

December 22, 1995

Oregon

Mr. Paul Turner
Willamette Graystone
P.O. Box 7816
Eugene, Oregon 97401

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

Re: WQ-WCS-Materials: Concrete Septic Tank
Concrete Dosing Septic Tank
Concrete Septic & Dosing Tank
Concrete Holding Tank

Dear Mr. Turner:

The design information and plans for your tanks, prepared by Terry Bounds, P.E., have been reviewed and found to comply with the Department's standards. The tank configurations are: single compartment septic tanks with capacities of 1,000 gallons, 1,250 gallons, 1,500 gallons, and 3,000 gallons; double compartment 1,500 septic tanks, and septic & dosing tanks (1,000 gallon capacity in the first compartment, 500 gallon capacity in the second compartment); and dosing septic tanks with liquid capacities of 1,000 gallons, 1,500 gallons, and 3,000 gallons. The tanks with capacities of 1,500 gallons and 3,000 gallons may also be used as holding tanks when the outlet is sealed or omitted in their construction.

WILLAMETTE GRAYSTONE is authorized to manufacture and distribute these tanks for use in on-site sewage disposal systems in Oregon until further notice, providing the following conditions are met:

1. Each tank must be manufactured in compliance with the Department's rules and the enclosed plans and design specifications. Any deviation from the plans and specifications shall not be permitted unless and until authorized in writing by this office.
2. The concrete mix shall be in accordance with the mix description on the plans and in the analysis prepared by Terry Bounds, P.E. The minimum concrete strength of 4,000 psi specified by Mr. Bounds shall actually be achieved. Three concrete sample cylinders shall be taken and tested for each tank manufactured until the minimum compression strength is obtained. Thereafter, you shall take at least one concrete sample cylinder for each five (5) tanks produced. Samples shall be tested for compressive strength. Samples shall be alternately broken at 7 and 28 days. All samples shall be field cured where 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. Each tank shall be cured and protected from premature drying and excessive hot or cold temperatures for the first 10 days following casting. Tanks may be shipped from the casting yard after 7 days, or earlier if the concrete has reached two-thirds of its design strength.



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

DEQ-1



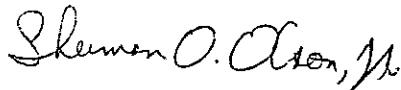
4. You are responsible for providing a watertight tank. We presume that Willamette Graystone will pre-test some percentage of tanks at the plant to verify they are watertight.
5. You are to deliver to the purchaser a fully assembled and complete tank, and provide the tank riser(s) and cover(s).
6. A seep ring is shown in the plans where the plastic inlet and outlet fittings pass through the wall, however it is not specified. Provide this office with a sample of the ring you intend to use.
7. The inlet and outlet "Tee" fittings shall be either Sch. 40 ABS or Sch. 40 PVC plastic.
8. The mastic sealant used at the wall joint in the 3,000 gallon tank is not specified. Provide this office with the specification sheet for the sealant you intend to use.
9. The specific make and model of siphon is not described. Provide this office with the specifications sheet for the siphon the tanks are designed to accommodate.
10. These tanks are not acceptable for use at locations where motor vehicles are likely to pass over. Tank placed at such locations shall require an engineering analysis of the potential top loading, and may require the preparation of site-specific plans and specifications.
11. The effluent filter assembly proposed for use within each tank must be specified if it requires replacement or modification of the 4 inch diameter sanitary tee fitting at the tank outlet. Be aware the filter assembly shall perform the same as a sanitary tee if the filter is removed. Assemblies with larger effluent filter housings may impair the ability to clean and otherwise service the septic tank, and may cause the Department to require an additional full size manhole riser and gasketed cover when used in the single compartment tanks. Some effluent filter designs shall only be allowed through the issuance of a Water Pollution Control Facility permit, and thus shall be approved project specific.
12. A tank installation manual, on waterproof paper or equivalent, shall be provided with each tank [refer to OAR 340-73-025(13)]. The manual shall describe how to properly install the tank, riser(s) and cover(s), pipe connections, testing procedures, backfill, and any special precautions or limitations. The manual for tanks designed for the use of pumps and siphons shall also describe the installation specifications for the pump or siphon, piping, valves, pump control and alarm switch placement, etc. Specific siphon information, including but not limited to the type or model of siphon, screen, and related apparatus to be used within the tanks shall also be described in the manual. Each manual needs to be realistic and compliment the structural design and other comments prepared by Mr. Bounds. He should review each manual before it is

finalized. His comments should be incorporated into each manual. **Please provide this office with a copy of the manual(s) within 30 days.**

13. In the "General Notes" listing of methods that may be used to insure tank submergence in areas with high groundwater, method 5 is not an optional method that may be used in Oregon. It shall not be described in the installation manual.
14. The 1,000 gallon and 1,250 gallon tanks are not accepted for use as holding tanks, unless such use is consistent with the requirements of OAR 340-71-160(11).
15. Each tank shall be marked on the uppermost tank surface over the outlet with the liquid capacity, date of manufacture, burial depth limit, and either your full business name or the assigned number 220 if manufactured at the Eugene plant. If manufactured at the plant in Wood Village, the assigned number to use is 726.

Other on-site system products manufactured by Willamette Graystone that the Department has approved include concrete distribution boxes and drop boxes. Please feel free to contact me if you have questions about this letter. My telephone number is 229-6443, or toll free 1-800-452-4011.

Sincerely,



Sherman O. Olson, Jr.
On-Site Sewage Disposal Program
Wastewater Control Section
Water Quality Division

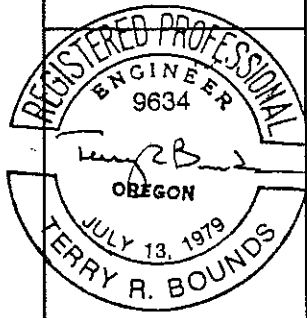
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Enclosures

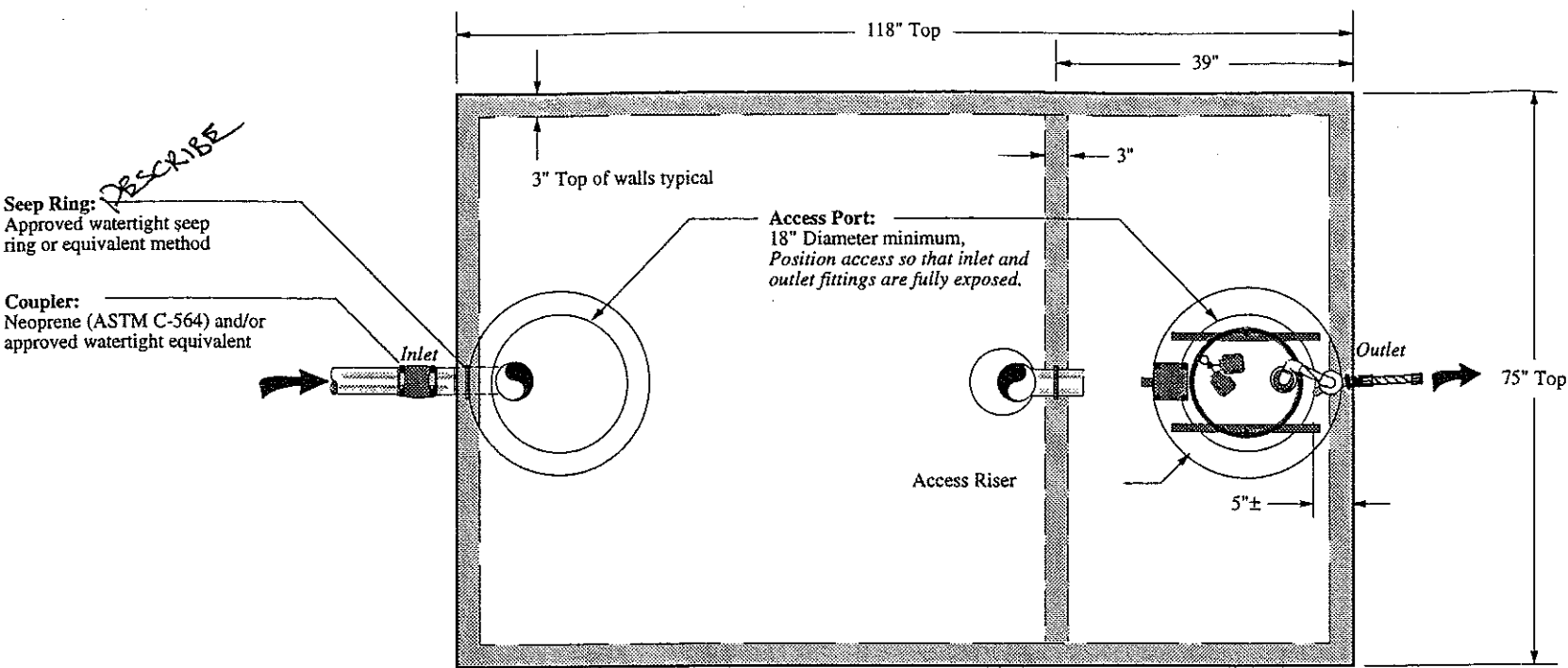
cc: Terry Bounds, P.E.
City of Portland
Clackamas County
Benton County
Lane County
Linn County
Washington County
DEQ:Northwest Region:Portland
DEQ:Western Region:Eugene Office
DEQ:Western Region:Roseburg Office
DEQ:Western Region:Coos Bay Office

Willamette Graystone Inc.
 P.O. Box 7816
 Eugene, OR
 97401
 Phone: 503-726-7666

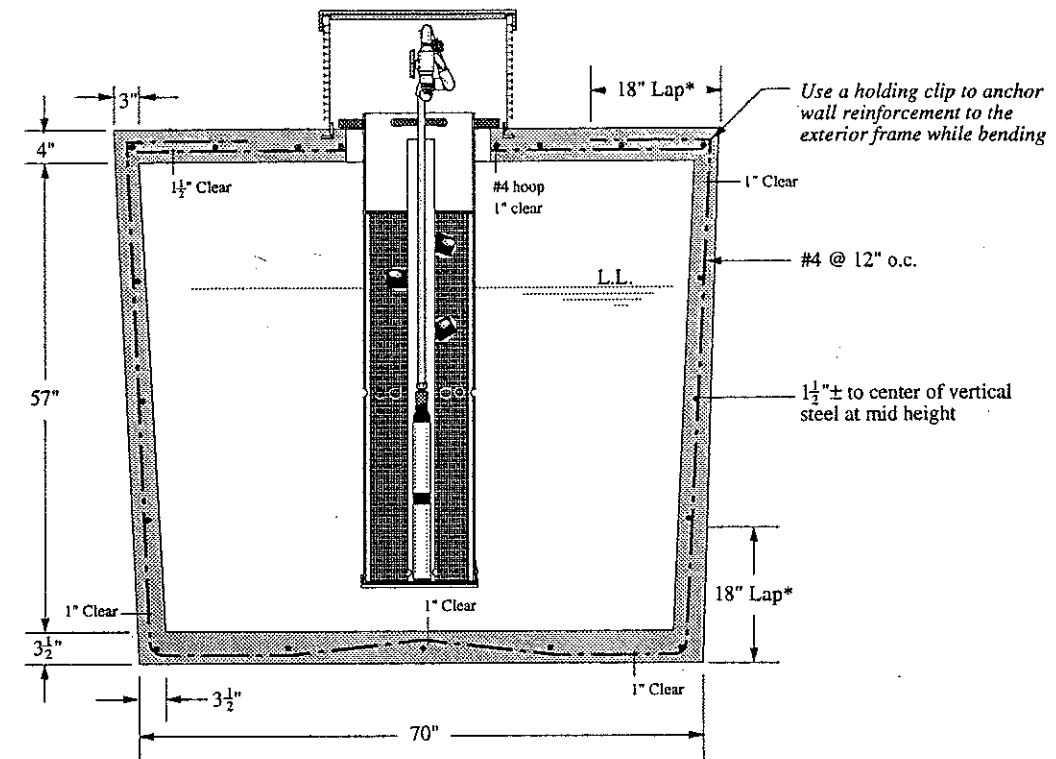
Orenco Systems Inc.
 814 Airway Avenue
 Sutherlin, OR
 97479-9012
 Phone: 503-459-4449



Willamette Graystone Inc.
 Eugene, OR
 1500 Gallon Two Compartment Septic Tank
 Approved By: TRB P.E.
 Designed By: TRB P.E.
 Drawn By: CDV
 Date: 6/22/95
 Project #: _____
 Revision #: _____
 Scale: 1" = 2'



TOP VIEW



END VIEW

General Notes:

Tank Volumes: Total Volume: 1797 gal±
 Operating Volume: Primary Compartment 1000 gal±
 Operating Volume: Secondary Compartment 500 gal±
 Average unit volume primary compartment: 20.6 gal./in.±
 Average unit volume secondary compartment: 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 = 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 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 30 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.

Dosing: Dosing volumes not to exceed maximum limits set by Oregon on-site rules 340-71 and 73. Maximum percent of projected daily flow: 10% to sandfilters or 20% in other applications. Maximum discharge rate from single compartment dosing tank 30gpm. Float and dosing levels may vary within the limits of the onsite rules.

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

Liquid capacity: 1500 gal.
 Max burial depth: 4ft.
 Max traffic (wheel): 2500 lbs.
 Date manufactured: _____
 Permit no.: _____

Seep Ring: Approved watertight seep ring or equivalent method
Coupler: Neoprene (ASTM C-564) and/or approved watertight equivalent

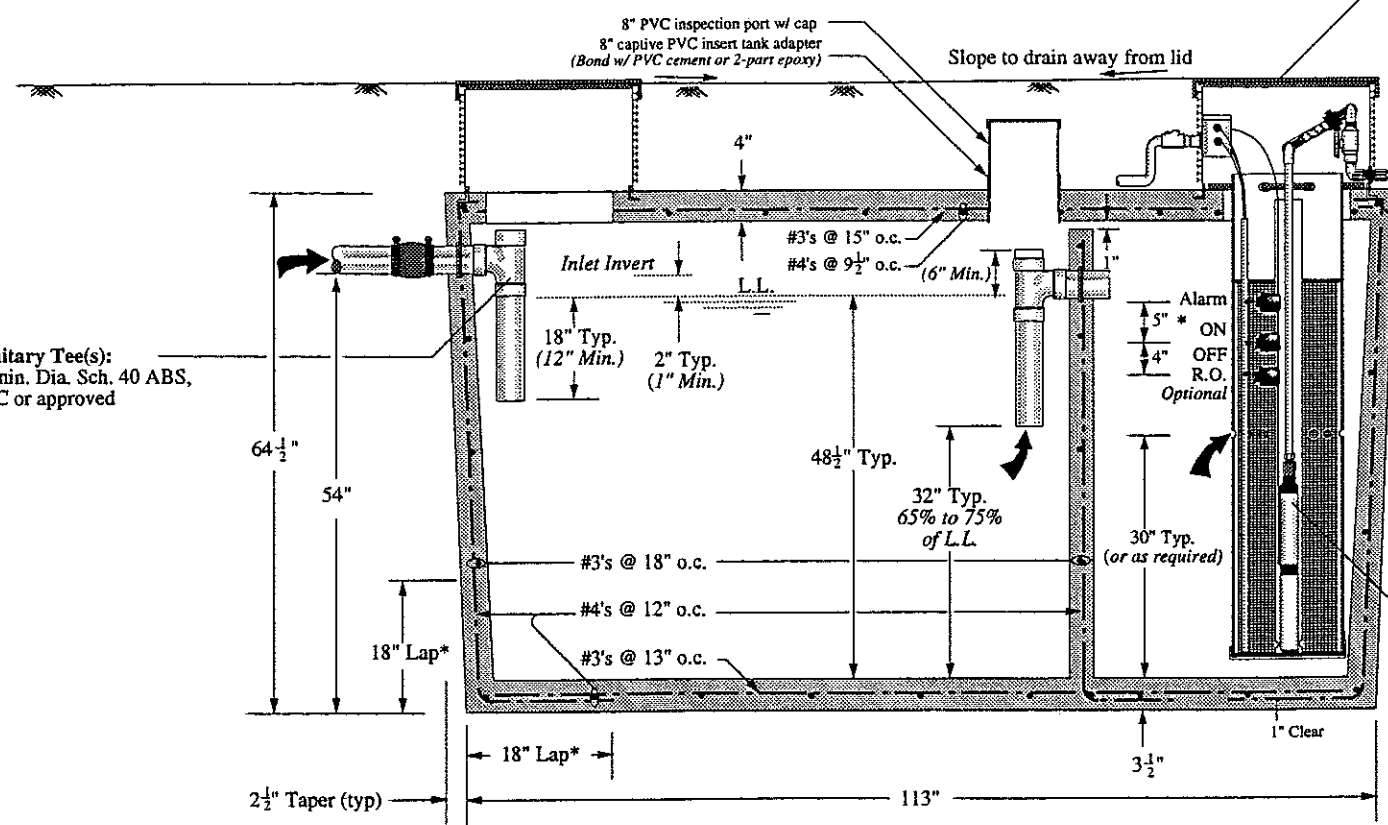
Access Port: 18" Diameter minimum, Position access so that inlet and outlet fittings are fully exposed.

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 cast into tank embed 1 1/2"±)

*Number of float and float settings will vary depending on system dosing requirements

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



SIDE VIEW 1500 GALLON TWO COMPARTMENT TANK

* 18" Minimum Lap Typical at all corners top and bottom