Setting a Long Ridge

Proper prep work pays off for a fast and safe installation

BY NATHANIEL ELDON

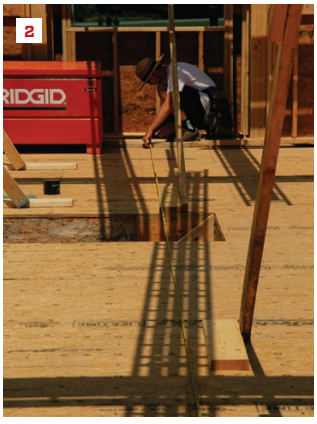
When I'm framing a building with a long ridge span, I always prefer to set one long, straight ridge rather than fuss with multiple, shorter pieces of dimensional lumber in the traditional way. Recently, we framed a house that had two very long non-structural ridges—one just shy of 44 feet and the other nearly 46 feet long. I decided to make the ridge out of 1 3/4-inch-by-11 7/8-inch LVL. We lucked out because the longest length of that dimension LVL that was readily available locally was 48 feet. (You can special order longer lengths, but I would never delay a job for one ridge beam.) I ordered the lengths for both members about a foot longer than we needed.

MEASURE THE RIDGE

Because the ridge ties into the gables, we frame and raise the gable-end walls first. While the gables still lie flat on the second-floor deck, we sheathe them and attach the rake overhangs before we raise them. At the peak of the gable, we hold the top plates back half the width of the ridge on each side. This space will allow the ridge to slip into place once the gables are raised and braced.

We find the length of the ridge directly from the floor deck, measuring to the outside of the exterior wall framing at either end. On this project, the design called for a bay that projected from

Photos by Seth Stafford



To find the length of the ridge, the author measured to the outside of the wall framing **(1)**. The crew member at the other end of the tape held it at 1 foot for the measurement **(2)** and did the same when measuring the ridge stock **(3)**. The crew laid out the rafters on one side **(4)**, squared the layout around the edge **(5)**, and then transferred the layout to the opposite side **(6)**.

each gable. I had continued the plates for the main walls through the bay space, and we were able to quickly measure to the outside of the plates without the sheathing being in the way **(1)**. (On projects that don't include projecting bays like these, I simply measure between the inside edges of the wall plates and then add twice the thickness of the walls—11 inches for 2x6 walls and 7 inches for 2x4 walls.)

To measure the ridge length, I used a 100-foot tape **(2)**. Because I don't trust the accuracy of the hook on long tapes, the carpenter at the hook end of the tape, Justin Cline, "burned a foot" when he held the tape for the measurement. To avoid confusion, I made sure that he held the tape to burn the same foot when I measured the actual ridge to cut **(3)**. I didn't trust the factory cuts on the ends of the LVL to be square, so I made a fresh square cut on one end and then measured and cut the ridge to length.

RIDGE LAYOUT

The next step was laying out the ridge. We always maintain "stack framing." All framing members align vertically—rafters over studs over floor joists. So to lay out the ridge, I needed to locate my original layout point and work from it.

For this house, I had started the layout from the north wall on the first floor. The second-floor gable wall stepped back 7 feet from the first-floor exterior walls, so to lay out the ridge, I extended a tape 7 feet past the north end of the ridge and marked 95 1/4 inches. Here I drew an "X" to the south of the line. At that point, I tacked in a nail and pulled a 16-inch-on-center layout for the length of the ridge. Next, Cline marked both sides of the rafter layout on the ridge using the 1 1/2-inch tongue of a framing square **(4)**. To complete the layout, we squared the layout around the edge **(5)**, flipped the ridge to the other side, and marked the rafter positions on that side **(6)**.

The crew attached a ripping of 2-by stock to the top of the ridge for setting the height of the rafters **(7)**. Strong aluminum staging provided a good working platform for the crew **(8)**. To set the height of a supporting ledger, the author set a scrap of the ridge stock into the slot on the gable **(9)**. The ridge would be nailed to the rake plates at that height **(10)**.

This roof assembly was to be ventilated from the soffit to the ridge. In this part of the country, we would typically hold the rafters above the ridge slightly to provide the necessary space for ventilation. For a wider structural ridge, I usually notch the plumb cut of the rafter to wrap over the ridge, but for a narrow non-structural ridge like this, the extra cuts didn't make sense. Instead, we ripped a temporary 2-by strip and tacked it on the top of the ridge for setting the rafters to **(7)**. Once the rafters were installed, we would remove the strip and hold the roof sheathing down an inch or so from the tip of the rafter plumb cut, which would provide a clear ventilation path at the peak of the roof.

STAGING AND SUPPORT

When you're working with long and unwieldy pieces of lumber like this ridge, a solid work platform is a must. Normally, we would set up a couple of towers of pipe staging and run long aluminum planks between the towers. But with this project, the rafters sat on intermediate walls running parallel to the ridge between the exterior knee walls (at the bottom of the rafters) and the ridge. We bridged between these walls with aluminum scaffolding planks perpendicular to the ridge line. These planks then supported longer aluminum planks that ran along both sides of the ridge **(8)**.

Because this ridge was non-structural, I installed a temporary ledger across the wall on the inside of each gable to support the ends of the ridge until everything was tied together. If the ridge had been structural, we would have framed-in permanent posts below the ridge to support it, with the loads transferred down to the foundation. For this ridge, though, posts would not be necessary. We would be bolting collar ties to the rafters to help them resist outward push from the weight of the roof.

Before the ridge was brought over, the crew stacked the rafters for the back of the house, keeping them low and out of the way **(11)**. On the front of the house, they leaned the rafters up, closer to their final positions **(12)**. The crew centered the ridge on the telehandler forks and held it in place with ratchet straps **(13)**. The telehandler then slowly and carefully lifted the ridge into position **(14)**. After releasing the straps holding the ridge on the telehandler forks, the crew was ready to install the ridge **(15)**.

To set the height of this temporary ledger, I inserted a short cut-off piece of the ridge (with the ventilation packer) into the slot at the top of each gable **(9)** before nailing the ledger in place **(10)**.

As part of the preparation for setting the ridge, I cut all the common rafters based on the rake measurement of the gable walls. We used a telehandler to lift the stacks of rafters up to the second-floor deck. The best access for setting the ridge would be from the back of the house, so on that side, we put the rafters in low stacks to keep them out of the way **(11)**. On the front side of the house, we tilted the rafters up so they'd be within reach for installation **(12)**.

LIFTING THE RIDGE

The crew loaded the ridge onto the forks of the telehandler. The long LVL wasn't that heavy, but its long length made it floppy and difficult to handle. To minimize this effect, we rolled the ridge up to a vertical position and then secured the middle of the ridge to the forks of the telehandler with ratchet straps **(13)**. Jerry Beasley, my best telehandler operator, slowly drove the ridge around to the back of the house, and then brought the ridge as close to position as he could with the boom. We would do the rest **(14)**.

I unstrapped the ridge from the forks **(15)**, and we dragged it back until the north end was just inside the gable framing. One of the crew took the north end, lifted it on his shoulder **(16)**, and slipped it up onto the ledger, and then we pushed the ridge into the slot between the gable wall plates **(17)**.

The south gable was a bigger challenge. Instead of sliding the ridge into the slot between the plates as we did on the north end, we had to lift it up and drop it in **(18)**. When we lifted the ridge, the lift angle added a little length to the ridge, so we loosened one of the gable braces to give us a little play in the walls. With the gable

The crew pulled the ridge back so that one crew member could shoulder the end of the ridge onto the ledger **(16)**. They then pushed the ridge into the gable slot **(17)**. At the other end, they had to lift the ridge to drop it into the slot from above **(18)**. One of the crew tapped the ridge down into place **(19)**.

slightly loose, we slipped the ridge into the south slot and tapped it down to seat it at the proper height **(19)**. We then moved the gable wall back into position against the end of the ridge.

STRINGING THE RIDGE

The ridge was in position, but as to be expected over such a long length, it had a huge bow and a sag due to its own weight. To gauge the straightness of the ridge, I ran a tight nylon string along the bottom edge of the ridge from end to end. I first used the tight string to find a center post height. (With the variations that were possible in two floors of framing, I thought this method would provide a more accurate measurement). To make a temporary center support, we held a 2x4 up against the string and marked the length. After cutting the 2-by, we stuck it under the ridge to hold it at the proper height.

The center post took care of the sag, but we still needed to straighten the bow. I usually install two pairs of rafters as close to the center of the ridge as possible to brace it straight. But the center of this roof had two intersecting gable dormers that we would build later. So to straighten the ridge, we nailed a temporary diagonal brace to the center post and anchored it back to the second-floor deck, using the tight string as a guide **(20)**.

PLUMB THE GABLES

After the ridge was set in place and braced generally straight, we took the time to double-check the gable-end walls for plumb. Although we had rough-plumbed the gables when we raised them, installing the ridge and taking the bow out can affect how plumb the gables are. So I prefer to plumb the gables for good after the ridge is installed and relatively straight.

There were no common rafters at the center of this house, so the crew supported the center with a temporary post and braced it back to take the bow out of the ridge **(20)**. The low ends of the rafters were secured first **(21)**, and then the top of the rafter on one side was attached **(22)**. The author toenailed the opposite side so that it could be driven into place to straighten the ridge **(23)**.

For the plumbing process, we used a laser level, shooting from the floor to the ridge. I started by making a mark on the floor about 8 feet from the inside of the plate line and at the center line of the building. I adjusted the location of the mark so that it was clear of any braces, scaffolding, or planks that might block the beam of the laser. Then I marked the same measurement from the inside of the wall on the bottom of the ridge. I set the laser at the mark on the floor and looked to see how it referenced the mark on the ridge. The marks lined up perfectly—indicating that the gable was plumb—and we braced it in that position.

If we hadn't been so lucky, I would have adjusted the gable in or out until the marks lined up. I always check both gable ends this way, but if one gable has been braced perfectly plumb and the ridge has been cut to the right length and installed properly, the opposite gable is usually plumb as well.

INSTALL THE RAFTERS

With the ridge in the correct position and the gables plumb, it was time to set the rafters. With rafters this long, this task is best done with a four-person crew: two crew members at the ridge and two others at the exterior walls—on each side of the building, and each with a framing nailer. The planks on the staging put the ridge at a comfortable working height for me, so I took the ridge duty along with another crew member who was close to me in height. Beyond the comfort factor, a good working height makes installing rafters faster and more efficient.

As a general rule, I always have the crew at the low end of the rafters nail them to the exterior walls before we secure them to the ridge **(21)**. Fastening the low end first helps us straighten the ridge, because we're using the weight of the rafter to our advantage to push the ridge into line.

Pairs of rafters straighten and support the ridge. If the ridge needs to be tweaked in the opposite direction, the opposite side goes in first **(24)**. The last of the rafters goes in, leaving the ridge nice and straight **(25)**. The author removes the temporary strips on top of the ridge, leaving a space for ridge ventilation **(26)**. The intersecting gable dormers complete the roof framing **(27)**.

Fastening in this order also sets the ends of the rafter in a straight line, which saves us time when we're trimming soffits later. (These particular rafters transitioned to shallower-pitch porch rafters, so there were no rafter tails or soffits to deal with).

When the low end of the rafter was secured, my partner at the ridge set the rafter on his side in place so that the top was flush with the top of the temporary 2-by strip. Standing on the opposite side of the ridge, I then shot nails through the ridge to secure the rafter in place **(22)**. After nailing the rafter on one side, I set the opposing rafter on its layout and toenailed through the top of the rafter so that I could drive it into place **(23)**. My ridge partner then nailed it at an angle from the opposite side.

As we continued down the ridge installing the rafters, we would reverse roles if my partner's side seemed looser than mine, and I would tap my side into place first **(24)**. We also kept checking the straightness of the ridge by eye. If we've cut our rafters accurately, securing the rafters straightens the ridge and holds it straight **(25)**.

Once we installed the common rafters along the ridge and knee walls, we nailed the rafters to the layout on the intermediate walls. We then removed the temporary packing strips from the top edge of the ridge **(26)**. Over the next couple of days, we installed the framing for the two intersecting gable dormers, which included LVL headers between the common rafters that flanked the openings. The ridge for the intersecting roofs extended from the headers to the dormer gables. Then it was just a matter of filling in the valley rafters, jacks, and the intermediate rafters above the headers, and we were ready to sheathe the entire roof **(27)**.

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