

Framing Rake Walls

**Full-scale layout using
actual rafters is fast
and accurate**



by Tim Uhler

I'm always impressed when I drive by a framing site and see rake walls up before the roof. In my opinion, that's a sign the framers know what they're doing.

The carpenter who taught me was uncomfortable laying out rakes, so he would frame the roof first, then fill in the rakes a stick at a time. It worked, but it was slower than framing the rakes and standing them up like any other wall — if

for no other reason than we had to do the work from ladders or staging.

On the crew I run, we always frame the rakes flat on the deck. We've come up with a way to lay out and build rakes that is simple and about as idiot-proof as any framing method can be. I can't claim to have invented it, since it's based on methods I read about in the book "A Roof Cutter's

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Figure 1. The bottom plate does double duty as a story pole for transferring the rake-wall stud layout farther up the deck (left). After tacking the plate to the deck, the crew snaps lines between the layout marks (below left) to indicate where each stud will go. The finished layout (below) is a full-size template for marking cuts and assembling pieces. There's no stud marked in the middle of this wall because there will be an opening there.

Secrets,” by Will Holladay, and in trade magazines like *JLC* (see “Framing Rake Walls,” 4/98, and “Fast Layout For Tall Rake Walls,” 4/01).

Although this article describes our approach to simple rake walls, these methods work equally well for complex rakes — ones where rafters start from different heights or where the pitch is not the same on both sides of the ridge.

Toss the Tape

What's most unique about our approach is that we try to avoid measuring; instead we figure out dimensions by laying down actual framing parts like studs and rafters. This simplifies the work and greatly reduces the chance for error. Other steps we

take to save time are nothing out of the ordinary. For example, we cut blocks without measuring and cut out window openings with a router. We didn't invent these techniques and we're not the only framers who use them — but I like to think that we're better than most at consistently using such labor-saving tricks.

Full-Size Layout

There are a few things you need to know to frame a rake: the wall height in that part of the building, the roof pitch, and the size and location of door and window openings. Once you have this information, it's pretty easy to lay out and build the rake.

Stud locations. I like to snap the entire rake-wall layout onto the deck, because once that's done we can put away

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Figure 2. The author cuts a pair of rafters and tacks them down over layout lines or against the actual corner pieces of the wall. On this layout (above), the blue line represents the top of the wall and the pencil line represents the face of a stud. With the rafters in position (above right), the author scribes a line along the bottom to mark the upper edge of the top plate. To mark the lower edge, he removes the rafters and snaps a parallel line 1½ inches in from the scribed one (right).



our tape measures and mark everything in place.

We mark the stud layout in two locations — near the edge of the deck and as far in from there as the peak of the rake will be when it's lying flat. Then we snap lines between those points to indicate where the studs will be when we cut and assemble the rake.

Bottom plate. If the rake wall is less than 20 feet long, we can use a single piece of lumber for the bottom plate. We mark the stud locations on the plate and use it as a story pole to transfer layout marks to the subfloor at the top and bottom of the wall (Figure 1, page 2).

If the wall is more than 20 feet long, we'll need more than one piece of stock for the bottom plate. In that case, we do the

stud layout directly on the deck, transfer it up to the plates, and repeat the layout farther up the wall.

When we're done, we tack the plate or plates onto the deck on the layout line for that wall of the house. If we use 2x6 studs, the plate will be 5½ inches in from the edge.

We normally snap wall layout in black chalk because it won't wash away in the rain. To avoid confusion, we try to snap rake-wall layout in blue, but if it's rainy we have to snap it in black.

Laying Out the Top Plate

In the past, we located the top of the rake wall by drawing the rafter on the deck. We would calculate the rafter cuts, measure the heel stand, and then figure out how far down from there



Figure 3. The full-size layout is used to mark the bevel cuts on rake studs. These studs have been placed on the stud layout; they butt to the bottom plate so the carpenter can mark where they cross the line representing the underside of the top plate (above). With the saw set to the bevel angle of the roof, the author cuts rake studs to length (right).



the bottom edge of the rafter should be. But for some reason, when we did it this way the rafters on top of the rake wall never quite lined up with the other rafters in the roof.

Tracing actual rafters. Now, we cut an actual pair of rafters instead and tack them onto the subfloor (Figure 2, page 3). This tells us exactly where the top plates should be in relation to the rafters and the bottom plate.

To ensure that the rafters are correctly positioned, we first snap a pair of lines across the deck to represent the wall height in that part of the building. We locate this line not by measuring, but by taking the precut studs for that part of the house, butting them to the bottom plate, and capping them with a pair of top plates.

After doing this at each end of the wall, we snap a line across the deck in alignment with the upper edge of the top plates. This line represents the top of the wall; since it was laid out with actual pieces, it's closer to reality than numbers off a tape.

Checking the fit. When the rafters go down, we align the seat cuts with the line representing the top of the wall. We can tell right away if something's wrong because the cuts will be off at the birdsmouths or ridge. Lately, to speed layout, we've been cutting rake rafters long and allowing them to butt at the center of the roof. When we install the ridge, it butts to these

rafters and lands on a post in the wall.

Once the rafters are on the deck and all the fits look good, we tack the rafters down and trace along the lower edge. This line represents the upper edge of the rake-wall top plate.

To cut studs, we need to know where the bottom of the plate is, so we scribe or snap a line 1½ inches in from the line that we just traced.

We are now ready to cut and assemble the rake wall.

Marking and Cutting Studs

We already have the regular studs for the ends of the wall, but the rest of the studs must be bevel-cut, each to a different length. There's no need to measure these cuts; all we have to do is move the rafters out of the way, place stud stock on the layout, butt it to the bottom plate, and mark where each piece crosses the layout line for the top plate (Figure 3).

To prevent confusion about which way to cut the bevel, we mark the edge with an angled line. Then we set a saw to the roof angle and bevel-cut the tops of all the rake studs.

Besides making it easier to lay out the bevel cuts, working from a full-scale layout helps us keep track of the pieces; we don't always put all the rake studs down at once because sometimes the short ones come from cutoffs of longer pieces.

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Figure 4. The layout is used to position studs as the wall is assembled. After nailing the studs between the plates (above), the carpenters nail the rake rafters on top of the wall (right). Door and window headers are installed as needed.



The same is true for window openings — we cut the studs over the header last so we can get them from scrap. Being able to look at the deck and see what's there makes it less likely we will miss something.

Assembling the Pieces

After cutting all the pieces, we nail the wall together (Figure 4). The only thing we haven't cut is the fire blocking. We do this after the wall is assembled by holding scrap pieces of framing stock in position and cutting them by eye (Figure 5).

Once the blocks are fastened in place, we nail a pair of rafters to the top of the wall. Normally, the next step would be to square the wall — but we don't need to do this because we framed it on top of a full-size layout that was either drawn square to begin with or measured off a deck we knew to be square.

Strapped to the deck. Before sheathing the wall, we slip a short piece of metal strap beneath the bottom plate and nail



Figure 5. Rather than waste time measuring blocking with a tape, a carpenter lines up the saw by eye and makes the cut.

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Figure 6. Metal straps (top) function as hinges to prevent the wall from sliding off the deck during lifting. On large walls, the crew installs reinforcing straps (above left) next to the studs where the lifting straps will go. Carpenters sheathe the wall in the usual way, then use a powerful router with a flush trimming bit to cut out openings (above right).

it to the deck. We bend the other end around the bottom plate and nail it to the plate and to the edge of a stud. The strap will prevent the wall from slipping off the edge of the deck when we stand it up (Figure 6).

Typically we install two or three straps per wall, but if the wall is really big, we install them every 6 feet or so. Once the straps are on, we sheathe the wall in the usual way, with $\frac{1}{2}$ -inch OSB.

Fly rafters and rake trim. Framing rakes flat on the deck allows us to easily install parts that might otherwise have to be installed from staging or ladders. We like to install the rake overhangs and fly rafters — or bargeboards — before standing the wall. The overhang consists of a 2x6 nailed to short studs toenailed 24 inches on-center to a 2x6 cleat on the wall (Figure 7, page 7). The fly rafters are 2x10 trim, which we nail to the overhangs. They run long at the bottom and are trimmed off later when we run the fascia.

Two cuts at once. To avoid measuring, we lay the long pieces on the rake wall and trace the end cuts on to them. The outer pieces butt at the peak; to get that cut, we lap one over the other, square up, and draw the cut line.

We do something similar to get the miter cut where the fly rafters meet. With the first piece nailed to the overhang, we lap the second piece over it and use the $3\frac{3}{4}$ -inch cutting capacity of the Big Foot saw to cut through both pieces at the same time. We then pull the second piece tight and nail it off. There's no need to caulk the joint; cutting it this way gives us a perfect fit.

If it weren't for the local inspectors wanting to examine the shear nailing, we'd paper the wall before

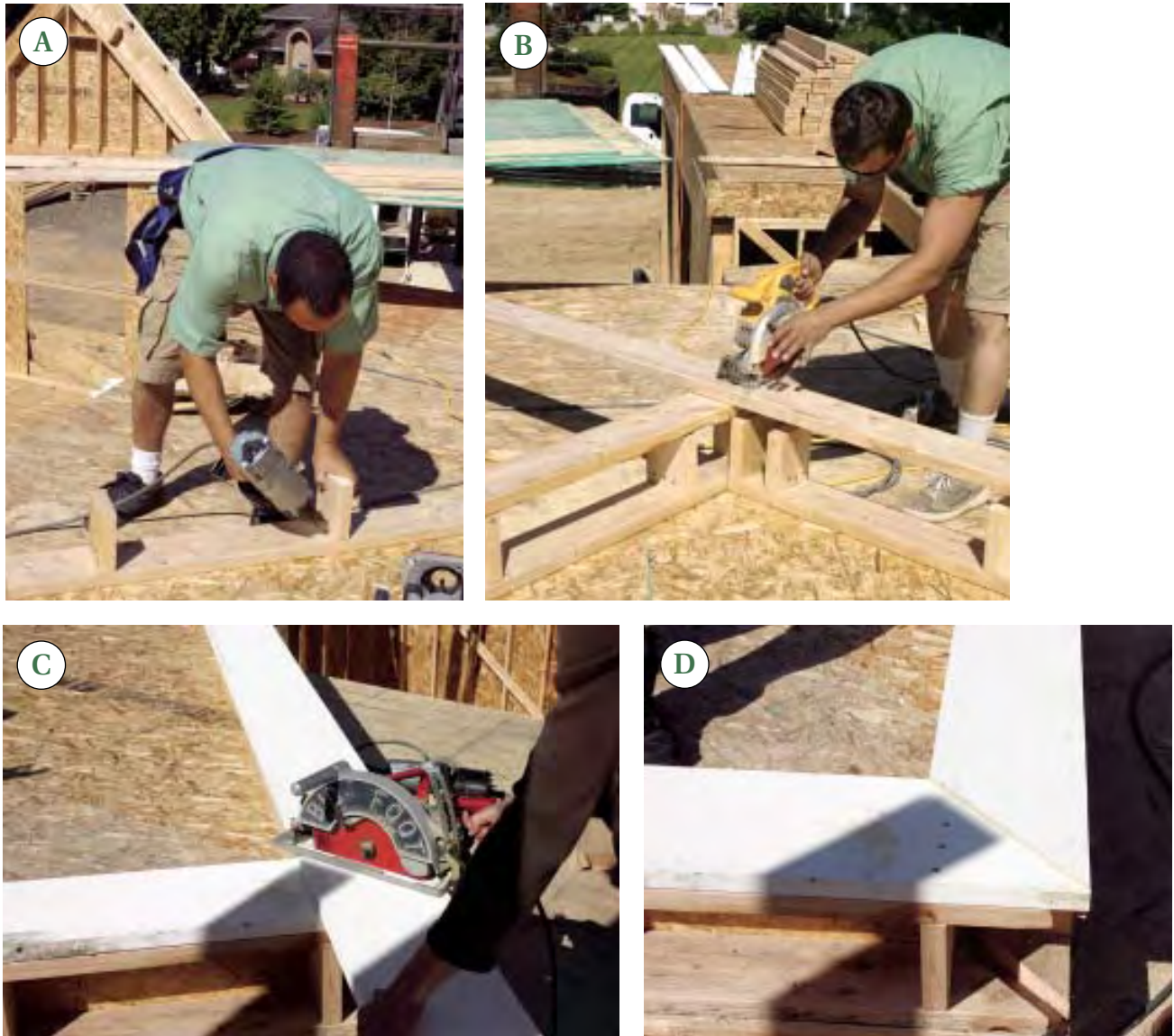
we stood it up. And if we're doing the finish in-house, we might install windows and some of the siding — though we'd have to be careful not to make the wall so heavy we couldn't stand it up.

Lifting the Wall

Rake walls are typically tall and heavy, so they can be dangerous to lift. Our four-man crew can safely lift small rake walls by hand, but large ones are beyond our ability.

Fortunately, we own a forklift, which we use to lift all but the

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smallest rakes. To prepare a rake for the forklift, we cut a couple of holes through the sheathing near the top of the wall and thread a strap through the holes; we try to put the strap about one-third the way down from the peak and spread it as wide as possible (Figure 8, page 8).

We're not concerned that the strap will break because it's rated for much more weight than our machine can lift.

Strain of lifting. Lifting puts a lot of strain on a heavy wall. Since the tension on the strap squeezes sideways against the studs, we try to install the strap near a run of horizontal blocking.

Before sheathing a really big wall, we take yet another precaution: We use metal straps to reinforce the stud-plate-rafter

Figure 7. It's easier to build overhangs while the wall is lying flat (A). Instead of measuring the outer piece of the ladder, a carpenter laps the stock, squares up to mark the cut, and cuts the piece in place (B). Fly rafters — or rake trim — are installed the same way. The first piece is nailed to the ladder, the second piece is lapped over it, and the joint is cut in place (C). The result (D) is a perfect fit.

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connections closest to the lifting-strap holes. The sheathing would probably provide enough reinforcement, but the metal straps make us feel better.

Even with a machine, lifting rakes can be dangerous, so for this part of the job we make ourselves slow down and check everything twice before moving ahead. We plan all our moves in advance: where the forklift will go, where people will stand, and how we're going to brace the wall once it's up.

Bracing the wall. The outermost braces can be preattached to the wall; once the wall is standing, all we have to do is nail them to the deck.

The center braces can't go in until the wall is partway up, but we at least have the stock and framing guns there and ready to go.

When the wall is about 10 feet up, we stop lifting long enough to nail center braces to it. We put two nails very close together through each of the braces, so they can pivot down as the wall goes up. The carpenter who directs the forklift driver must pay close attention, because once the wall is partway up the driver can't see what's happening on the other side.

After the wall is partially braced, we let some of the tension off the lifting strap but do not remove it until the wall is plumb and securely braced in place. Sometimes we leave the strap and forklift there until the rake is fastened to the adjoining interior and exterior walls.



Figure 8. To prepare this wall for lifting, the author's crew puts a heavy lifting strap through holes in the sheathing, runs it across the inside face of the studs, then loops the ends onto the forks of an all-terrain forklift (top left). A carpenter uses hand signals to direct the forklift driver as he lifts the wall (top right). The crew quickly plumbs and braces the wall with prepositioned diagonal braces (above).

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