

Foundation anchorage – *Building Code Basics: Residential*

Anchorage to the foundation is a critical part of the load path to resist lateral and uplift forces acting on the framing system of the building. The IRC prescribes anchor bolt criteria for connecting the sill plate to the foundation. Other methods, such as foundation straps, may be used if installed according to the manufacturer's instructions and in a way to provide equivalent anchorage. Such alternatives typically require closer spacing than for embedded anchor bolts (Figure 5-13). [\[Ref. R403.1.6\]](#)

To resist the increased forces of earthquake ground motion, additional anchorage requirements apply to buildings located in SDCs "D₀," "D₁," and "D₂" and to townhouses in SDC "C." In this case, anchor bolts in braced wall lines (described in Chapter 6) require 3-inch by 3-inch plate washers approximately ¼ inch thick to increase the holding capacity against the sill plate or bottom plate (Figure 5-14). Bolt spacing is also reduced to 4 feet for anchorage of three-story buildings. One- and two family dwellings are exempt from specific seismic design requirements in SDC "C" (Table 5-3). [\[Ref. R403.1.6.1\]](#)

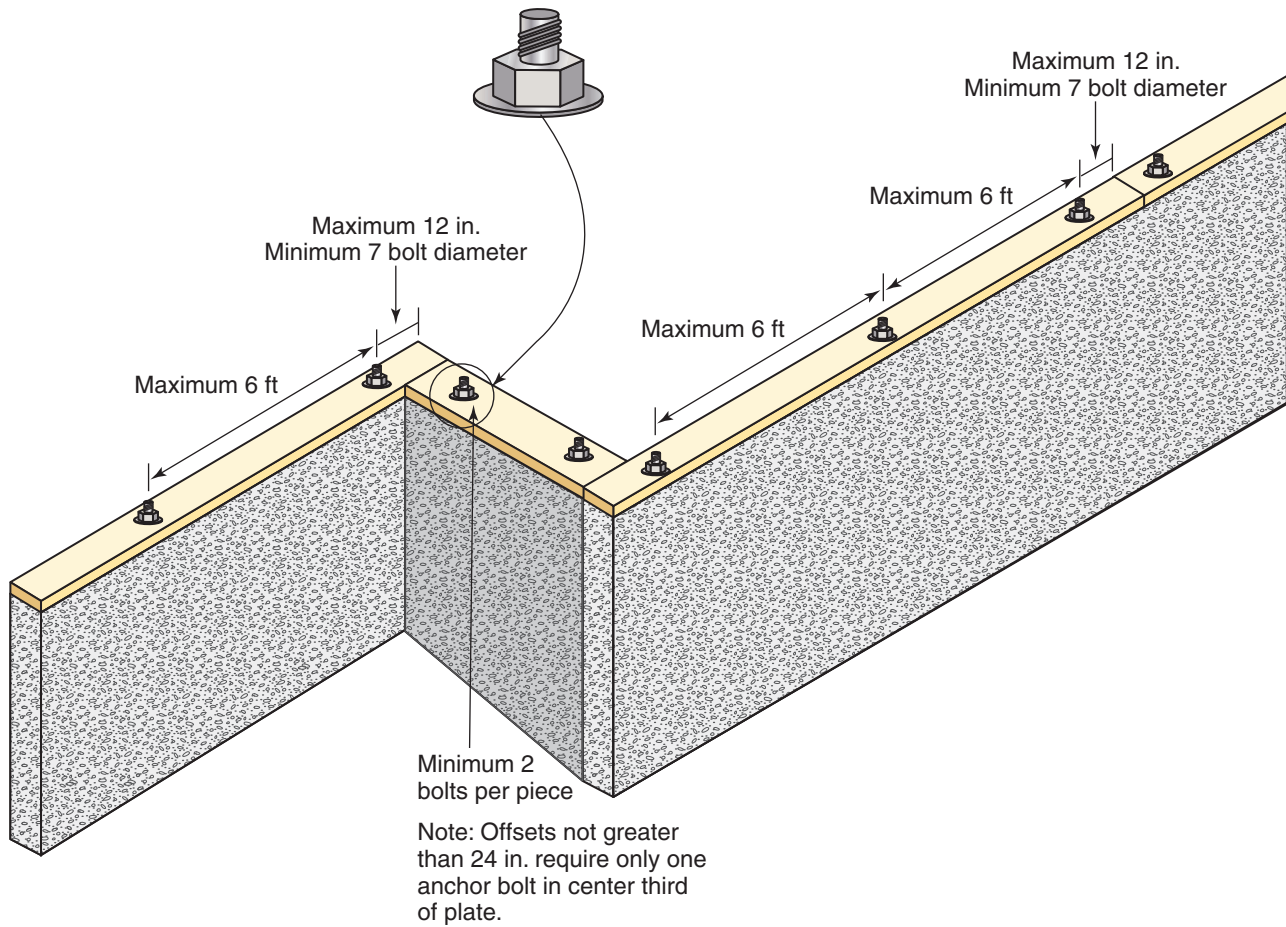


FIGURE 5-13A Wood sill plate anchorage to foundation for all buildings in SDCs “A” and “B,” and dwellings in SDC “C”

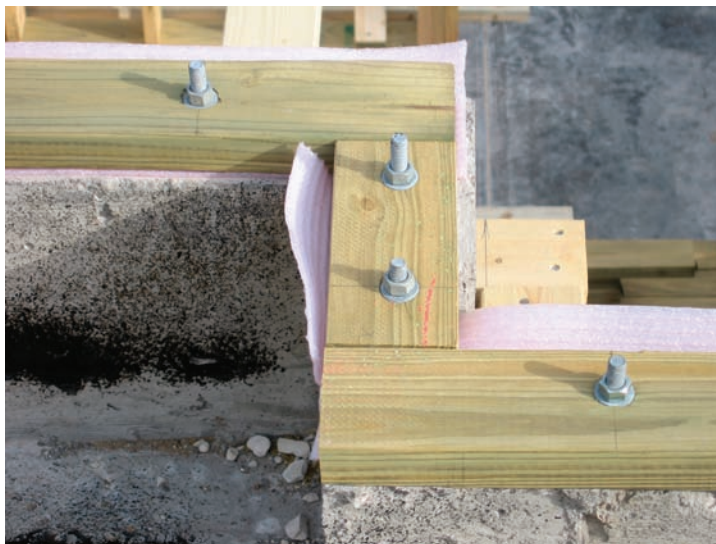


FIGURE 5-13B Anchor bolts for all buildings in SDCs “A” and “B,” and dwellings in SDC “C”

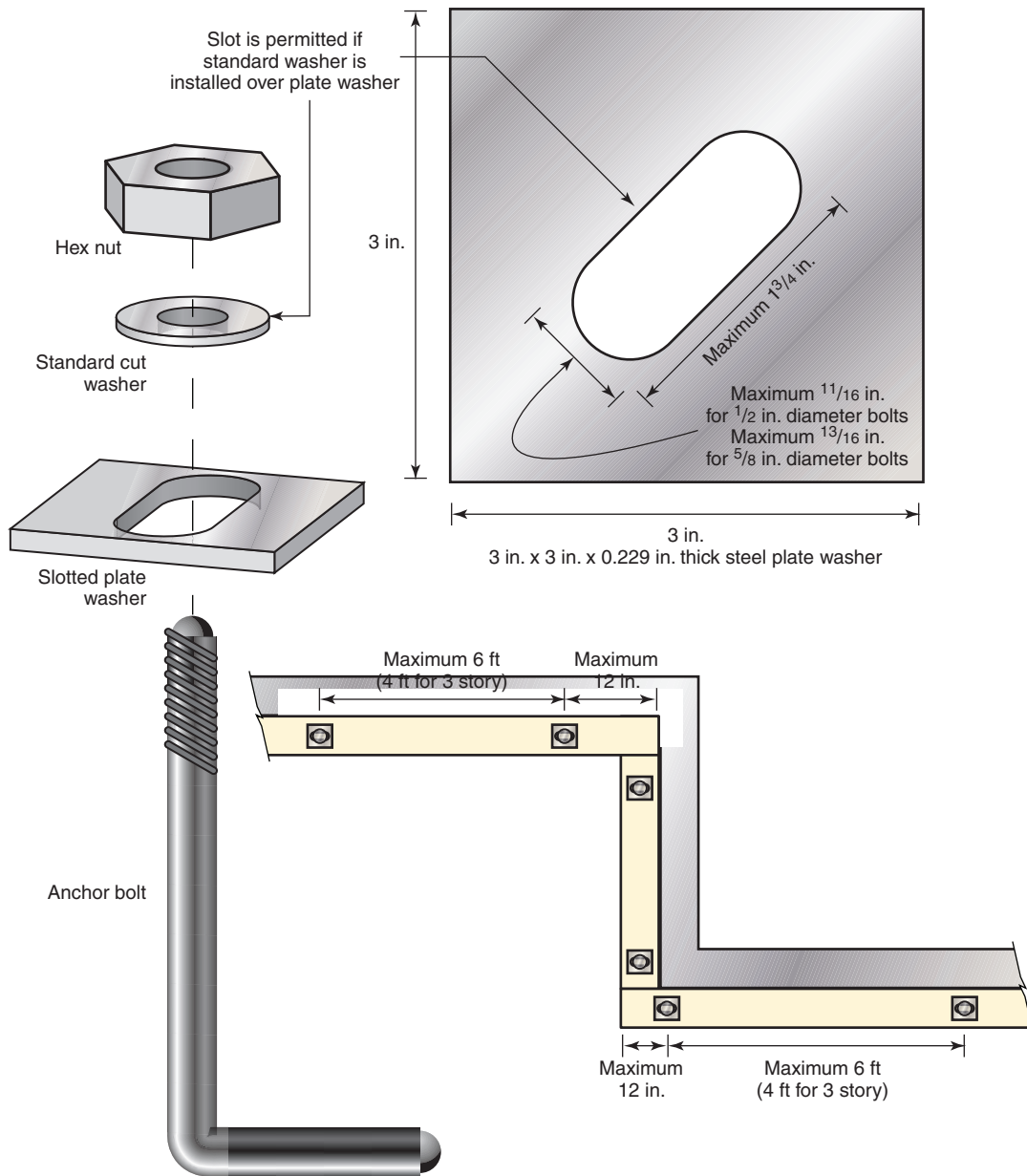


FIGURE 5-14 Wood sill plate anchorage to foundation for all buildings in SDCs “D₀,” “D₁,” and “D₂” and townhouses in SDC “C”

TABLE 5-3 Foundation anchor bolts (minimum ½-inch diameter and 7-inch embedment)

Seismic Design Category	One- and Two-Family Dwellings			Seismic Design Category	Townhouses		
	Stories	Maximum Spacing	Washer		Stories	Maximum Spacing	Washer
A and B				A and B	1, 2, or 3	6 ft.	Standard cut
C	1, 2, or 3	6 ft.	Standard cut	C	1 or 2	6 ft.	3 in. × 3 in. × 0.229 in.
					3	4 ft.	
D₀, D₁, and D₂	1 or 2	6 ft.	3 in. × 3 in. × 0.229 in.	D₀, D₁, and D₂	1 or 2	6 ft.	
	3	4 ft.			3	4 ft.	

Note: Standard cut washers are permitted in wall lines without braced wall panels.