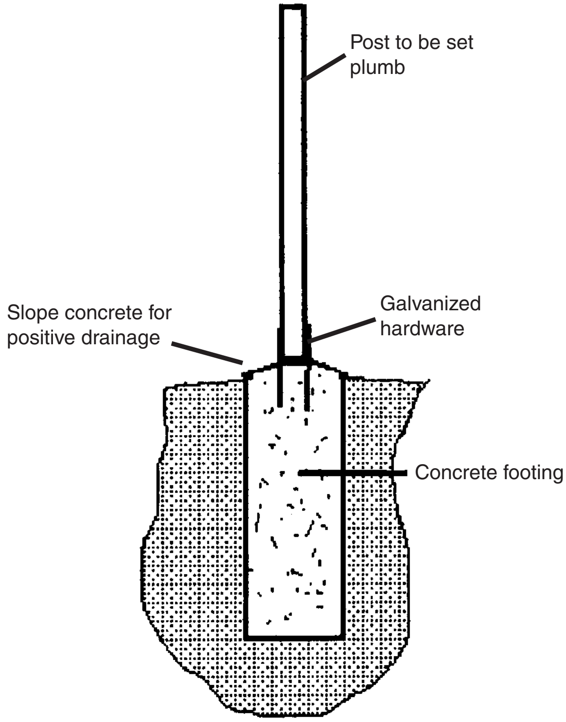

Figure 4.56 Wooden fence post anchored in concrete.

if made of brick would be 412.05 lb. Based on this calculation, a wall 0.67 ft thick would be 4.33 ft (height from the top of the wall to the top of the footer) times 120 lb/ft^3 times 0.67, or 348 lb plus the weight of the mortar at 0.9 ft times 0.67 ft times 150 lb/ft^3, or 90 lb. Finally, 348 lb plus 90 lb yields a weight of 438 lb.

To determine the wall's resistance to wind load, the overturning moment (M_O) and the righting moment (M_R) must be compared. The overturning moment is measured at half the height of the wall plus the depth below grade, 3 ft in the example: $M_O = 120 \times 3 = 360$ lb. The righting moment is measured: $M_R = 438$ lb $\times$ 0.67 = 293.46 lb. In this case the righting moment is less than the wind load, so additional stabilization is required.

The calculation above is based on a single section of freestanding wall 1 ft long, and it does not consider other aspects of the wall such as corners, piers, or other support. To prevent overtopping, the wall may also be designed with piers or with sections at right angles to the wall. The lateral support of solid walls is designed using a ratio of the length of the wall between lateral supports (L) to the thickness of the wall (T): L/T. Table 4.16 summarizes the L/T for freestanding walls. The L/T for wind loads for the example is 14. The maximum length of wall between supporting members therefore is: $14 = L/0.67$ ft, or $L = 9.38$ ft.