

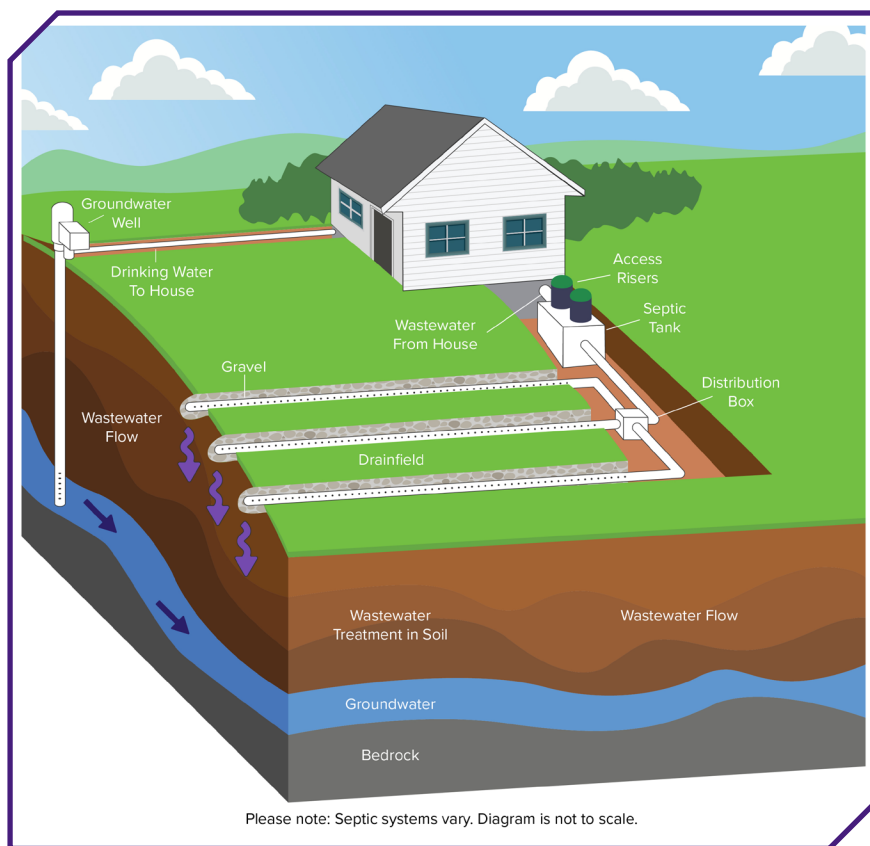
Wastewater Installers

Absorption Trench

A conventional septic system is a primary treatment technique that uses an absorption trench for the secondary treatment of effluent. These trenches can be used where soil conditions are satisfactory, sufficient land space is owned, and it will not cause an issue to public health. The effluent seeps through the aggregate-filled trenches and uses the microbial activity in the soil to convert organic matter from septic tanks into mineral components. In some parts of Louisiana, these systems aren't as common due to soil saturation and high water tables.

Feasibility

To use an absorption trench, one must take into consideration the soil porosity (permeability), groundwater table, available space and the rate at which septic tank effluent enters the soil (percolation rate). The conditions that must be satisfied to install the drain field include an acceptable soil percolation rate, a maximum elevation of groundwater that is at least 2 feet below the bottom of the trench, and that clay or other impervious strata are at least 4 feet below the bottom of the trench. If these criteria are not met, then the installation should include an alternate secondary treatment method. The percolation test will be conducted by a specialist and will determine the permeability which can be correlated to the hydraulic conductivity of the soil. This test is completed by digging three or more separate test holes spaced uniformly along the trench. The holes will be 4 inches



Conventional septic system

wide and 12 inches deep with scratched bottom and sides to remove the smeared surface and mimic natural soils. Before testing, the hole should be prewet with clear water to mimic wet seasons. Once this condition is satisfied, water is added to a depth of at least 6 inches, but not more than 12 inches. This water is monitored over a 60-minute period. If the drop in liquid depth in the first 30 minutes is less than 1 inch, it is unnecessary to continue. The distance that water drops in 60 minutes at each of the three test holes is recorded to determine the percolation rate.

Design

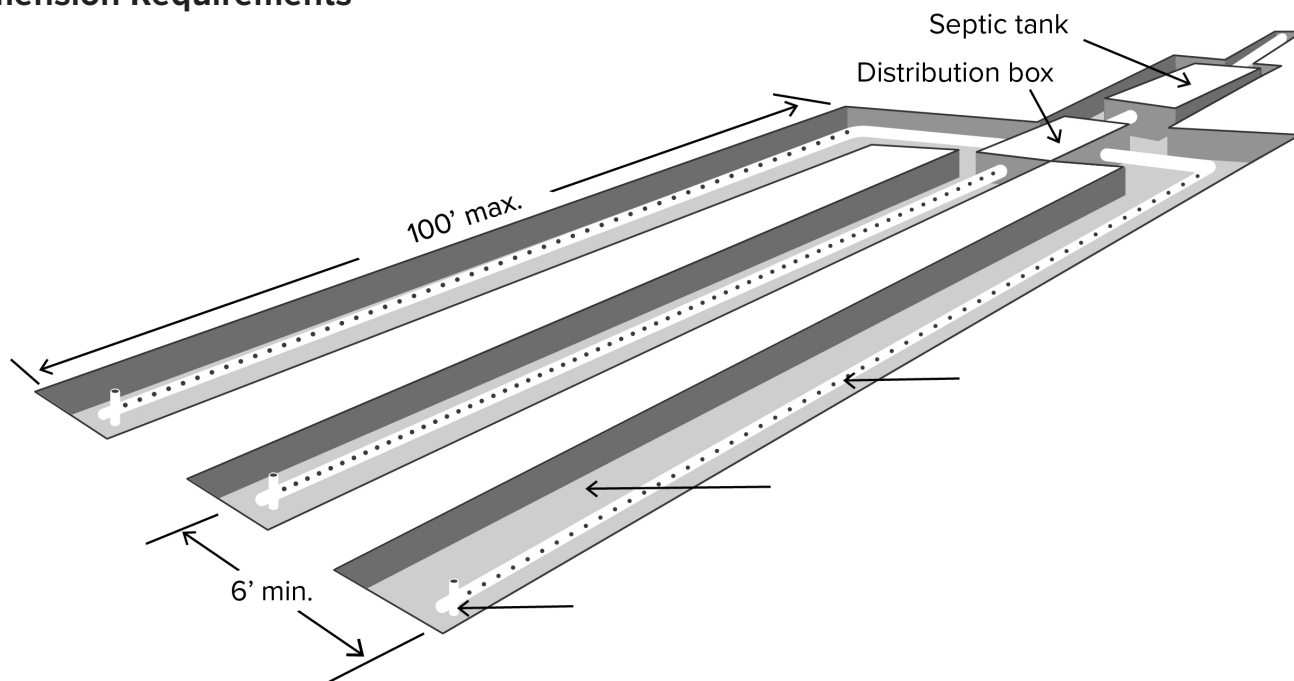
The absorption trench design depends on many different factors such as the size, shape and topography of the area while also being designed for the capacity of the septic system. There is a minimum requirement of two trenches for the drain field with a minimum total distance

of 160 feet. The absorption trench length requirements for residential houses are listed in the table below. Additionally, the trenches must have level bottoms and a distribution box for equal effluent distribution across all trenches.

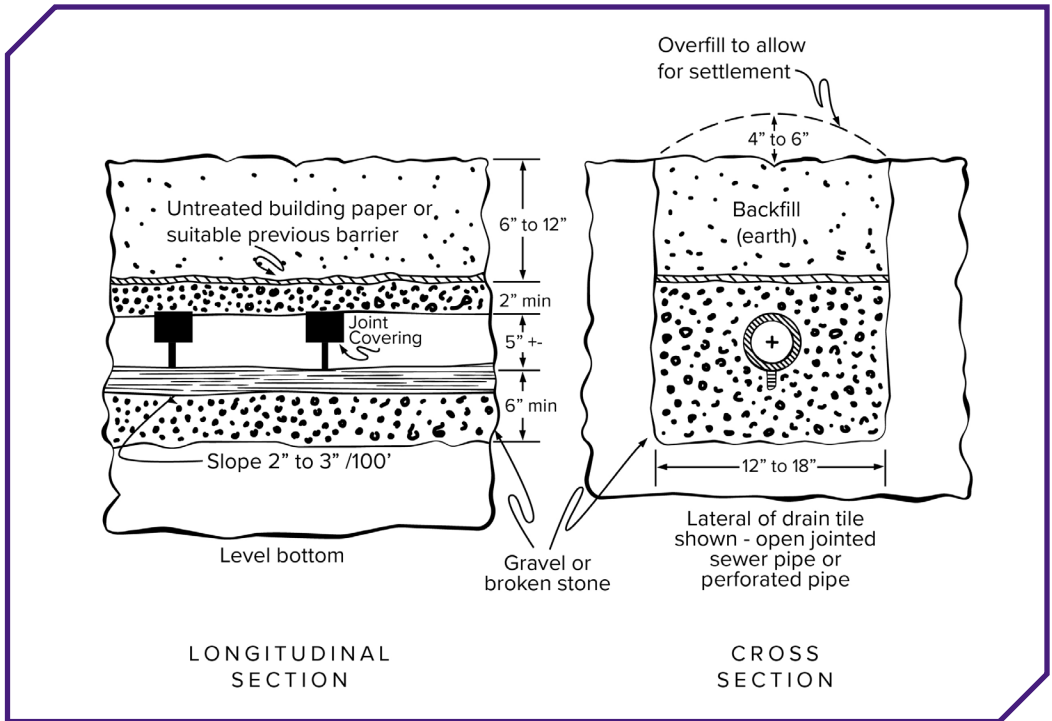
Average Water Level Drop From Percolation Test in 60 Minutes (in inches)	Length of Absorption Trenches Required Per Bedroom* (in feet)
More than 12 minutes	72
12	83
11	87
10	91
9	96
8	100
7	104
6	110
5	117
4	127
3	142
Less than 3	Not acceptable for absorption field

*A minimum of two trenches at a total length of 160 feet will be required for absorption trenches.

Dimension Requirements



The trenches should have a depth of 18 inches, but must not exceed 24 inches. An individual trench will have a maximum length of 100 feet. The centerlines between trenches should be at least 6 feet apart to ensure adequate water dispersion. Absorption trenches must comply with all minimum requirements for water wells and supply lines including a minimum distance of 10 feet from the property line or dwelling. Conventional field lines are laid on a slope of 2-3 inches per 100 feet, but the use of gravelless pipe or other distribution chambers must be laid as close as possible to a slope of 1 inch per 100 feet. Conventional field lines are 4 inches in diameter (perforated nonmetallic pipe) from 1) PVC sewer



2) piping and fittings (thin wall), ASTM D2729-93; 2) smooth wall polyethylene (PE) pipe, ASTM F810-93 (for use in waste disposal absorption fields); or 3) SRP pipe and fittings, ASTM D2852-93.

Specification for Backfill

Care must be taken to protect the soil and prevent sealing of the trench. The excavation process should not take place when soil is wet enough to smear or compact. All disturbed surfaces have to be raked to a depth of 1 inch and loose material removed before the backfill is placed in the trench. Conventional field pipe must be surrounded by clean-graded gravel or rock, brick or similar material. The bedding material size will range from 0.5-2.5 inches in diameter and fill 2 inches above the top of the pipe and at least 6 inches below the pipe. By using previous paper material or landscape fabric, the gravel will remain in place and prevent clogging of the perforated pipe. Gravelless pipe and distribution boxes must

be filled with porous soil or sand with 4-12 inches of pervious soil, hand-tamped, and then overfilled with about 4-6 inches of earth. Absorption trenches should not be located beneath driveways, parking, buildings or other paved structures to prevent compaction. Additionally, areas subject to passage or parking of heavy equipment or vehicles should not be suitable for absorption trenches. To maintain adequate secondary treatment, septic tanks should be inspected every six years after installation and pumped every eight years or as necessary, to prevent solid overflow to the soil absorption trench which could lead to clogging and failure.

Additional Requirements

- The location of the absorption field shall comply with minimum distance requirements from water wells, water lines, etc., as contained in Part XII of the Public Health – Sanitary Code. This includes being a minimum of:
 - 50 feet from any private water wells
 - 10 feet from any property line
 - 100 feet from public water supply wells
 - 25 feet from potable water (pressure) lines

References

- <https://www.doa.la.gov/media/j3hnpfdy/51.pdf>
- <https://ldh.la.gov/assets/oph/Center-EH/sanitarian/onsitewastewater/8145.pdf>
- <https://ldh.la.gov/page/wastewater>

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