

**Lee County Health Department
Environmental Services**

**Private Sewage Disposal System
Rules and Regulations Handbook**



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PRIVATE SEWAGE DISPOSAL SYSTEM RULES & REGULATIONS

Purpose

The purpose of a private sewage disposal system is to dispose of the wastes and provide adequate treatment so that water wells and recreational waters of the state are protected from sewage contamination.

Permit

A permit is required to install a new system or reconstruct an existing system. Permits cost \$500.00 and are valid for six months after application.

Construction or Alteration

Whenever reconstruction of an existing on-site system is necessary, the total system shall be evaluated for effluent quality, maintenance, and compliance with current state code. Secondary treatment shall be required on all systems issued a reconstruction permit. All private sewage disposal systems constructed or altered after March 18, 2009, shall comply with chapter 69. Alteration includes any changes that affect the treatment or disposal of the waste. Repair of existing components that do not change the treatment or disposal of the waste are exempt.

Septic Tank

The size of the septic tank and sewage treatment system is based on the number of bedrooms in the home. The minimum divided tank capacity will be 1250 gallons. Effluent screens are required in the outlet of the septic tank.

Setback Distances: The septic tank shall be a minimum of 50 feet from a non-public water supply, 10 feet from a public water supply line, and 10 feet from any building. See table 1 on page 8. Access must be provided to all parts of the septic tanks necessary to enable adequate inspection, operation, and maintenance. Another requirement that will make maintenance easier is the requirement that risers on septic tanks come to ground surface. This change will encourage pumping and maintenance of septic tanks and inspection of the effluent screen in the septic tank.

Septic Tank – Primary Treatment

The primary purpose of the septic tank is to provide an area for solid materials to digest and settle in order to protect the secondary treatment. Septic tanks do not provide complete sewage treatment. To achieve adequate treatment, septic tank effluent must pass through a secondary treatment.

Maintenance

The most important task associated with on-site wastewater treatment systems is the periodic removal of sludge and scum from the septic tank by a licensed pumper. The frequency of solid removal depends on the storage capacity of the tank and the daily load of material discharged into the tank. It is recommended that the tank be pumped at least every 2-3 years under normal use. However, when a garbage disposal is utilized, more frequent pumping may be needed. An annual inspection of the tank will indicate a sludge accumulation to determine when pumping is necessary. Never enter or allow someone to enter a septic tank. Lack of oxygen or the presence of hydrogen sulfide gas can overcome a person and continued exposure can be fatal.

Operating Tips

Remember - septic tanks are designed to trap, store and break down solid materials. Do not flush anything into the septic tank that is not biodegradable, such as baby wipes, high strength paper towels, pharmaceuticals, grease or coffee grinds, etc.

Clear water sources such as water softener, heating-cooling, footing drains, down spouts, etc. must NOT discharge through the sewage system.

Prevent physical damage to the tank by installing in areas away from traffic flow and future construction sites.

Chamber System

A chamber system means a buried structure, typically with a domed or arched top, providing at least a 6-inch height of sidewall soil exposure below the invert of the inlet and creating a covered open space above a buried soil infiltrative surface. Infiltrator is a closed system and commonly used in sandy soil. This system requires a site evaluation and a percolation test to determine absorption capabilities of the soil.

Percolation Tests

Percolation tests shall be conducted by a Soil Scientist or Engineer in 3 locations evenly distributed over the proposed absorption field. The average rate is then used to determine the amount of trench needed to absorb the daily wastewater discharge from the home.

Soil with high clay content will limit the ability to absorb wastewater. Extremely sandy or stony soil may allow too rapid percolation into the water table without providing adequate filtration. Soils with

a percolation rate greater than 60 minutes per inch are unsuitable for a conventional field or lateral system.

Sizing and Layout

The required amount of soil surface area depends on the capacity of the soil to accept wastewater (indicated by the perc test) and the daily discharge of wastewater from the household. An area equal to the absorption field installed shall be reserved for future replacement or expansions, if necessary.

Layout of absorption trenches is influenced by the slope of the site. The trench bottom shall be level to provide even distribution. Distribution lines on sloping sites shall be level to provide even distribution. Distribution lines on sloping sites shall be laid along the contours of the land to maintain a level trench bottom. All distribution trenches shall be separated. Six feet of undisturbed soil shall be left between each trench edge on level sites and no longer than 100 feet each. The depth should not exceed 36 inches in a conventional absorption system.

Distribution Box

The distribution box or formation of pipes must be installed on undisturbed earth in a manner which maintains an equal distribution of wastewater.

Distribution Piping

The distribution piping shall consist of 4 inch perforated PVC. Perforations shall be from 1/2 inch to 3/4 inch in diameter. The distribution lines shall be laid on a minimum of 6 inches of 3/4 inch to 2-1/2 inch stone screened from river sand or quarried and washed free of clay and clay coatings. Concrete aggregate designed as class II by the Department of Transportation is acceptable. Distribution lines shall be level. Ends of distributors must be capped or interconnected with solid 4 inch PVC pipe. Cover pipe with approved river rock or washed concrete stone, and then a layer of untreated building paper, synthetic drainage fabric, or other approved material shall be laid as to separate the gravel from the soil backfill. To increase the longevity of a properly installed soil absorption system, we suggest the following measures be taken:

- (1) Keep all unnecessary traffic off of the absorption area.
- (2) Direct all surface water away from the absorption area.
- (3) Provide ventilation to the system by a common vent or vents connected to each lateral.

Sand Filters

The subsurface sand filter system is used mainly in clay soils, and requires an open drain for the effluent discharge.

The filter consists of one filter bed with distribution lines (top) and collector lines (bottom) separated by clean, washed concrete sand. The collector lines are laid on a grade of one inch in 10 feet and the upper ends are capped. The downstream ends of collectors must be interconnected and outlet to ground surface. A vent shall be placed on the downstream end of the collector lines, and extend at least 12 inches above the ground surface. Four inches of clean washed rock 3/4 inch to 2-1/2 inches in size shall be placed over the line. Three inches of washed pea gravel 1/8 inch to 3/8 inch in size is then placed over the 4 inches of washed rock. An approved drainage fabric may be used in lieu of the pea gravel. Drainage fabric must be 30 by 50 mesh with a percolation rate of at least 5 gallons per square foot.

The bed is then filled to grade with 30 inches (per Lee County Ordinance 2011) of coarse washed sand and leveled. Six inches of gravel is placed on the sand to act as bedding for the distribution lines.

The distribution lines shall be laid level and shall be horizontally spaced a maximum of 3 feet apart, center to center.

Venting shall be placed on the downstream end of the distribution lines with each distribution line connected to a common vent. Vents shall extend at least 12 inches above the ground surface with the outlet screened, or provided with a perforated cap.

Enough gravel shall be carefully placed to cover the distribution lines.

A layer of untreated building paper of 40 to 60 pound weight or synthetic drainage fabric shall be placed upon the top of the upper layer of gravel.

A minimum of 12 inches of backfill shall be applied.

When the discharge of a sand filter is hooked to a common collector drain, a sampling port with a riser brought to ground level and capped shall be installed in the discharge line ahead of the common collector.

Any onsite wastewater treatment system that discharges to a designated water of the state will need a National Pollution Discharge Elimination System (NPDES) permit.

Distribution Box

The distribution box or formation of pipes must be installed on undisturbed earth in a manner which maintains an equal distribution of wastewater.

Sand Filter Variations Using Pumps

If a sand filter must be constructed where adequate elevation is not available to operate by gravity, a pump pit may be installed at the discharge point of the sand filter to lift the effluent to ground surface. Durable, corrosion-resistant pumps, where required, should be installed in water-tight pits of sufficient size.

Note: If the sand filter effluent is discharging into the county ditch right of way, a permit from the Lee County Engineer must be obtained *prior* to installation.

Time of Transfer Inspections

On July 1, 2009, the time of transfer septic system inspection law (SF261) went into effect. The new law requires that every home/building served by a septic system have that septic system inspected prior to the sale or deed transfer for the home/building. The purpose of the law is to eliminate sub-standard or polluting septic systems. A sub-standard septic system is one that has no treatment (secondary treatment) following the septic tank or has a secondary treatment system that has failed. These sub-standard septic systems pose an environmental and public health hazard and require repair. If a property owner has a septic system with a septic tank AND a secondary treatment system, such as a sand filter or soil absorption system, and it is not creating a public health or environmental hazard, it does not have to meet current code. All inspections must be conducted by an inspector that has been certified by the Iowa Department of Natural Resources.

If a private sewage disposal system is failing to ensure effective wastewater treatment or is otherwise improperly functioning, the private sewage disposal system shall be renovated to meet current construction standards. The Iowa Department of Natural Resources requires and agreement for installation either by the seller or the buyer, within a reasonable time period as determined by the county.

Inspections must be conducted by an inspector certified by the Iowa Department of Natural Resources. In order to be a certified time of transfer inspector, an individual shall have met the experience requirements, have successfully completed the inspection course and examination, and have been issued a current certificate by the Iowa Department of Natural Resources.

The inspection shall be conducted using DNR Form 542-0191, Time of Transfer Inspection Report.

An inspection is valid for a period of two years for any ownership transfers during that period.

Prior to an inspection, the certified inspector shall contact the administrative authority to obtain any permits, as-built drawings or other information that may be available concerning the system being inspected. Information may also be obtained from service providers or the

homeowner. If an as-built drawing is available, the system inspection shall verify that drawing. If no as-built drawing is available, the inspector shall develop an as-built drawing as part of the inspection.

At the time of inspection, any septic tank(s) existing as part of the sewage disposal system shall be uncovered and have the contents pumped out and disposed of according to 567—Chapter 68. In the alternative, the owner may provide evidence of the septic tank is being properly pumped out within three years prior to the inspection by a commercial septic tank cleaner licensed by the department, which shall include documentation of the size and condition of the tank and its components at the time of such occurrence. If the septic tank(s) is opened, the condition of the tank and its components shall be documented and included in the final report.

Pump chambers or vaults shall be opened for inspection, and the pump shall be tested to ensure proper operation.

Proof that a secondary treatment system is in place must be provided. This proof may include, but is not limited to:

- (1) Opening a distribution box or uncovering a header pipe for a soil absorption system. Existing distribution boxes shall be opened for inspection.
- (2) Verification of the existence of a sand filter by locating the vents and discharge pipe.
- (3) Locating and opening the lid(s) of an advanced treatment unit.
- (4) Absorption fields shall be probed to determine their condition. The condition of the fields shall be noted on the inspection report. The condition of the absorption field may also be determined with a hydraulic loading test.

An effluent test shall be performed on any legally discharging private sewage disposal system. The effluent shall be tested to determine if it meets the requirements of NPDES General Permit No. 4, and the test results shall be included in the inspection report.

- (1) The certified inspector shall ensure that a legally discharging private sewage disposal system has an NPDES General Permit No. 4, if applicable.
- (2) The certified inspector shall ensure that a Notice of Intent to discharge is submitted to the department for coverage under NPDES General Permit No. 4.

An advanced treatment unit, such as an aerobic treatment unit, textile filter, peat filter or fixed activated sludge treatment system, shall be inspected according to the manufacturer's recommendations.

Private sewage disposal systems not mentioned above shall be inspected for code compliance, and an effluent sample shall be taken if applicable. Any components of the private sewage disposal system not mentioned above shall be inspected for proper function. Examples of other components include, but are not limited to, effluent screens, tertiary treatment systems, disinfection devices, alarms, control boxes and timers.

Following an inspection, the inspection form and a narrative report describing the condition of the private sewage disposal system at the time of the inspection shall be provided to the county environmental health department, county recorder, Iowa Department of Natural Resources, owner of property, potential buyer, real estate firm, and any interested parties.

Time of Transfer Inspection Exemptions

Iowa Code 455B.172(11): For the purposes of this subsection, “transfer” means the transfer or conveyance by sale, exchange, real estate contract, or any other method by which real estate and improvements are purchased, if the property includes at least one but not more than four dwelling units. However, “transfer” does not include any of the following:

- (1) A transfer made pursuant to a court order, including but not limited to a transfer under chapter 633 or 633A, the execution of a judgment, the foreclosure of a real estate mortgage pursuant to chapter 654, the forfeiture of a real estate contract under chapter 656, a transfer by a trustee in bankruptcy, a transfer by eminent domain, or a transfer resulting from a decree for specific performance.
- (2) A transfer to a mortgagee by a mortgagor or successor in interest who is in default, or a transfer by a mortgagee who has acquired real property at a sale conducted pursuant to chapter 654, a transfer back to mortgagor exercising a right of first refusal pursuant to section 654.16A, a non-judicial voluntary foreclosure procedure under section 654.18 or chapter 655A, or a deed in lieu of foreclosure under section 654.19.
- (3) A transfer by a fiduciary in the course of the administration of a decedent’s estate, guardianship, conservatorship, or trust.
- (4) A transfer between joint tenants or tenants in common.
- (5) A transfer made to a spouse, or to a person in the lineal line of consanguinity of a person making the transfer.
- (6) A transfer between spouses resulting from a decree of dissolution of marriage, a decree of legal separation, or a property settlement agreement which is incidental to the decree, including a decree ordered pursuant to chapter 598.
- (7) A transfer for which consideration is five hundred dollars or less.
- (8) A deed between a family corporation, partnership, limited partnership, limited liability partnership, or limited liability company as defined in section 428A.2, subsection 15, and its stockholders, partners, or members for the purpose of transferring real property in an incorporation or corporate dissolution or in the organization or dissolution of a partnership, limited partnership, limited liability partnership, or limited liability company under the laws of this state, where the deed is given for no actual consideration other than for shares or for debt securities of the family corporation, partnership, limited partnership, limited liability partnership, or limited liability company.
- (9) A transfer in which the transferee intends to demolish or raze the building. A legally binding document verifying that the building will be demolished shall be attached to the form.
- (10) A transfer of property which a system that was installed not more than two years prior to the date of the transfer.
- (11) A deed arising from a partition proceeding.

(12) A tax sale deed issued by the county treasurer.

Table I

Minimum Distance in Feet From	Closed Portion of Treatment System ⁽¹⁾	Open Portion of Treatment System ⁽²⁾
Private water supply well	50	100
Public water supply well	200	200
Groundwater heat pump borehole	50	100
Lake or reservoir	50	100
Stream or pond	25	25
Edge of drainage ditch	10	10
Dwelling or other structure	10	10
Property lines (unless a mutual easement is signed and recorded)	10	10
Other type of subsurface treatment system	5	10
Water lines continually under pressure	10	10
Suction water lines	50	100
Foundation drains or subsurface tiles	10	10

(1) Includes septic tanks, aerobic treatment units, fully contained media filters, and impervious vault toilets.

(2) Includes sub-surface absorption systems, mound systems, intermittent sand filters, constructed wetlands, open bottom media filters and waste stabilization ponds.

Table IIIb

Maximum Soil Loading Rates Based Upon Soil Evaluations in Gallons per Square Foot per Day (gal/ft²/day) for Septic Tank Effluent. Values in () are for secondary treated effluent.

Soil Texture	Single Grain	Massive	Structure Granular, Blocky, or Prismatic			Platy	
			Weak	Moderate	Strong	Weak	Moderate to Strong
Coarse sand and gravel	1.2 (1.6)	X	1.2 (1.6)	X	X	1.2 (1.6)	X
Medium sands	0.7 (1.4)	X	0.7 (1.4)	X	X	0.7 (1.4)	X
Fine sands	0.5 (0.9)	X	0.5 (0.9)	X	X	0.5 (0.9)	X
Very fine sands*	0.3 (0.5)	X	0.3 (0.5)	X	X	0.3 (0.5)	X
Sandy loam	X	0.3 (0.5)	0.45 (0.7)	0.6 (1.1)	0.65 (1.2)	0.4 (0.6)	0.3 (0.5)
Loam	X	0.4 (0.6)	0.45 (0.7)	0.5 (0.8)	0.55 (0.8)	0.4 (0.6)	0.3 (0.5)
Silty loam	X	NS	0.4 (0.6)	0.5 (0.8)	0.5 (0.8)	0.3 (0.5)	0.2 (0.3)
Clay loam	X	NS	0.2 (0.3)	0.45 (0.7)	0.45 (0.7)	0.1 (0.2)	0.1 (0.2)
Silty clay loam	X	NS	0.2 (0.3)	0.45 (0.7)	0.45 (0.7)	NS	NS

NOTE: “X” means not found in nature. “NS” means not suitable for soil absorption.

* Flow rates are difficult to determine for some very fine sands; experience may provide better information and flow rates.

Table IIIc
Minimum Length of Absorption Trenches in Feet

	2 bedroom 300 gal.		3 bedroom 450 gal.		4 bedroom 600 gal.		5 bedroom 750 gal.		6 bedroom 900 gal.	
Width of trench in feet	2'	3'	2'	3'	2'	3'	2'	3'	2'	3'
Soil loading rate gal/ft ²										
0.1	Not suitable for soil absorption trenches									
0.2	750	500	1125*	750	1500*	1000*	1875*	1250*	2250*	1500*
0.3	500	333	750	500	1000*	666	1250*	833*	1500*	1000*
0.4	375	250	562	375	750	500	938*	625	1125*	750
0.5	300	200	450	300	600	400	750	500	900*	600
0.6	250	167	375	250	500	333	625	417	750	500
0.7	214	143	321	214	428	286	536	357	643	429
0.8	188	125	281	188	375	250	469	312	562	375
0.9	167	111	250	167	333	222	417	278	500	333
1.0	150	100	225	150	300	200	375	250	450	300
1.1	136	91	205	136	273	182	341	227	409	273
1.2	125	84	188	125	250	167	313	208	375	250

* Requires pressure distribution (pump)

Table III d
Alternative Option for Use of Absorption Bed*

Percolation Rate min./inch	Absorption Area/Bedroom sq. ft.	Loading Rate/Day gal./sq. ft.
1 – 5	300	.5
6 – 15	400	.375
16 – 30	600	.25

*Absorption beds may only be used when site space restrictions require and shall not be used when the soil percolation rate exceeds 30 min./inch.

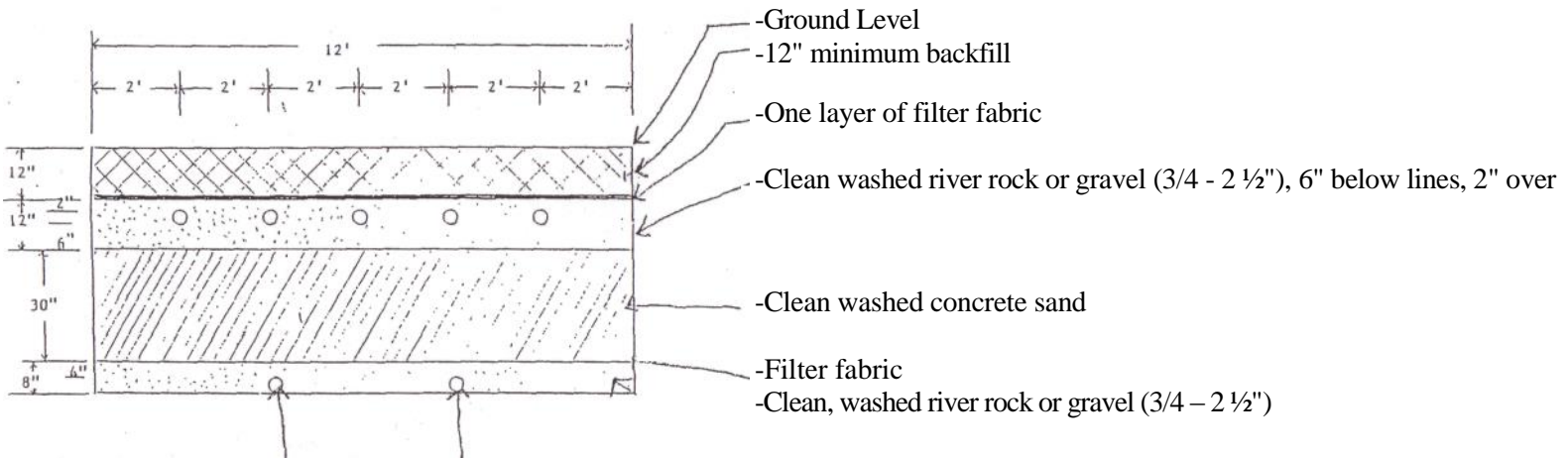
Number of Bedrooms	Tank Size *	Square Footage (gravity flow)	Distributors **	Collectors**
2	1250	480	5	2
3	1250	720	5	2
4	1500	960	5	2
5	1750	1200	5	2
6	2000	1440	5	2

*Liquid Capacity, Two Compartments or Two Tanks in Series.

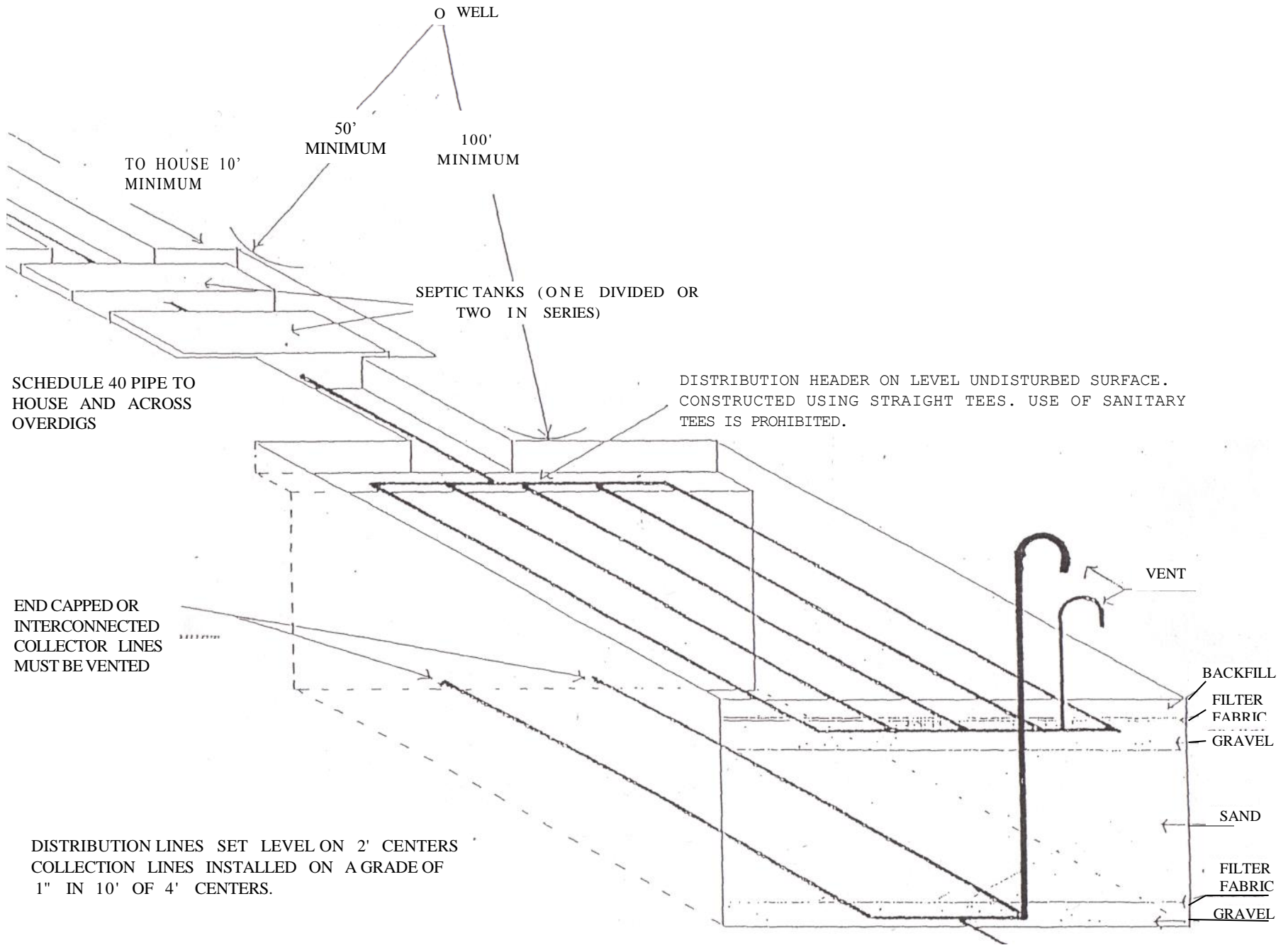
**Number Based on 12 foot width.

Sand Filter Cross Section

Distribution lines installed level on 2' centers, using 4" perforated PVC. A distribution box made of rigid plastic (concrete d-boxes are prohibited), shall be provided for each filter bed where gravity distribution is used, set level on undisturbed ground.



Collector lines laid to a grade of 1" in 10'



SCHEDULE 40 PIPE TO HOUSE AND ACROSS OVERDIGS

END CAPPED OR INTERCONNECTED COLLECTOR LINES MUST BE VENTED

DISTRIBUTION LINES SET LEVEL ON 2' CENTERS
COLLECTION LINES INSTALLED ON A GRADE OF
1" IN 10' OF 4' CENTERS.

DISTRIBUTION HEADER ON LEVEL UNDISTURBED SURFACE.
CONSTRUCTED USING STRAIGHT TEES. USE OF SANITARY
TEES IS PROHIBITED.

VENT

BACKFILL
FILTER FABRIC
GRAVEL
SAND
FILTER FABRIC
GRAVEL

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