



Oregon

Theodore R. Kulongoski, Governor

Department of Environmental Quality

811 SW Sixth Avenue
Portland, OR 97204-1390
503-229-5696
TTY 503-229-6993

April 22, 2004

Tom Noice
Willamette Graystone, Inc.
3700 Franklin Blvd.
Eugene, OR 97403

Dear Mr. Noice:

The Oregon Department of Environmental Quality (Department) has received the plans, specifications, and other associated materials you provided for the septic tank configuration to be manufactured by your company. I am pleased to advise you that the following tank may be installed in Oregon based on your certification that this tank complies with all applicable Department rules and regulations:

⇒ **500-Gallon Dosing Tank**

You are authorized to manufacture and distribute this tank for use in onsite sewage treatment and disposal systems in Oregon until further notice, provided the following conditions are met:

1. The tank must be manufactured in compliance with the Department's rules, and with the plans and design specifications provided. Any deviation from the plans and specifications shall not be permitted unless authorized in writing by this office.
2. The concrete mix shall be in accordance with the mix description on the plans prepared by your engineer. The minimum concrete strength of $f_c = 4,000$ psi as specified by your engineer shall be achieved. Three concrete sample cylinders shall be taken and tested for each tank manufactured until the minimum compressive strength is obtained. Thereafter, at least one concrete sample cylinder for each five tanks produced shall be taken. Samples shall be tested for compressive strength. Samples shall be alternately broken at 7 and 28 days. All samples shall be field cured where the tanks are stored. Laboratory curing of additional samples may be done at your option. All test results shall be made available for Department review upon request.
3. The tank shall be cured and protected from premature drying and excessive hot or cold temperatures for the first ten days following casting. Tanks may be shipped from the casting yard after seven days, or earlier if the concrete has reached two-thirds of its design strength.
4. It is the responsibility of your business to insure that each assembled tank delivered to the construction site is water-tight. It is expected that your business will pre-test some percentage of the tanks at the plant to verify they are water-tight.
5. A fully assembled and complete tank shall be delivered to the purchaser, including the necessary tank risers and covers.

6. Each tank shall be delivered with the installation guide. The guide shall be printed on waterproof paper or an equivalent.
7. The high water level alarm float must be located so that at time of activation the tank has one-third of its capacity remaining for effluent storage. Commercial applications utilizing duplex pumps are not subject to the one-third storage reserve capacity requirement.
8. Each tank is only acceptable for use at locations where the top loading will not exceed the engineering design parameters. Tanks proposed for use at other locations shall require an engineering analysis of the potential top loading, and may require the preparation of site-specific plans and specifications.
9. Each tank shall be marked on the uppermost tank surface over the outlet with the liquid capacity, date of manufacturer, burial depth limit, and either your full business name or the assigned number **310**.

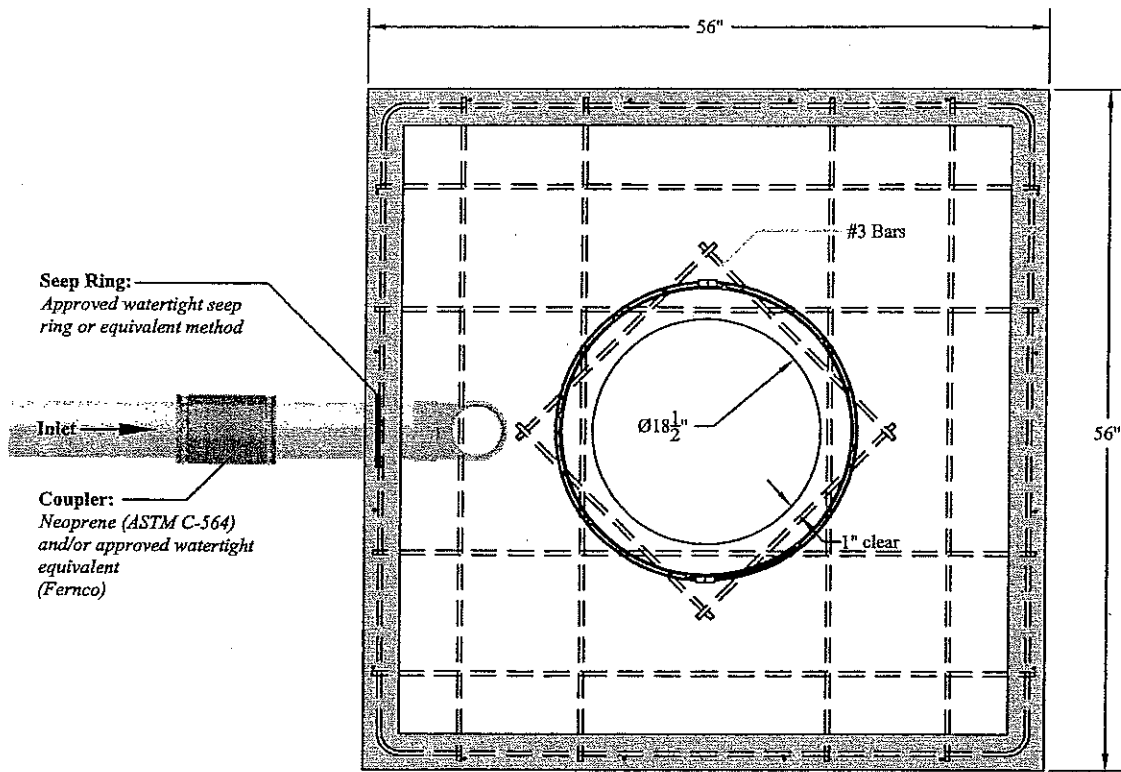
Please feel free to contact Uri Papish at (503) 229-5013 if you have any questions about this letter.

Sincerely,

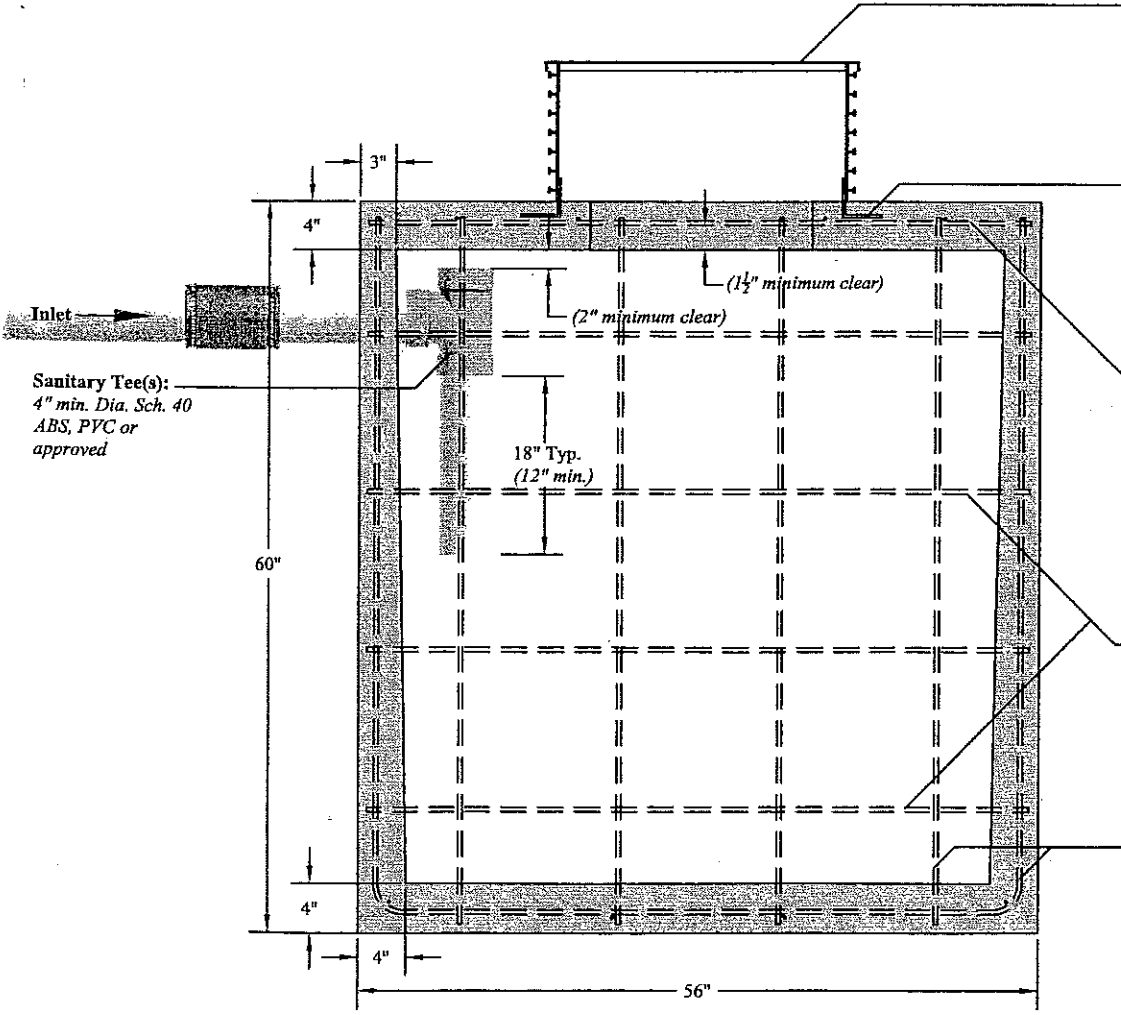


Mark Cullington, Manager
Water Quality Division

cc: Contract County Offices
DEQ Direct Service Offices
Mike Kucinski, DEQ WR Salem
Dick Nichols, DEQ ER Bend
Andy Schaedel, DEQ NWR



Top View



Side View

Riser and Lid:
 24" Dia. ribbed PVC riser w/ latching lid and polyurethane gasket or approved
 30" Dia. required per 340-71-200 when depth of bury greater than 36"
 All risers shall be attached in a permanent and watertight manner
 Lids shall be kept securely fastened at all times

Riser / Tank adapter:
 Cast into concrete top for adapting to riser. (Bond the riser and adapter together w/PVC cement or 2-part epoxy. Spread around PVC or fiberglass riser adapter. If riser is cast directly into tank top, the riser should be embed 1 1/2")

#4's @ 13" O.C. E.W.

#3's @ 13" O.C.

#3's @ 13" O.C.

General Notes:

Tank Volumes: Total Volume: 540 gal±
 Operating Volume: 480 gal±
 Average unit volume full depth: 10.4 gal./in±
 Unit volume at typical operating depth: 10.5 gal./in±

Loads: Top = 400 psf
 Lateral Load = 62.4 pcf
 Concentrated Wheel Load = 2500 lb. The septic tank shall be capable of withstanding long-term hydrostatic loading, in addition to the soil loading, due to a water table maintained at ground surface. Soil Bearing = 1000 psf (re-evaluate support base if soil bearing is less or unequal)

Concrete: The walls and bottom slab shall be poured monolithically. Reinforcing steel shall be ASTM A-615 Grade 60, fy = 60,000 psi.

The concrete shall achieve a minimum compressive strength of 4,000 psi in 28 days; fc = 4,000 psi. Concrete shall be ready mix with cement conforming to ASTM C-150, Type II. There shall be a content of not less than six and one half (6 1/2) sacks per cubic yards and maximum aggregate size of 3/4 inch. Water/Cement ratio shall be kept below 0.4, (W:C 0.35±). Air-entraining agents and fibrous reinforcement will enhance workability, curing and watertightness of the tank; however, their usage is optional.

Tanks shall not be moved from the manufacturing site to the job site until the tank has cured for seven (7) days, or has reached two-thirds of the design strength. Proper curing techniques must be used to ensure watertight tanks.

Installation: Installation, bedding, compaction, etc., shall be in strict compliance with the manufacturers standards and state of Oregon's on-site rules 340-71 and 73. All tanks shall be set level on a minimum 3 inch thick compacted sand or approved granular bedding overlying a firm uniform base. The base shall be stable and uniform in order to ensure equal bearing across the tank bottom. Installations with 18 inches or less of ground cover may require additional buoyancy considerations as described in the manufacturers instructions. A minimum cover of 12 inches is required over the tank in areas subject to occasional light wheel loads.

Test: Tanks shall be tested and certified watertight per Oregon On-Site Rules 340-71 and 73.

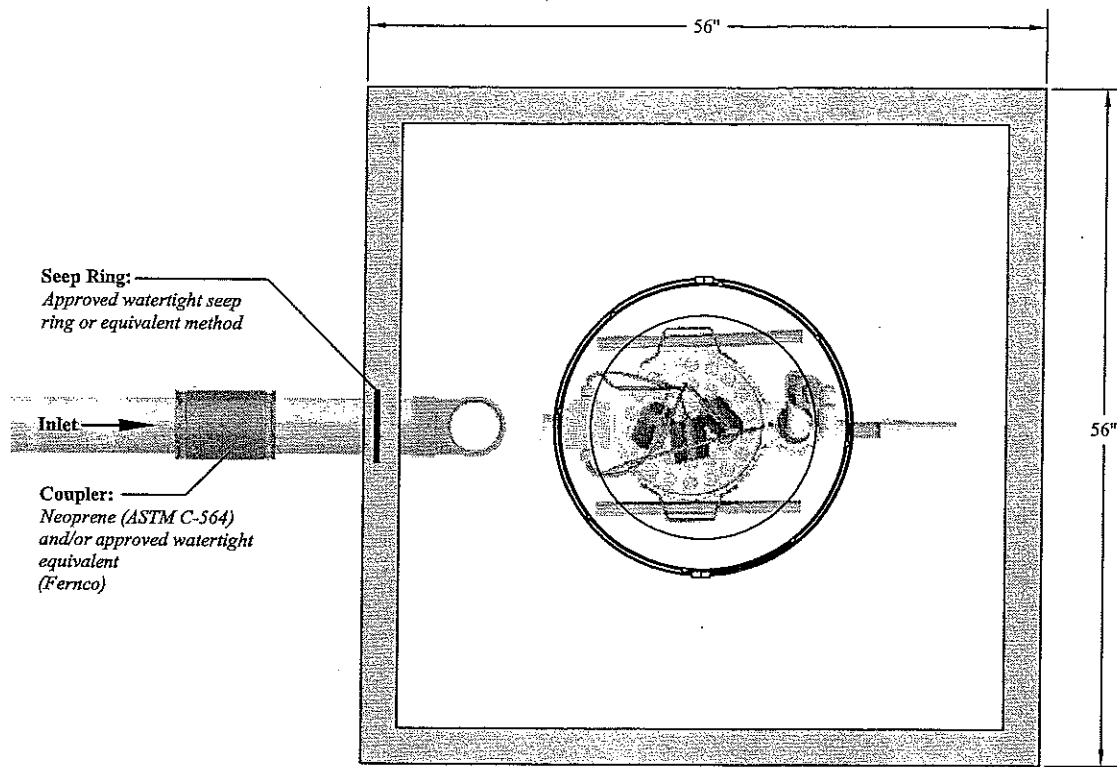
Tank Markings: Place marking on the upper most surface over the outlet.
 Liquid capacity: 500 gal.
 Max burial depth: 4ft.
 Max traffic (wheel): 2500 lbs.
 Date manufactured: _____
 Permit no.: _____



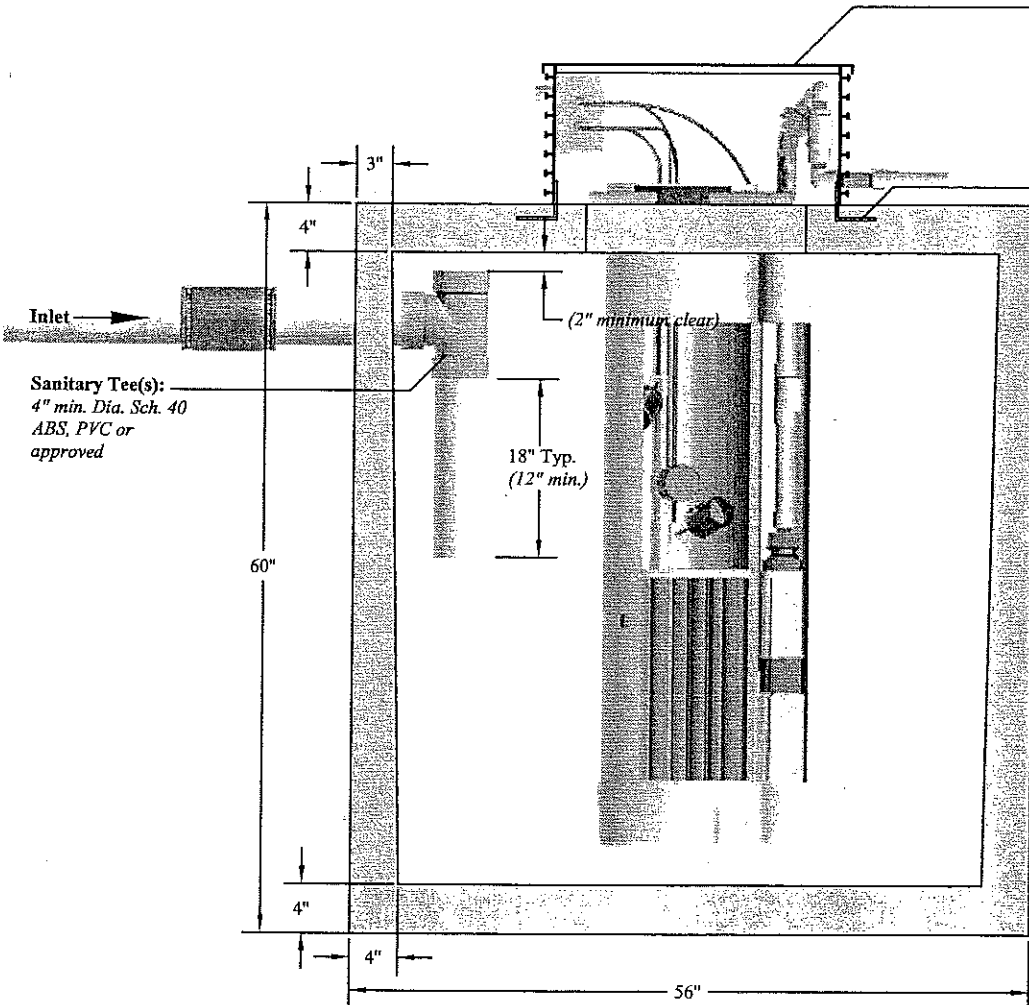
WILLAMETTE GRAYSTONE INC.
 P.O. Box 7816
 EUGENE, OR 97401
 PHONE: 541-726-7666

ORENCO SYSTEMS, INC.
 814 AIRWAY AVENUE
 SUTHERLIN, OR 97479
 PHONE: 541-459-4449

Willamette Graystone Inc. Eugene, OR 470 Gal	Designed By: TRB P.E.
Approved By: TRB P.E.	Drawing #: 1 of 4
Drawing By: CSJ	Project #:
Date:	Revision #:
Scale: 1" = 1'	



Top View



Side View

Riser and Lid:
 24" Dia. ribbed PVC riser w/ latching lid and polyurethane gasket or approved
 30" Dia. required per 340-71-200 when depth of bury greater than 36"
 All risers shall be attached in a permanent and watertight manner
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Riser / Tank adapter:
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 (Bond the riser and adapter together w/PVC cement or 2-part epoxy. Spread around PVC or fiberglass riser adapter. If riser is cast directly into tank top, the riser should be embed 1 1/2")

Seep Ring:
 Approved watertight seep ring or equivalent method

Inlet:

Coupler:
 Neoprene (ASTM C-564) and/or approved watertight equivalent (Fernco)

Sanitary Tee(s):
 4" min. Dia. Sch. 40 ABS, PVC or approved

General Notes:

Tank Volumes: Total Volume: 540 gal±
 Operating Volume: 480 gal±
 Average unit volume full depth : 10.4 gal./in.±
 Unit volume at typical operating depth : 10.5 gal./in.±

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Test: Tanks shall be tested and certified watertight per Oregon On-Site Rules 340-71 and 73.

Tank Markings: Place marking on the upper most surface over the outlet.

Liquid capacity: 500 gal.
 Max burial depth: 4ft.
 Max traffic (wheel): 2500 lbs.
 Date manufactured: _____
 Permit no.: _____

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ORENCO SYSTEMS, INC.
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Willamette Graystone Inc.
 Eugene, OR
 470 Gal

Approved By: TRB P.E.	Designed By: TRB P.E.
Drawing By: CSJ	Drawing #: 1 of 4
Date:	Project #:
Scale: 1" = 1'	Revision #:

TANK INSTALLATION INSTRUCTIONS

SET TANK TO LEVEL AND TO A UNIFORM BEARING ON 4-6 INCHES OF THICK SAND OR GRANULAR BED OVERLYING A FIRM AND UNIFORM BASE. TANK SHOULD NOT BEAR DIRECTLY ON LARGE BOULDERS OR MASSIVE ROCK EDGES.

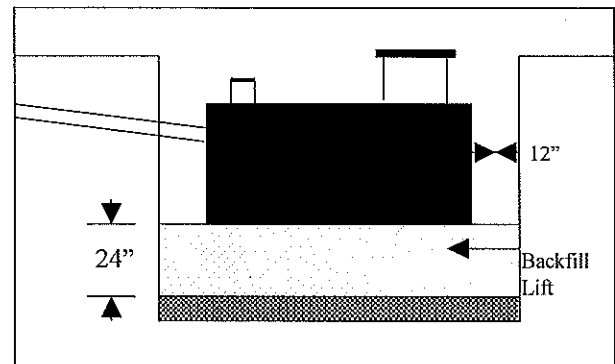
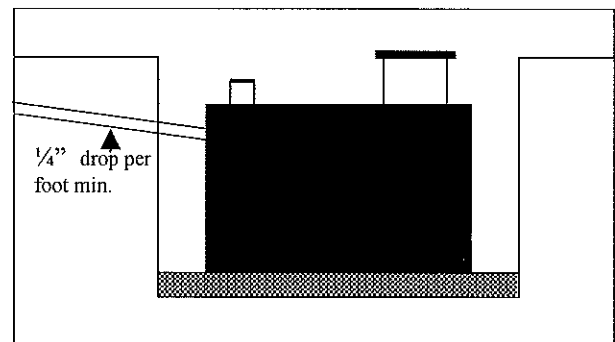
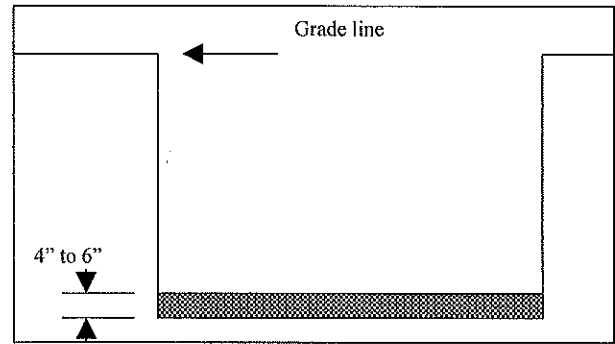
UNSTABLE OR WET FOUNDATIONS SHOULD BE STABILIZED AND CARED FOR BY OVER EXCAVATION AND BACKFILL WITH SELECT MATERIALS, OR OTHER MEANS AS REQUIRED TO INSURE A STABLE AND UNIFORM BEARING FOUNDATION FOR THE TANK.

BACKFILL SHOULD BE PLACED IN UNIFORM COMPACTED LAYERS NO GREATER THAN 24" THICK AND OF NEARLY EQUAL HEIGHT ON EACH SIDE OF THE TANK TO MINIMIZE SETTLEMENT AND TO PROVIDE SUPPORT FOR THE TANK WALL. BACKFILL SHOULD BE OF PROPER SIZE AND GRADATION (AND FREE OF STONES OVER 4" IN DIAMETER, AND ANY OTHER DELETERIOUS MATERIALS).

EACH LAYER SHOULD CONTAIN SUFFICIENT MOISTURE TO ALLOW FOR PROPER COMPACTION.

NOTE: JETTING OR FLOODING SHOULD NOT BE USED TO SETTLE BACKFILL.

ALL PIPING ASSOCIATED WITH THE TANK IS SCH 40 ABS. FERNCO COUPLINGS ARE INCLUDED FOR THE INLET AND OULET PIPES. ACCESS RISERS ARE REQUIRED FROM THE TOP OF TANK TO GRADE ELEVATION. 8" INSPECTION PORT AND CAP ARE INCLUDED WITH TANK.



1. IF WATER TESTING IS REQUIRED, ENSURE ALL STEPS FOR BACKFILLING ARE COMPLETE. MAKE SURE THE INLET AND OUTLET ARE SEALED FROM ANY INFILTRATION OR EXFILTRATION THAT MAY OCCUR.
2. BRING THE WATER LEVEL TO A POINT 2" ABOVE THE POINT OF RISER CONNECTION TO THE TOP OF THE TANK, DO NOT! PUT MORE THAN 2" OF WATER INTO THE RISER.

3. MEASURE THE WATER LOSS; IF THERE IS NO WATER LOSS DURING THE FIRST 24 HOURS, THE WATER TEST IS COMPLETE. SOME WATER ABSORPTION & EVAPORATION MAY OCCUR DURING THE FIRST 24 HOUR PERIOD, IF SO REFILL THE TANK AND DETERMINE THE EXFILTRATION BY MEASURING THE WATER LOSS OVER THE NEXT 24 HOURS. THE TANK SHOULD NOT LOSE MORE THAN 1 GALLON OF WATER.

WARRANTY: FAILURE TO ABIDE BY THE INSTALLATION INSTRUCTIONS AND FAILURE TO PERFORM PROPER WATER TESTING PROCEDURES MAY CAUSE THE MANUFACTURER'S WARRANTY NULL AND VOID.