

Absorption Trench Design in Hawai‘i

(1) Location.

(A) Absorption trenches shall be located in accordance with section 11-62-32.

(B) Absorption trenches shall not be constructed in soils with a percolation rate slower than sixty minutes per inch or where rapid percolation may result in contamination of water-bearing formations or surface waters.

(C) Absorption trenches shall be located on the property to maximize the vertical separation distance from the bottom of the absorption trench to the seasonal high groundwater level, bedrock, or other limiting layer, but under no circumstance shall the vertical separation be less than three feet. The director may require a greater vertical separation where water-bearing formations are in danger of contamination.

(D) Absorption trenches shall not be constructed in unstabilized fill.

(2) Design.

(A) The minimum absorption area for any absorption trench system shall be based upon a flow of 200 gallons per bedroom per day and in accordance with Table III located in Appendix D, entitled Tables, dated July 1, 2014, and located at the end of this chapter.

(B) The absorption area shall be computed using the bottom area of the absorption trench.

(C) Each absorption trench system shall have a minimum of two trenches.

(D) Each distribution line shall be equal in length.

(E) The maximum length of any one trench shall be one hundred feet.

(F) Absorption trenches shall be at least eighteen inches wide but no more than thirty-six inches wide.

(G) The bottom of absorption trenches shall be at least eighteen inches below the finished grade.

(H) Gravity fed absorption lines and trenches shall have a slope at the rate of two to four inches per hundred feet.

(I) Absorption trenches shall not be installed on land with a slope gradient greater than twelve per cent.

(J) On rolling or sloping land, each absorption trench shall approximate the land surface contour.

(K) A distribution box or header shall be installed between the treatment unit and the absorption trenches.

(L) Each distribution line shall connect individually to the distribution box.

(M) If a header is used, there shall be an equal number of distribution lines on each side of the influent junction. An inspection port shall be provided on the header and shall be brought to grade and fitted with a screw type cap or cover.

(N) If a distribution box is used, a permanent inspection port with a minimum interior diameter of six inches shall be secured to the box cover, brought to the finished grade, and fitted with a screw type cap or cover.

(3) Materials.

(A) The engineer shall be responsible for the choice of materials used in the soil absorption system.

(B) Pipe used for distribution lines shall meet the appropriate ASTM standard or those of an equivalent testing laboratory. Fittings used in the absorption system shall be compatible with the materials used in the distribution lines.

(C) Gravel or crushed stone shall be washed and shall range in size from three-fourths to two and one-half inches.

(D) The material used to cover the top of the stone shall be a filter fabric material or equal.

(4) Construction.

(A) A distribution box or header shall be set level and arranged so that effluent is evenly distributed to each distribution line. Adequate provisions shall be taken to assure stability and provide access for inspection of the distribution lines.

(B) The pipe connecting the distribution box to the distribution line shall be of a tight joint construction laid on undisturbed earth or properly bedded throughout its length.

(C) If a header is used, it should be made of water-tight construction.

(D) When the trenches have been excavated, the sides and bottom shall be raked to scarify any smeared soil surfaces. Construction equipment and other materials not needed to construct the system should be kept off the area to be used for the absorption system to prevent undesirable compaction of the soils. Construction shall not be initiated when the soil moisture is high.

(E) At least six inches of gravel or crushed stone shall be placed in the bottom of the trench.

(F) The distribution line shall be carefully placed on the bedding at a uniform slope and covered with at least two inches of gravel or stone.

(G) The ends of the distribution lines shall be capped or plugged.