Framing Big Gable Walls

Safely and Efficiently

Build them on the floor, lift them with specialized jacks, and eliminate extra footsteps wherever possible

BY LYNN HAYWARD

Framing quickly and efficiently is all about doing things for a reason rather than doing things just to see wood go up fast. Many builders frame the roof first, then frame the gable walls under it. Although they seem to be getting a lot done fast (because the roof is up), it's actually very dangerous to dangle off a ladder while maneuvering full sheets of plywood and a nail gun, trying to sheathe the gable wall that just went up so quickly.

In the long run, I find that building the whole end of the house in place on the floor is much safer and more efficient. If the gable end has any kind of unusual trim detailing, as was the case on the house featured here, building flat on the deck makes even more sense.

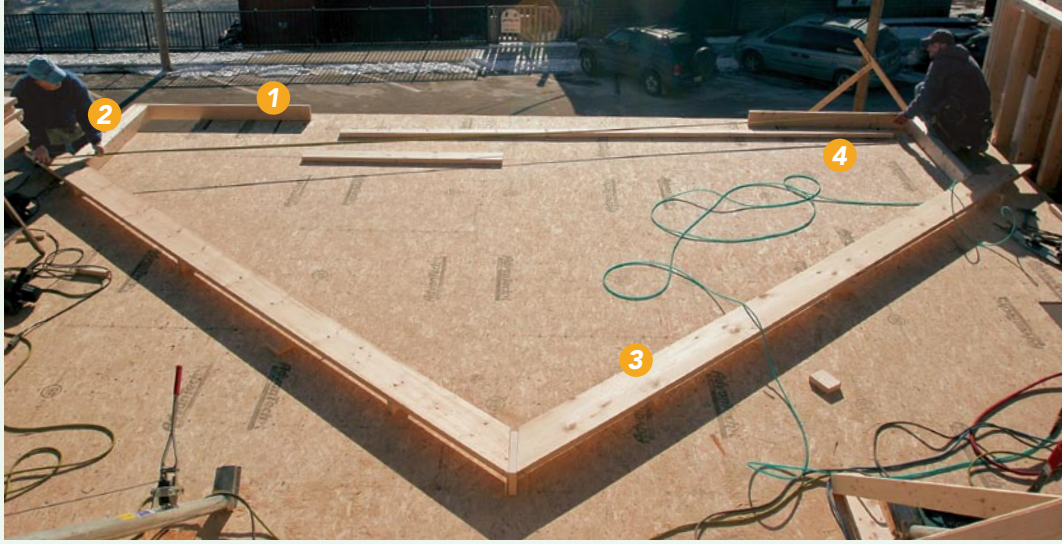
Don't snap lines for every stud; snap only one line at the plate

Even builders who frame gable walls on the deck often expend more time and effort than they need to. A common practice is to snap the entire gable-wall layout on the deck: individual studs, top and bottom plates, and rafter layout.

You don't need to work this way, however. The only chalk-

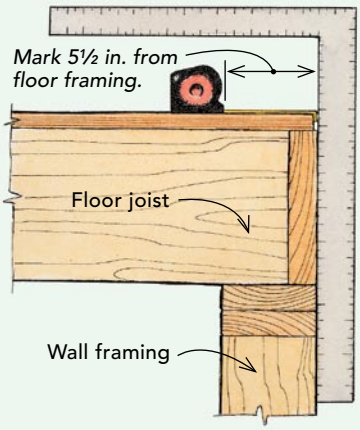
BUILD THE OUTSIDE FIRST

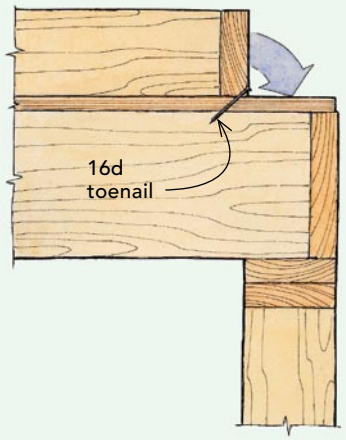
To sheathe a wall before standing it, the wall should be straight and square. My process begins at the bottom plate and ends at the rafters, which define the top of the wall. Because the wall in the photo at right gets a large French door, I omitted the central section of the bottom plate rather than cutting it out later. When doing this, it's important to toenail the plate in its exact location (photo bottom left) to keep the rough opening plumb and square.

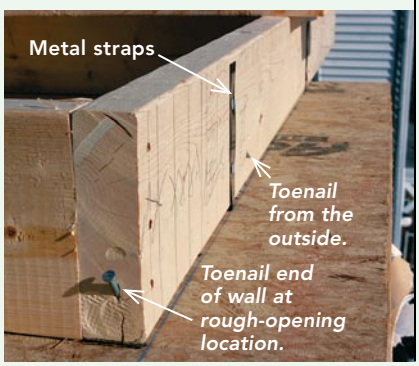


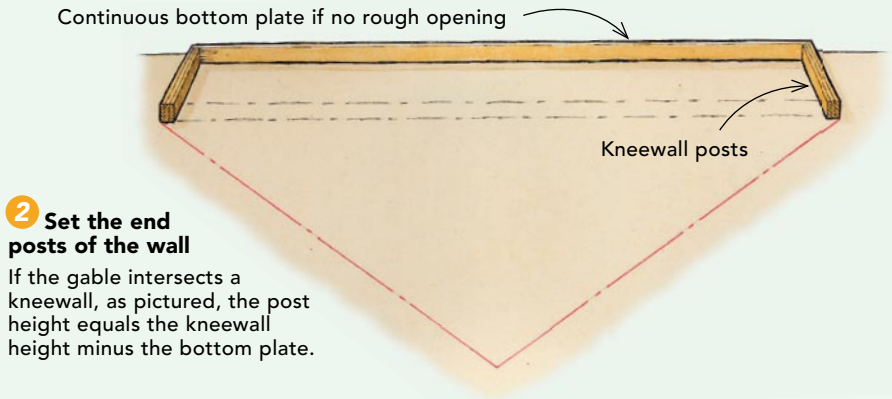
1 Toenail the bottom plate to the subfloor

Snap a chalkline 5½ in. from the floor framing. To locate the line, use a framing square to plane up from the rim joist instead of hooking the subfloor, which may not be cut straight. Many framers toenail the bottom plate from the inside so that the toenail is easier to remove after the wall is raised. The reason why it's easier to remove the nail is exactly the reason why I do it differently: The nail pulls out as the wall is stood. If you toenail from the outside, the nail stays in the deck, which helps to prevent the wall from slipping out as it's raised. I go a step farther and nail metal straps to the wall and floor before standing the wall. After the wall is raised, it's fairly easy to pull the nails and remove the exposed portion of the straps.



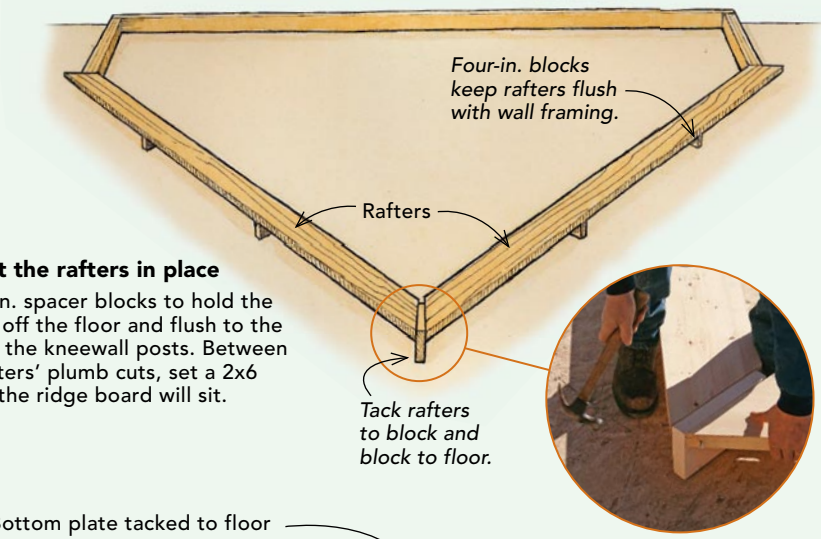






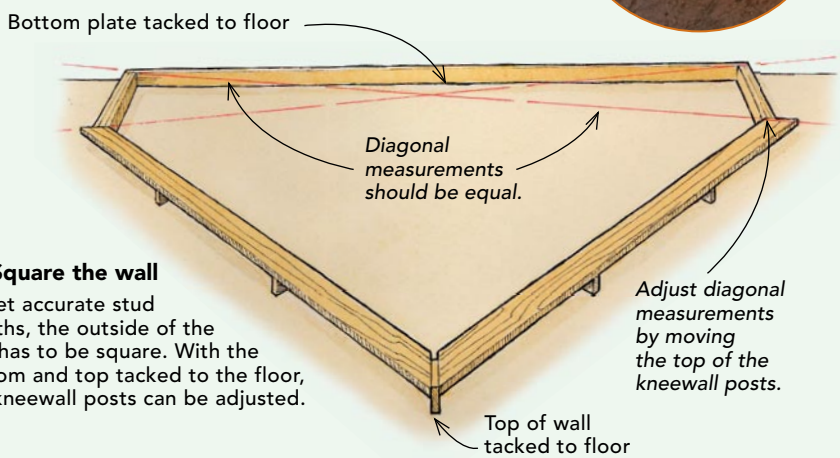
2 Set the end posts of the wall

If the gable intersects a kneewall, as pictured, the post height equals the kneewall height minus the bottom plate.



3 Set the rafters in place

Use 4-in. spacer blocks to hold the rafters off the floor and flush to the face of the kneewall posts. Between the rafters' plumb cuts, set a 2x6 where the ridge board will sit.



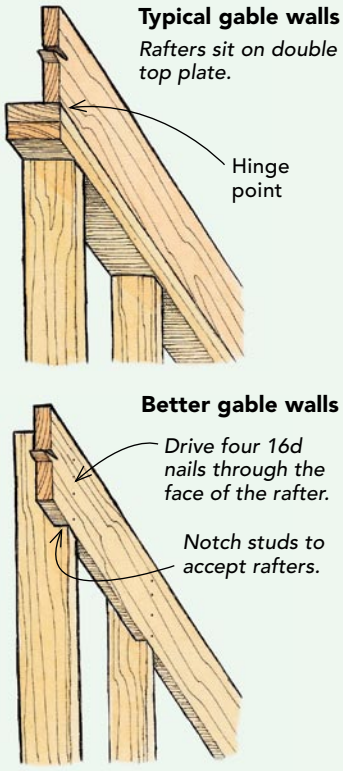
4 Square the wall

To get accurate stud lengths, the outside of the wall has to be square. With the bottom and top tacked to the floor, the kneewall posts can be adjusted.

Drawings: Heather Lambert

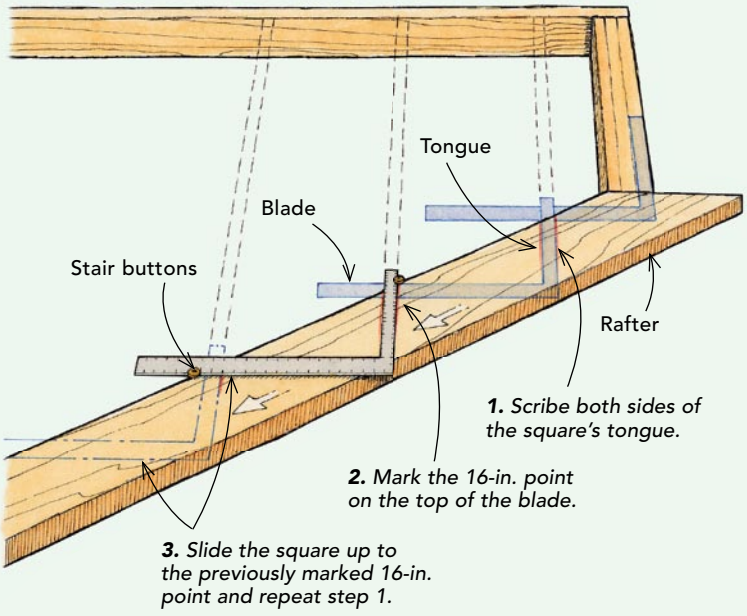
A STRONGER DESIGN AND A FASTER LAYOUT

Some framers build gable walls the same way they frame typical sidewalls: with a bottom plate, a double top plate, and studs in between. I don't do it this way. Instead, I skip the top plates and notch the studs to accept a rafter. This approach is stronger because it eliminates a hinge point by nailing through the face of the rafter into the stud. This method also uses less wood and is faster to assemble.



Lay out studs with a framing square

With stair buttons attached to the tongue and blade of a framing square, you can mark the gable wall's stud layout right on the face of each rafter. Button position depends on roof pitch. The 1½-in.-wide tongue of the square should remain perpendicular to the wall's bottom plate as you move up the rafter, stepping off a 16-in. run. Tracing against the edges of the tongue gives you the placement of the stud.



line I snap on the deck is the line representing the inside edge of the bottom plate. Because I use the rafters to define the top of the wall (photo p. 71), any additional lines are superfluous.

My single chalkline is snapped 5½ in. in from the outside of the framing (for 2x6 walls). Rather than hooking the subfloor and then measuring in, I use a straightedge, such as a framing square, to plane up from the framing. Following this procedure keeps the outside walls consistently straight from one floor to the next.

I cut the bottom plate to length and toenail it to the deck through the outer face of the plate. The nail acts as a hinge when my crew and I are lifting the wall. If you toenail through the inside face, the nail will pull out of the deck and let the wall slide bottom first as you raise it. I also use short lengths of metal strapping nailed to the floor and to the bottom plate to prevent the bottom of the wall from kicking out during lifting. After the wall is in place, we pull these hinge nails and the nails in the straps with a cat's paw, then cut off the metal straps.

Rafters replace the top plates

We eliminate the top plates in gable walls in favor of notching the studs to accept the rafters. This method makes stronger and lighter walls, and it uses less wood. We nail the kneewall posts at a right angle to the ends of the bottom plate and tack them to the floor to hold them in place while we build the gable wall. Atop the kneewall posts, we place the straightest two rafters in the pile and nail them down. At the peak, we tack a 2x6 block between the plumb cuts in the rafters with its bottom placed exactly where the bottom of the ridge board will be. A stud will be cut to fit below this block, and the block

Smooth framing strategy. *Before you start filling in the wall with studs, run a string along the top of the rafter to check for straightness. If there's a substantial bow, bend the rafter back straight with a lever and a block nailed to the subfloor. Then secure it with a stud or two.*

will be removed before roof framing. This puts the ridge at exactly the right height during roof framing.

With the outline of the wall nailed together, and the bottom plate and the ridge block tacked to the subfloor, we square the wall using the kneewall portion as our rectangle for equalizing the diagonals. When the wall is perfectly square, we tack the end posts in place to the floor and turn to framing the inside of the wall.

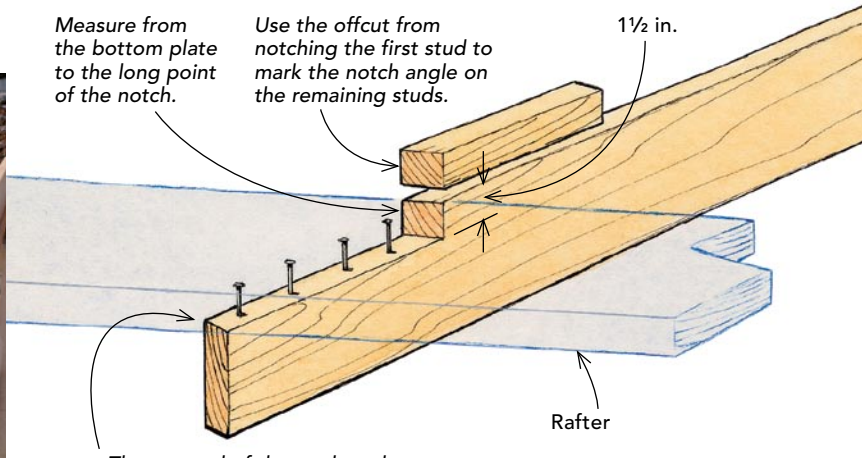
Mark stud layout on the rafters with a framing square

After laying out the wall on the bottom plate, we transfer the wall layout to the face of each rafter using a framing square and a pair of screw-on stair buttons (sidebar, facing page). In stair-layout language, you have to position the buttons on the square so that the broader blade steps off a 16-in. run, while the square's tongue remains plumb—or perpendicular to the bottom plate, because the wall is framed on the deck.

Before measuring the studs, we stretch a gauge string along the top of the rafter to see if there's a bow. If we find a bow, we cut the middle stud short by a little more than what the string shows. We then nail the stud on layout to the bottom plate, tack it to the floor with a toenail, and use a block (which is nailed to the subfloor) and a short length of 2x4 to pry the rafter straight. We face-nail the rafter

NOTCHING STUDS IS DONE QUICKLY

Once the stud layout is marked on the rafters (see facing page), the lengths of all gable studs can be measured, and studs can be cut all at once to save time. Measure studs from the wall's bottom plate to the long point of the notch at the bottom edge of the rafter. Once the first notch is cut, use the offcut to mark the notch angle on all remaining studs.



The top end of the stud can be square-cut below the top edge of the rafter. Pick a round number that's easy to remember.

Install a dummy ridge board. *A short 2x6 provides the proper spacing for a ridge board to fit between rafters after the wall is raised.*

Frame from the inside out. *If you frame the window openings first, you'll be able to nail sideways into the header with a nail gun for a strong connection. Cripple studs above the header are placed last because they need to be measured after the window opening is framed.*

to the stud and then release the lever. This step usually takes care of any discrepancies.

Cut all the studs at once, not one stud at a time

To get the stud length, I hook my tape on a scrap of 2x6 tight against the bottom plate, and measure to the long point of the beveled notch. It's better to measure to the long point because after cutting the beveled notch, you may need to hook your tape on the long point and pull the overall length.

As I measure the studs, I mark their lengths on the face of the rafter, then on a block of scrap wood. This way, I can cut all the studs necessary, or at least six or eight at a time. Because the notch in the stud is beveled, I need to mark the slope of the rafter on each stud, but I do this only once (with a Speed Square). For each subsequent cut, I use the offcut from the first stud as a scribing block.

You should be able to cut two gable-wall studs from each 16-ft. 2x6: a long and a short piece, or two medium pieces. The top of the stud is cut square below the top of the rafter. For each stud, I make two marks: One represents the square cut, and the other is the long point of the bevel. I trace the 1½-in. width of the notch with the tongue of the framing square, scribe, then cut the notch. As I cut the studs, I cross the lengths off the list.

Use a router to cut out windows, doors, and sheathing edges

The framing is straightforward. Check the rafter against the gauge string, and correct if necessary. Frame window and door openings in the center of the wall first, then work your way out. Finally, face-nail the rafter to the studs.

I begin sheathing by snapping a chalkline about 3 ft. up from the bottom plate. This overhanging sheathing covers the floor framing and ties the gable wall to the rest of the house. To get the exact overhang measurement, measure down from the subfloor to the top of the first floor's wall sheathing. Subtract ⅛ in. from this number. It's important that the sheathing not hang down too far, or it will prevent the gable wall from resting on the subfloor, making it unstable.

As the framers sheathe the wall, I break out my 3-hp router with a panel-cutting pilot bit, and I cut out the window and door openings as well as the overhang along the top of the rafters. This router technique is much faster than marking, measuring, and snapping a bunch of lines to represent these cutouts, and then using a circular saw to make the cuts. This technique is also a lot cleaner, leaving no sheathing bumps to hinder the window and door installation.

Wall sheathing spans the rim joist. *Hanging the sheathing below the bottom of the wall ties the two stories together structurally. Don't hang it down too far, though, or it will prevent the wall from sitting on the floor fully.*

Cut openings quickly with a panel-cutting bit. *I look for a plunge-cutting panel bit with a cutting length of 1⅛ in. or 1¼ in. This allows me to get twice the life out of the bit: After I dull the top half, I reset the bit lower for a fresh cutting surface. Porter-Cable makes one for around $16.*

WALL SHEATHING 101: WHEN TO MEASURE

The first sheet determines how smoothly the rest of the sheets will flow, so snap a line across the studs as an alignment aid, line up the sheets carefully, and double-check the overhang. But don't measure, mark, snap lines, and cut out window and door openings with a circular saw. Instead, sheathe over them, then make cutouts with a high-powered router.

When installing the housewrap, we make sure to snap a line, similar to the one for sheathing, to allow overlap on the first floor. We also allow for about a foot of overlap at the corners, stapling along the corner and folding back the extra.

As we progress along the wall, we pull the housewrap tight. It's important to keep the housewrap tight and to avoid big bubbles that can cause a problem when snapping lines for the clapboards or the siding. I don't like to install windows or apply siding to a wall before standing it up because the racking that takes place during the lifting process can loosen the nails.

I do, however, apply exterior trim to the gable. I make sure the trim has been painted with at least two coats of exterior paint. Here's a tip about the gable fascia: As wood dries, it shrinks. Because the board shrinks equally from side to side, it shrinks the most along the short point of the miter, the widest part of the board (see *FHB* #164, p. 104). To minimize this problem, we cut the fascia so that it has a small gap at the long point. A couple of weeks later, after the short points have shrunk, the gap is uniform. This usually coincides with the end of the roof dry-in, and as long as we're up there, we toenail the gap together with a stainless-steel siding nail for a tight, long-lasting joint.

Wall jacks make easy work of lifting heavy walls

After the wall is framed and sheathed with housewrap and the fascia is applied, it weighs a lot. I use wall lifts made by Proctor (www.proctorp.com; about $875 for 16-ft. jacks). They're basically steel pipes with a come-along mounted to them (they telescope for easy storage). At the bottom of the rod is a hinged shoe; one leaf of the hinge is nailed to the subfloor, and the other leaf is welded to the pole.

The pole can move with the wall as the wall goes up. The pole starts out standing basically plumb, and as the wall is jacked up, the top moves farther and farther away from the shoe, hence the hinge. At the top of the pole is a pulley through which the cable from the come-along runs. At the end of the cable is a bracket nailed into the top of the wall.

The wall jacks also have a small bracket at the top of the pole to stop the wall from falling past the 90° plumb position and falling off the house. After the wall is standing plumb, we attach braces to hold it that way, and we remove the wall jacks.

With the wall stood and braced, we pull the toenails and then cut the straps; then we nail the wall to the line. This sometimes takes a little persuasion. □

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LIFT WITH YOUR HEAD, NOT WITH YOUR BACK

Lifting exterior walls with wall jacks is safer in the short and long run: The wall doesn't fall on anyone during lifting, and my back lasts longer. The 16-ft. jacks (about $875) consist of two telescoping steel poles, a come-along, and a hinged shoe. A bracket at the end of the come-along cable is nailed into the top of the wall; the hinged shoe is nailed into the subfloor, and the wall is raised by cranking the come-along. A hook on top of the poles keeps the wall from falling off the house after it has been stood.

A little persuasion gets the wall back on the line. *With the wall stood and braced, we nail down the bottom plate, adjusting it to the line as we go. We also drive a few 8d nails through the sheathing into the rim joist to squeeze it tight before nailing off the sheathing with a nail gun.*