

4.11 Extra Drain Rock Trench

Description

A standard trench with 6 inches or more aggregate under the perforated pipe.

Conditions for Approval

1. The site must meet the requirements for a standard system.
2. The bottom of the trench shall be no deeper than 48 inches below the surface.

Calculations

To determine the percent reduction in the standard trench length, find the trench width and the gravel depth below the pipe in Table 4-3.

Table 4-3. Percent Reduction of Standard Trench Length

		Trench Width							
		12"	18"	24"	30"	36"	48"	60"	72"
Gravel Depth Below Pipe	12"	75%	78%	80%	82%	83%	86%	87%	90%
	18"	60%	64%	66%	69%	71%	75%	78%	82%
	24"	50%	54%	57%	60%	62%	66%	70%	75%
	30"	43%	47%	50%	53%	55%	60%	64%	69%

For trench widths not shown in Table 4-3, use Equation 4-10 to find the percent reduction of standard trench length.

$$\text{Equation 4-10. Percent of Standard Trench} = \frac{W'' + 2}{W + 1 + 2D} \times 100$$

Where W = width of trench in feet
D = increased depth of gravel in feet

Example 1: Width of trench = 3 feet; 12 inches of gravel below pipe.

$$\text{Percent of standard trench} = \frac{3 + 2}{3 + 1 + 2(1)} \times 100 = \frac{500}{6} = 83\%$$

Example 2: Width of trench = 6 feet; 12 inches of gravel below pipe.

$$\text{Percent of standard trench} = \frac{6+2}{6+1+2(1)} \times 100 = \frac{800}{9} = 89\%$$

Figure 4-9 shows a typical cross-sectional view of a standard trench utilizing extra drain rock.

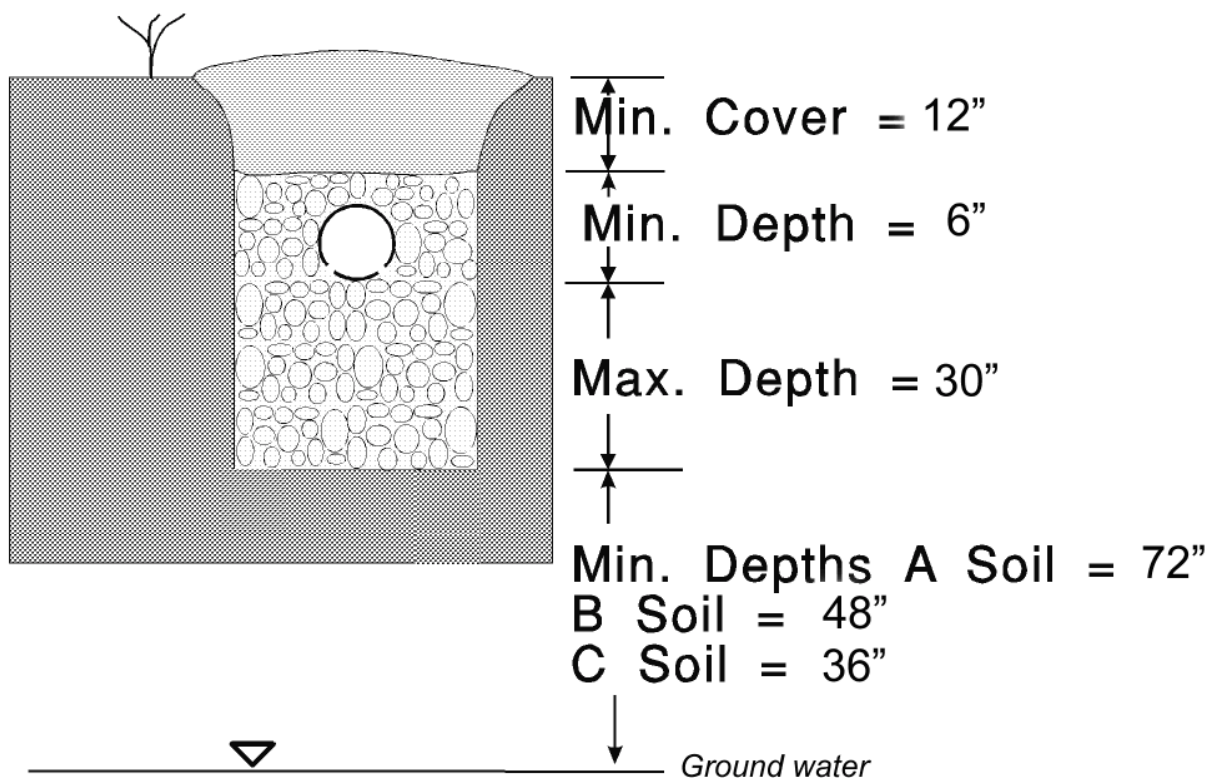


Figure 4-9. Cross-Section of Standard Trench with Extra Drain Rock

As a third example, a three-bedroom home is to be located on a small lot. The effective soil is a uniform silt loam (soil group B-2; see Table 2-4 in the Soils and Ground Water section) with a normal high ground water at 7 feet. Table 2-7 in the Soils and Ground Water section shows the minimum distance from trench bottom to ground water as 3 feet. Maximum depth of the trenches is 4 feet. The total absorption area required for the home is 500 square feet (250 gallons/dwelling/0.5 gallons/ft²/day), equivalent to a standard 3-foot wide and 167-foot long trench. With 30 inches of aggregate under the pipe and a trench width of 36 inches, the trench length would be reduced by 55% (see Table 4-3), from 167 feet to 92 feet.