Stairs 4: Building Stair Stringers

A stair **stringer** is one of the boards that hold each step in place. They run the length of a straight staircase (see Figure 1).

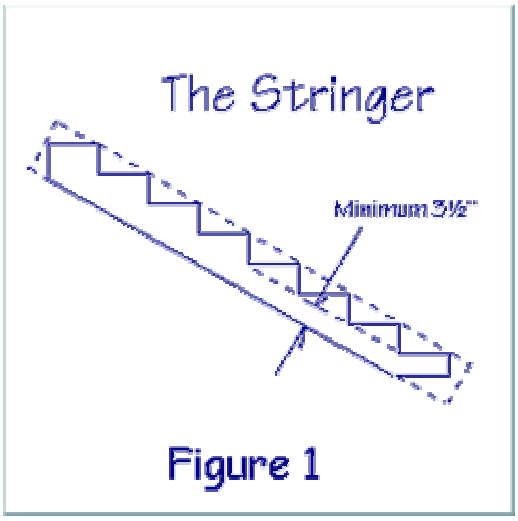

Figure 1

The Size of the Stringer

In choosing the size of your stringer, a 2 x 10 should be the smallest board chosen. A rule to follow is: the amount of solid wood remaining on the stringer after the rise and runs are cut out should be a minimum of $3\frac{1}{2}$" to support the weight of your 350 pound neighbours when they come over to inspect your work. (See Figure 1.) In some cases, a verticle post or two can be placed beneath the stringer to the floor to help support the stairs. In other cases, the stringers can be nailed securely to the sides of the walls for added support. When circumstances demand no posts under the stringer or walls for support, use a 2 x 12 stringer for added protection.

The Layout

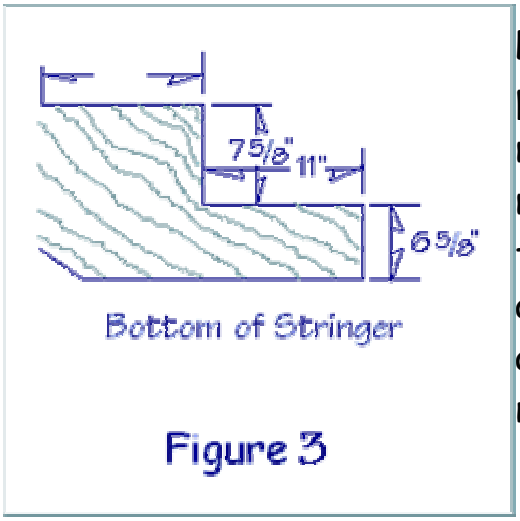

Figure 3

Laying out the stringers is a very precise job. With 14 rises, a mistake of 1/16" can multiply to a mistake of 7/8". Get your framing square, stair gauges and a sharp pencil from your tool box and let's get to work. For those not familiar with the 'steel

square', please refer to my article, The Steel Square. Figure 2 shows the correct method of laying your square on the stringer. Start at the top end of the stringer near the end of the 2 x 10 or 2 x 12. With your stair gauges guiding the square in place at the 7 5/8" rise and 10½" run

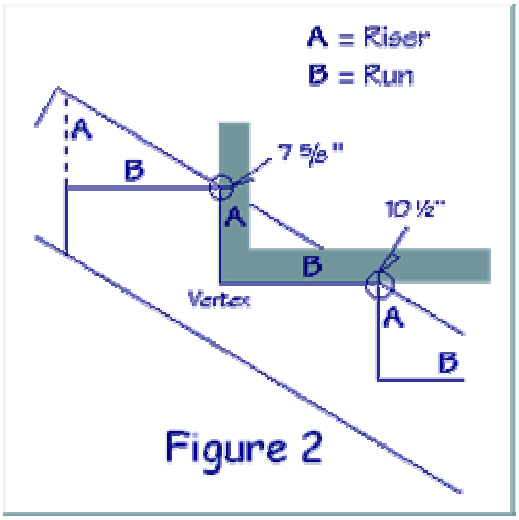

Figure 2

very sharp lines along the edges of the steel square, so the lines meet at the square's vertex. Slide the square along the board until the rise marker on the square meets the first run mark you drew on the board. Continue this procedure along the full length of the board until you have counted the full number of rises and runs you calculated earlier, in our example these are 14 rises and 13 runs. One thing to watch with the square is to make sure you take your rise and run from both the inside or the outside of the square. Where your pencil marks meet must be where the square starts its measurement.

The Bottom Riser

The stringer is laid out with the correct numbers of rises and runs. Now we must compensate for the bottom riser when we add the tread on top of it. The BC Building Code stipulates that the minimun thickness for a tread is 25 mm.(1"). Carpenter framers making stairs in a new house rip 1" plywood into strips for the treads or use 1½" lumber. In our example let's use 1" plywood as our tread. Now take 1" off the bottom step of the stringer. The bottom of your finished stringer should look similar to Figure 3.

Installing the Stringer

When installing the stringer to the stair opening, measure from the top floor down the face of the trim joist to the rise measurement, say 7 5/8" and then add on the thickness of tread or 1" that you took off the bottom of the stringer. If the stairs are going between 2 walls and the finish, probably drywall, is not on the walls yet, as is the case in new construction, before installing the stringers nail a 3" ripping of 5/8" or 3/4" plywood along the bottom outside of the stringers. This enables the drywallers to come after the stairs are in and slip the drywall between the wall and the end of the steps, rather than having to cut out the drywall in the shape of each step. They will appreciate your consideration. It will save you a few bucks, too. If the walls are finished, of course, just nail the stringers to the studs right through the finished walls.