Rake Wall Framing

Frame, sheathe, and side before lifting the walls

BY TIM UHLER

One of our goals as a framing crew is to minimize the amount of work we do while on ladders, and we aim for this particularly when framing rake walls. We've found that the more framing we can do while a wall is on the deck, the safer and more efficient we are. But this is not just a production argument, it's a quality issue, too. It's just common sense that you can fit things together more precisely when you aren't dangling from a ladder.

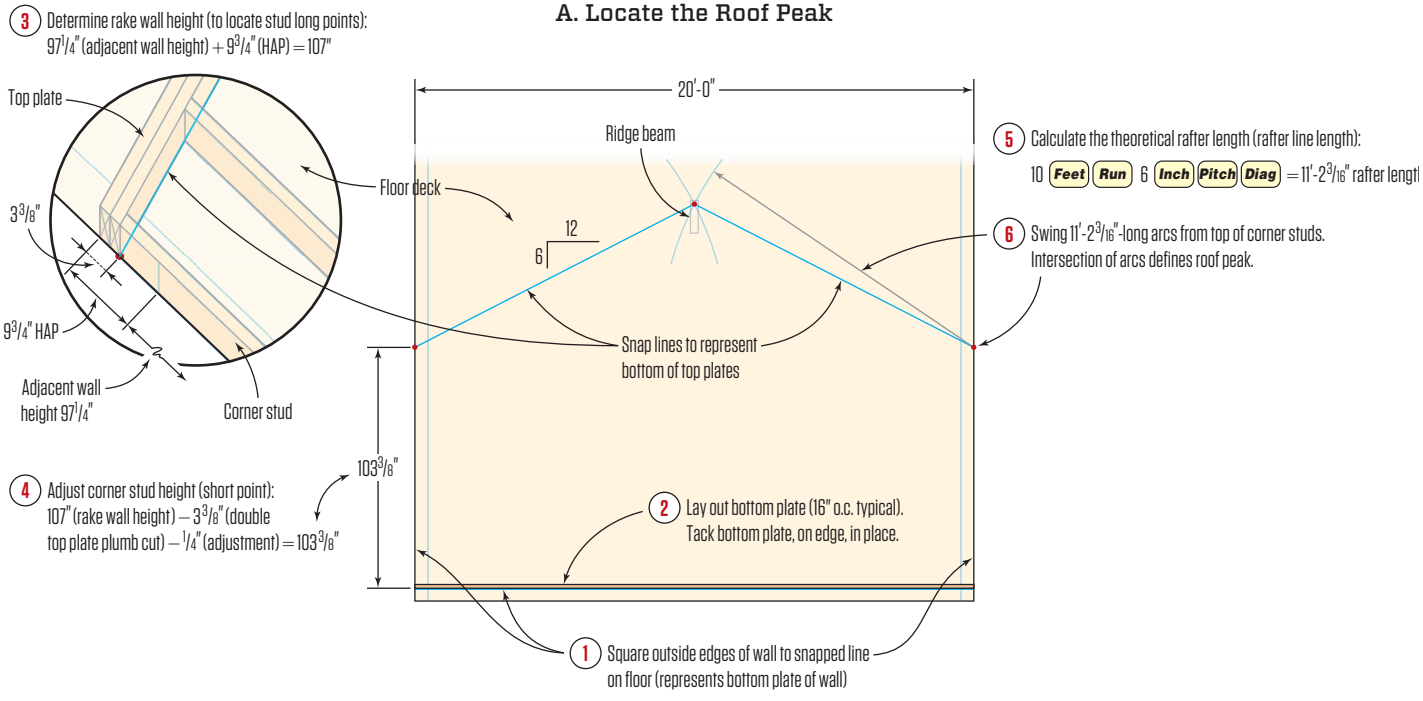
I've written on this topic before ("Framing Rake Walls," Sep/06), detailing the same basic methods for framing rake walls. However, since then we've changed the way we do a number of things, particularly with our layout process:

- We no longer snap out the entire wall. Here in the Pacific Northwest, the deck is often wet, and snapping out every stud and king stud in a wall like we used to do would ruin our chalk lines and make a mess. Instead, we define the perimeter framing (bottom plate, corner studs, and angled top plates), then calculate the on-center spacing along the angled top plate.
- We no longer cut studs in place over snapped lines. Instead, we pull measurements for the studs from the plate layout, and with a cut list in hand, cut the studs on the lumber pile.
- We no longer install rafters on top of the rake walls. Instead, we frame our walls to the top of the rafters. This keeps the wall much

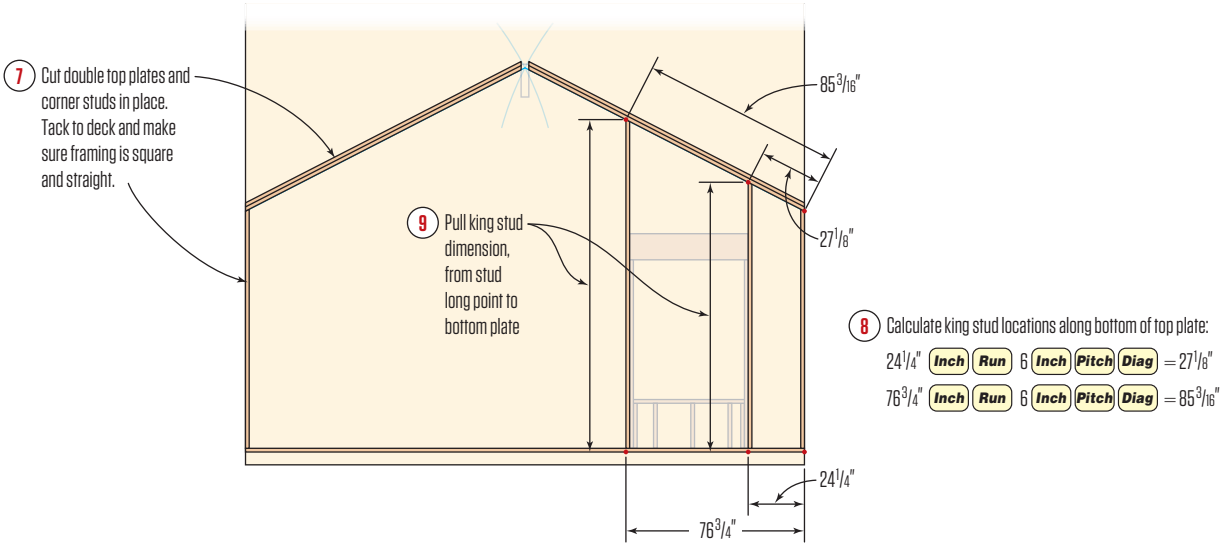
Photos: Tim Uhler

Rake Wall Framing Layout

A. Locate the Roof Peak



B. Corner and King Stud Layout



stiffer when we lift it.

■ We now install the soffit board instead of just framing out the overhang. This speeds production and helps to keep the wall stiff while being lifted.

What follows is our current method for framing any rake wall, including walls where the slopes differ or the slopes start at different heights.

LAYOUT

There are just a few pieces of information needed to begin layout—the span of the roof section, the roof slope (more than one if they are different), the "heel stand" ("height above plate" or HAP) of the rafters, and the plate heights where the roof starts from.

1. To begin, we snap a line that represents the bottom plate and two lines that are square to the bottom for the corner studs at each end.

2. We cut the bottom plate, lay it out for studs at 16 inches on-center, and tack it on edge to the floor deck.

3. Next, we lay out the point where the slope of the roof starts at the outside of the wall (see illustration, left). This is done by making a story pole on a long 2x6 that shows every component of the wall elevation—the bottom plate thickness, the stud and top plates for the adjacent wall, and the height above plate (HAP) for the rafters. The top of the rafters is the top of the rake wall.

4. To find the height of the corner studs, we subtract the plumb distance of the double top plate for the rake wall, then subtract an additional ¼ inch. We've found that rake walls always end up a hair taller than the precise calculated wall height. But subtracting that ¼ inch works well. This is a critical step because if we get the wall height wrong, the whole wall will be slightly above the roof plane, whereas if it's slightly lower than the roof plane, it's easier to fix.

5. Next, we use the roof rise and run to calculate the rafter length using a Construction Master calculator.

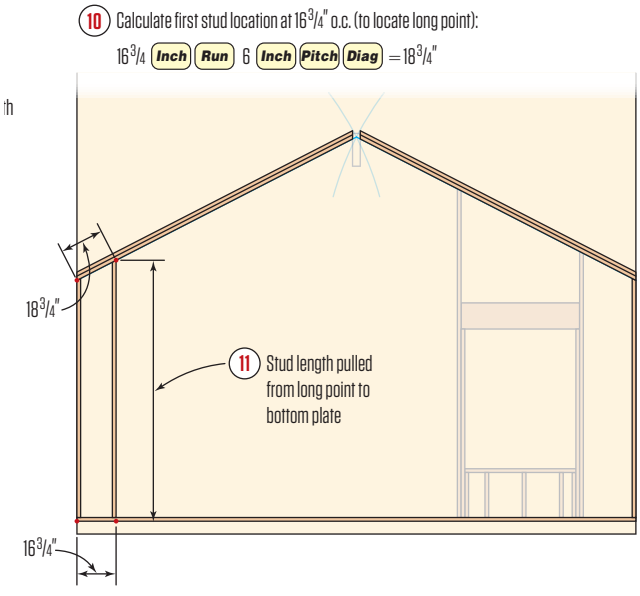
6. As shown in the illustration, we tack a nail to the deck where the top of each corner stud will be and swing arcs with a radius equal to the rafter length. From the point where they intersect to the top of each corner stud represents the underside of the top plates. We don't always snap this line, but we will if it's longer than the plate stock we have on hand.

7. We can now cut the corner studs and top plates (see illustration). We tack the studs and first top plate on edge to the floor. Before tacking the studs down, we pull diagonals to check for square, then double-check the length of the wall at the top of those studs. When we're setting the ridge, the top plates will be cut back half the ridge thickness on each side, but for now we keep the plate together to help stiffen the wall for lifting **(1)**.

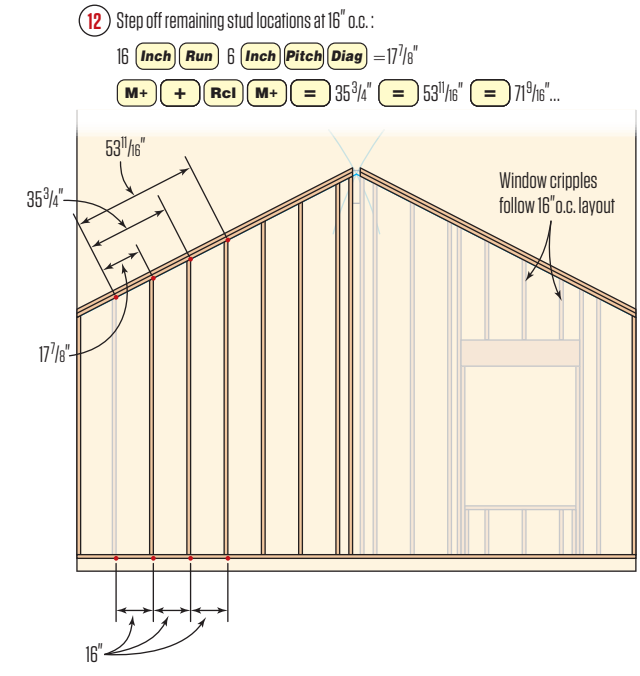
8. Typically, we lay out and install the king studs for any window and door openings first. We always lay out the uphill (long-point) side of the stud so that we're cutting to the "sharp" point of the bevel. Using the Construction Master calculator, we enter that number as the RUN in the calculator and then find the DIAG. We measure the distance along the underside of the top plate **(2)**.

9. As shown in the illustration, we measure along the bottom plate to get to the long side of each king stud.

C. First Stud Layout



D. Layout of Remaining Studs



10. Now we can lay out the studs along the rake wall. Pulling from the left, the first stud is 16¾ inches to the long side of the stud. Again, using the Construction Master calculator, we calculate the distance along the top plate, this time using 16¾ inches as the RUN.

11. Next, we mark the uphill side of the first stud.

12. Finally, we use the Construction Master to step-off the remaining studs, this time using a 16-inch RUN. The calculator keeps track, so hitting the equal sign for each successive stud yields the next number in the sequence. A framer tacks a nail at the first layout mark and just marks each of these numbers as I call them out.

Once the layout is complete, we can just pull the lengths from the studs off our layout marks to create a cut list **(3)**.

ASSEMBLING THE WALL

Using two guys—one cutting and one framing—is most efficient on these walls **(4)**. With a cut list in hand, the sawyer can work at the lumber pile. To simplify things, we have just one lumber length for studs. When I do the materials take-off, I always calculate the height of the wall at the peak and order all the studs at that height. For example, if the peak is at 15 feet, 6 inches, I order 16-foot material. The scrap is used up in window packages, cripple studs, blocking, and overhang framing.

While the sawyer is cutting out all the studs, the framer starts installing the king studs and frames-in all the window openings. This typically gives the sawyer time to get ahead cutting studs, and the framer can fill in the rest of the skeleton after the windows are roughed in.

When we block the wall for fire blocking and sheathing breaks, we cut standard-length blocks at 14 7⁄16 inches for normal stud bays. For irregular blocking near windows or double studs, the cut man eyeballs rough lengths and we custom-cut these over the wall frame to keep it all straight. As we block, we check to make sure that our on-center studs at 4 feet, 8 feet, and so on, are correctly located so that our sheathing won't need to be cut to center on studs.

OVERHANG & TRIM

Once the frame is complete, we sheathe and tape the wall (or install housewrap, if we aren't using Zip Wall), so we are ready to apply an overhang **(5)**. We frame out a closed gable soffit using 2x6s with cripples every 4 feet on-center **(6)**. We do all the cutting in place, sizing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the overhangs to fit LP SmartSide Soffit, which comes in 12-, 16- and 24-inch-wide panels. To accommodate expansion, we frame the overhang ¼ inch wider than the soffit material.

LP SmartSide Soffit panels come in 16-foot lengths, and once nailed in place, they stiffen the wall and keep the fly rafters dead straight. For overhangs longer than 16 feet, we like to keep a full 16-footer centered along the length of the rake to help keep the wall stiff, and infill at each end as needed.

We install fly rafters and any trim, cutting in place and scribing the miters for a perfect fit **(7)**. At the peak, where the fly rafters meet at a plumb cut, we add an RBC or an A35 clip to keep the overhang from opening as we lift **(8)**. This keeps the plumb cuts on the trim nice and tight during lifting, too.

For lifting, we temporarily brace the overhang with 2-bys cut with 45° bevels to hold it square to the wall.

ODD-SHAPED GABLES

Double gables, walls with two slopes, or other odd-shaped gables can be framed using the same process. The most important step is to accurately locate the wall line where the rafters land and to be sure that the heel stand (height-above-plate) for the rafters is exactly correct. With these well defined, it's a matter of snapping out the rafter line length, or cutting top plates, equal to the rafter line length. If the length of the rafter is less than 20 feet, we just cut it out of 20-foot material and nail the skeleton of the wall (the bottom plate, end studs, and top plates) together, making sure it's square. From there, the rake-wall framing is standard.

Double gable. A house we recently framed had a double gable on the front that we decided to build as one wall. We located each end of each gable, then swung arcs with radii equal to the rafter line length. This located where each gable crossed. After that, the framing was like that of any other rake wall.

Gable with a hole. We often frame a gable in which a section of the floor plan extends through the plane of the main gable. If the ceiling in the smaller room is vaulted, we frame the smaller wall first and lift it into place, then we snap out and frame the larger wall with a hole in it that matches the profile of the smaller wall **(4, 9)**.

Layout on the larger wall is only slightly more difficult. After snapping out the perimeter, we locate and snap out the position of the smaller wall's plates and heel stand. Where the top of the lower


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rafter line touches the bottom of the larger rafter line forms the edge of the "hole."

Unequally sloped gable. Sometimes we'll have a gable end that has a different slope on each side. Usually the side with the shallower slope has a full-height wall. Again, we begin layout by locating the height of the walls where the rafters will sit, and the heel stand of the rafters. From there we snap out the slopes, but instead of swinging the arcs, we snap out each pitch.

While we could calculate the length of the rakes, it's faster to snap out the slopes. For example, if one side is a 12:12 slope, we simply snap out a right triangle with equal sides, running the hypotenuse long. We do this with the shallow-pitch side, too, which locates the peak for us without our doing any math. I used to draw this out and use the exact lengths, but have found it's just as fast to snap it out "longhand."

SIDING

We often install the lap siding—at least inside the gable, where the siding ends must be cut to fit the rake. This is so much easier to do when you aren't on ladders or scaffolding. We have done this with fiber cement, LP SmartSide, and cedar shingle siding **(10)**. We recently sided a large gable with SmartSide in about 30 minutes, including installing the belly band, z-metal, siding, and "shadow" fascia (trim that hides the cut ends of the siding) **(11)**. This easily would have taken us 2 to 6 labor hours working from scaffolding, depending on the setup.

LIFTING RAKE WALLS

We try to frame as many walls as we can before lifting them because once the bracing is in place, it can make it difficult to work. We brace the wall plumb using our DeWalt DW0822 laser level, so that we don't have to come back later and brace it again.

In round numbers, framing and sheathing the wall and attaching overhangs while it is on the ground is easily twice as fast (or even faster) as standing a sheathed frame and installing the overhang, trim, and siding from ladders or scaffolding. I also believe that it's much safer and that the end-product is far better. With experience, the process becomes much easier as well.

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