

Louisiana Administrative Code
Title 51
Part XIII. Sewage Disposal

**Regulations Regarding Septic Tank Installations with Field Beds/Absorption
Trenches
For Individual Residential Installations**

Chapter 3. General Requirements for Sewerage Disposal

§303. Responsible Parties

- A. A person who owns, operates, manages, or otherwise controls any premises, shall provide for sewage disposal in a manner which is in compliance with this Code.

§305. Discharges

- A. A person shall not directly or indirectly discharge, or allow to be discharged, the contents or effluent from any plumbing fixtures, vault, privy, portable toilet, or septic tank, into any road, street, gutter, ditch, water course, body of water, or onto the surface of the ground.

Chapter 7. Individual Sewerage Systems

Subchapter A. General Requirements

§703. Plans

- A. The review and approval of plans and specifications for the proposed individual sewerage system shall be made in accordance with the "Regulations Controlling the Design and Construction of Individual Sewage Systems" (See Chapter 7, Subchapter B).

Subchapter B. Design and Construction Regulations

§715. Septic Tanks

- A. A septic tank is a watertight tank made of steel, concrete or other approved materials in which the settleable solids of sewage settle out and are largely changed into liquids or gases by bacterial decomposition. The remaining residue in the tank is a heavy, black semi-liquid sludge which must be removed from the tank periodically. Although the completely digested sludge contains relatively few disease germs, in cleaning the tank it is impossible to remove the digested sludge without removing some undigested material. Therefore, it is particularly important that the removed sludge be disposed of in a safe manner. There are commercial service companies that will contract for septic tank cleaning and sludge disposal. Such commercial services are controlled by a permit system in accordance with §901 of this Part.
- B. Multiple compartment septic tanks or single chamber septic tanks in series provide more effective treatment than single chamber tanks of the same total capacity; therefore, the use of multiple compartment tanks or single tanks in series is encouraged. However, single chamber septic tanks are acceptable.

- C. The velocity of flow through the tanks must be such that maximum solids and scum retention is achieved. Vertical cylindrical tanks must have horizontal (inlet-to-outlet) separation of at least 24 inches.
 - 1. Tees or baffles must be used at the inlet. The outlet must be designed so as to preclude floating solids from escaping from the tank. The inlet tee or baffle diverts the incoming sewage toward the bottom of the tank without disturbing the scum which forms on the surface of the liquid, and the outlet prevents the surface scum from flowing out of the tank.
- D. The minimum total septic tank liquid capacity required is 2 1/2 times the estimated average daily design flow. Sewage loading criteria for determining the average daily design flow and organic loading are contained in Chapter 15 of this Part. One-bedroom residences may, however, utilize a 500 gallon tank.

NOTE: The minimum allowable total septic tank volume for all applications is 500 gallons.

- E. The distance between the inlet and outlet openings in the tank wall, measured horizontally, shall be not less than 24 inches. The distance between the inlet and outlet shall exceed the width of rectangular and oval-shaped tanks.
- F. The tank shall operate with a liquid depth between a minimum of 30 inches and a maximum of 72 inches measured vertically from the invert of the outlet (overflow level) to the bottom of the tank. Recent septic tank studies have indicated the shallower tank to be more efficient and is therefore preferred.
- G. For tanks having straight vertical sides, the dimension between the top of the tank and the liquid level shall not be less than 15 percent of the liquid depth. In horizontal cylindrical tanks, the volume of the air space above the liquid shall not be less than 15 percent of the liquid capacity. In the latter case, this condition is met if the liquid depth (distance from outlet invert to bottom of tank) is at least 79 percent of the diameter of the tank.
- H. A single tank may be divided into two or more compartments by means of internal partitions. Each compartment shall conform to the dimensions limitations for complete tanks and shall have a liquid capacity of at least 250 gallons. The total liquid capacity shall conform to the requirements for single chamber tanks. No tanks shall have more than three compartments.
- I. The tank shall be constructed of materials which are corrosion resistant and provide a watertight permanent structure. The cover of the tank shall be designed for a dead load of not less than 150 pounds per square foot. Concrete covers must be reinforced with steel and must be not less than 4 inches thick. Metal septic tanks shall comply with the requirements of §715.O. Tanks of other materials such as fiberglass will be reviewed for acceptance on an individual basis. They will be required to comply generally with the basic applicable standards for metal septic tanks.
- J. Access to the septic tank for cleaning and inspection shall be provided by a removable cover or manhole. Both inlet and outlet devices as well as each compartment in multiple compartment tanks must be accessible. Manholes, when used shall be at least 20 inches square or 24 inches in diameter and provided with covers which can be sealed watertight. Septic tanks with removable covers must be provided with an 8-inch inspection hole over the inlet and the outlet.
- K. Either tees or baffles shall be provided at the inlet of the tank and shall extend upward at least 6 inches above the liquid level of the tank. The inlet tee or baffle shall extend downward to at least 6 inches below the liquid level, but it shall not extend below the level of the lower end of the outlet tee or baffle. At least 2 inches of open space shall be provided above the baffle or tee to provide ventilation to the tank through the building plumbing system.
- L. On the outlet side the tee or baffle shall extend downward to a distance below the water surface equal to 40 percent of the liquid depth of tanks with vertical sides and 35 percent of liquid depth of tanks of other shapes as measured to the nearest inch. If a tee or baffle is used in the outlet the upper end shall extend 6 inches above the liquid level.

- M. Inlet and outlet fittings (tees or ells) must be of cast iron, schedule 40 PVC or ABS plastic or other approved material.
- N. The invert of the inlet shall be located at least 2 inches above the invert of the outlet.
- O. Metal septic tanks shall be prefabricated of a minimum of 14 gauge commercial grade steel. Corrosion protection shall, at a minimum, consist of a hot-dipped asphalt coating of at least 0.025-inch thickness properly applied to all surfaces of the new, clean, bare metal.
- P. The location of a septic tank shall comply with minimum distance requirements from water wells, water lines, etc. as contained in Part XII, of this Code.
- Q. The use of septic tanks in series is encouraged. The first tank shall have at least a 500-gallon liquid capacity and all subsequent tanks shall have at least 300-gallon liquid capacities. The total capacity of all tanks in series must comply with the capacities for septic tanks as prescribed in §715.D.
- R. Piping from the house to the septic tank must be such that the waste flow does not disturb the retention of scum and sludge in the tank. To attain this, the inlet piping from the house must have a minimum diameter of four inches and be laid on a slope of at least 1/8 inch per foot. The slope for the last 10 feet of line preceding the septic tank must not exceed 1/4 inch per foot. All plastic piping, excluding perforated pipe, must be a minimum of SDR 35 sewer and drainage pipe or equivalent.
- S. Backfill around septic tanks must be made in thin layers thoroughly tamped in a manner that will not produce undue strain on the tank. Sufficient soil cover can be provided over the top of the septic tank to permit grass growth. However, no other obstruction to access (i.e., concrete slabs, buildings, etc.) shall be allowed.
- T. Septic tanks should be inspected every six years and pumped at least every eight years by a licensed sewage hauler.
- U. Untreated or uncoated metal septic tanks shall not be used.
- V. Abandoned septic tanks (tanks no longer in active use) shall be pumped out by a licensed sewage hauler, then removed or the cover discarded and the tank filled with soil to natural grade. The contents of the abandoned tank shall not be placed into a newly installed individual sewerage system.

§719. Absorption Trenches

- A. Where soil conditions are satisfactory and sufficient land is available, septic tank effluent shall be disposed of in absorption trenches. This consists of a system of covered gravel (or other approved aggregate) filled trenches into which the septic tank effluent is applied so as to permit the liquid to seep into the soil. By action of microorganisms in the soil, the organic matter is converted into mineral compounds.
- B. A number of variables determine whether an absorption trench is feasible, including: soil porosity (permeability), ground water table, available space, and the rate at which septic tank effluent enters the soil (percolation rate). In general three conditions should be met.
 - 1. The soil percolation rate must be within the acceptable range.
 - 2. The maximum elevation of the ground water table should be at least 2 feet below the bottom of the proposed trench system.
 - 3. Clay formations or other impervious strata should be at a depth greater than 4 feet below the bottom of the trenches.
- C. Unless these conditions are satisfied, the site is unsuitable for a subsurface sewage disposal system, and an alternative method must be utilized.

- D. The acceptability of soil for an absorption trench system and the required size of such a system is currently based upon the "Percolation Test" described below.
1. Three or more tests must be made in separate test holes spaced uniformly over the proposed absorption field site.
 2. Dig or bore a hole, with horizontal dimensions of from 4 to 12 inches and vertical sides to the depth of the proposed absorption trench. In order to save time, labor, and volume of water required per test, the holes may be bored with a 4-inch auger.
 3. Carefully scratch the bottom and sides of the hole with a knife blade or sharp-pointed instrument in order to remove any smeared soil surfaces and to provide a natural soil interface into which water may percolate. Remove all loose material from the hole.
 4. To conduct the test, fill the hole with clear water. This pre-wetting procedure should normally be accomplished on the day prior to the percolation rate measurement. This procedure is to insure that the soil is given ample opportunity to swell and to approach the operating condition of the wet season of the year. Thus, the test should give comparable results in the same soil whether made in a dry or in a wet season.
 5. With the exception of sandy soils, percolation rate measurements shall be made on the day following the procedure described under §719.D.4 above. Add water until the liquid depth is at least 6 inches, but not more than 12 inches from a fixed reference point. Measure the drop in water level over a 60-minute period. This drop is used to calculate the percolation rate. If the drop in liquid depth in the first 30 minutes is less than one inch, it is unnecessary to continue the test for the full 60-minute period.
 6. The distance the water falls in 60 minutes in each of the three test holes is recorded. The average drop for the three holes is used to determine the total length of absorption trench from Table 1 below.

Table 1	
Absorption Trench Length Requirements for Individual Residences	
Average Water Level Drop in 60 minutes (in inches)	Length (in Feet) of Absorption Trenches Required per Bedroom*
More than 12	72
12	83
11	87
10	91
9	96
8	100
7	104
6	110
5	117
4	127
3	142
Less than 3	Not acceptable for absorption field

NOTE: A minimum of 160 linear feet of field line shall be provided.

***-or per 150 gpd of design flow for non-residential applications.**

- E. Many different designs may be used in laying out an absorption trench system. The choice will depend on the size and shape of the available disposal area, the capacity required and the topography of the area.

- F. The septic tank effluent is applied to the absorption field through a system of level bottomed trenches. Conventional field lines are laid on a slope of 2 to 3 inches per 100 feet. Gravelless pipe and other distribution chambers must be laid as close as possible to a slope of 1 inch per 100 feet. A distribution box may be required for equal distribution of the effluent.
- G. To provide the minimum required backfill depth and earth cover, the depth of the absorption trenches must be a minimum of 18 inches. Additional depth may be needed for contour adjustment for extra backfill under the distribution line or for other design purposes. However, the total depth must not exceed 24 inches.
- H. Careful construction is important in obtaining a satisfactory soil absorption system.
- I. Individual trenches shall not be greater than 100 feet in length and not less than 18 inches in width. The center line distance between individual trenches shall be at least 6 feet. In addition, the absorption trenches shall be located at least 10 feet from any dwelling or property line.
- J. The location of the absorption trenches shall comply with minimum distance requirements from water wells, water lines, etc., as contained in Part XII of this Code.
- K. In every case, at least two trenches shall be used.
- L. Trench bottoms must be level to promote even distribution, thereby minimizing premature failure of a portion of the trench. During excavation, attention must be given to the protection of the soil. Care must be taken to prevent sealing of the surface on the bottom and sides of the trench. Trenches should not be excavated when the soil is wet enough to smear or compact easily. All smeared or compacted surfaces must be raked to a depth of 1 inch and loose material removed before the backfill is placed in the trench.
- M. Conventional field lines shall consist of perforated non-metallic pipe meeting one of the following standards.

PVC sewer pipe and fittings (Thin wall), ASTM D2729-93
Smooth wall polyethylene (PE) pipe, ASTM F810-93, for use in waste disposal absorption fields;
SRP pipe and fittings, ASTM D2852-93.

- 1. In every case, the minimum acceptable diameter is 4 inches. Although the trench bottom is level, conventional field pipes must be laid on a slope of between 2 to 3 inches per 100 feet to provide even distribution of the liquid throughout the trench.
- N. Where conventional field pipe is used, it must be surrounded by clean graded gravel or rock, broken, hard-burned clay brick or similar material. The bed material may range in size from 1/2 inch to 2.5 inches. The gravel must extend from at least 2 inches above the top of the pipe to at least 6 inches below the bottom of the pipe. The top of the stone should be covered with either untreated building paper, or similar pervious material to prevent the gravel from becoming clogged by the earth backfill.
- O. Where gravelless pipe or distribution chambers are used, the fill must be porous soil or sand which allows the passage of water in all directions with a 6-inch layer below the pipe and filled 4 to 6 inches above grade and spread 3 to 4 feet on either side of the trench. Only gravelless pipe or other distribution chambers specifically approved for use in Louisiana by the state health officer may be used. The total length of gravelless distribution products required is the same as for conventional absorption trenches.
- P. For an absorption trench to work properly, it must have access to air, generally through the soil interstices of the backfill. Therefore, the absorption trench should be backfilled with 4 to 12 inches of pervious soil, hand-tamped and then overfilled with about 4 to 6 inches of earth. Care should be taken to avoid compacting of the backfill.

Q. All of the above listed requirements, with the exception of the protection of water supplies, are aimed at preventing absorption trench clogging and premature failure. In addition, the septic tank should be inspected every six years after installation and pumped, as necessary, to prevent solid overflow to the soil absorption system and subsequent clogging and failure.

R. Absorption trenches shall not be located:

1. beneath driveways, parking or other paved areas;
2. in areas that may be subjected to passage or parking of heavy equipment or vehicles, or storage of materials;
3. beneath buildings or other structures.