depth from the tank ground cover requirements

Bed thickness must be at least 12 inches thick over native soil or concrete slab.

Unstable Soil Condition

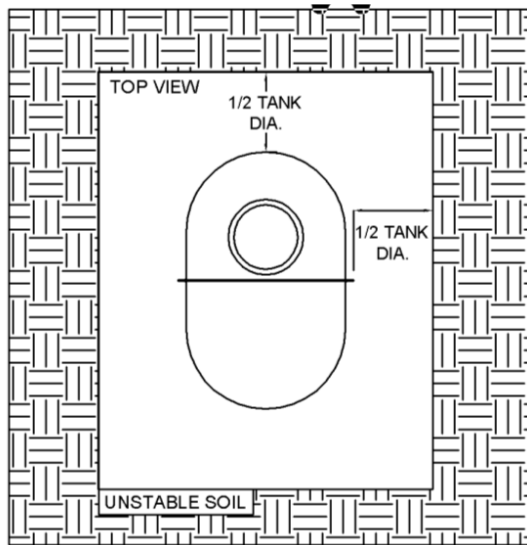


FIGURE 5-2

FRP/Mocoat Fiberglass Ltd recommends that the Ball Tank owner seek the advice of a local Professional Engineer and OH&S Officer if the soil condition is unstable.

5. PLACING TANK IN HOLE

Carefully lower the tank into the excavation by using lifting straps and a spreader bar when necessary.

Under no circumstances should chains or wire slings be used around the tank.

Use guy ropes to guide the tank when necessary.

Do not roll the tank to move it.

Always take extra care when handling a tank with a bottom fitting or sump to prevent damage to the bottom sump or fitting.

6. BED AND BACKFILL MATERIAL

Approved Backfill Material

Pea Gravel:

- A natural, rounded aggregate, clean and free flowing.
- Particle size not less than $\frac{1}{8}$ inch or more than $\frac{3}{4}$ inch diameter.

Stone or Gravel Crushings:

- Stone or gravel crushings, clean and free flowing.
- Angular particle size not less than $\frac{1}{8}$ inch or more than $\frac{1}{2}$ inch diameter.

Cement-Stabilized C-33 Sand:

In situations where use of Pea Gravel, Stone/Gravel Crushings are not feasible, Cement-Stabilized Sand is an approved backfill material for the Ball Tank and Bonded One-Piece 5' Diameter Tank ONLY when installed as per the enclosed guidelines.

- Cement-Stabilized C-33 Sand is a combination of sand meeting the requirements of ASTM C-33 for particle size combined with Portland Cement Mix, meeting the ASTM C-150 standard. To achieve an appropriate mix, use a minimum of 10% of cement per cubic yard of Cement-stabilized sand. This is equal to 2.5 bags of cement per cubic yard of mixture. Sand and Portland Cement Mix should have a moisture content level of $\pm 3\%$ of optimum moisture level.
- Is not to be used in installations where property is subject to a high water table.

Compacted ASTM C-33 Sand: In situations where use of Pea Gravel, Stone/Gravel Crushings, Rubber Shred, or Cement-Stabilized C-33 Sand are not feasible, Compacted C-33 Sand is an approved backfill material for the Ball Tank and Bonded One-Piece 5' Diameter Tank ONLY when installed as per the enclosed guidelines.

- ASTM C-33 Sand is sand meeting the particle size standards according to ASTM C-33. Sand and gravel suppliers should be able to provide you with a lab report classifying their sand as C-33.

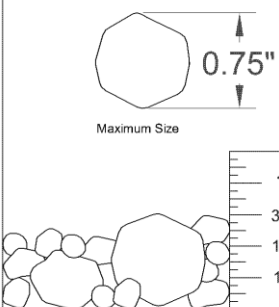
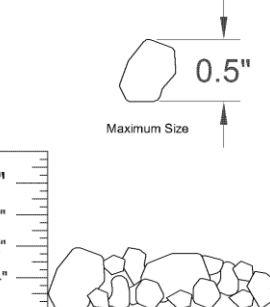
Proper Compaction of Cement-Stabilized C-33 Sand or ASTM C-33 Sand

In order to use Cement-Stabilized C-33 Sand or ASTM C-33 Sand for backfill of fiberglass tanks, very specific compaction levels must be met. In order to provide sufficient support for tank walls, installation must meet ASTM D-558 for compaction, which states that backfill should be installed in 8-12 inch lifts and compacted to 95% of (Standard Proctor Density) maximum density, which is 100 PSI (Pounds per Square Inch).

If using Cement-Stabilized C-33 Sand, the mixture must be used and compacted within 4 hours of mixing.

NOTE: USING OTHER THAN APPROVED BEDDING AND BACKFILL MATERIALS WITHOUT PRIOR WRITTEN AUTHORIZATION FROM FRP/MOCOAT LTD WILL VOID THE TANK WARRANTY.

Use only specified backfill material throughout. The backfill material must not contain any foreign material, such as rocks, brick, clay, wood, native soil, etc.

PEA GRAVEL	CRUSHED STONE
 <p>Maximum Size</p>	 <p>Maximum Size</p>
<p>Pea Gravel:</p> <p>Clean naturally-rounded aggregate with particle sizes no larger than $\frac{3}{4}$" with no more than 5% passing a #8 sieve.</p> <p>Dry density must be a minimum of 95 pounds per cubic foot.</p>	<p>Crushed Stone or Gravel:</p> <p>Washed, with angular particle sizes no larger than $\frac{1}{2}$" with no more 5% passing a #8 sieve.</p> <p>Dry density must be a minimum of 95 pounds per cubic foot.</p>

- Sharp objects must not contact the tank at any time. Remove any supports used for the installation of piping prior to backfilling to grade.
- The object of backfill is to construct a uniform, homogenous envelope of firm backfill material around the tank.
- If the tank must be filled with liquid during the backfilling process, the level of the liquid inside the level of the liquid inside the tank must not exceed the level of the surrounding backfill material by more than 24 inches.

7. COVER

Minimum Cover—No Traffic

- Two feet of backfill material is the minimum cover require for residential applications provided there will no be vehicle traffic over the tank at any time.

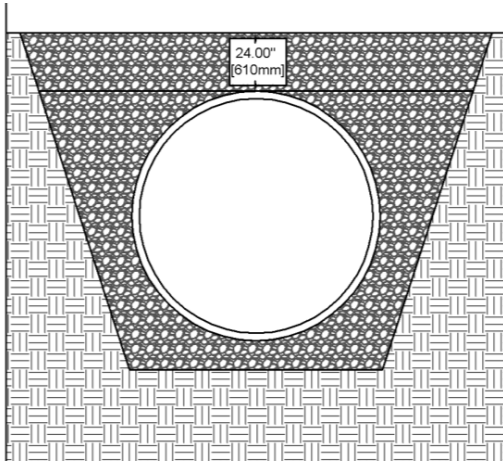


FIGURE 7-1

**Minimum Cover – Traffic Loads

Heavy Duty tanks subjected to traffic loads must have a ground cover of at least:

- Five feet of backfill material, or
- Two feet of backfill on top of the tank including a reinforced concrete surface pad at least six (6) inches thick.
- The concrete pad must extend horizontally at least one foot beyond the tank in all directions. Asphalt pavement is not a substitute for concrete pads.
- Barricade the area to prevent traffic over the tank until the minimum ground cover requirements are completed.

**This application is for special ordered H/D tanks. Contact FRP/Mocoat Fiberglass Ltd for additional charges.

**Minimum Cover—Traffic Loads

Heavy Duty tanks subjected to traffic loads must have a ground cover of a least:

- A. Five feet of backfill material, or
- B. Two feet of backfill on top of the tank including a reinforced concrete surface pad that is at least six inches thick.

**This application is for special order H/D tanks. Contact FRP/Mocoat Fiberglass Inc. for additional charges.

- The concrete pad must extend horizontally at least one foot beyond the tank in all directions. Asphalt pavement is not a substitute for concrete pads.
- Barricade the area to prevent traffic over the tank until the minimum ground cover requirements are completed.

8. INSTALLATION—Dry Hole

- Excavate the site to allow for a least 18 inches of space around the outside of the tank.

Note: A seven-foot burial tank must not have any more than seven feet of specified backfill material measuring from the top of the tank to ground level.

Backfill Bed

- Provide a 12-inch minimum backfill bed of approved backfill material over the hole bottom or the concrete slab.
- If using Cement-Stabilized C-33 Sand or compacted ASTM C-33 Sand for backfill, tank must be bedded on 12 inches of Cement-Stabilized C-33 Sand.
- *Do not* place the tank directly on the concrete slab.
- *Do not* use timbers. Beams or cradles to support the tank.

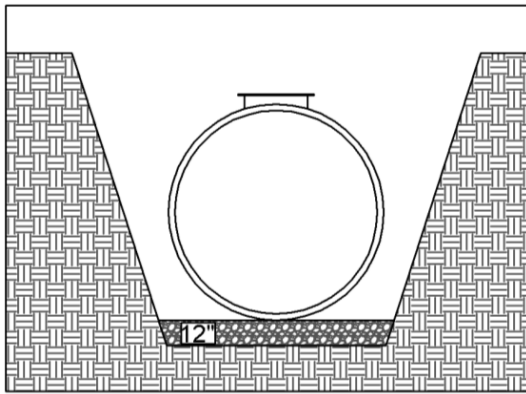


FIGURE 8-1

- Use only specified backfill material for bedding.
- The hole should be deep enough to allow at least 12 inches of specified backfill material on top of the tank.

Side/End of Tank

- Continue backfilling the tank with the same backfill material. Backfill in uniform layers no greater than 12 inches at a time.
- Ensure that all voids between ribs and under the tank are completely filled.
- The backfill material around the tank between 4 and 8 o'clock position is critical to ensure quality tank performance.

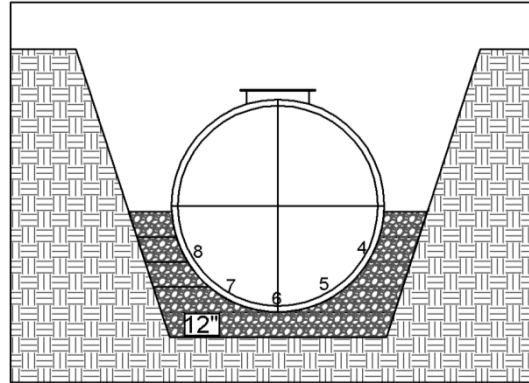


FIGURE 8-2

Top of Tank

- Continue backfilling with the same backfill material above the top of the tank in 12-inch lifts until ground cover requirements are met.
- *Do not* allow vehicle traffic or heavy loads to go across the tank; this will void the warranty!
- Contact FRP/Mocoat Fiberglass Inc. for special order HD tanks that can accommodate traffic or extreme water conditions or any other adverse situations to which the tank may be subjected.

9. INSTALLATION – Wet Hole

Water Level, Pumping, Bed

- Excavate pump-out wells at the corners of excavation to *keep the water below the tank bottom*.
- In the case of a wet hole/high water table, Cement-Stabilized C-33 Sand or Compacted ASTM C-33 Sand are not considered appropriate as backfill options.
- Install a 12" bed of specified backfill material and position the tank on the bed.

- FRP/Mocoat Fiberglass Ltd. recommends the use of a Geotextile fabric around the tank to prevent fines from collecting around the body of the tank.
- *If extremely difficult water conditions at the site are suspected, such as, underground streams, surface run-off locations, shorelines or wide fluctuation in water level, etc., increase the bed thickness to 18 inches and clearances between the tank and hole walls to a minimum of 24 inches.*

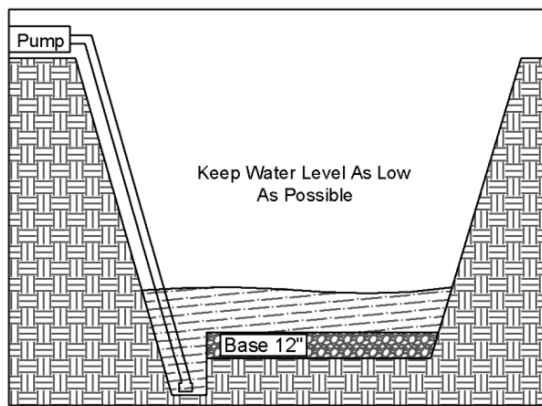


FIGURE 9-1

Ballasting

- If the ground water level is expected to exceed the tank bottom level at any stage of the backfilling process, ballasting will be necessary until the tank is anchored and buried to grade.
- The tank must not float after commencement of the backfilling process.
- The water ballasting level in the tank must not be higher than 24 inches above the water level in the hole.

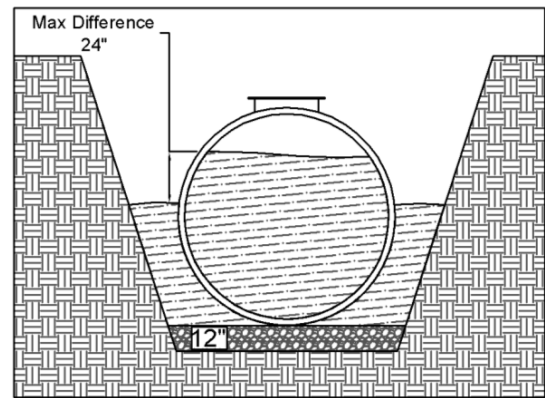


FIGURE 8-2

Backfilling

- Make sure that the minimum required clearances are maintained before starting to backfill. See section 4.
- Proceed with the backfilling process as per the dry hole installation instructions mentioned earlier using specified backfill material.
- To prevent the tank from floating during spring thaw or high-water table conditions, leave the tank approx. $\frac{1}{3}$ full over the winter months. This weight will keep the tank in place. Freezing of sewage or water when the tank is $\frac{1}{3}$ full will not affect the tank as the ice will have room to expand beyond the $\frac{1}{3}$ level. However, do not allow liquid to freeze beyond the $\frac{1}{3}$ full level!

10. INSTALLATION—Freezing Weather

- Ensure the bed is not frozen under the tank. The aggregate must be free flowing without the use of calcium chloride. Under such conditions, the backfilling process should be completed in one working day.
- Material that has frozen into lumps must be thawed before being used as backfill. (Caution: steaming may cause subsequent refreezing of fill material).
- The bottom of the excavation must be free of frost and the walls of the excavation free of snow and ice.

11. ANCHORING

General

The decision whether or not to anchor the tank and the selection of the anchoring method is the sole responsibility of the owner.

- Use concrete deadmen or pads if there is a problem with extreme water levels when installing the tank.
- Anchoring the tank down will help prevent any chance of the tank floating due to the hydraulic effect of ground water when installing the tank.
- For severe water conditions or ground movement, install a heavy duty (H/D) tank to handle the increase in ground water pressure. In addition, the tank must remain at least $\frac{1}{3}$ full at *all times*.
- Anchoring shall be engineered with consideration of tank size, ground cover, water table elevation and calculated uplift force on the empty tank.

Use of Deadmen

- Deadmen are typically reinforced concrete beams.
- Lay the deadmen in the excavation parallel to the tank and outside of the tank “shadow.”
- Install the bottom of the concrete deadmen at the same elevation as the bottom of the tank.

The tank and the deadmen should not contact each other. Instead, provide sufficient clearance to allow the deadmen to be set outside the tank “shadow.”

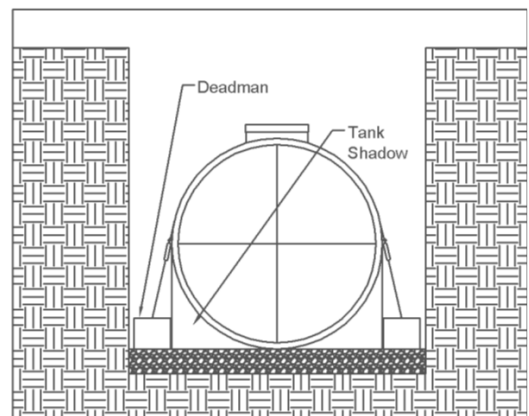


FIGURE 12-1

Use of Anchor Pad

- An anchor pad is typically a reinforced concrete base
- The total length of the slab must at least 18 inches beyond the diameter of the tank.
- The thickness of the reinforced slab should be at least eight inches thick.
- Provide a separate anchor point for each hold down strap.

Allow for sufficient depth in the excavation for 12 inches of approved bedding material between the base of the tank and the anchor slab.

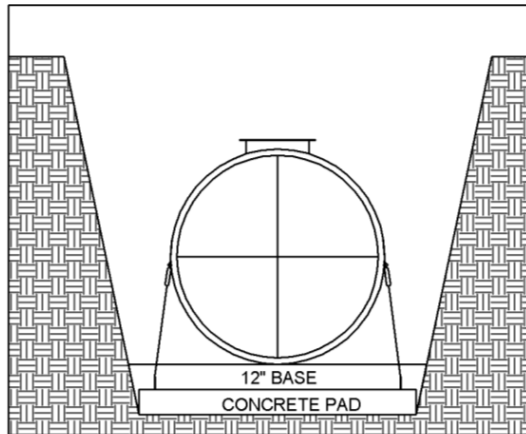
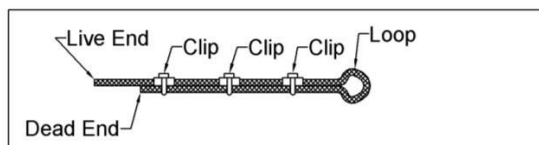


FIGURE 11-2

Anchor Plates

Only FRP/Mocoat Tie-Down Kits may be used when anchoring an FRP/Mocoat Tank.

- Place the fiberglass reinforced plastic (FRP) strap atop the structural ribs only at the designated ribs. If FRP straps are ordered at the time of tank order, there are anchor guides on the designated structural ribs. These guides assist in the proper placement of the straps on the ribs.
- Almost fully extend the turnbuckle and attach to the D-log of the anchor strap.
- Using the steel cable, loop through the turnbuckle and around the deadmen or concrete pad steel tie-down rods.



- Use three (3) cable clamps to clamp the cable together.
- The saddle of the clamp must go over the live portion of the cable and not the dead end (never saddle a dead horse).
- Repeat the above steps for each side of the FRP strap and at each strap location.
- Each turnbuckle should then be hand tightened to a snug position and then tool tightened using the same number of turns on each turnbuckle to maintain consistent tension on each cable.
- Evenly distribute loads until they are snug without causing deflections in the tank.

Tie-Down Kit Contents

- 1 Fibreglass Reinforced Plastic (FRP) Anchor Strap (3/16" thick x 2" wide x 114" long)
- 2 Galvanized Aircraft Cables (3/8 inch diameter by eight feet long.)
- 6 Galvanized 3/8 inch Cable Clamps
- 2 Galvanized Turnbuckles 1/2 inch by six inch (2200 pounds working strength).

Number of Kits Required

5 Foot Diameter Tank	Kits Required
All 5 foot Dia Tanks	2 Kits

Please contact your factory representative if you require clarification or have any questions!

Please accept our sincere thanks for giving us the opportunity to serve you!



FRP/MOCOAT FIBERGLASS LTD WARRANTY REGISTRATION FORM			
Complete at the time of installation and return to FRP/Mocoat Fiberglass Ltd. within ten (10) days of installation.			
Customer Details			
Name		Phone No.	
Address	<div>STREET ADDRESS / BOX NO.</div> <div>CITY</div> <div>PROV / STATE</div>		
Site Location		Site Phone No.	
Product Details			
Tank Model Number		Invoice No.	
Purchased From			
Contractor / Installer			
Name		Phone No.	
Address	<div>STREET ADDRESS / BOX NO.</div> <div>CITY</div> <div>PROV / STATE</div>		
Pre-Installation		Completed By	
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Signature of Owner			Date:
Signature of Installer			Date:

CONTACT FRP/MOCOAT FIBERGLASS LTD FOR ANY TECHNICAL INQUIRIES
 PHONE: 866-722-6246 or 306-329-4884 – EMAIL: quotes@frpmocoat.com
 Return Form by Mail: PO Box 220, Asquith SK S0K0J0 or Email: quotes@frpmocoat.com