

Chapter 5. INDIVIDUAL ONSITE WASTEWATER DISPOSAL DESIGN STANDARD

Subchapter 1. SEPTIC TANKS

Rule 5.1.1. **Definitions:**

1. Air Space – the space required between the lid of a septic tank and the bottom of the outlet pipe for the capture of gases generated by the anaerobic bacteria. Vent pipes within the facility or residence plumbing remove these gases from the septic tank.
2. Anaerobic – a process that utilizes bacteria that grow only without free dissolved oxygen. They obtain oxygen from breaking down complex organic substances
3. Filter – a device used to remove solids from the effluent of a septic tank.
4. Access Opening – a resealable opening in the treatment unit that allows for inspection, maintenance and entry if necessary.
5. Septic Tank – Water-tight, covered receptacle for treatment of sewage; receives the discharge of sewage from a building, separates settleable and floating solids from the liquid, digest organic matter by anaerobic bacterial action, stores digested solids through a period of detention, allows clarified liquids to discharge for additional treatment and final dispersal, and attenuates flows.
6. Synthetic Fiber Reinforcement – Synthetic fibers of polypropylene or polypropylene/polyethylene blend used in place of welded wire or other accepted reinforcing materials for the purpose of providing structural integrity to concrete.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.2. **General:** Septic tanks shall be constructed from concrete, steel, fiberglass or polyethylene. The septic tank size is based on the number of bedrooms or twice the daily flow for nonresidential application.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.3. **Location:**

1. Septic tanks shall not be located in depressed areas where surface water will accumulate. This water may enter the septic tank causing it to flood.
2. The area over the septic tank shall not be used for vehicular traffic or vehicular parking.
3. The septic tank must be installed according to the following minimum distances:

- a. foundation five (5) feet
 - b. property lines ten (10) feet
 - c. potable water supplies and all private wells fifty (50) feet
4. Septic tanks shall not be located under dwellings or other structures.
 5. Where all or part of the Individual On-site Wastewater Disposal System is proposed to be installed on property other than the owner's, an easement in perpetuity shall be legally recorded in the proper county. The easement shall be of sufficient area to permit access, construction and maintenance of the Individual On-site Wastewater Disposal System.
 6. Easements or right-of-way areas for utilities, surface or subsurface drainage, roads, streets, ponds or lakes shall not be used as available space for location of Individual On-site Wastewater Disposal Systems.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.4. **Design:** All septic tanks (prefabricated concrete, steel, fiberglass or polyethylene) must be designed according to minimum standards as follows:

1. General
 - a. The septic tank shall be watertight, structurally sound and not subject to excessive corrosion or decay. The outlet of the septic tank should be placed so as not to be located below the Seasonal High Water Table.
 - b. The minimum hydraulic detention time of the septic tank must be two (2) days (48 hours) based on daily sewage flows. In no case shall the septic tank have a minimum effective liquid capacity of less than seven hundred fifty (750) gallons.
 - c. All tanks manufactured in two (2) sections must have an interlocking type joint. Tanks manufactured in two sections must be sealed and joined with an approved sealant such as butyl rubber or other approved pliable sealant that is waterproof, corrosion-resistant and is warranted by the manufacturer for sealing concrete septic tanks.
 - d. All septic tanks with a capacity of greater than fifteen hundred (1,500) gallons shall be deemed structurally sound by a licensed Professional Engineer via stamped letter.

2. Tank Dimensions

- a. The inside length of a rectangular septic tank shall be a minimum of 1.5 times the width. The minimum inside width of a septic tank shall not be less than 3.5 feet.
- b. The minimum liquid depth of all septic tanks shall be thirty (30) inches.
- c. A minimum air space of seventeen (17) percent of the liquid depth must be provided.

3. Tank Inlet and Outlet

- a. The inlet and outlet of the septic tank must be large enough to accommodate a four (4) inch schedule forty (40) pipe and be equipped with a sanitary tee or baffle.
- b. The inlet and outlet pipes must extend a minimum of three (3) feet onto undisturbed soil before entering and after exiting the septic tank.
- c. The inlet invert shall enter the septic tank a minimum of two (2) inches above the liquid level of the tank. The inlet tee or baffle shall be provided to divert the incoming sewage downward and extend a minimum of six (6) inches below the liquid level of the tank.
- d. The outlet tee or baffle shall extend eighteen (18) inches below the liquid depth of the tank.

4. Baffle Walls and Two Compartment Tanks

- a. The first compartment shall be between sixty (60) and sixty-seven (67) percent of the total capacity of the tank.
- b. The baffle forming the two (2) compartments shall have an opening four (4) to six (6) inches wide, located in the center of the baffle and at fifty (50) percent of the liquid depth of the tank.
- c. If the tank is to be made of concrete, the baffle wall shall be constructed of concrete and be structurally sound. This shall be interpreted as a minimum of three thousand (3000) pound concrete containing six (6) inch by six (6) inch number ten (10) concrete wire and having a minimum thickness of two and one-half inches.
- d. Baffle walls shall be securely and permanently fastened to the septic tank. All fasteners shall be of sound and durable material not subject to corrosion or decay.

5. Access Openings

- a. A resealable opening above each tee and baffle must be provided in each tank top. These openings provide for cleaning or rodding out of the inlet or outlet pipe and access for pumping.
- b. Openings covering the inlet and outlet shall be accessible and visible at finished grade once the septic tank is covered.
- c. Rectangular openings shall be a minimum of fifteen (15) inches by fifteen (15) inches as measured from the bottom side of the lid of the septic tank.
- d. Circular openings shall be a minimum diameter of seventeen (17) inches as measured from the bottom side of the lid of the septic tank.
- e. Multi-slab tank lids and one piece lids that can be removed manually to include but not limited to steel and fiberglass require the slab or lid over the inlet and outlet tee or baffle to have a minimum access opening of 6 inches by 6 inches if rectangular or 8 inches in diameter if round.
- f. All concrete covers, access openings and slabs must have a handle of 3/8 inch steel rebar or other corrosive resistant material of the size necessary to facilitate the removal of the cover, opening or slab.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.5. **Effluent Filters:** Effluent filters shall meet the following criteria:

1. The filter shall retain all partials greater than one-eighth (1/8) inch in size.
2. The assembly shall perform as a conventional tank outlet, meeting the requirements of Rule 5.1.4.3, when the filter is removed.
1. The filter must be designed to handle the flow of the system it is to serve and not result in excessive maintenance. For a single family dwelling, maintenance is considered “excessive” when the filter requires service or cleaning more than one (1) time per year. Service shall be performed each time the tank is pumped, and in accordance with manufacturer’s specifications.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.6. **Minimum Standards for Septic Tank Construction**

1. General

- a. All septic tanks manufactured for sale in the state of Mississippi shall bear an imprint identifying the manufacturer, the serial number assigned to the manufacturer's plans and specifications approved by the Department, the liquid or working capacity of the tank and be marked with the date of manufacture. These imprints and markings must be visible at the time of inspection by the Department.
- b. All openings and lids shall be capable of being sealed in a way that will prevent entrance of surface water and groundwater.
- c. Tank openings shall be securely fastened or sealed to prevent unwarranted access to the contents of the tanks vandal, tamper and child resistant. Acceptable protection of openings may include, but is not limited to:
 - i. A padlock
 - ii. An "O" ring with twist lock cover requiring special tools for removal
 - iii. Covers weighing sixty-five (65) pounds or more, net weight
 - iv. Stainless steel or other corrosion resistant fasteners for fiberglass or polyethylene lids.

2. Prefabricated Concrete Septic Tank

- a. A minimum twenty-eight (28) -day concrete compressive strength of three thousand (3,000) pounds per square inch must be used in the construction of the septic tank. The concrete must achieve a minimum compressive strength of two thousand five hundred (2,500) pounds per square inch before removal of the tank for the manufactured site. It shall be the responsibility of the manufacturer to certify that this condition has been met before shipment. Accelerated curing in the mold by use of propane gas or other fuels is prohibited, except by accepted methods and upon approval of the Department.
- b. Lids, walls and bottom thickness must be a minimum of three (3) inches. The bottom and walls must be a monolithic pour.

3. Steel Septic Tanks

- a. Steel septic tanks must meet Underwriter's Laboratory Standard UL-70 for the tank coating. Only tanks listed as approved under the current published listing will be approved for installation.

4. Fiberglass and Polyethylene Septic Tanks

- a. Resins and sealants used in the tank manufacturing process shall be capable of effectively resisting the corrosive influences of the liquid components of sewage, sewage gases and soil burial. Materials used shall be formulated to withstand shock, vibration, normal household chemicals, earth and hydrostatic pressure when either full or empty.
- b. Not less than thirty (30) percent of the total weight of the tank shall be fiberglass reinforcement. Fiberglass tanks with an effective liquid capacity of not over one thousand five hundred (1,500) gallons shall have a minimum wall thickness of 1/4 inch. However, a wall thickness of not less than 3/16 inch will be allowed in small isolated areas of a tank.
- c. Internal surfaces shall be coated with an appropriate gel coating to provide a smooth, porefree, watertight surface.
- d. Tanks shall be constructed so that all parts of the tank meet the following mechanical requirements:
 - i. Ultimate tensile strength - minimum twelve thousand (12,000) PSI when tested in accordance with ASTM D 638-89, Standard Method of Test for Tensile Properties of Plastics.
 - ii. Flexural strength - minimum nineteen thousand (19,000) PSI when tested in accordance with D 790-86, Standard Method of Test for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - iii. Flexural modules of elasticity - minimum eight hundred thousand (800,000) PSI when tested in accordance with ASTM D 790-86 , Standard Method of Test for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- e. A test report from an independent testing laboratory is required to substantiate that individual tank design and material formulations meet the requirements of Rule 5.1.6.4.d.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.7. Minimum Standards for Concrete Reinforcement:

- 1. Tanks Reinforced with Welded Steel Concrete Wire
 - a. The reinforcing wire shall be a minimum number ten (10) gauge six (6) inch on centers. The reinforcing wire shall be lapped a minimum of six (6) inches.

- b. Lids for prefabricated septic tanks shall have one (1) 3/8 inch steel reinforcing rod per foot of length and width.
2. Tanks Reinforced with Synthetic Structural Fibers
- a. Manufacturer of synthetic structural fibers shall provide certification showing fibers meet the requirements of outlined in this section.
 - b. Synthetic fibers shall be monofilament and made of a polypropylene or polypropylene/polyethylene blend in accordance with ASTM C 1116, Section 4.1.3, Part III.
 - c. Synthetic structural fibers shall have minimum length of 1.5 inches.
 - d. Synthetic structural fibers shall produce concrete with a minimum average residual strength of one hundred fifty (150) psi when tested in accordance with ASTM C 1399.
 - e. Fiber dosage rate shall be a minimum of 3 lb/yd³ of concrete.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.8. **Maintenance:** The septic tank should be pumped at a frequency depending on the wastewater flow. The recommended pumping cycle is three (3) to five (5) years, but pumping should not occur until the settleable solids have reached a depth of 1/3 the septic tank liquid depth. This can be determined by “sticking” the tank.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.1.9. **Septic Tank Sizing:** The effective liquid capacity of septic tanks for dwellings shall be based on the number of bedrooms proposed or anticipated as shown in the table below:

Number of Bedrooms	Number of Occupants	Minimum Effective Liquid Capacity (gallons) without baffle or effluent filter	Minimum Effective Liquid Capacity (gallons) with baffle or effluent filter
2 or less	4 or less	750	750
3	6	900	900
4	8	1200	1000
5	10	1500	1250
6	12	1800	1500

For each additional bedroom add 260 gallons

For each additional occupant over 2 per bedroom add 130 gallons

For a nonresidential application, the septic tank will be sized at twice the estimated daily flow

SOURCE: Miss Code Ann. §41-67-3

Subchapter 2. ADVANCED TREATMENT SYSTEMS

Rule 5.2.1. General:

1. All Advanced Treatment Systems installed in the state of Mississippi shall be in compliance with the current revision of the *National Sanitation Foundation/American National Standard Institute International Standard 40 or 245* testing protocol, hereby incorporated into regulation by reference and shall be certified by an approved third party certification program. The Division will maintain a current listing of registered and certified manufacturers. The current list will be made available by the Department.
2. The Department shall only approve individual Advanced Treatment Systems that have no discharge of wastewater off the property of the generator.
3. All Advanced Treatment Systems must be installed according to the Certified Manufacturer's specifications by a factory-trained installer that is an authorized representative of the manufacturer.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.2.2. Definitions:

1. Aerator – a mechanical device that provides dissolved oxygen to an Advanced Treatment System.
2. Advanced Treatment System – treatment component that utilizes oxygen to degrade or decompose wastewater.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.2.3. Location:

1. Advanced Treatment Systems shall be installed level on undisturbed soil. If leveling or elevation change is necessary, the Advanced Treatment System must be placed on a bed of sand.
2. It is recommended the outlet of the Advanced Treatment System should be placed so as not to be below the Seasonal High Water Table.
3. An Advanced Treatment System should not be located in an area that collects surface water. This water may enter the Advanced Treatment System causing a

failure by flooding. This flooding will cause the effluent to be discharged before it is properly treated.

4. The Advanced Treatment System must be installed according to the following minimum distances:
 - a. foundations five (5) feet
 - b. property lines ten (10) feet
 - c. potable water supplies and all private wells fifty (50) feet
5. The area over the Advanced Treatment System shall not be used for vehicular traffic or vehicular parking.
6. Advanced Treatment Systems shall not be located under dwellings or other structures.
7. Where all or part of the Individual On-site Wastewater Disposal System is proposed to be installed on property other than the owner's, an easement in perpetuity shall be legally recorded in the proper county. The easement shall be of sufficient area to permit access, construction and maintenance of the Individual On-site Wastewater Disposal System.
8. Easements or right-of-way areas for utilities, surface or subsurface drainage, roads, streets, ponds or lakes shall not be used as available space for location of Individual On-site Wastewater Disposal Systems.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.2.4. Inlet and Outlet:

1. The inlet and outlet must be schedule forty (40) pipe four (4) inches in diameter. A three (3) inch house sewer stubout, when used, shall be connected to the four (4) inch pipe from the septic tank inlet using manufactured fittings designed for that purpose.
2. The inlet and outlet pipe (schedule 40 four (4) inch) must extend a minimum of three (3) feet onto undisturbed soil before entering and after exiting the Advanced Treatment System.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.2.5. Maintenance

1. All advanced Treatment Systems should be pumped at a frequency based on the

wastewater volume generated by the residence or establishment. The pumping cycle will depend on the level of the sludge in the Advanced Treatment System. The sludge should not be allowed to accumulate more than the recommended depth specified by the manufacturer of the Advanced Treatment System. If the sludge is allowed to discharge, a clogging problem may occur if any additional treatment or disposal system is used in conjunction with the Advanced Treatment System.

1. All Advanced Treatment Systems shall be maintained and inspected as required by the Certified Manufacturer.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.2.6. **Aerators:** The type of aerator used with the Advanced Treatment System is mandated by the manufacturer. The maintenance of the aerator is outlined in the manual provided by the Certified Manufacturer or his authorized representative.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.2.7 **Sizing:**

Number of Bedrooms	Minimum Capacity (gallons per day)
2 or less	400
3	400
4	520
5	650
6	780

For each additional bedroom add 130 gallons

For each additional occupant over 2 per bedroom add 65 gallons

For a nonresidential application, use the estimated daily flow

SOURCE: Miss Code Ann. §41-67-3

Subchapter 3. PUMPS AND PUMP CHAMBERS

Rule 5.3.1. Effluent pumping is required in cases where the disposal site is at a higher elevation than the treatment facility or the disposal system is one that utilizes pressure distribution. In these cases the effluent must be moved using pumps. Pumps and associated equipment must be manufactured and warrantied for the purpose of pumping treated wastewater. In all installations the manufacturer's recommendations must be followed. Pumps and pressure lines must be sized correctly to assure that the system is hydraulically sound.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.3.2. **General:**

1. Pump chambers shall have a storage volume as required per each system type, for subsurface drip, overland disposal and spray systems. Pump chambers for septic tank systems shall be a minimum of 400 gallons.
2. The pump chamber shall be constructed to withstand normally encountered earth pressures and manufactured with approved materials resistant to the corrosive effects of wastewater, common household chemicals and chemicals used for disinfection.
3. The pump chamber shall be equipped with an audible high water alarm.
4. The pump chamber shall have a grade level access large enough to allow servicing and/or removal of the largest component in the chamber. Access ports shall be protected against unauthorized entrance.
5. The pump chamber shall be vented through the grade level access or by means of a separate vent. In either case the vent shall be a minimum of one inch in diameter.
6. All openings shall be sealed with a mastic, butyl rubber or other pliable sealant that is waterproof, corrosion resistant and approved for use in contact with wastewater and chemicals used for disinfection, in a manner to prevent the entrance of surface and groundwater.
7. When pumping to normally gravity fed systems the use of a stilling chamber (baffled distribution box) shall be required. The stilling chamber must be sized larger than the maximum volume pumped in a single dose so as not to flood the chamber.
8. The stilling chamber shall be constructed and placed so it will drain between doses into the treatment and/or disposal site.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.3.3. Minimum Pump Specifications:

1. The pump shall be equipped with a low water cutoff to prevent damage during low water conditions in the dosing chamber.
2. The pump shall be constructed of corrosion resistant materials suitable for effluent pumping.
3. The pump shall be sized per manufacturers' specifications to meet or exceed the hydraulic requirements of the system.

4. The pump shall be installed in compliance with manufacturers' specifications so as not to violate the pump warranty.
5. The suction and pressure lines shall be PVC schedule 40 or equal and be sized to meet the hydraulic requirements of the system.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.3.4. Electrical: All electrical components shall be in compliance with the National Electrical Code.

SOURCE: Miss Code Ann. §41-67-3

Subchapter 4. AGGREGATE

Rule 5.4.1. In a conventional onsite wastewater system treatment begins in the septic tank, under anaerobic conditions. Final treatment and disposal takes place in the soil of the drainfield, an aerobic environment. It is necessary for this aerobic condition to exist in the soil of the drainfield for proper treatment of the effluent.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.4.2. Definitions:

1. Aggregate System - any subsurface disposal system that utilizes gravel, crushed stone, tire chips or other approved aggregate media.
2. Conventional Subsurface Aggregate Disposal System - any gravity-fed subsurface disposal field utilizing a loose aggregate media ranging from 36 to 12 inches in depth.
 - a. Standard Subsurface Disposal 25 in. to 36 in.
 - b. Shallow Subsurface Disposal 12 in. to 24 in.
3. Tire Chips - Coarse aggregate made from recycled tires to substitute volumetrically for mineral aggregate for use as media in a conventional subsurface disposal field.

SOURCE: Miss Code Ann. §41-67-3

Rule 5.4.3. Site Evaluation:

1. Information obtained during the soil and site evaluation will determine which type(s) of IOWDS may be utilized for an individual lot.