

WAC 246-272C-0210 General design and construction requirements—

Sewage tanks. (1) **Sewage tank loads.** Sewage tanks must be designed and constructed to withstand all structural, hydraulic, hydrostatic, earth loads, and any anticipated traffic loads. They must be designed and constructed so they:

(a) Do not collapse, deform, or crack when subjected to the anticipated loads when the tanks are either full or empty;

(b) Support a dead load equivalent to at least three feet of earth cover with a unit density of at least 110 lb/ft³ and a 2,500 lb_f/wheel load concentration over the critical elements of the tank. Tanks installed with more than three feet of earth cover must be reinforced to support the additional load;

(c) Account for minimum hydrostatic load of 62.4 lbs/ft³ and support earth backfill and hydrostatic pressures. Minimum lateral load calculations must include pressures due to effective weight of adjacent earth backfill and hydrostatic loads assuming the water table is at ground level;

(d) Allow for septage pumping during high groundwater conditions. Internal hydrostatic pressures must be included in the calculations to allow for septage pumping during high groundwater conditions assuming a water table is at ground level;

(e) Counteract buoyancy effects, assuring an adequate flotation safety factor in high groundwater areas. The design engineer shall submit to the department calculations to demonstrate the tank's ability to counteract buoyancy effects and include this information as part of the sewage tank installation instructions; and

(f) Withstand a wheel load of 16,000 lb_f/wheel with fourteen feet axle spacing consistent with a HS20-44 loading as designated by AASHTO, if designed as a "traffic bearing tank."

(2) **Construction materials.** Sewage tanks must be designed and constructed of solid, durable and watertight materials that do not corrode or decay. Steel sewage tanks are prohibited. Acceptable materials include:

(a) Concrete for cast-in-place tanks; and

(b) Concrete, fiberglass, polyethylene or other solid, durable, watertight material that does not corrode or decay for prefabricated tanks.

(3) **Connections and components.** Sewage tanks must be designed and constructed using structurally sound and watertight access connections or components, either into the tank or through the tank's walls. Sewage tank connections and related components include:

(a) Inlet and outlet fixtures;

(b) Electrical conduits; and

(c) Access ports, inspection ports, and risers.

(4) **Inlets, outlets, and intercompartmental fittings or baffles.**

(a) Sewage tank inlets, outlets, and intercompartmental fittings must:

(i) Provide effective scum storage and sludge retention; and

(ii) Be constructed of a durable material and attached to the walls of the tank in a secure and corrosion resistant fashion.

(b) All inlet and outlet devices must have sanitary tees constructed of:

(i) PVC conforming to or exceeding the requirements of ASTM D 3034; or

(ii) ABS conforming to or exceeding the requirements of ASTM D 2680.

(c) All sanitary tees must have a minimum of four inches inside diameter. For a larger capacity tank, the diameter must be greater to accommodate the design flow.

(d) Concrete baffles are allowed if cast with the tank pour. Concrete baffles installed after the tank has been poured are not allowed.

(5) **Seals and gaskets.** Seals and gaskets for inlet, outlet, and intercompartmental fittings must be resilient, watertight, corrosion-resistant, and flexible. Seals meeting ASTM C-1644, or equivalent must be used to join the tank wall and the PVC piping to prevent leakage at the wall connection.

(6) **Water-tightness.** Sewage tanks must be watertight and prevent surface drainage and groundwater from entering into the tank or connected chambers. The department and local health officers are encouraged to require testing sewage tanks in the field at installation.

(7) **Air space and venting.** Sewage tanks must provide air space to allow gases to vent through the main building sewer vent or other plumbing vent stacks to the atmosphere.

(a) Air space must be above the liquid surface in the tank back and through the tank's inlet.

(b) Sewage tanks must maintain at least a one-inch air space between the underside of the top of the tank and the top of any of the inlet, outlet, or intercompartmental fitting to vent gases.

(c) Sewage tanks that do not adequately vent through the building plumbing vent stacks must:

(i) Use a carbon-filtered vent above the ground surface; or

(ii) Bury the end of the vent in a gravel trench in a manner adequate to prevent infiltration from groundwater or surface water.

(d) Use another sewage tank venting method approved by the department according to the requirements under WAC 246-272C-0500.

(8) **Confined space.** Designs must take into account whether the space is a confined space. Confined spaces must comply with the department of labor and industries' requirements in chapter 296-809 WAC, Confined spaces.

(9) **Forms or processes.** Manufacturers of prefabricated tanks may use any form or process to construct the tank, provided the tank meets or exceeds the standards and requirements in this section through WAC 246-272C-0250.

(10) **Coatings.** Coatings, sealants or liners may be added to the inside or outside of the sewage tanks to enhance corrosion protection and water-tightness of the tanks. All coatings, sealants, or liners must be rated and warranted by the manufacturer for use with sewage or sewage effluent.

(11) **Access openings and risers.** Access openings must be large enough for a person with equipment to easily clean, maintain, remove, and replace sewage tank components.

(a) The minimum diameter of the sewage tank opening must be:

(i) Eighteen inches for tanks with a liquid volume of less than or equal to two thousand gallons; and

(ii) Twenty inches for tanks with a liquid volume greater than two thousand gallons.

(b) Maximum distance between access points on a tank must be ten feet center-to-center.

(c) Access openings must be located above the inlet and the outlet.

(d) Access openings must be located directly above any pumping or dosing equipment, or effluent screen or filter.

(e) Risers must be a minimum of twenty-three inches in diameter.

(f) Connection of the riser to the tank and the connection of additional riser sections must incorporate joint grooves or adapters to prevent lateral movement and to remain watertight.

(g) Access and riser openings must be covered with a lockable lid or other type of secured lid to prevent unauthorized entry.

(h) Access risers and lids must be structurally sound to withstand the anticipated site-specific load conditions of the riser.

[Statutory Authority: RCW 43.20.050 (2) and (3). WSR 09-23-119, § 246-272C-0210, filed 11/18/09, effective 12/19/09.]