



# Oregon

John A. Kitzhaber, MD, Governor

## Department of Environmental Quality

Western Region

Eugene Office

165 East 7th Avenue, Suite 100

Eugene, OR 97401-3049

Phone: (541) 686-7838

Fax: (541) 686-7551

TTY: 711

[www.oregon.gov/DEQ](http://www.oregon.gov/DEQ)

April 20, 2012

Doug Dilley  
Willamette Graystone, Inc.  
P.O. Box 7816  
Springfield, OR 97475

Dear Mr. Dilley:

The Oregon Department of Environmental Quality (Department) has received the plans, specifications and other associated materials you provided for a proposed septic tank configuration to be manufactured by Willamette Graystone, Inc. This letter is to inform you the following tank can be installed in the State of Oregon, based on your certification that the following tank complies with all applicable Department rules and regulations:

- 1000 gallon concrete Two-Piece Clamshell Style Tank
  - W/O effluent filter
  - W/ effluent filter

Boeger & Associates, LLC was the engineering firm for all plans submitted. These plans were stamped by Dennis Boeger, P.E., CWRE. A copy of the Department approved plans dated April 20, 2012, specifications and an installation manual are attached to this letter. Willamette Graystone, Inc. is authorized to manufacture and distribute the above mentioned tank for use in onsite wastewater treatment 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 the plans and design specifications provided. Any deviations from the plans and specifications are not permitted unless authorized in writing by the Department.
2. The concrete mix must be in accordance with the mix description on the plans prepared by your engineer. A twenty-eight (28) day compressive strength of 3,000PSI, as specified in the plans provided by the engineer must be achieved. Samples must be tested for compressive strength. Three (3) concrete sample cylinders must be taken and tested for each tank manufactured until the minimum compressive strength is obtained. Thereafter, at least one (1) concrete sample cylinder for each five (5) tanks produced must be taken. Samples must be alternately broken at twenty-eight (28) days. All tanks



must be field cured where the tanks are stored. Laboratory curing of additional samples may be done at the discretion of Willamette Graystone. Upon request, all test results must be made available to the Department for review.

3. The tank(s) 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.
4. Your business is responsible to ensure that each assembled tank delivered to a construction site is water-tight. It is expected that Willamette Graystone will pre-test some percentage of the tanks at the plant to verify they are water-tight.
5. The riser and lid may be constructed of either ribbed Poly Vinyl Chloride (PVC) or Concrete.
6. Each septic tank must be installed with a minimum twenty four (24) inch diameter water-tight riser, at the outlet side of the tank extending to the ground surface when the burial depth does not exceed thirty six (36) inches. Burial depths thirty six (36) to forty eight (48) inches require a thirty (30) inch riser on the outlet side of the tank extending to the ground surface. All risers must be installed in accordance with Oregon Administrative Rule 340-071-0220(3)(b)(C).
7. Willamette Graystone, Inc. is required to provide the bonding and sealing agents and instruction guide with each mid-seam tank not fully assembled at the plant prior to shipment.
8. Specific effluent filter details were identified in your submittal. The effluent filter(s) compatible with the tank are described in the plans.
9. Each tank must be delivered with an installation guide. The guide must be printed on water proof paper or an equivalent method of keeping the guide legible in adverse weather conditions.
10. 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 require an engineering analysis of the potential top loading, and may require the preparation of site-specific plans and specifications.

11. Each tank must be marked on the uppermost tank surface over the outlet with the liquid capacity, date of manufacture, burial depth limit and either the full business name or the assigned number 310.

This determination should not be construed in any way as the Department's endorsement of this product or any advertising. Moreover, the Department is not responsible for any situation which may result from use or miss-application of your product.

If you have any questions about this letter, please feel free to contact Daniel Wiltse at (541) 687-7436, toll free in Oregon at (800) 844-8467, or by email at [wiltse.daniel@deq.state.or.us](mailto:wiltse.daniel@deq.state.or.us).

Sincerely,



Michael E. Kucinski, Manager  
Water Quality/Onsite

Enc: Approved Plans  
Installation Manual

Ec: All Contract County offices (w/enclosures)  
DEQ Direct Service offices (w/ enclosures)  
Dennis Boeger P.E., Boeger & Associates, LLC (w/ enclosures)

WILLAMETTE GRAYSTONE, INC.

1,000 Gallon Two-Piece Single Compartment Septic Tank Installation Manual

Date 4/20/12 Signed Dev**1) Hole Preparation**

Ensure hole is at least 12" longer and wider than the size of the tank, providing the excavated walls are straight up and down. If over digging depth occurs or you have unstable soils, you must use sand, crushed rock, or pea gravel, to bring up to grade. Grade from the house is 1/4" per foot. From the bottom of said pipe, measure down the distance to the excavation, the same that is on the manufacturers card for inlet elevation. This would be the grade. Level from that point lengthwise, and crossways, to finish grading the bottom of the hole. All tanks shall be set level on a minimum 3-inch thick compacted 3/4" minus, pea gravel or approved granular material overlying a firm uniform base.

**2) Setting the tank**

OSHA restrictions apply. Do not stand in hole while tank is being placed. Watch for water coming into the hole and walls sliding off in the hole. Stay away from edge of hole and watch the equipment operator. Be sure the tank is level. Check for proper alignment between inlet pipe and tank inlet

**3) Risers and Installation**

**Plastic Risers:** Plastic risers are either poured into the concrete, or attached to a poured in flanged adapter, to facilitate the holding of a 24" diameter access riser. If a groove is in the concrete top around the manhole, a riser can be attached by using a 2-part epoxy (Weld-On 812).

**4) Lid**

The lid of the riser shall be attached with stainless steel bolts.

**5) Pipe Connection**

Pipe connection is done by applying ABS cement to the inside of the 4" coupler in the tank wall, and applying ABS cement to the pipe to be fitted; push together and hold for a few seconds. If PVC 3034 pipe is coming into the tank, an adapter (ASTM D2751) is supplied with the tank, and weld-on glue (Weld-On 794 ABS to PVC) is applied to the inside of the coupler in the tank and on the pipe coming in. This adapter makes up the difference in outside measurements of the two pipes. Neoprene Couplers are also an appropriate form of connection.

**6) Buoyancy Countermeasures**

Installations with 20 inches or less ground cover may require additional buoyancy considerations. Shallower applications will require buoyancy calculations and counter measures by a professional engineer.

**7) Tank Mid-Seam**

An acid resistant and non-degradable Mastic Butyl Sealant (1/4" x 3/4") shall be placed along entire perimeter of tank seam. In areas of high ground water, tank halves must be mechanically fastened.

**8) Test Procedures**

If possible, backfill the tank to a point 10" down from the top of the tank. Fill the tank with water to point 2" above the top surface of the tank. No more than 2" of water into the riser. If water level drops in 24 hours--which may be due to concrete absorption, refill to the same mark for a re-test. The water level should not drop more than 1" in the riser.

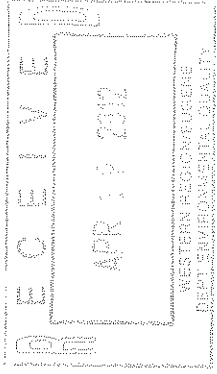
**9) Backfill Instructions**

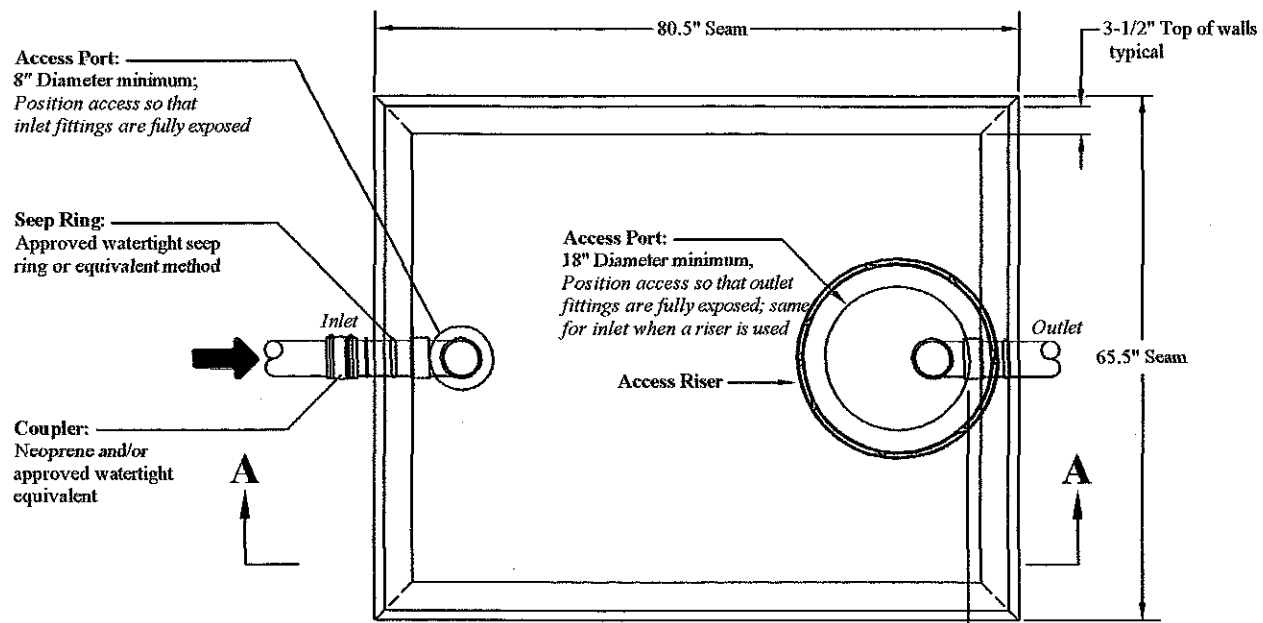
Backfill should be of proper size and gradation. No stones over 2 1/2" in diameter. No deleterious materials (i.e., any material that might puncture or damage the tank). Each layer should contain sufficient moisture to allow for proper compaction. If possible, the layers should be compacted with a hand tamper. Make sure inlet and outlet pipes have a compacted base under them to help provide support for the pipes. Ensure the final grade slopes away from the access riser.

**\*Special Precautions**

*When backfilling with loader or backhoe bucket, be especially careful not to disturb riser. inspection port. or any unit that may be attached to the tank.*

3700 Franklin Blvd - Eugene, OR 97401 Office: 541-726-7666 24 Hr Fax: 541-744-8953





Top View

PLAN APPROVED

Date 4/29/12 Signed DAW

**General Notes:**

**Tank Volumes:** Total Volume: 1240 gal±  
 Operating Volume: 1049 gal±  
 Average unit volume full depth: 21.8 gal/in±  
 Unit volume at typical operating depth: 21.8 gal/in±

**Loads:** Top = 400 psf  
 Lateral Load = 62.4 psf  
 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 = 1500 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.

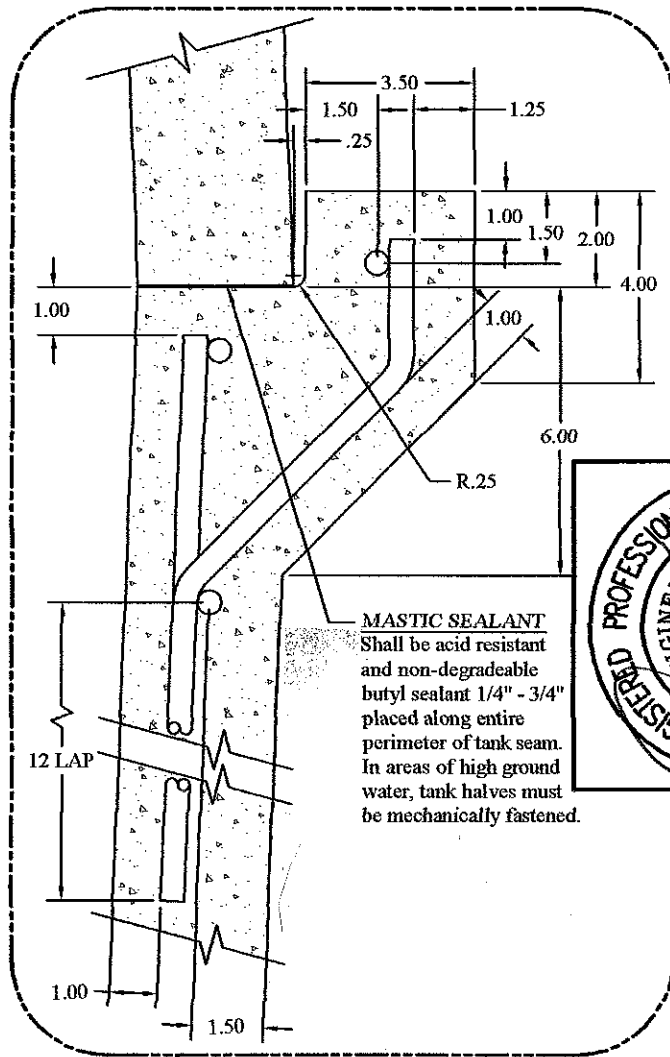
The concrete shall achieve a minimum compressive strength of 3,000 psi in 28 days; fc = 3,000 psi. Concrete shall be ready mix with cement conforming to ASTM C-150, Type II. There shall be a content of not less than six and one half (6 1/2) sacks per cubic yards and maximum aggregate size of 3/4 inch. 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.

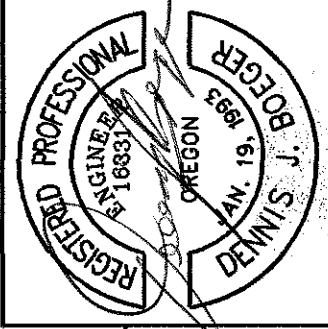
**Installation:** Installation, bedding, compaction, etc., shall be in strict compliance with the manufacturers standards and state of Oregon's on-site rules 340-71 and 73. All tanks shall be set level on a minimum 3 inch thick compacted sand or approved granular bedding overlying a firm uniform base. The base shall be stable and uniform in order to ensure equal bearing across the tank bottom. Installations with 20 inches or less of ground cover may require additional buoyancy considerations as described in the manufacturers instructions. A minimum cover of 24 inches is required over the tank in areas subject to occasional light wheel loads. Tanks should not be installed in ground water which could rise above center seam without mechanically fastening the tank halves together.

**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: 1000 gal.  
 Max burial depth: 4ft.  
 Max traffic (wheel): 2500 lbs.  
 Date manufactured:  
 Permit no.:

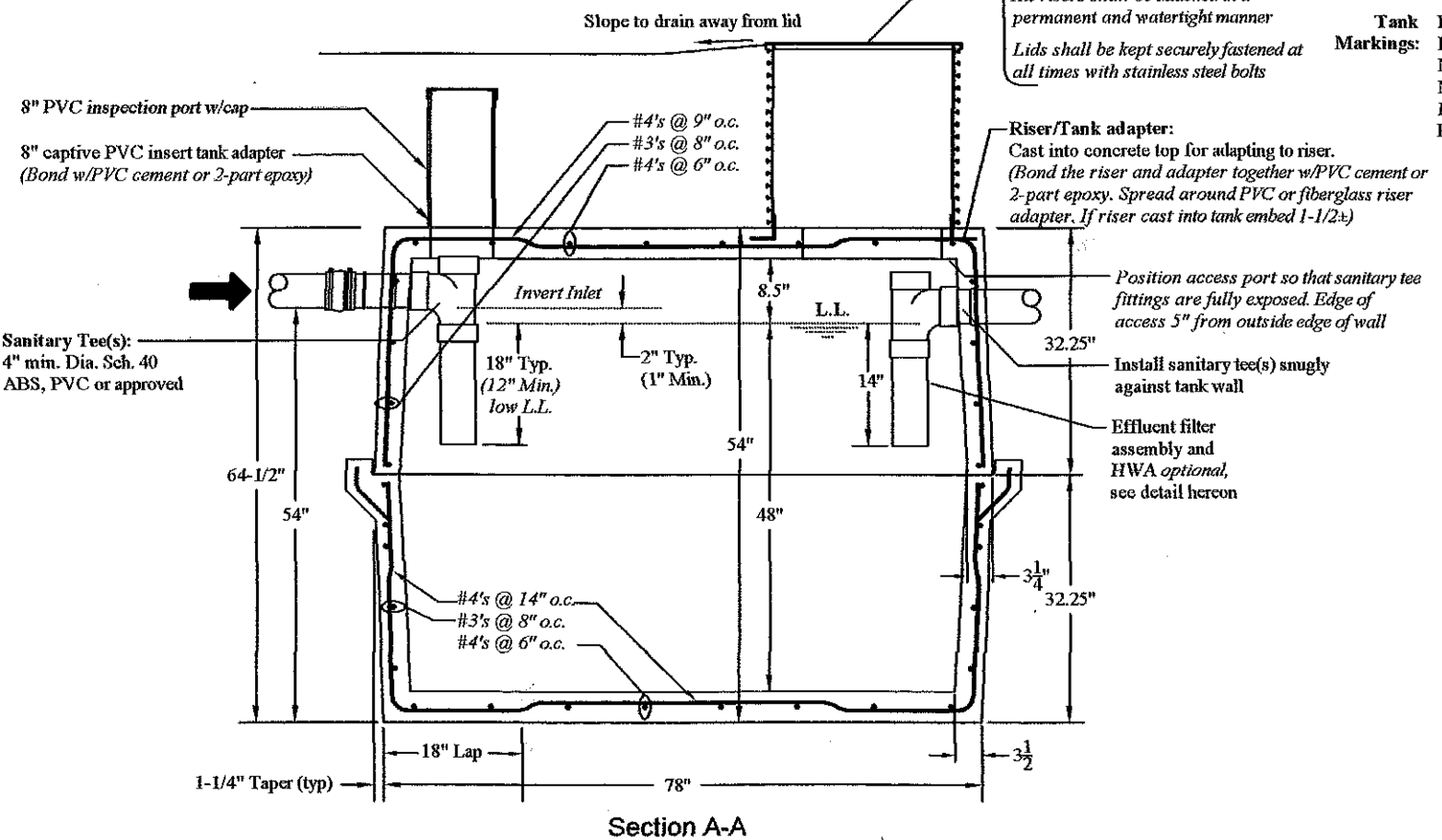


**MASTIC SEALANT**  
 Shall be acid resistant and non-degradable butyl sealant 1/4" - 3/4" placed along entire perimeter of tank seam. In areas of high ground water, tank halves must be mechanically fastened.

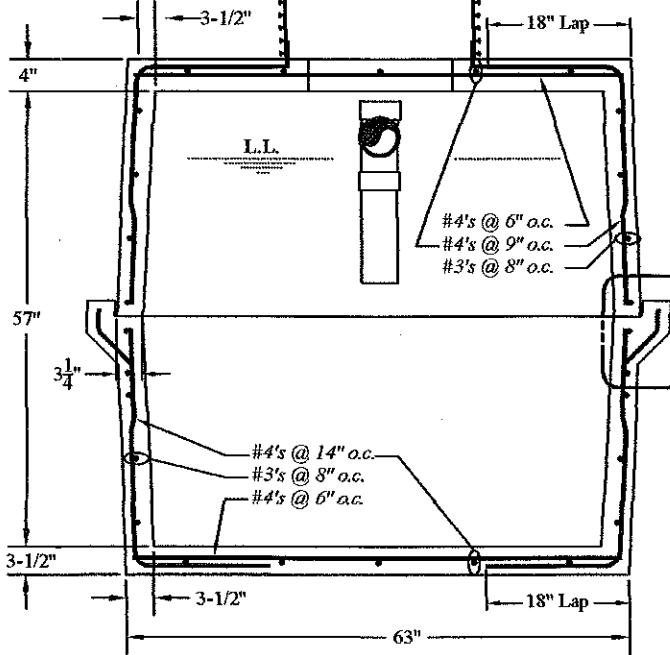


Boeger & Associates, LLC  
 1607 Oak Street  
 Eugene, OR 97401  
 Ph: 541.302.4986  
 Fax: 541.302.4986  
 dboeger@boegerassociates.com

WILLAMETTE GRAYSTONE, INC.  
 1,000 GALLON CLAMSHELL SEPTIC TANK



Section A-A



End View

**Dimensions and specs for OSI filter**

Model #	*FT0436-28	*FT0836-36	*FT1236-54
nominal Diameter (in.)	4	8	12
Overall Height (in.)	36	36	36
Mesh Screen Height (in.)	28	36	54

\*Biotube® Screen Technology. Other sizes per DEQ approval letter November 9, 1995

Optional Effluent Filter Detail

W.O. No. 174  
 Design D. BOEGER  
 Drawn L. NYGAARD  
 Date 4/17/2012  
 Scale: 1" = 2'  
 Sheet 1 of 1

APR 19 2012

WESTERN REGION/EUGENE  
 DEPT ENVIRONMENTAL QUALITY