

INTRODUCTION

The purpose of this manual is to provide specific, detailed supplemental instruction regarding the installation of special Fiberglass Double-Wall Underground Storage Tanks (including compartment tanks) for New York City. This manual must be used in conjunction with Containment Solutions' Standard Installation Instructions, Pub. No. 6001.

This procedure applies to new tanks only.

SAFETY

No instruction or procedure presented in this manual should be interpreted in a way to put one's health at risk, or to harm property and/or the environment.

The following definitions will serve as a guide when reading this manual:



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



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



A caution without the safety alert symbol indicates a potentially hazardous situation, which if not avoided may result in property damage.

TANK INSTALLATION - WARNING



Do not enter the tank excavation unless necessary and in compliance with OSHA regulations! Follow OSHA guidelines for tank excavation.

Collapsing excavation walls can cause injury or death!

IMPORTANT REMINDERS

- Fiberglass tanks must be installed according to these instructions and NFPA 30 and 31.
- Any variances to the published Installation Instructions must be approved by Containment Solutions in writing *prior to the installation.*

- Local codes may apply. Please consult them.
- The presence of a Containment Solutions representative at the jobsite does not relieve the contractor of responsibility to follow the published installation instructions.
 1. The Fire Department shall witness the pouring of the concrete slab.
 2. The Fire Department shall witness a 5 psi air soap test on the inner and outer tanks.
 3. With approved backfill material in place up to the top of the tank, the Fire Department shall witness a hydrostatic test on the inner tank and an air test on the outer tank. The inner tank will be hydrostatically tested. The test pressure depends on the tank capacity. Tanks with a nominal capacity of **4000 gallons or less are to be tested at a maximum pressure of 30 psi** while tanks with a nominal capacity of **4001 gallons and greater, or compartment tanks, are to be tested at a maximum pressure of 20 psi.** The outer tank of all size tanks will be air tested to 5 psi for one hour with inner tank and all compartments at 5 psi.
 4. The Fire Department shall inspect placement of the backfill material and shall witness the pouring of the top slab and make final inspection for permits.

INSTALLATION CHECKLIST

- Installation checklist (Pub. No. INST 6002) must be properly completed, signed by the installing contractor's representative, and the tank owner's representative.
- A copy of the installation checklist must be retained by the tank owner and/or installation contractor to validate any future warranty claim.
- Check with local authorities for any additional testing requirements.
- If you have question on other installation details, such as specific procedures for adding tanks to an existing installation or alternate installation techniques, contact your local Containment Solutions Sales Representative. If he or she is not available call Tank Technical Support, Conroe, Texas at 936-756-7731.
- If you have other questions regarding tank modifications, such as adding fittings or manways, or tank repair, contact:

IMPORTANT TELEPHONE NUMBERS	
Field Service Dept.	Technical Support
Mt. Union, Pennsylvania	Conroe, Texas
1-800-822-1997	1-800-537-4730

TANK INSTALLATION - DOUBLE WALL TANKS

1. HANDLING

The same as standard tanks. See "Handling" section in Containment Solutions Installation Instructions Pub. No. INST 6001.

2. BED AND BACKFILL

The same as standard tanks. See "Bed and Backfill" section in Containment Solutions Installation Instructions Pub. No. INST 6001.

3. PRE-INSTALLATION TESTING



WARNING! Do not pressurize tanks over 5 psi. Tank damage or physical injury can result.

- All tanks must be tested for leaks prior to installation. Use the visual air/soap test:
- Visual Air/Soap Test - to be performed on all tanks. (Note exception below)
 - Warm weather soap solution - 5 gallons of water with 8 ounces of household dishwashing detergent.
 - Freezing conditions soap solution - substitute one gallon of automotive windshield washer solution for 1 gallon of water.
 - Cover entire tank outer surface with soap solution (**Exception: hydrostatically monitored double-wall tanks**).
 - Cover all fittings with soap solution
 - Carefully inspect for leaks as indicated by bubbles.
 - Roll Tank to inspect bottom. Ensure fittings and/or collars do not contact ground.
- In the unlikely event a tank leak is discovered, discontinue the installation and immediately call Containment Solutions Field Service to schedule a repair.

3A. TESTING DOUBLE-WALL TANKS WITH DRY ANNULAR SPACE

For all Tests:

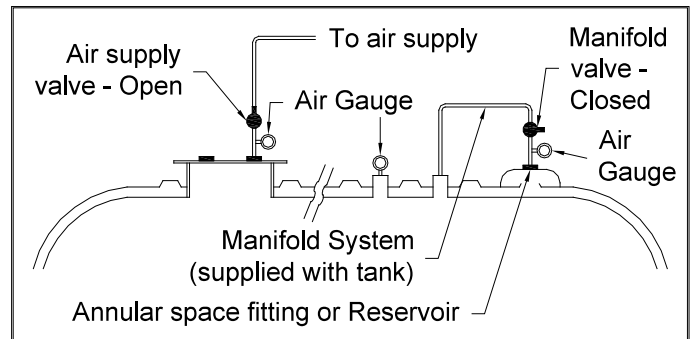
- Install air gauge at the fitting where the air pressure hose is connected to the tank.
- Install a second gauge at the other monitoring fitting.
- Use a maximum 15 psi air gauge with 1/4 or 1/2 lb. increments.
- Do not lift or hoist a tank under pressure (to avoid potential injury).

Outer Wall Test:

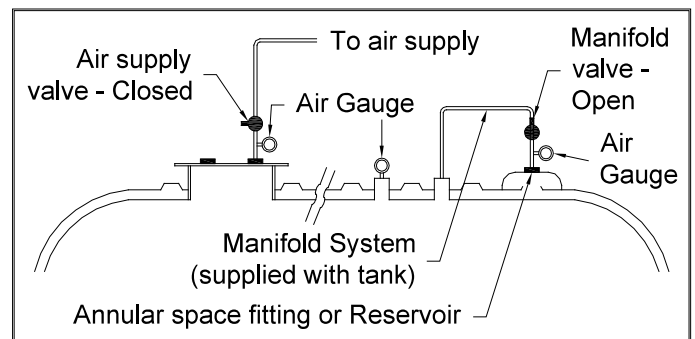
- Close manifold valve between primary tank and annular space.
- Pressurize primary tank to 5 psi maximum.
- Use a pressure relief valve.

CAUTION

Caution: Do not connect the air supply directly to the annular space fitting or allow the manifold valve to be open during pressurization of the primary tank or the tank may be damaged.



- Close the air supply valve to the primary tank.
- Disconnect the air supply.
- Open the manifold valve in order to pressurize the tank annular space.
- Pressure may drop slightly.



- Monitor the pressure readings for at least 30 minutes.
- At the same time, cover tank outer surface with soap solution (see Visual Air/Soap Test, Section 3).
- Carefully inspect for leaks as indicated by bubbles.

TANK INSTALLATION - DOUBLE WALL TANKS

Inner Wall Test

- Close manifold valve to annular space.
- Open air supply valve to vent primary tank.
- Maintain 5 psi pressure on the annular space.
- Monitor air gauge on tank for another 30 minutes, but not more than 60 minutes.

After successfully completing air test:

- Release pressure
- Disconnect and remove air supply hose.

3B. TESTING DOUBLE-WALL TANKS (HYDROSTATICALLY MONITORED) WITH ANNULAR SPACE FILLED

This tank has a hydrostatic monitoring system that includes a nontoxic colored monitoring fluid between the tank walls. This fluid is a brine solution (30% calcium chloride).

In the unlikely event of a tank leak, this monitoring fluid will leave a colored trace on the tank.

Reservoir Level Check

- Remove the 4" plug from the reservoir fitting.
- Inspect for monitoring tracer fluid.
- If reservoir is empty, immediately call Containment Solutions Field Service.
- Use a maximum 15 psi air gauge with 1/4 or 1/2 lb. increments.

Outer Wall Test

- Closely inspect outer wall for any trace of colored monitoring tracer fluid.

IMPORTANT: If a colored fluid is found during any test, discontinue the installation and immediately contact Containment Solutions Field Service.

- Tighten all fitting plugs to the annular space and reservoir to avoid spilling monitoring fluid.
- Inspect tank bottom by lifting tank.
- After completing inspection of tank bottom, replace tank on shipping pads.



Do not rotate tank more than 90 degrees in either direction.

Do not stand under tank while tank is in the air. Injury or death could occur.

- Connect air compressor line to primary tank fitting.
- Use a pressure relief valve.
- Pressurize primary tank to 5 psi maximum.



Do not attach air pressure line to any annular space fitting.

Do not lift tank with pressure on it. This could result in personal injury.

- Apply a soapy water solution to all fittings and manways.
- Check for leaks as indicated by bubbles.
- If bubbles are present, tighten the plugs or bolts and retest.

Inner Wall Test

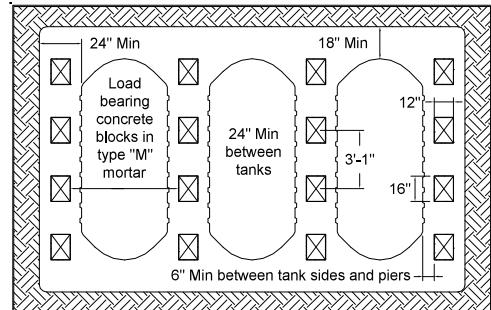
- Release pressure from primary tank.
- Remove primary tank fitting plug
- Look inside for any accumulation of monitoring tracer fluid.

IMPORTANT: If a colored fluid is found during any test, discontinue the installation and immediately contact Containment Solutions Field Service.

- Replace and tighten fitting plug.

4. HOLE SIZE

The following minimum clearances should be used with concrete piers.



- The hole must be large enough to allow a 6" minimum clearance on each side of the tank and the concrete block piers.
- This 6" minimum clearance must be maintained for the entire tank length. Otherwise, tank damage and potential loss of product may occur.
- The minimum spacing between tanks is 24".
- The minimum clearance between the tank end caps and the banks of the excavation walls is 18" (24" preferred).
- For additional installation information see "Hole Size" section in Containment Solutions Pub. No. 6001.

TANK INSTALLATION - DOUBLE WALL TANKS

5. BURIAL DEPTH AND COVER

Installation is the same as standard tanks. See "Burial Depth and Cover" section in Containment Solutions Pub. No. INST 6001.

6. FILTER FABRIC / GEOTEXTILE MATERIAL

Installation is the same as standard tanks. See "Filter Fabric / Geotextile Material" section in Containment Solutions Pub. No. INST 6001.

7. ANCHORING

- Anchor straps must be placed between the arrows (><) on the tank ribs.
- Anchor straps must be placed in the strap guides on the designated tank ribs.
- For additional anchoring information see "Anchoring" section in Containment Solutions Pub. No. INST 6001.

8. INSTALLATION PROCEDURE - DRY HOLE

CAUTION

The use of approved backfill material is critical to long term sump performance. Failure to use approved backfill may result in sump failure.

The only approved backfills are pea gravel and crushed stone, meeting the requirements in Containment Solutions Pub. No. INST 6001.

- Prepare gravel bed (9" minimum thickness, 12" preferred, on top of concrete anchor pad (12" minimum thickness).
- Place tank on gravel bed and make anchoring attachments per Installation Instructions. See "Anchoring" section in Containment Solutions Pub. No. INST 6001.
- Place first 12" lift of backfill evenly around tanks.
- Backfill must be pushed completely:
 - Beneath the tank bottom.
 - Between all ribs.
 - At 3 to 5 points under end caps.
- Use a long-handled probe to push gravel completely under tanks.
- Place second 12" lift of gravel and repeat the manual placement of backfill to insure proper support.
- After completion of second lift, backfill to the tank top using approved backfill.

For additional details, see "Installation Procedure" section in Containment Solutions Installation Instructions Pub. No. INST 6001.

9. INSTALLATION PROCEDURE - WET HOLE

The hole must be de-watered: then follow the procedures detailed in Section 8.

10. PIPING AND SUMP CLEARANCES

Installation is the same as standard tanks. See "Piping and Sump Clearances" section in Containment Solutions Pub. No. INST 6001.

11. TANK FILL TUBE INSERT

Installation is the same as standard tanks. See "Tank Fill Tube Insert" section in Containment Solutions Pub. No. INST 6001.

12. FILLING TANKS

Installation is the same as standard tanks. See "Filling Tanks" section in Containment Solutions Pub. No. INST 6001.

13. VENTING

Installation is the same as standard tanks. See "Venting" section in Containment Solutions Pub. No. INST 6001.

- If the annular space is vented, isolate the annular space vent from the primary tank vent.

NOTE: The annular space of hydrostatically monitored tanks (tanks with brine solution in annular space) must be vented.

14. TANK ACCESSORY CLEARANCES

Installation is the same as standard tanks. See "Manway" section in Containment Solutions Pub. No. INST 6001.

15. SPECIAL NEW YORK CITY TESTING

Do not start this test sequence until backfill is to the top of the tank. The Fire Department shall witness this test.

15A. FOR TANKS WITH DRY ANNULAR SPACE OR ANNULAR SPACE BRINE-FILLED

! WARNING

THERE IS GREAT DANGER OF PERSONAL INJURY FROM FLYING OBJECTS IF THE TANK EXPLODES OR LOOSE PIPING CONNECTORS FAIL DURING THE 10 PSI TEST OF THE INNER TANK AND THE ANNULAR SPACE. IT IS THE TESTER'S RESPONSIBILITY TO ENSURE THAT ADEQUATE SAFETY PRECAUTIONS ARE TAKEN TO PROTECT PEOPLE AND PROPERTY DURING THE 10 PSI AIR TEST.

TANK INSTALLATION - DOUBLE WALL TANKS

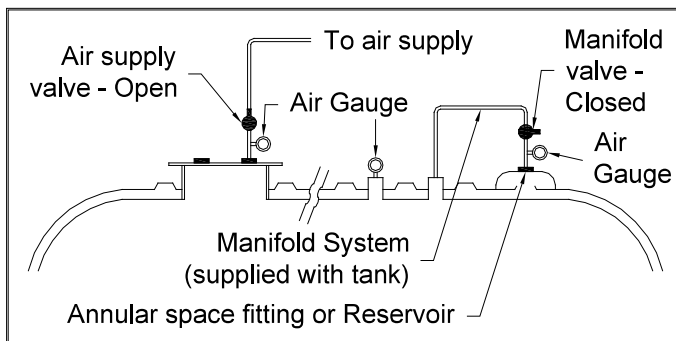
Outer Wall Test:

Pressure test the annular space as follows:

- For tanks (including compartment tanks and including all compartments manifolded together) with Dry Annular Space or with Annular Space Brine-Filled.
- Connect an air gauge to an annular space fitting and another air gauge to a primary tank fitting.
- Close manifold valve between primary tank and annular space.
- Pressurize the inner tank to 5 psi maximum.
- Use a pressure relief valve set at test pressure + 1/2 psi.



Do not connect the air supply directly to the annular space fitting or allow the manifold valve to be open during pressurization of the primary tank or the tank may be damaged.



- Close the air supply valve to the primary tank.
- DISCONNECT the air supply
- Open the manifold valve to pressurize the annular space to 5 psi maximum.
- After one hour, release the pressure from the primary tank and annular space.

15B. PRIMARY TANK HYDROSTATIC TEST

For tanks (including compartment tanks) with Dry Annular Space or with Annular Space Brine-Filled.



THERE IS GREAT DANGER OF PERSONAL INJURY FROM FLYING OBJECTS IF THE TANK EXPLODES OR LOOSE PIPING CONNECTORS FAIL DURING THE HYDROSTATIC TEST OF THE INNER TANK. IT IS THE TESTER'S RESPONSIBILITY TO ENSURE THAT ADEQUATE SAFETY PRECAUTIONS ARE TAKEN TO PROTECT PEOPLE AND PROPERTY DURING THE HYDROSTATIC TEST.

As of November 15, 1996, the New York City Fire Department issued an addendum to §27-4065.M.1 AS MODIFIED BY §27-4019.B OF NEW YORK CITY ADMINISTRATIVE CODE. THIS CODE CHANGE ALLOWS TANKS FROM 4001 THROUGH 12000 GALLON NOMINAL CAPACITY TO BE INSTALLED AND HYDROSTATICALLY TESTED AT 20 PSI.

ADMINISTRATIVE CODE §27-4065.M.1 IS STILL IN EFFECT FOR TANKS UP TO 4000 NOMINAL CAPACITY AND THESE TANKS MUST BE HYDROSTATICALLY TESTED WITH A DIFFERENT PRESSURE AND DURATION THAN TANKS OVER 4000 GALLONS. FOR ALL COMPARTMENT TANKS, THE HYDROSTATIC TEST IS DONE AT 20 PSI.

TANKS WITH A NOMINAL CAPACITY OF 4000 GALLONS AND LESS WILL RECEIVE A HYDROSTATIC TEST PRESSURE OF 30 PSI FOR A 30 MINUTE DURATION. TANKS WITH A NOMINAL CAPACITY OF 4001 GALLONS OR GREATER OR ALL COMPARTMENT TANKS, WITH ALL COMPARTMENTS MANIFOLDED TOGETHER, RECEIVE A HYDROSTATIC TEST PRESSURE OF 20 PSI FOR A 60 MINUTE DURATION.

CAUTION

Do not hydrostatically pressurize a tank with a nominal capacity of 4000 gallons or less to more than 30 psi. Do not hydrostatically pressurize a tank with a nominal capacity greater than 4001 gallons, or all compartment tanks, to more than 20 psi.

TANK INSTALLATION - DOUBLE WALL TANKS

- For compartment tanks, manifold all compartments together at the tank top.

IMPORTANT NOTE: For compartment tanks, in the following instructions, the term "primary tank" means ALL COMPARTMENTS MANIFOLDED TOGETHER WITH ANY TEST PRESSURES, THEN APPLIED TO ALL COMPARTMENTS SIMULTANEOUSLY.

- Be sure manway bolts are torqued to 50 ft. lbs. using a torque wrench and follow ASTM specification for Structural Joints Using A325 or A490 Bolts.
- Fill the primary tank, including all compartments, with water, being sure to vent tank and each compartment while filling.
- Isolate the primary tank, including all compartments, from the annular space by disconnecting the air test fixture (if present) from the inner tank.
- Install a pressure gauge to monitor the primary tank pressure. The water pressure gauges used for the hydrostatic test should have one pound gradations and have full scale reading of not less than 50 psi.
- Vent the annular space for tanks with dry or brine-filled annular space. As the pressure is increased on the primary tank, the pressure on the annular space will increase, if the annular space is not vented.
- Pipe the tanks in accordance with local codes and hydrostatically test the primary tank at the proper test pressure and duration based on tank nominal capacity.
- Use a gate valve and pressure gauge to control the hydrostatic pressure at test pressure on the primary tank.
- Use a pressure relief valve set at test pressure + 1/2 psi.
- For safety reasons, run the pressure hose and gauge remote from the tank, and monitor pressure remote from tank.

Note: When measuring remote, there will be a short time lag before the pressure reading on the gauge will reflect the actual pressure on the tank.

- After the proper time duration, release the hydrostatic pressure in the primary tank and all compartment tanks.
- Make sure tank and all compartment tanks are vented prior to removal of water.
- Remove water from the primary inner tank and all compartment tanks.

16. MONITORING

The installation is the same as standard tanks. See "Monitoring" section in Containment Solutions Pub. No. INST 6001



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