

Checklist for Manufactured Septic Tank Review

Manufacturer _____

Tank Model _____

R317-4-14 Appendix A (1.1)

- Plans showing all dimensions, capacities, reinforcing, and other pertinent data.
- Evaluation on each tank from a registered engineer.

R317-4-14 Appendix A (1.1A)

- Minimum 3" thick sidewalls and bottom.
- Minimum 4" thick top.
- Minimum reinforcing of 6" x 6" No. 6, welded wire fabric, or equivalent.
- Class A, 4000 psi concrete used.

R317-4-7-10 Appendix A (1.2)

- Appropriate identifying marks on the exterior of the tank.
- Name and address or nationally registered trademark of the manufacturer.
- The liquid capacity of the tank in gallons.
- Both the inlet and outlet, marked accordingly.

R317-4-7-11 Appendix A (1.3)

- Liquid depth of the tank to be between 30" and 72".

R317-4-7-12 Appendix A (1.6)

- The first compartment volume V equal to or V exceed two-thirds of the total required septic tank volume.
- No compartment to have internal horizontal distance less than 24".
- Minimum opening dimension between compartments is 4", cross sectional area A6" diameter pipe.
- The mid-point of the opening is approximately 40% of the liquid depth.
- No more than 3 compartments.

R317-4-7-14 Appendix A (1.6)

- The inlet invert must be at least 2" above the outlet invert. (Preferable 3")
- The inlet baffle or tee is to penetrate the liquid level at least 6".
- The outlet shall extend ~40% of the liquid depth. (Vertical side tanks)
- The outlet shall extend ~35% of the liquid depth. (Other shapes)
- Inlets or outlets shall not prevent venting. (Minimum 1" space)
- The top of the baffle must extend above the liquid at least 6".

R317-4-7-15 Appendix A (1.7)

- Minimum scum storage volume of 15% or more, of the liquid volume.

R317-4-7-17 Appendix A (1.8)

- 18" minimum opening into each compartment of the tank.
- Minimum 12" opening to the inlet and outlet.

R317.4-14 Environmental Quality, Water Quality.

Appendix A. Septic Tank Construction.

1.1. Plans for Tanks Required.

Plans for all septic tanks and underground holding tanks shall be submitted to the division for approval. Such plans shall show all dimensions, capacities, reinforcing, maximum depth of soil cover, and such other pertinent data as may be required. All tanks shall conform to the design drawing and shall be constructed under strict, controlled supervision by the manufacturer.

A. Precast Reinforced Concrete Tanks.

1. The walls and base of precast tanks shall be securely bonded together and the walls shall be of monolithic or keyed construction.
2. The sidewalls and bottom of such tanks shall be at least 3 inches in thickness.
3. The top shall have a minimum thickness of 4 inches.
4. Such tanks shall have reinforcing of at least 6 inch x 6 inch No. 6, welded wire fabric, or equivalent. Exceptions to this reinforcing requirement may be considered by the division based on an evaluation of acceptable structural engineering data submitted by the manufacturer.
5. All concrete used in precast tanks shall be Class A, at least 4,000 pounds per square inch, and shall be vibrated or well-rodged to minimize honeycombing and to assure water tightness.
6. Precast sections shall be set evenly in a full bed of sealant. If grout is used it shall consist of two parts plaster sand to one part cement with sufficient water added to make the grout flow under its own weight.
7. Excessively mortared joints should be trimmed flush.
8. The inside and outside of each mortar joint shall be sealed with a waterproof bituminous sealing compound.
9. For the purpose of early reuse of forms, the concrete may be steam cured. Other curing by means of water spraying or a membrane curing compound may be used and shall comply to best acceptable methods as outlined in Guide to Curing Concrete, ACI308R-01, by American Concrete Institute, Farmington Hills, Michigan.

B. Poured-In-Place Concrete Septic Tanks.

1. The top of poured-in-place septic tanks with a liquid capacity of 1,000 to 1,250 gallons shall be a minimum of 4 inches thick, and reinforced with 3/8 inch reinforcing rods 12 inches on center both ways, or equivalent.
2. The top of tanks with a liquid capacity of greater than 1,250 gallons shall be a minimum of 6 inches thick, and reinforced with 3/8 inch reinforcing rods 8 inches on center both ways, or equivalent.
3. The walls and floor shall be a minimum of 6 inches thick. The walls shall be reinforced with 3/8 inch reinforcing rods 8 inches on center both ways, or equivalent. Inspections by the regulatory authority may be required of the tank reinforcing steel before any concrete is poured.
4. A 6 inch water stop shall be used at the wall-floor juncture to ensure water tightness.
5. All concrete used in poured-in-place tanks shall be Class A, at least 4,000 pounds per square inch, and shall be vibrated or well-rodged to minimize honeycombing and to ensure water tightness.
6. Curing of concrete shall comply with the requirements in Subsection R317-4-14 Appendix A.1.2.

C. Fiberglass Tanks.

1. Fiberglass tanks shall comply with one of the following criteria for acceptance.
 - a. The Interim Guide Criteria for Glass-Fiber-Reinforced Polyester Septic Tanks, International Association of Plumbing and Mechanical Officials Z1000-2007. The

identifying seal of the International Association of Plumbing and Mechanical Officials shall be permanently embossed in the fiberglass as evidence of compliance.

b. Manufactured to meet the structural requirements of Underwriters Laboratories (UL) Standard 1316.

c. Professionally engineered plans demonstrating compliance to tank configuration requirements of this rule including acceptable structural calculations or other pertinent data as may be required.

2. Inlet and outlet tees shall be attached to the tank by a rubber or synthetic rubber ring seal and compression plate, or in some other manner approved by the division.

3. The tank shall be installed in accordance with the manufacturer's recommendations.

D. Polyethylene Tanks.

1. Polyethylene tanks shall comply with the criteria for acceptance established in Prefabricated Septic Tanks and Wastewater Holding Tanks, Can3-B66-10 by the Canadian Standards Association, Ontario, Canada.

2. Inlet and outlet tees shall be attached to the tank by a rubber or synthetic rubber ring seal and compression plate, or in some other manner approved by the division.

3. The tank shall be installed in accordance with the manufacturer's recommendations.

1.2. Identifying Marks.

A. All prefabricated or precast tanks that are commercially manufactured shall be plainly, legibly, and permanently marked or stamped with:

1. the manufacturer's name and address, or nationally registered trademark;

2. the liquid capacity of the tank in gallons on the exterior at the outlet end within 6 inches of the top of the wall; and

3. the inlet and outlet of all such tanks shall be plainly marked as "IN" or "OUT" respectively.

1.3. Inlets and Outlets.

Inlets and outlets of tanks or compartments thereof shall meet the minimum diameter requirements for building sewers.

A. Only one inlet or outlet is allowed, unless preauthorized by the regulatory authority.

B. Inlets and outlets shall be located on opposite ends of the tank.

1. The invert of flow line of the inlet shall be located at least 2 inches, above the invert of the outlet to allow for momentary rise in liquid level during discharge to the tank.

2. Approved tanks with offset inlets may be used when approved by the regulatory authority.

C. All inlets and outlets shall have a baffle or sanitary tee.

1. An inlet baffle or sanitary tee of wide sweep design shall be provided to divert the incoming wastewater downward. This baffle or tee is to penetrate at least 6 inches below the liquid level, but the penetration is not to be greater than that allowed for the outlet device.

2. For tanks with vertical sides, outlet baffles or sanitary tees shall extend below the liquid surface a distance equal to approximately 40% of the liquid depth. For horizontal cylindrical tanks and tanks of other shapes, that distance shall be reduced to approximately 35% of the liquid depth.

3. All baffles shall be constructed from sidewall to sidewall or shall be designed as a conduit.

4. All sanitary tees shall be permanently fastened in a vertical, rigid position.

D. Inlet and outlet pipe connections to the septic tank shall be sealed and adhere to the tank and pipes to form watertight connections with a bonding compound or sealing rings.

E. Inlet and outlet devices may not include any design features preventing free venting of gases generated in the tank or absorption system back through the roof vent in the building plumbing system. The top of the baffles or sanitary tees shall extend at least 6 inches above the liquid level in order to provide scum storage, but no closer than 1 inch to the inside top of the tank.

1.4. Liquid Depth of Tanks.

Liquid depth of tanks shall be at least 30 inches. Depth in excess of 72 inches may only be considered in calculating liquid volume required in Subsection R317-4-6.6 if the tank length is at least two times the liquid depth.

1.5. Burial Depth.

The maximum burial depth shall be stated on the plans submitted.

1.6. Tank Compartments.

Septic tanks may be divided into compartments provided they meet the following:

- A. The volume of the first compartment shall equal or exceed two-thirds of the total required septic tank volume;
- B. No compartment shall have an inside horizontal dimension less than 24 inches;
- C. Inlets and outlets shall be designed as specified for tanks, except that when a partition wall is used to form a multi-compartment tank, an opening in the partition may serve for flow between compartments provided the minimum dimension of the opening is 4 inches, the cross-sectional area is not less than that of a 6 inch diameter pipe (28.3 square inches), and the mid-point is below the liquid surface a distance approximately equal to 40% of the liquid depth of the tank.

1.7. Scum Storage.

Scum storage volume shall consist of 15% or more of the required liquid capacity of the tank and shall be provided in the space between the liquid surface and the top of inlet and outlet devices.

1.8. Access to Tank Interior.

Adequate access to the tank shall be provided to facilitate inspection, servicing and maintenance, and shall have no structure or other obstruction placed over it and shall conform to the following requirements:

- A. Access to each compartment of the tank shall be provided through properly placed manhole openings not less than 18 inches in diameter, in minimum horizontal dimension or by means of an easily removable lid section.
- B. All access covers shall be designed and constructed in such a manner that they cannot pass through the access openings, and when closed will be child-proof and prevent entrance of surface water, dirt, or other foreign material, and seal the odorous gases in the tank. Concrete access covers for manhole openings shall have adequate handles.
- C. Access to inlet and outlet devices shall be provided through properly spaced openings not less than 12 inches in minimum horizontal dimension or by means of an easily removable lid section.