

15A NCAC 18E .1402 TANK DESIGN AND CONSTRUCTION

(a) Tanks shall be watertight, structurally sound, and not subject to corrosion or decay.

(b) Septic tanks and grease tanks shall have effluent filters and access devices approved in accordance with Rule .1404 of this Section. An effluent filter and support case shall be installed level in the outlet end of the septic tank or grease tank and shall meet the following criteria:

- (1) solvent welded to a minimum of three-inch PVC Schedule 40 outlet pipe;
- (2) be installed in accordance with filter manufacturer's specifications and effluent filter approval; and
- (3) be accessible and removable without entering the septic tank or grease tank.

(c) Septic tanks installed where the access openings on the top of the tank are deeper than six inches below finished grade shall have an access riser over each compartment with a cover that extends to within six inches of the finished grade. The opening of the access riser shall be large enough to accommodate the removal of the septic tank lid. When the top of the septic tank or access riser is below the finished grade, the location of the tank shall be visible at finished grade. When access risers are used they shall be installed in accordance with the Rules of this Subchapter, the manufacturer's specifications, and the Department's approval.

(d) Septic tanks shall meet the following minimum design standards:

- (1) a minimum liquid depth of 36 inches;
- (2) a minimum of nine inches freeboard, measured as the air space between the top of the liquid and the bottom of the tank top. Venting of the tank shall be provided to prevent the buildup of gases;
- (3) the approved septic tank capacity shall be determined as the liquid volume below the outlet invert to the bottom of the tank;
- (4) the length of the tank shall be a minimum of twice as long as the width, as measured by the longest axis and widest axis based on the internal tank dimensions;
- (5) there shall be three inlet openings in the tank, one on the tank end and one on each sidewall of the inlet end of the tank;
- (6) outlet openings shall have a cast or manufactured penetration point and include a watertight, sealed, non-corrodible, and flexible connective sleeve. A flexible connective sleeve shall be able to bend without breaking. The connective sleeve shall meet ASTM C1644 for precast concrete tanks or ASTM C1644, C923, or C564 for thermoplastic or glass-fiber-reinforced polyester tanks and be approved by the Department if it meets the requirements of this Subparagraph and Rule .1404 of this Section;
- (7) inlet penetrations shall be greater than or equal to four inches in diameter and outlet penetrations shall be greater than or equal to three inches in diameter;
- (8) there shall be no openings below the septic tank operating liquid level;
- (9) the outlet shall be through an effluent filter approved in accordance with Rule .1404 of this Section, and secured in place in an effluent filter support case. The effluent filter case inlet shall extend down to between 25 and 50 percent of the liquid depth measured from the top of the liquid level. Other methods of supporting the effluent filter case and for making pipe penetrations shall be approved by the Department on a case-by-case basis upon a showing that the performance is identical to those designed in accordance with this Rule;
- (10) the invert of the outlet shall be a minimum of two inches lower in elevation than the invert of the inlet;
- (11) all septic tanks shall be designed with a partition so that the tank contains two compartments. The following conditions shall be met:
 - (A) the partition shall be located at a point not less than two-thirds or more than three-fourths the length of the tank from the inlet end;
 - (B) the partition shall be designed, manufactured, installed, and maintained to remain in position when subjected to a liquid capacity in one compartment that corresponds with the lowermost elevation of the water passage slot or holes;
 - (C) the partition shall be designed to create a gas passage, not less than the area of the inlet pipe, and the passage shall not extend lower than seven inches from the bottom side of the tank top;
 - (D) the top and bottom sections of the partition shall be designed to create a water passage slot four inches high for the full interior width of the tank, or a minimum of two four- or five-inch openings, or one four- or five-inch opening per 30 horizontal linear inches of baffle wall, whichever is greater, may be designed into the partition instead of the four-inch slot;

- (E) the partition shall be designed, manufactured, and installed to create an average opening not greater than one-half inch between the partition and the tank wall below the liquid level, with a tolerance of one-half inch;
 - (F) the entire liquid passage in the partition wall shall be located between 25 and 50 percent of the liquid depth of the tank, as measured from the top of the liquid level; and
 - (G) other methods for designing the partition shall be approved by the Department on a case-by-case basis upon a showing that the performance is identical to those designed in accordance with this Rule;
- (12) access openings shall be provided in the top of the tank, located over each compartment, and have a minimum opening of 15 inches by 15 inches or 17 inches in diameter. The opening shall allow for maintenance and removal of internal devices of the septic tank;
 - (13) access risers and covers shall be designed and manufactured to prevent surface water infiltration;
 - (14) tank lids and riser covers shall be locked, secured with fasteners, or weigh a minimum of 40 pounds, but no more than 80 pounds; and
 - (15) all septic tanks shall bear an imprint or embossment identifying the manufacturer, the septic tank serial number assigned to the manufacturer's plans and specifications approved by the Department, and the liquid or working capacity of the tanks. The imprint or embossment shall be located to the right of the blockout made for the outlet pipe on the top or end of outlet end of the tank.
- (e) Pump tanks shall meet the design requirements of Paragraph (d) of this Rule with the following modifications:
- (1) a watertight access riser with removable cover shall be located over the pump. The access riser shall extend to a minimum of six inches above finished grade and shall be designed and maintained to prevent surface water infiltration;
 - (2) the access opening over the pump shall have a minimum opening of 24 inches in diameter or equidimensional opening;
 - (3) when two or more pumps are required in accordance with Rule .1101(b) of this Subchapter the access openings shall be sized to allow for pump removal, operation, and maintenance;
 - (4) tanks may be designed with a single compartment. If a partition is provided, the partition shall be designed to contain a minimum of two four-inch diameter circular openings, or openings with an equivalent area, located no more than 12 inches above the tank bottom;
 - (5) there shall be no requirement as to tank length, width, or shape, provided the tank satisfies all other requirements of the rules of this Section;
 - (6) the invert of the inlet openings shall be located within 12 inches of the tank top. No freeboard shall be required in the pump tank;
 - (7) tanks shall be vented if located more than 50 feet from the facility, and accessible for routine maintenance;
 - (8) all pump tanks shall bear an imprint or embossment identifying the manufacturer, the pump tank serial number assigned to the manufacturer's plans and specifications by the Department, and the liquid or working capacity of the tank. The imprint or embossment shall be located to the left of the blockout made for the outlet pipe on the top or end of outlet end of the tank; and
 - (9) the pump tank working capacity shall be the entire internal tank volume.
- (f) Grease tanks shall be septic tanks approved in accordance with Paragraph (d) of this Rule with the following modifications:
- (1) the liquid passage between chambers shall be located between 40 and 60 percent of the operating liquid depth measured from the top of the liquid level. The liquid passage between chambers may be made using a sanitary tee extending down between 40 and 60 percent of the liquid depth measured from the top of the liquid level;
 - (2) when sanitary tees are used as the liquid passage through an interior compartment partition, an access opening and riser to grade over the tees shall be provided for servicing and routine maintenance;
 - (3) when two or more tanks are used in series, a sanitary tee shall be provided in the outlet end of each interconnected tank extending down between 40 and 60 percent of the liquid depth;
 - (4) the final chamber shall contain an effluent filter and support case extending down between 40 and 60 percent of the liquid depth. The effluent filter shall be approved by the Department for use in grease tanks. The grease rated effluent filter shall be sized for the DDF and have openings of 1/32-inch or less; and

- (5) access risers shall extend to finished grade and be capped with cast iron manhole rings and covers. Lockable aluminum hatches may be substituted for cast iron manhole rings and covers in non-traffic areas. Aluminum hatches or manhole rings and covers shall be designed and maintained to prevent surface water infiltration. Locks shall be the responsibility of the person owning or controlling the system.
- (g) Siphon tanks shall meet the design requirements of Paragraph (e) of this Rule and shall:
 - (1) be designed in accordance with the construction requirements of this Rule and Rule .0804 of this Subchapter;
 - (2) provide three inches of freeboard;
 - (3) have the invert of the inlet pipe three inches above the siphon trip level; and
 - (4) have a watertight access opening over each siphon with an opening of 24 inches, extending to finished grade, and designed to prevent surface water inflow.

History Note: Authority G.S. 130A-335(e), (f), and (f1); 130A-335.1; Eff. January 1, 2024.