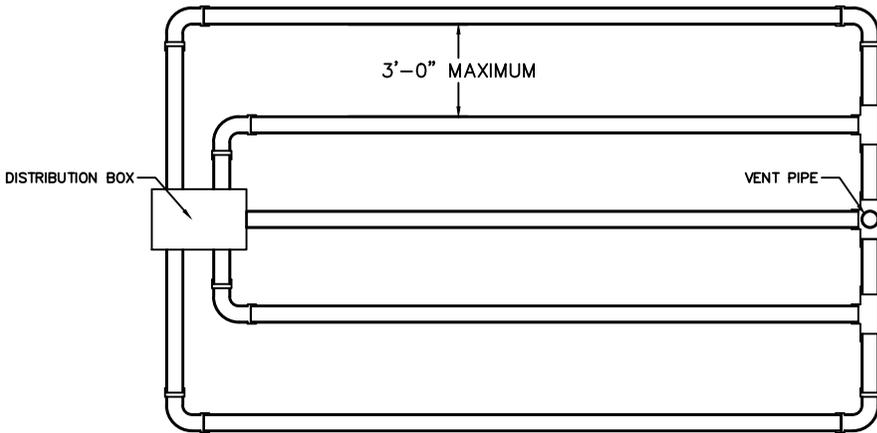
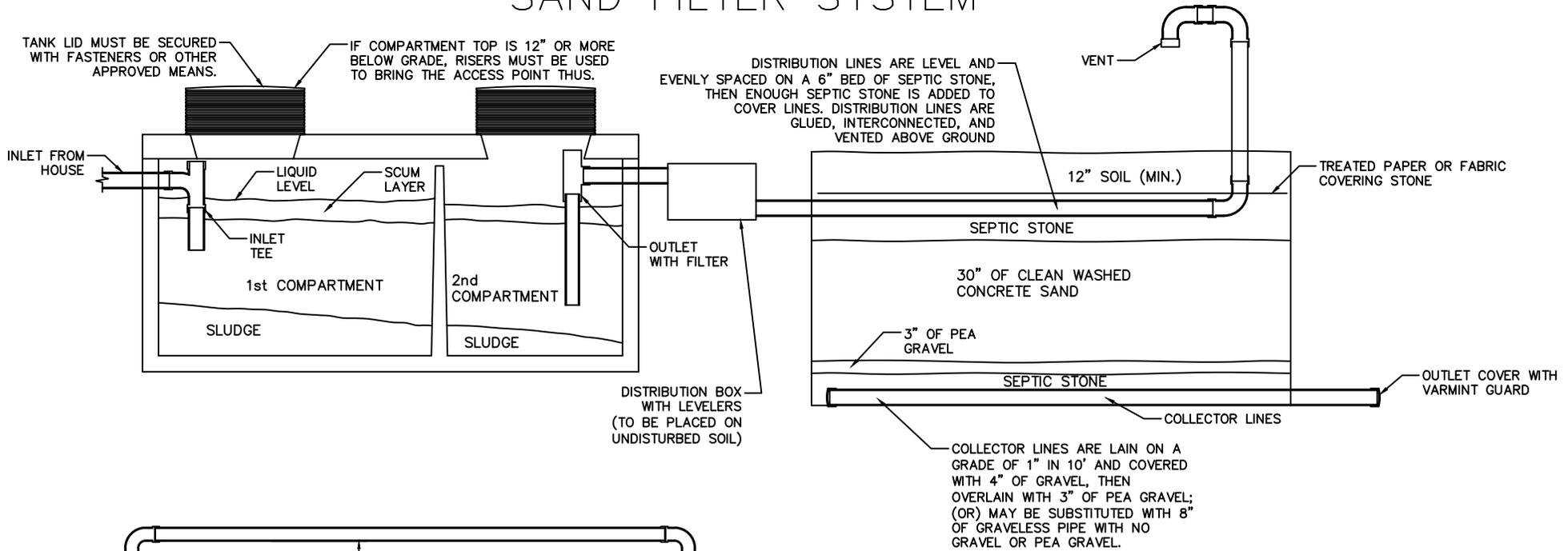
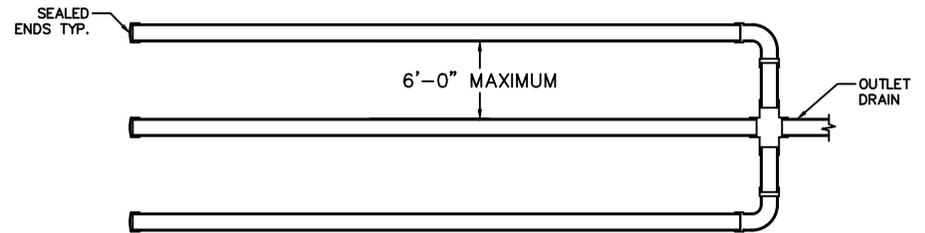


SAND FILTER SYSTEM



DISTRIBUTION LINE LAYOUT
ALL PVC FITTINGS MUST BE GLUED



COLLECTOR LINE LAYOUT
(MINIMUM OF 2 LINES)
ALL PVC FITTINGS MUST BE GLUED

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 7:30 A.M. to 4:00 P.M. (CLOSED HOLIDAYS)

PLEASE CALL 563-263-0482 OR EMAIL Zoning@co.muscatine.ia.us

REQUIRED FIELD SIZE:
240 FT² PER BEDROOM
480 FT² (2 BEDROOM)
720 FT² (3 BEDROOM)
960 FT² (4 BEDROOM)
1200 FT² (5 BEDROOM)

REQUIRED TANK SIZE:
3 BEDROOM OR LESS - 1,250 GALLON
4 BEDROOM HOME - 1,500 GALLON
5 BEDROOM HOME - 1,750 GALLON
6 BEDROOM HOME - 2,000 GALLON

Construction:

- a. Number. A subsurface sand filter shall consist of one filtering bed or two or more filtering beds connected in a series and separated by a minimum of 6 ft of undisturbed earth.
- b. Pipelines. Each bed shall contain horizontal sets of distribution & collector lines. These lines shall be equivalent to schedule 40 PVC pipe or an approved substitution.
 - (1) One collector line shall be provided for each 6 feet of width or fraction hereof. A minimum of 2 collector lines shall be provided. The upper end of each collector line shall be sealed.
 - (2) The collector lines shall be laid to a grade of 1" in 10' (or 0.5 to 1.0%). The tops of open joints in the collector lines may be covered with tarred felt to prevent intrusion of the media.
 - (3) Septic stone ¾" to 2½" in size shall be placed around and over the lower collector lines until there is a minimum of 4" of stone over the pipes.
 - (4) The stone shall be overlain with a min. 3" of washed pea gravel 1/8" to 3/8" interfacing with the filter media.
 - (5) A min. of 24" 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.

- (6) 6" of ¾" to 2½" in size shall be placed up the sand bed.
 - (7) Distribution lines shall be level and shall be horizontally spaced a maximum of 3' apart center to center.
 - (8) Venting shall be placed on the downstream end of the distribution lines with each line being vented or connected to a common vent. Vents shall extend at least 12" above the ground with the outlet screened, or provided with a perforated cap.
 - (9) Enough septic stone shall be carefully placed to cover the distributors
 - (10) A layer of material such as unbacked, rolled 3½" thick fiberglass insulation, untreated building paper of 40-60lb weight or synthetic drainage fabric shall be placed on top of the upper layer of septic stone.
 - (11) A min. 12" of backfill shall be provided over the beds.
- c. Distribution boxes. A distribution box shall be provided for each filter bed.

- d. Box location. The distribution box shall be placed upon undisturbed soil, outside the filter bed.
- e. Distribution. Separate water tight lines shall be provided leading from the distribution boxes to each of the distributor lines in the beds.
- f. Pumps. A pump shall be installed when adequate elevation is not available for the system to operate via gravity.
 - (1) The pump shall be corrosion resistant material.
 - (2) The pump shall be installed in a watertight pit.
 - (3) The dosing system shall be designed to flood the entire filter during the dosing cycle. A dosing frequency of greater than 2 times per day is recommended.
- g. Dosing Siphons. When a dosing siphon is used where elevations permit, such siphon shall be installed as follows:
 - (1) Dosing siphons shall be installed between the septic tank and the first filter bed.
 - (2) Dosing siphons shall be installed with strict adherence to the mfg. instructions.
- 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 2 times per day is recommended.

- a. Residential systems shall be sized at a rate of 240 FT² of surface area per bedroom.
- b. Effluent application rates for commercial systems shall not exceed the following:
 - (1) 1.5 Gal / per Ft² per day for double bed sand filters.
 - (2) 1.0 Gal / per Ft² per day for single bed sand filters.
 - (3) Total Surface area for any sand filter system shall not be less than 200².

Sizing of Subsurface Sand Filters: