
FOOTINGS

In order to properly support the loads of a building, footing design must address not only the size of the footing, but factors such as the condition and characteristics of the soil, footing depth, slope, and reinforcing. [\[Ref. R403\]](#)

Depth, bearing, and slope

For other than engineered soil conditions, footings must bear on undisturbed ground and extend below the frost depth to provide a stable foundation. In addition, exterior footings require excavation to at least 12 inches below the undisturbed soil. Vegetation, wood, debris, loose or frozen soil, and any other detrimental materials are removed prior to placing concrete (Figure 5-3). [\[Ref. R403.1.4\]](#)

Placing footings below the frost depth protects foundations from the expansive effects of freezing and thawing soil. Otherwise, frost heave can exert stresses sufficient to cause significant damage to a foundation. The code offers exceptions to the frost depth requirements where damaging effects of frost heave are negligible. Accessory buildings with an eave height of 10 feet or less and limited in area—600 square feet for light frame construction and 400 square feet for other construction—and decks not attached to a dwelling do not require frost protection. The code also permits frost-protected shallow foundations utilizing rigid polystyrene insulation.

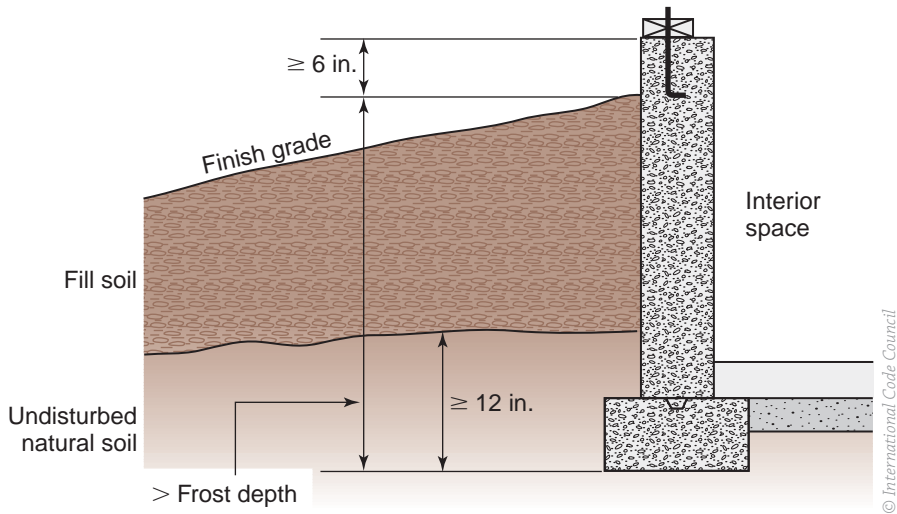


FIGURE 5-3 Depth of footings

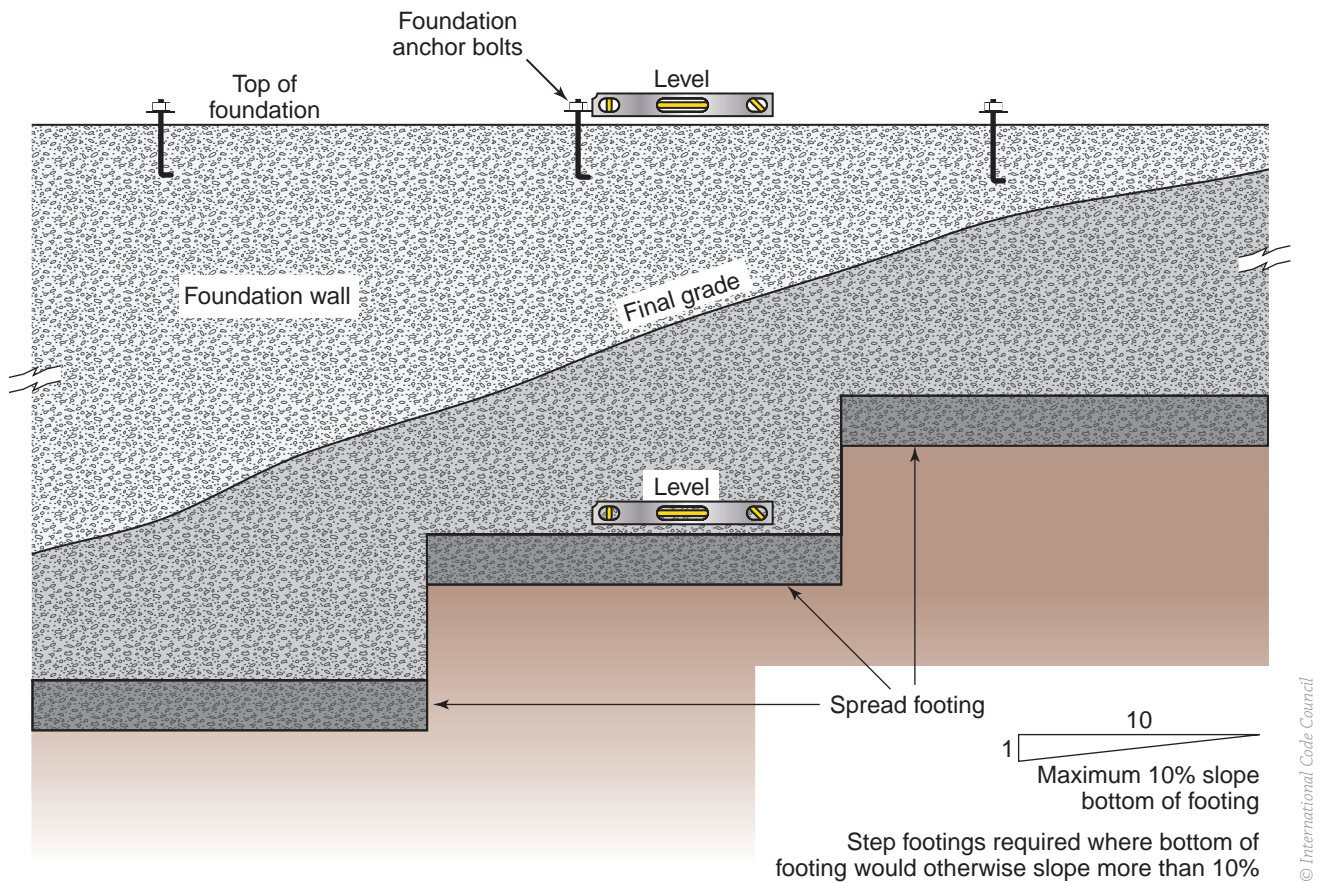


FIGURE 5-4 Stepped footing

To prevent sliding and to adequately transfer loads to the soil, the code limits the slope of the bottom of footings to a maximum 1 unit vertical in 10 units horizontal (10 percent slope). Transitions that would result in greater slopes must be achieved through stepping of the footings (Figure 5-4). [\[Ref. R403.1.5\]](#)