

Framing an Opening in a Bearing Wall

Before you slice through studs, make sure you've got the weight of the house well supported elsewhere

BY MIKE GUERTIN

Spec homes seem to grow like weeds in my neck of the woods. When these homes are built, it also seems that contractors usually minimize the number and size of the windows to cut costs and maximize profits. So it's not surprising that after living in the dark for a few years, homeowners feel the need to let in more light. That's when they call me to add windows or patio doors.

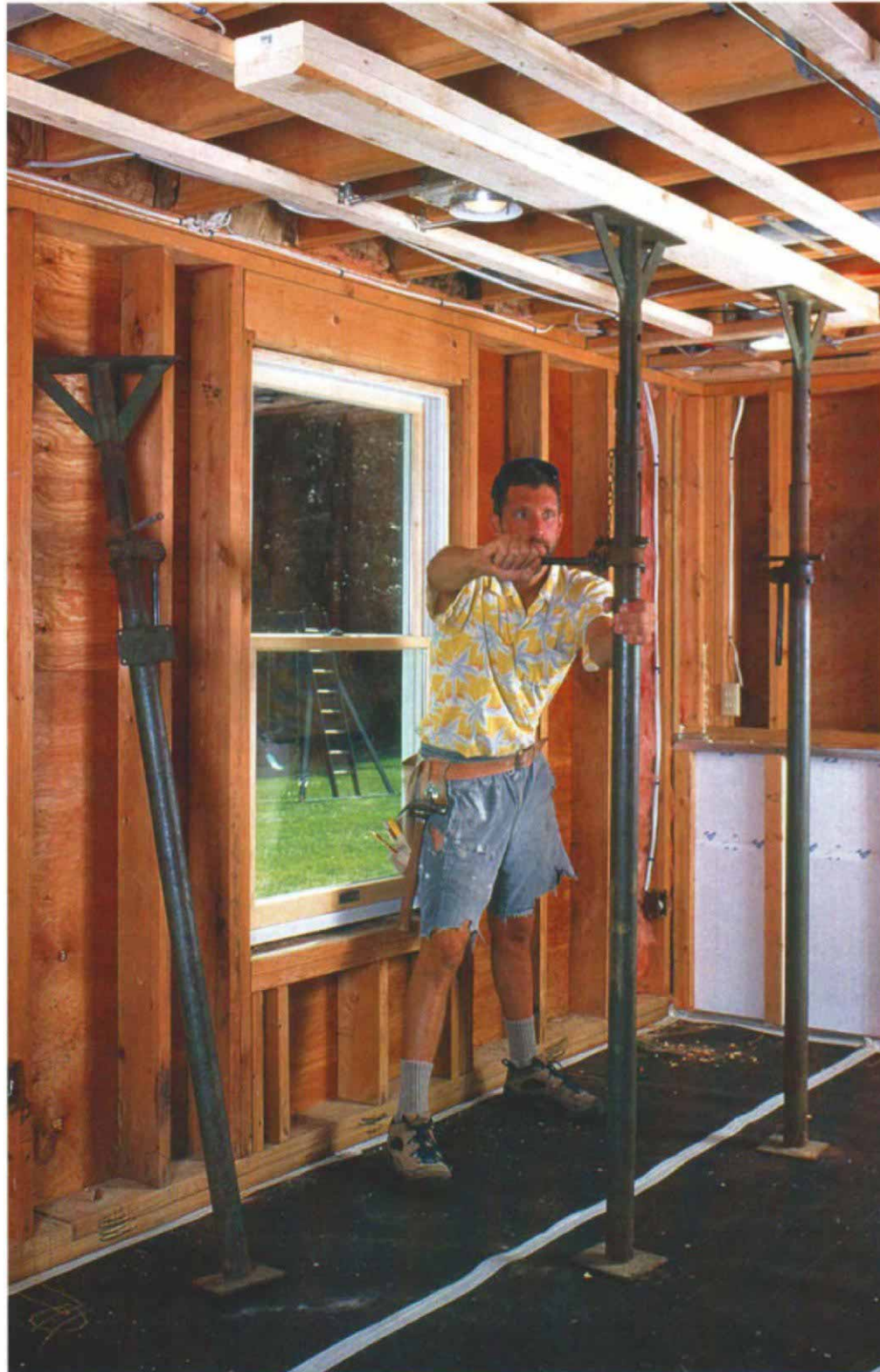
Putting a window or door into an existing wall with either no window or with a smaller window usually means creating an opening in a bearing wall (sidebar p. 70). A simple matter while the house is being built, framing an opening in a bearing wall after the fact is more tricky. Here's how I do it.

Don't start cutting studs yet

Before I even think about taking my reciprocating saw out of its box, I make a few assessments. First, I look for any wiring, plumbing or ductwork that might be hidden inside the walls. With this job, a double window was replacing a single window as part of finishing a basement.

With the wall framing exposed, the utilities were clearly visible. If the wall had been finished, I would have started by carefully removing the plaster or the drywall. Any utilities in the opening have to be rerouted or worked around.

At this point, I also check out whether the wall is supporting anything. If the wall is a bearing wall, as in this case, the ceiling and all the weight above it need to be supported temporarily while the opening is cut and a header is installed. Once I have a plan of attack, I lay out the exact location of the open-



Screw jacks take the weight off the wall. Heavy-duty screw jacks placed under temporary plates lift the ceiling slightly to take the weight off the wall framing.

ing for the new windows. Then I remove the exterior siding and save it to be reused later.

Lift the ceiling a hair

Supporting the ceiling and the weight above is easy with the right equipment. I use screw jacks set between plates on the ceiling above and the floor below if the floor is framed. (In this case, I set the jacks on the basement slab.)

I start by tacking two 2x6 plates flat to the underside of the floor joists about 3 ft. back from the wall. Two spikes are plenty to hold the plates in place until the jacks are slipped under them (photo facing page). The doubled plates spread the load of the joists and transfer it evenly to the jacks, which can't always be set directly beneath each joist.

With double plates, I space the jacks about 4 ft. apart. When the opening is wider than the number of jacks I have, I nail two 2x6s together and position them upright as a header. The jacks can then be spaced up to 6 ft. apart. The plates should support at least one joist beyond the opening at both ends.

I crank the jacks equally to take the load off the wall. The screw jacks I use are powerful enough to lift the floor considerably, but lifting too far can crack floor, wall and ceiling finishes. Instead, I crank the jacks slowly and evenly, taking care to lift the ceiling no more than $\frac{1}{8}$ in., plenty of room to remove existing studs and to install new framing.

If screw jacks aren't available, here are a couple of lifting alternatives. Adjustable columns intended to shore up sagging basement beams can be modified for use as jacks. These columns have several separate parts that can be a pain to deal with, but they can be tack-welded together at strategic points to minimize aggravation. They are put in the same way as screw jacks.

Another way to support the ceiling is to build a temporary stud wall. Rather than insert jacks between the plates, you can put in studs 16 in. to 32 in. apart. To make sure the ceiling is lifted off the wall, I cut the studs $\frac{1}{4}$ in. longer than the distance between the temporary plates.

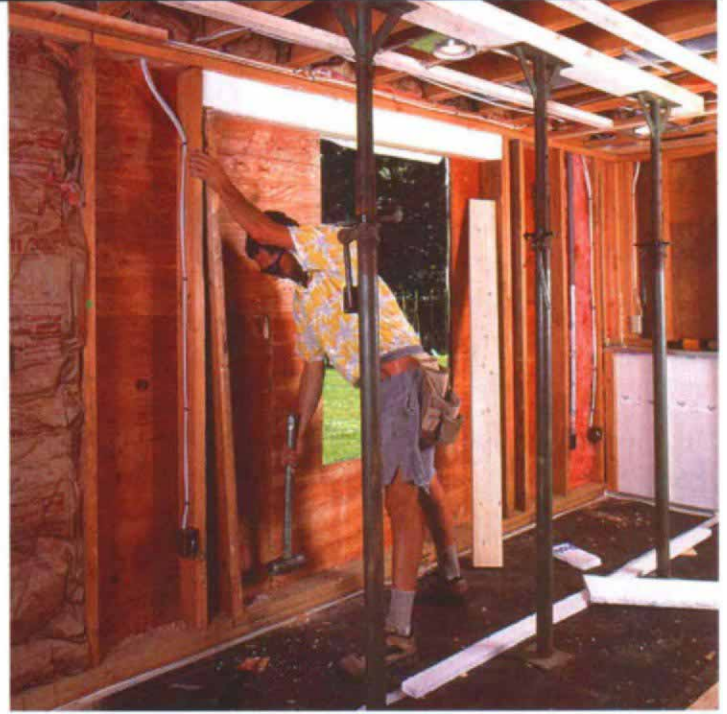
I slide in each stud at an angle and toenail it to the top plate. When all the studs are tacked in, I whack the bases of the studs with a sledgehammer. The bases are driven along the bottom plate so that they lift equally. You



Lift and separate. After the author lifts and supports the floor joists, a light tap with a sledgehammer separates the top of the studs from the plate (photo left), and a few taps along the side of each stud loosen the sheathing nails. A reciprocating saw equipped with a metal-cutting blade then clips the nails (photo right).



Old framing comes out in one piece. With most of the nails cut, the old studs and jacks pop out in one piece so that the lumber can be reused easily.



Header slides in first. A double 2x6 header is supported by the jack stud on one end and is tacked in place flush with the top of the king stud on the other end.

A jack adds support. With the first layers of the header in place, a jack stud is cut and slid into place. A layer of 1-in. foam and another 2x6 complete the header.

may not need to drive the studs into their fully vertical position to lift the ceiling enough to do the work. When the ceiling is raised to where I want it, I toenail the stud bases to the bottom plate to prevent them from kicking out.

Reusing studs saves material

The next step is removing the wall studs that fall inside the proposed opening. I could beat out the studs with a sledgehammer, breaking them to pieces in the process. But the Yankee in me likes to reuse as much old lumber as I can, which saves the cost of new lumber as well as disposal of the old.

So after lifting and supporting the ceiling, I tap the wall plate up and the sheathing out with a sledgehammer to open a gap at the top and along the outside edge of the studs (photo top left, p. 69). The gap lets me insert the metal blade from a reciprocating saw to cut off the nails (photo top right, p. 69). With most of the nails cut and a few light whacks from a sledgehammer, the old framing can be removed (bottom photo, p. 69).

Framing the rough opening is straightforward. On this job, I reused a king-stud/jack-stud combination that came out of the original wall in one piece. An existing stud served as my king stud for the other side of

the opening, and I left out the jack stud on that side for the time being. When I'm nailing the studs back in, there is usually a slight gap between the top of the stud and the top plate where the ceiling has been lifted. This gap closes when the weight is released.

Header spans the new opening with a boost

Ordinarily, I would have used a 2x8 header to span an opening as wide as this one over a double window. But a 2x8 header along with the short height of the basement ceiling would have brought the top of the window much lower than the standard 6 ft. 8 in. In-

How to tell if it's a bearing wall

It's not always easy to figure out which walls are bearing and which ones aren't. Bearing walls are walls that support floors, ceilings, roofs or concentrated loads from above. And sometimes an educated guess is all you have to go on. If you're not sure, you may have to call in an expert, but here are some ways to help you look.

1. Look for exposed framing in either the basement ceiling or attic floor. If the joist ends are clearly resting on the top plate of the wall, as in this project, it's a bearing wall.
2. Check the house plans, either the owners' copy or those on file at the local building department.
3. Use an electronic stud finder to determine which way the joists are running. (This trick works as long as the ceiling wasn't furred down.)

4. Look at the roof of the house. Floor joists usually run perpendicular to the ridge on gable-end homes such as ranches, Capes and colonials. Hip roofs could have joists running in either direction.
5. In a two-story house, joists typically run the same direction on both floors. To prove this assumption, look for a center bearing wall on the first floor that rests over a center beam in the basement.

6. When all else fails, look inside the ceiling or floor through existing holes. Recessed-light cans, heating ducts or even a junction box for an overhead fixture can let you peek at the framing.
7. If there are no existing holes, cut a small hole in the ceiling where a patch won't be noticeable, such as in a utility closet, a hallway or the concealed part of a ceiling above a cabinet or crown molding.

—M.G.

stead, I installed a 2x6 header with a 2x4 center jack pocketed between the windows.

To make the header the same thickness as the 2x6 wall, I first nailed together two 2x6s and slid them into place (photo left, facing page). One end was supported on the old jack, and I tacked the other end to the king stud temporarily. I tacked 1-in. thick foam on the inside of the doubled 2x6 to act as a thermal break in the header. After cutting and installing the other jack from one of the old studs (photo right, facing page), I added a third 2x6 as the inside layer of the header.

Finishing up

Next I eyeball the header, and if it's straight, I measure and install the center jack (top photo). If there is any crown to the header, I back off the screw jacks to let the weight back down onto the header before installing the center jack. With the header settled into place, I can then get an accurate measurement for the center jack stud;

Just as lifting the ceiling is done in small increments, releasing the temporary ceiling support should be done equally. I always take special care not to let the screwjacks become loose and fall, especially in a finished room. When the jacks have been removed, all the gaps between the top plate and the studs or header will disappear. And don't forget to remove the temporary plates that are just tacked to the ceiling joists.

With the temporary support out of the way, I frame the sill at the bottom of the rough opening and insert cripples if necessary. In this case, I just notched the sill around the center jack and toenailed it to the side jacks. Because the sill is a nailer for the sheathing and drywall, I eliminated the cripples and increased the insulation value of the wall.

Next, I nail off the wall sheathing around the perimeter of the rough opening before trimming back the sheathing. The nails keep the sheathing stable while the excess is removed from the opening (bottom photo). A demolition blade on the reciprocating saw can handle any sheathing nails left after the original wall studs are removed.

The final step is popping in the windows. The job should take no more than a couple of hours, even with an editor following you and taking photographs. With a little care and planning, I had to use only four new 2xs. And for the clients who'd been kept in the dark for years, the effect of extra windows in the room was, as always, dramatic. □



Center jack gives 2x6 header a boost. Because the 2x6 header is not big enough to span the opening without help, a center 2x4 jack stud is installed before the screw jacks are removed.

Let there be light. After the sheathing is nailed off around the perimeter of the opening, a reciprocating saw is used to cut back the sheathing, and the opening is ready for the new windows.



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