

Making Square Cuts on Round Footing Forms

Q I'm pouring concrete piers for a deck and would like to precut the tops of my footing forms so that they extend a consistent 6 inches above grade. The challenge is to cut the forms square, so that I can screed and finish the concrete level and smooth before setting the anchor bolts for my post bases. Do you have any tips?

A Mike Guertin, a builder and remodeler in East Greenwich, R.I., and a presenter at JLC Live, responds: Marking for an accurate cut on a cylinder can be a challenge, but I've found a couple of simple tricks that work well.

One method involves newspaper. I tape two or three full pages of newsprint end-to-end to make an elongated sheet, then wrap the sheet around the footing form. I keep the sheet snug as I wrap, and match the edges of the sheet as they meet around the cylinder (1). Then I tape the end of the newsprint to itself and slide one edge of the newsprint to the cut point. When it's in position, I mark my straight line along the edge of the newsprint (2).

Or, the forms themselves can be used as a cutting template, because the factory ends on footing forms are usually square to the tube (as long as it hasn't been damaged). I hack off a one-foot-long section from the factory end of a footing form (my cut doesn't need to be square). Then I make a straight cut along the side of the form from one end to the other, which will allow me to expand the section to fit around a form of the same diameter. I slip this section over a form that I need to cut (3). The section will naturally clamp snug around the form and the factory end will demarcate the cut line. And once I've made this cutting template, I can use it to mark all of the forms on a deck.



Are 2x6s Stronger Than 2x12s?

Q Recently I needed structural design values (E, Fb, Fv) for treated southern yellow pine. According to the Southern Pine Council's (southernpine.com) latest design values, SYP's E (modulus of elasticity) and Fv (allowable shear stress) remain constant, while Fb (bending strength) values grow smaller as the lumber dimension grows larger. Why does the Fb change with the lumber size?

A Frank Woeste, P.E., a professor emeritus and adjunct professor of sustainable biomaterials at Virginia Tech, responds: The phenomenon that the allowable Fb value decreases as the depth increases has been proven by exten-

sive testing. The current span tables—for all lumber species—reflect that testing. As to why it is so, there is no conclusive answer, but several theories have been offered. My own theory is based on probability—under ASTM test protocols, more knots and other imperfections are likely to occur in wider pieces of lumber.

In the ASTM test for determining allowable Fb, a wood joist is subjected to stress until it breaks. The test standard requires a span-to-joist ratio of 17. For a 2x6, the test joist is 93.5 inches long (5.5 in. x 17), while a sample 2x12 would be 191.25 inches long (11.25 in. x 17). In the test, only the center third of the span is subjected to the full stress level. For a 2x6, this would be 31.2 inches

long; for a 2x12, the middle third is 63.75 inches long.

Knots and other natural characteristics control the strength of lumber; for each grade, there is a maximum allowable knot size. If you look at a piece of pine lumber, you'll notice that the knots are usually clustered a couple of feet apart. Based on typical frequency of knots, it's likely that there will be more knots in a 63.75-inch section than in a 31.2-inch section, and more likely that the maximum allowable knot will occur in the longer section. So in the test, a 2x12 is more likely to fail at a relatively lower stress level than a 2x6. ♦

This article first appeared in JLC (jlonline.com).

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