Frame a Gable Wall

This fundamental approach hinges on an accurate layout that keeps the math to a minimum

BY BRIAN VOGT

After almost 20 years in the field, I know well that there are usually several good ways to complete any carpentry task. But here at North Bennet Street School (nbss.edu), where I now spend my days teaching carpentry, we stress fundamental textbook methods that minimize complex math and avoid specialty tools.

Our 2016 graduating class included 21 students, and, as we do every year, we used real construction projects to teach them carpentry. In addition to the small structures we built in our Boston shop at the beginning of the program, we finished with a full build. This year we framed a 24-ft. by 48-ft. barn, and used the opportunity to take the students through the basics of building a gable wall: laying it out full scale on the attic floor, framing it, sheathing it, attaching the overhangs, and, finally, raising it safely. □

Brian Vogt is the carpentry department head at North Bennet Street School in Boston. Photos by Patrick McCombe.

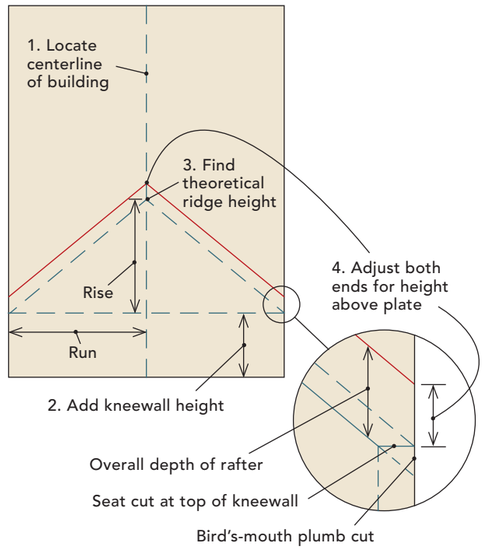
START WITH A FULL-SCALE LAYOUT

1. Find the center of the building and snap a line parallel to the eaves. This represents the roof ridge.
2. If the roof will rest on kneewalls, add their height on both sides of the gable and snap a line in between.
3. Use a construction calculator (or web application) to determine the theoretical ridge height:

   Enter RUN in feet and inches.

   Enter PITCH in inches (found on building plans).

   Press RISE.
4. Measure the height of the bird's-mouth plumb cut (See "Cutting and Setting Common Rafters" *FHB* #142) and subtract this amount from the overall depth of the rafter to find the height above plate (HAP). Add this HAP number to both the ridge height and kneewall height, and snap a line on the subfloor between them to mark the position of the rafter's top edge.



Drawing: Rodney Diaz

Transfer the stud layout

A framing square with a straight board clamped to it at the 10-in-12 roof pitch is used to lay out the studs on the rafter. The stud is marked along the vertical leg, and the 16-in. spacing is marked on the horizontal leg. The square is moved along the rafter and aligned with each tick mark, and the process repeated. The studs will be notched to fit around the rafter, and blocks of the same thickness as the notched studs hold rafters off the deck to allow the studs to slide under the rafter. L-shaped blocks set along the snapped chalkline keep the rafters in the correct location during framing.

ASSEMBLY-LINE CUTTING SAVES TIME

The tops of the gable studs must be cut to support the rafters. Marking and cutting the parts all at once minimizes setup and saw adjustments, saving time.

1 Gang-cut the tops

An angled cut at the top of each gable stud supports the rafter. These cuts are made by clamping several studs together, and marking the roof pitch across them. Set the saw to cut 1½ in. deep, the thickness of the 2x rafter. The tops of the studs extend to about 1 in. below the rafter's top edge.

2 Mark the cheeks

With the angled top cuts made, mark the vertical cheek cuts 1½ in. from the edge. Draw the line on all the studs using a combination square and a pencil.

3 Make stopped rips

Using a circular saw, make the cheek cuts, stopping at the top cuts you've already made. A finger on the saw's base guides the rip and keeps the blade parallel to the stud's edge.

4 Finish the cuts

Because the sawblade is round, a small part of the cheek cut must be completed with a handsaw. You could overcut with the circular saw, but finishing by hand takes seconds and the final result looks more professional.

5 Cut studs to length

With the top already notched, the studs are individually measured and cut. The measurement is taken from the long side of the angled top cut to the plate. Measuring from the long side allows you to hook the tape for more-accurate measuring.

6 Start rough openings with jacks and sills

Door and window locations are marked on the plates during layout. Once the rest of the studs are nailed in place, giving the wall some rigidity, frame the openings, starting with the sills and jack studs.

7 Add headers and king studs

Once the jack studs are in place, position the header on top of them and fasten the king studs in place using pairs of nails spaced 16 in. o.c. The extra king stud the students are placing on this setup maintains the 16-in. o.c. spacing.

8 Cripples come last

Once the rest of the wall is framed, measure, cut, and nail cripples in place above rough openings.

SHEATHE THE WALL ON THE DECK

Sheathing and installing overhangs while the wall is laying flat is safer than working from a scaffold or ladder, but a word of caution: You will need wall jacks, machinery, or plenty of help to lift a wall this size.

1 Start the sheathing in a corner

Run the sheathing so it overhangs the bottom plate at least 12 in., so the wall will be fully connected to the floor system below. In this engineered assembly, the sheathing was nailed to the studs with 8d nails spaced every 4 in. at panel edges and every 8 in. in the field.

2 Cover openings, then cut

To save time and make fewer cuts, sheathe over window and door openings and cut them out in a clockwise direction with a heavy-duty router and a ½-in. bottom-bearing bit.

3 Cut overhanging sheathing

Use a router to cut off any overhanging sheathing, this time cutting counterclockwise (up the right side of the gable, then down the left).

4 Build overhangs on the bench

It's easier to build the gable overhangs on a set of sawhorses. Bar clamps hold the parts together while they're fastened with 3-in. construction screws.

5 Install overhangs on the deck

Starting from the top of the wall, align the overhangs so they're flush with the tops of the rafters and secure them with pairs of screws driven into each stud.

6 Lift and pause

Lift the wall enough to get a sturdy sawhorse underneath. This divides the lift into two parts and allows an upright body position for the hardest part of the lift, reducing the chance of back injury.

7 Go all the way

Many helping hands and a pair of 2x6s attached to the gable studs with single structural screws that allow them to pivot help raise the wall. Steel strapping keeps the bottom plate from slipping off the deck. Tag lines with floor-mounted anchors prevent the wall from falling.

8 Nail it off

Once the wall is braced plumb, nail every 8 in. through the bottom plate into the band joist below.