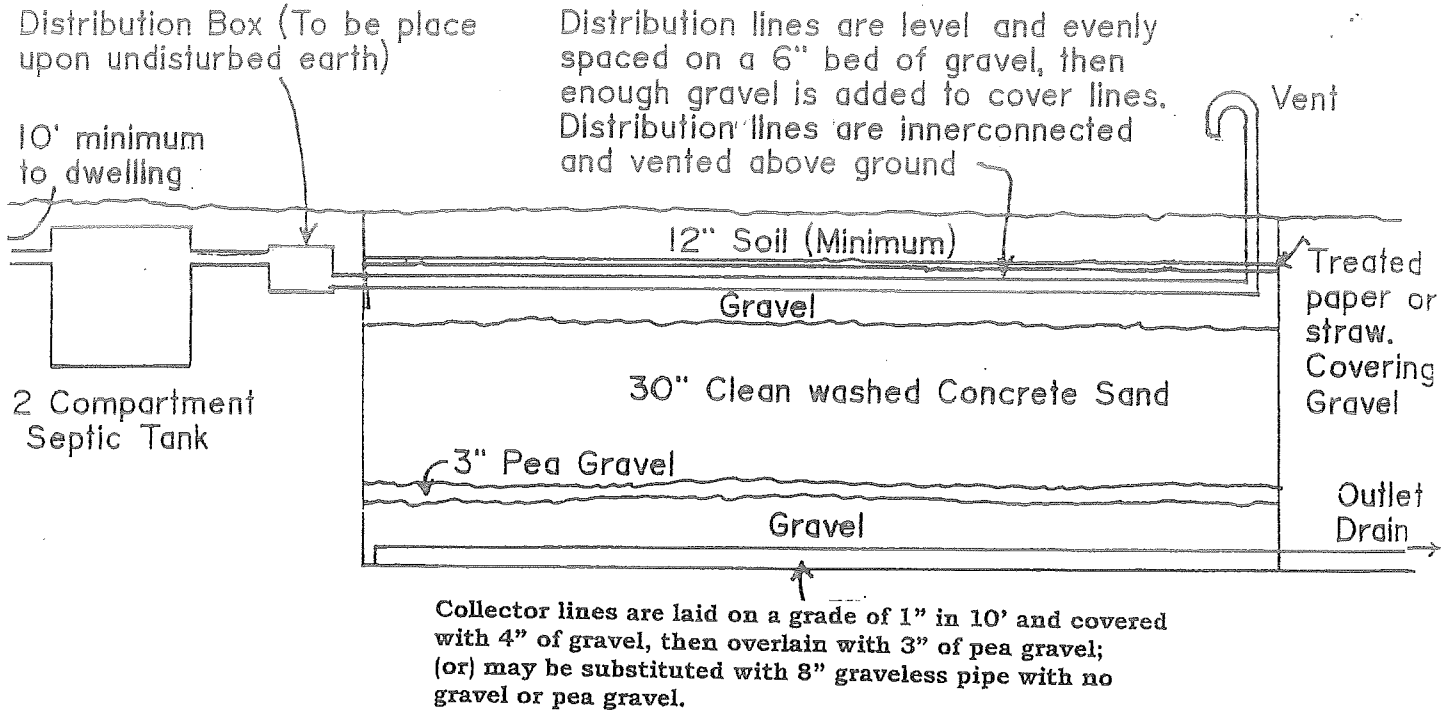
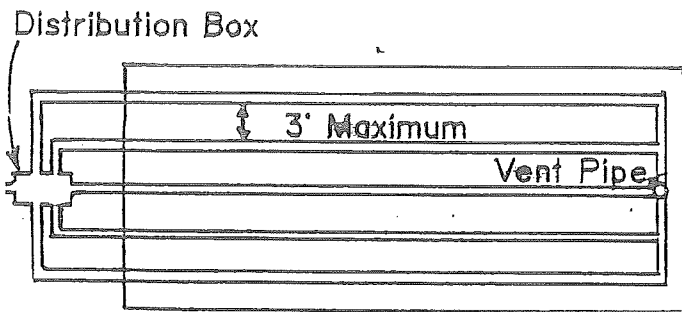


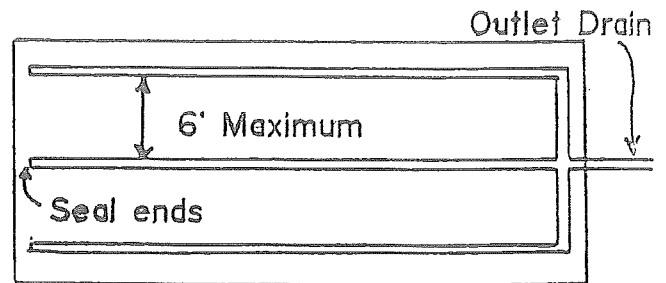
SAND FILTER



SIDE VIEW



DISTRIBUTION LINES LAYOUT



COLLECTOR LINES LAYOUT

(2 Lines minimum)

Required Size : 240 Sq. Ft. per bedroom
 480 Sq. Ft. (2 bedroom)
 720 Sq. Ft. (3 bedroom)
 960 Sq. Ft. (4 bedroom)

Muscatine County Building, Zoning & Environmental Office
 requires a 24 hour notice before an inspection is made of the system.

Our office is open: Monday - Friday 8 a.m. to 4 p.m.
 (closed holidays)

Please call 563-263-0482 for an inspection.

Construction.

- a. Number. A subsurface sand filter shall consist of one filtering bed or two or more filtering beds connected in series and separated by a minimum of 6 feet of undisturbed earth. (6)
- b. Pipelines. Each bed shall contain horizontal sets of distribution lines and collector lines. These lines shall be equivalent to schedule 40 PVC pipe or other suitable materials. (9)
- (1) One collector line shall be provided for each 6 feet of width or fraction thereof. A minimum of 2 collector lines shall be provided. The upper end of each collector line shall be sealed or plugged. (9)
- (2) The collector lines shall be laid to a grade of one inch in 10 feet (or 0.5 to 1.0%). The tops of open joints in the collector lines may be covered with tarred felt (tar paper) to prevent intrusion of the media. (9)
- (3) Gravel $3/4$ inch to 2-1/2 inches in size shall be placed around and over the lower collector lines until there is a minimum of 4 inches of gravel over the pipes. (10)
- (4) The gravel shall be overlain with a minimum of 3 inches of washed pea gravel $1/8$ to $3/8$ inch size interfacing with the filter media. (9)
- (5) A minimum of 24 inches of coarse washed sand shall be placed over the pea gravel. The sand shall have an effective size of 0.5 to 2.0mm with a uniformity coefficient of less than 3.5. Not more than 1.0% of the media shall be less than 0.13mm in size. (9)
- (6) Six inches of gravel $3/4$ inch to 2-1/2 inches in size shall be placed upon the sand in the bed. Distribution lines shall be 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 being vented or 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 distributors. (9)
- (10) A layer of material such as unbacked, rolled 3-1/2 inches thick fiberglass insulation, untreated building paper of 40 to 60 lb. weight, synthetic drainage fabric or 4 inches to 6 inches of marsh hay or straw shall be placed upon the top of the upper layer of gravel. In dry sandy soils, a 4-inch layer of hay or straw covered with untreated building paper is suggested to prevent the backfill from filtering down into the rock unless fiberglass or drainage fabric is used. (11)
- (11) A minimum of 12 inches of backfill shall be provided over the beds. (11)
- c. Distribution boxes. A distribution box shall be provided for each filter bed. (11)
- d. Box location. The distribution boxes shall be placed upon undisturbed earth outside the filter bed. (11)
- e. Distribution. Separate watertight lines shall be provided leading from the distribution boxes to each of the distributor lines in the beds. (11)
- f. Pumps. A pump shall be installed when adequate elevation is not available for the system to operate by gravity. (11)
- (1) The pump shall be of corrosion-resistant material. (11)
- (2) The pump shall be installed in a watertight pit. (11)
- (3) The dosing system shall be designed to flood the entire filter during the dosing cycle. A dosing frequency of greater than two times per day is recommended. (11)
- g. Dosing siphons. When a dosing siphon is used where elevations permit, such siphon shall be installed as follows: (11)
- (1) Dosing siphons shall be installed between the septic tank and the first filter bed. (11)
- (2) Dosing siphons shall be installed with strict the manufacturer's instructions. (11)
- h. Dosing tanks. The dosing tank shall be of such size that the siphon will flood the entire filter during the dosing cycle. A dosing frequency of greater than two times per day is recommended. (11)
- Sizing of subsurface sand filters. (11)
- a. Residential systems shall be sized at a rate of 240 square feet of surface area per bedroom. (11)
- b. Effluent application rates for commercial systems shall not exceed the following: (11)
- (1) 1.5 gallon/square feet/day for double bed sand filters. (11)
- (2) 1.0 gallon/square feet/day for single bed sand filters. (11)
- (3) Total surface area for any sand filter system shall not be less than 200 square feet. (11)