

Deck System

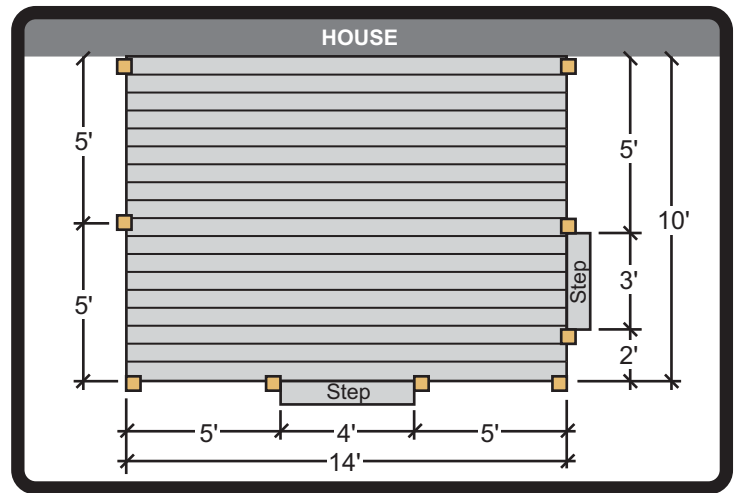
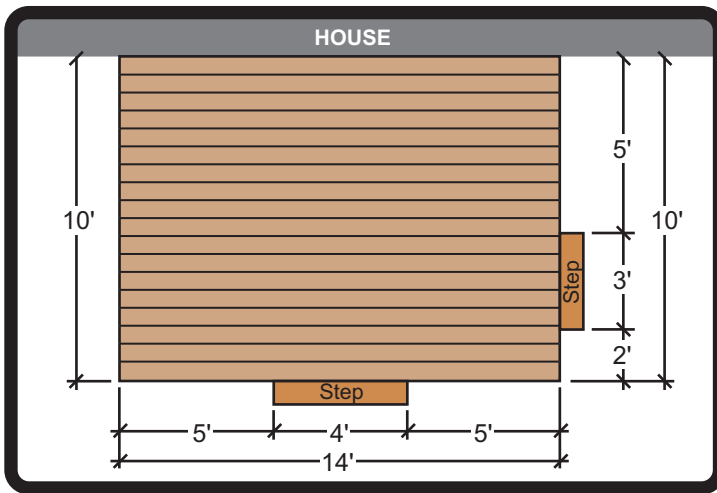
Installing a Handrail

In this example, we show you how to build a handrail around your deck using 4"x4" notched posts and 2"x2" spindles. There are many different methods, designs, and options for handrails. This is one of those methods.

Always check with your local building department/code inspector before starting any project. Your township may have specific requirements that need to be met. Many townships have very specific requirements for handrails.

Step 1: Determining the Layout

Take a moment to determine the layout and spacing of your handrail design. Begin by determining the areas where handrails will not be installed, including stairs, steps and other openings.

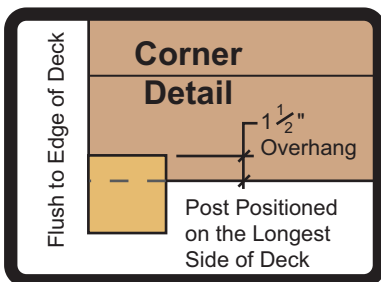


Next, determine the location of the 4"x4" posts. The maximum spacing between posts should not exceed 6 ft. from the center of one post to the center of the next post.

Deckman's Tip

The corners of the deck are the most difficult areas to determine location and position. In this example, each post has an 1 1/2" notch in the bottom of the post. Which side of the corner should the post go on? How should the post be positioned?

The posts should be placed along the longest side of the deck. In this example, the corner posts would go along the 14 ft. edge of the deck, and the edge of the post would be flush/aligned with the 10 ft. edge of the deck. Instructions on how to secure the posts will be described later.



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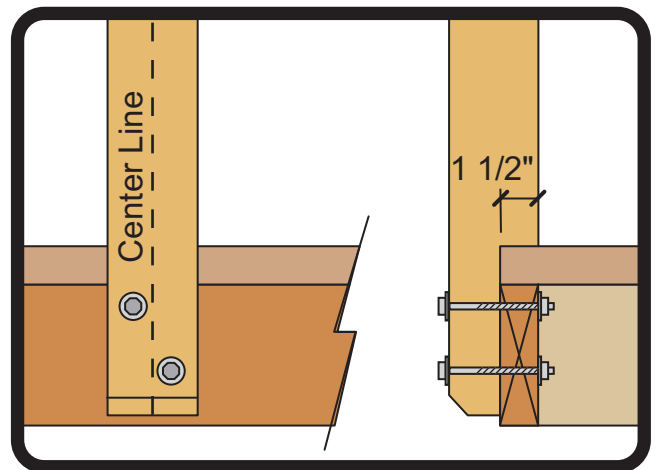
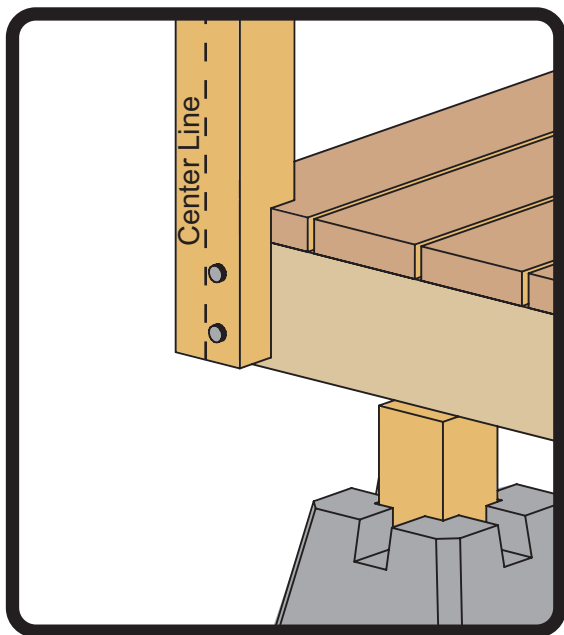
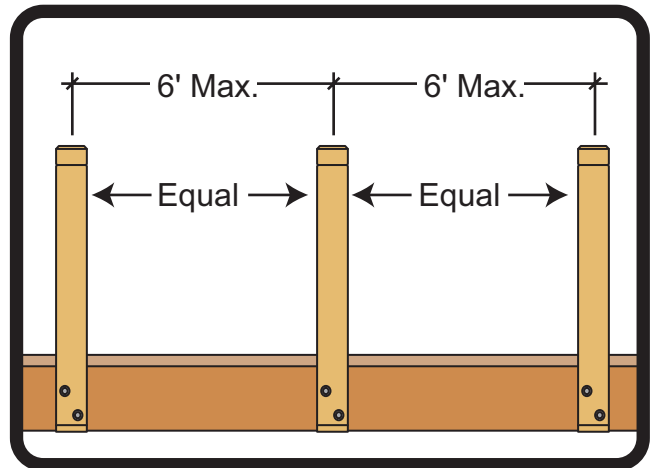
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Step 2: Install 4"x4" pre-notched handrail post

Position the notched 4"x4" post, then verify that all posts are spaced equally across the deck.

Using either a post-level or a standard level, verify the 4"x4" post is positioned plumb (vertically level) in both directions. Then using two deck screws, tack the post to the frame to hold it in position. Next, pre-drill two 1/2" holes through the 4"x4" post and frame. Offset the holes slightly as seen in the image to the right. Bolt the 4"x4" post to the frame of the deck using two 1/2" by 4 1/2" galvanized or stainless steel hex bolts, using a washer on both sides.



Note: When securing 4"x4" posts onto corners, the bolts will need to be attached from the edges of the post, due to the positioning of the support board and end board.

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How to Notch a Handrail Post

If you cannot find pre-notched handrail posts, the following is information for cutting your own 4"x4" handrail posts.

When building your own notched 4"x4" handrail posts, it is most efficient to perform each task on all posts before advancing to the next step.

Step 1: Cut 4"x4" Post to Length

From an 8 ft. 4"x4" post, cut a 47" piece to length. Two posts can be cut from each 8' length.

Step 2: Draw the Notch

Using a speed square and a pencil, draw a line 7" from the end of each 4"x4" post (line 1 in pictures). From each end of the line, draw a line 1 1/2" down both sides of the 4"x4" post (line 2 in pictures). Then extend this line back towards the bottom end of the 4"x4" post on both sides (line 3).

Step 3: Top Cut

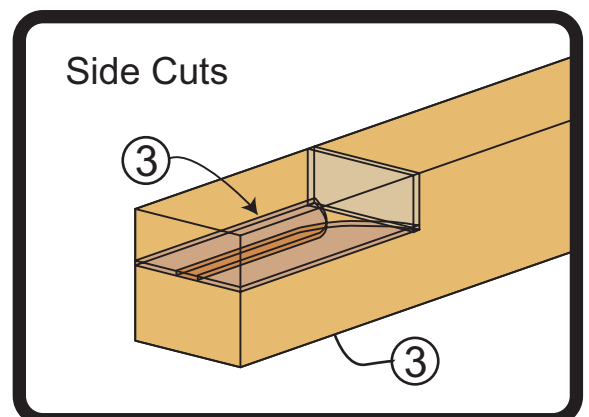
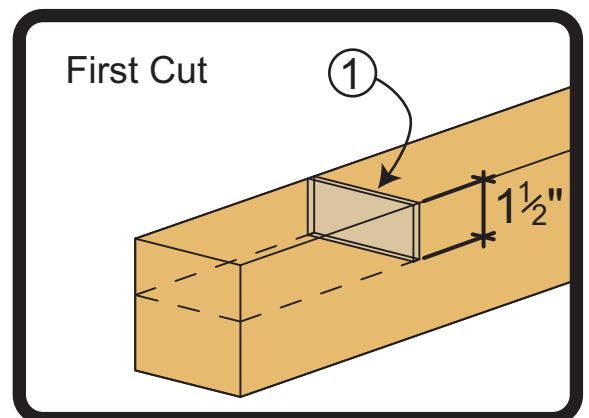
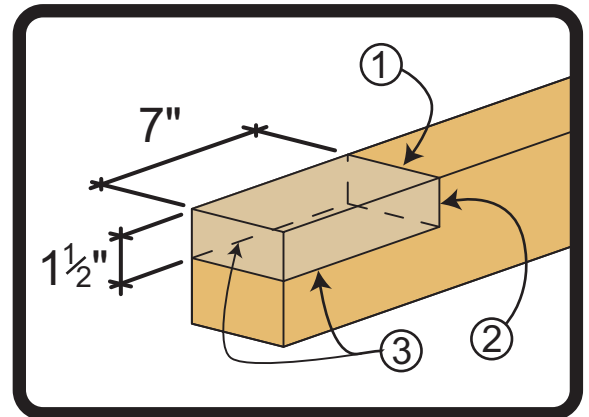
Set the circular saw blade to a depth of 1 1/2". Using a speed square as a guide, make a cut along the top of the post, following line (1).

Step 4: Side Cuts

Adjust the circular saw blade to its maximum depth. Turn the 4"x4" post on its side. Make a cut along the 7" line (3) up to the existing cut in the post. Stop the saw and remove the blade after it stops turning. Turn the post over and repeat this cut on the opposite side.

Step 5: Remove Waste

Due to the curve of the blade, there will be a small amount of material remaining. Use a hand saw to remove the remaining material.



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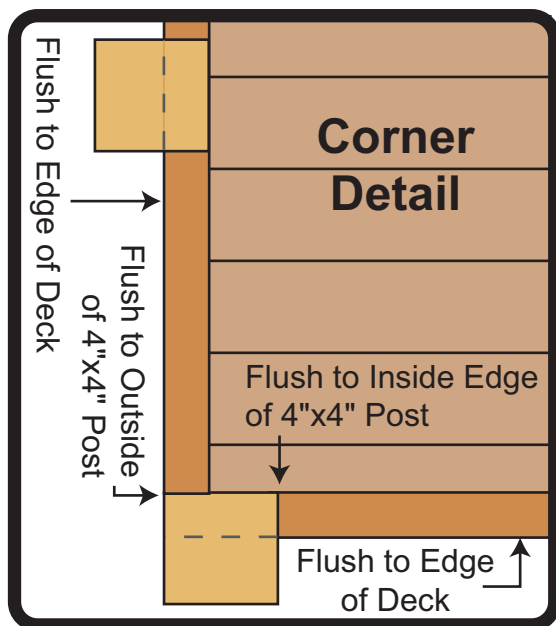
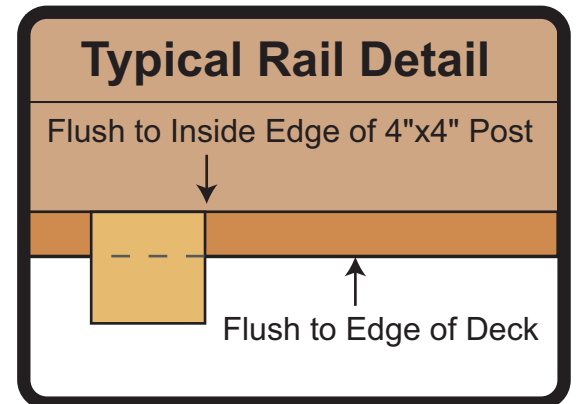
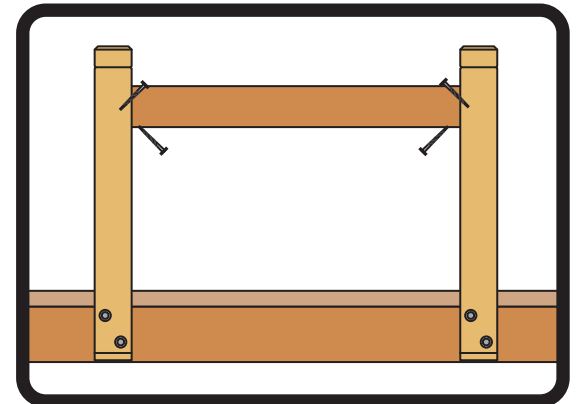
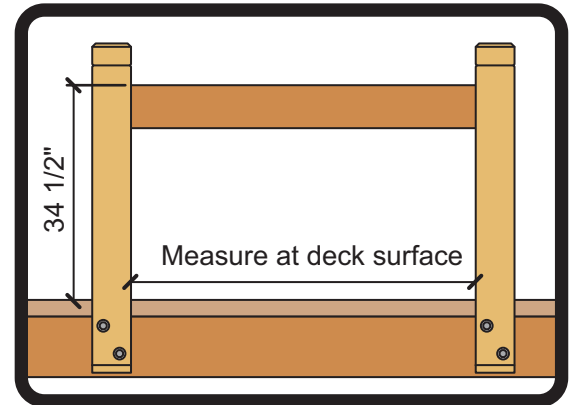
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Step 3: Secure 2"x6" board between the posts

Start by measuring the distance between the 4"x4" posts. For greatest accuracy, be sure to measure from the bottom of the 4"x4" posts. (as 4x4's might be slightly off plumb or warped). Then cut the 2"x6" board to length.

Mark a line 34 1/2" above the deck surface on the 4"x4" post. Position the top edge of the 2"x6" flush with this line, then position the 2"x6" face flush to the inside edge of the 4"x4" post.

Lastly, secure the 2"x6" board to the 4"x4" post by placing one deck screw at an angle from the bottom of the 2"x6" board into the 4"x4" post, and one deck screw at an angle from the top of the 2"x6" board into the 4"x4" post.



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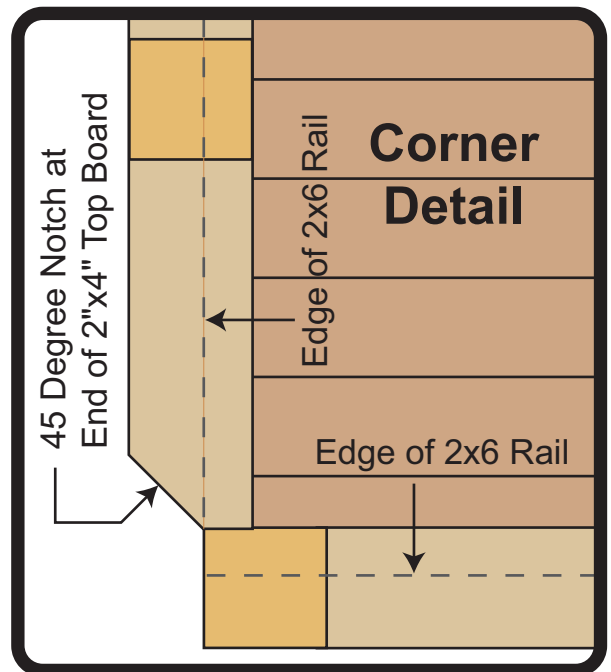
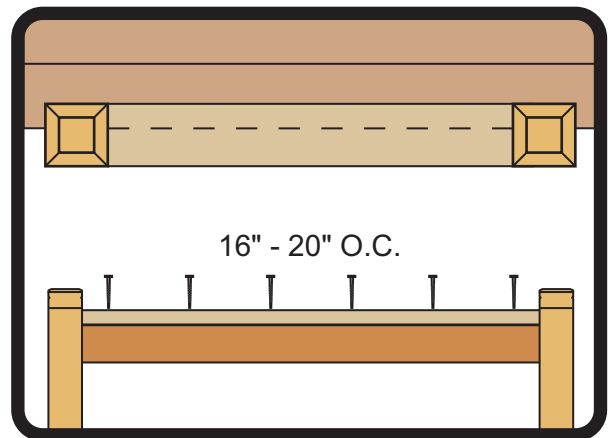
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Step 4: Position horizontal 2"x4" board on top

Cut a 2"x4" board to the same length as the 2"x6" board from Step 3. Place the 2"x4" board on top of the 2"x6" board flush between the two 4"x4" posts. Attach with deck screws every 16-20 inches on center.



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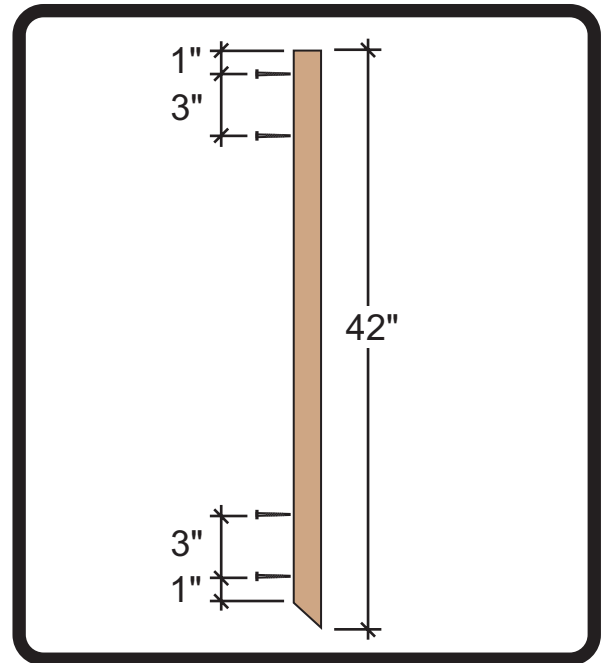
Step 5: Pre-drill 2"x2" spindles

Using either a counter-sinking drill bit or a standard drill bit, pre-drill two holes at the top and two holes at the bottom of each 2"x2" spindle. From both ends, drill one hole approximately 1-inch from the end and a second hole approximately 3" inches from the first hole. Pre-drilling all spindles at once ensures greater accuracy and placement. Next, align a group of spindles together. Using a chalk line or a pencil, mark the locations on the 2"x2" spindles.

(DO NOT PRE-DRILL THE SPINDLES ON THE DECK SURFACE)

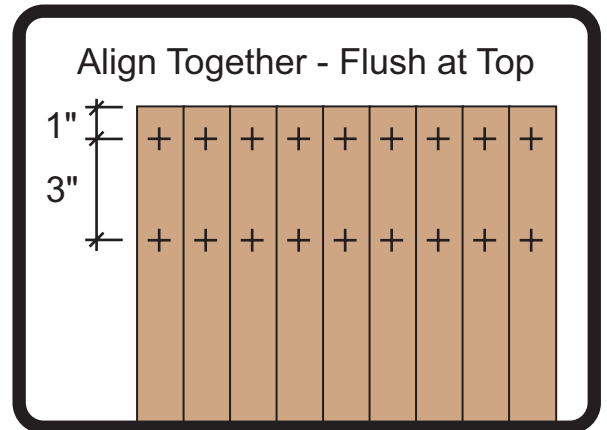
After the holes are pre-drilled, start a 2 1/2" deck screw in the top and bottom holes of each 2"x2" spindle.

Preparing the 2"x2" spindles can be done during any point of the project. *(This a great project for the relative that wants to help but doesn't have the best skills. Or, when it is raining.)*



Deckman's Tip

2"x2" lumber is dried more than most other lumber sizes. Because of the combination of small size and lower moisture content, 2"x2" spindles will have a tendency to split when securing to the rail. To reduce the chances of splitting, pre-drill the holes for the deck screws with a countersinking drill bit.



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Step 6: Mark and position the 2"x2" spindles

First, determine the location of the 2"x2" spindles then find the center point of the 2"x6" vertical board. From this point, mark a line every 5-inches along the 2"x6" board.

Next, measure the distance from the mark that is closest to the 4"x4" post (should be equal on both sides).

If the measurement is greater than 2 1/2 inches, use the current marks.

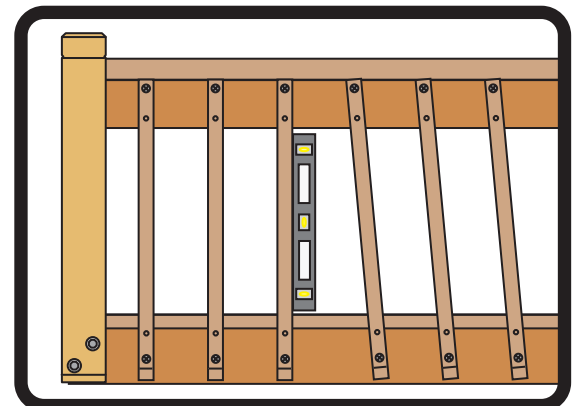
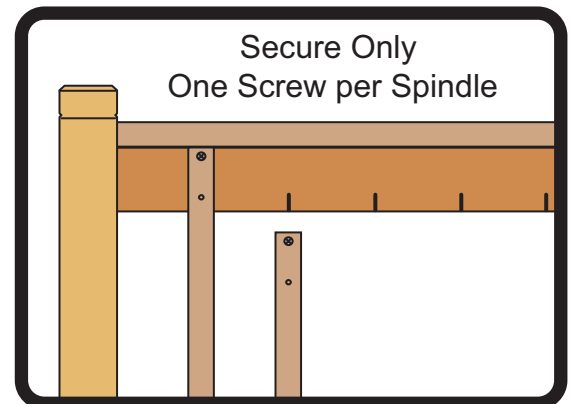
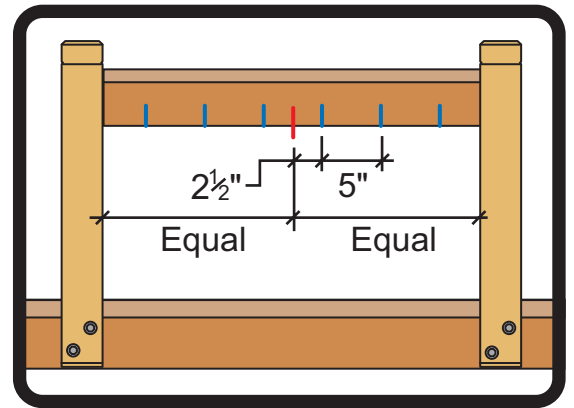
If the measurement is less than 2 1/2 inches, offset ALL of the current marks by 2 1/2 inches. (Make sure to differentiate the two different marks.)

To secure your spindles, hold the 2"x2" spindle centered over the mark you drew in the previous step. Position the top of the 2"x2" spindle tight to the bottom of the 2"x4" horizontal hand rail board. Secure the 2"x2" spindle to the 2"x6" vertical board using **only one** deck screw.

Step 7: Check for plumb and secure

Using a level, hold each 2"x2" spindle plumb (vertical level). Secure the bottom of the 2"x2" spindle to the frame of the deck with one 2 1/2" deck screw. Repeat this step until all spindles are attached. After all spindles are attached, secure a second screw at the top and bottom of each 2"x2" spindle.

At no point along the handrail should there be a space greater than 4" wide.



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