Bring Advanced Framing to Your Job Site

Less lumber means lower construction costs and more room for insulation

BY DANNY KELLY

Most houses have a lot more lumber in the walls than is really needed. All of that extra wood not only increases the costs, but it adds to thermal bridging and steals room from insulation.

Advanced framing aims to eliminate any lumber that isn't critical to the structure. Green-building programs award points for using advanced-framing techniques, which is great, but that's not why my firm does it. We do it because it allows us to use 2x6 studs and to install more insulation for about the same price as 2x4 walls. Also, the Department of Energy says a home with advanced framing will cost 5% less to heat and cool, which is a lot of money over the life of the structure.

Our path to advanced framing was incremental. We started about five years ago, when we began eliminating redundant jacks and cripples. Then we switched to 24-in. centers, two-stud corners, and ladder blocking at interior-wall intersections. These simple steps reduced the number of studs in the walls by 50%.

Once my crew felt comfortable with these changes, we made a switch to single top plates. This requires the framing members to be stacked within 1 in. of each other, creating an uninterrupted structural load path from the roof to the foundation. We look for a corner where we can stack from the mudsill to the rafters, and we start our joist, stud, and rafter layouts there. One potential problem with using single top plates is that precut studs create a wall that's 1½ in. shorter than typical. This isn't a big deal with 8-ft. walls, because you can simply buy 8-ft. studs and cut them down, but with 9-ft. walls, you have to cut down 10-ft. studs, which generates a lot of waste. Our solution is to cut the drywall a little shorter and use standard precut 9-ft. studs.

When the engineer allows, we also eliminate the conventional headers and use the band joist as a header. If the band joist alone is structurally insufficient, we install a header between the band joist and the floor joists, which allows more insulation in the wall. If a header must go in the wall, we cover it with rigid foam on the exterior and use header hangers to eliminate jack studs.

We've found only one real drawback to advanced framing: With less lumber in the wall, there are fewer places to mount outlets, switches, and cabinets, so we often have to add blocking. It's important to communicate with your subs about this early so that these details can be worked out ahead of time.

Have questions?

Advanced framing means new answers to old questions, such as:

- Where do you start the layout for stacked framing?
- Is there enough backing for trim?
- How do you fasten drywall at inside corners?
- What do you use instead of a second top plate?
- How big are headers?

Danny Kelly of Kelly McArdle Construction is a builder and remodeling contractor in Charlotte, N.C. Photos by Patrick McCombe.

PICK A CORNER

Start the layout at a corner where all the framing elements can be stacked from the mudsill to the rafters. An advantage of using a single top plate is that the stud layout on the top plate also can be used for joists or rafters.

Where do you start the layout for stacked framing?

Is there enough backing for trim?

INSTALL NAILERS FOR WINDOWS

Add 2x2s to the king studs to provide nailing for windows, siding, and exterior casing. Biscuits can reinforce corners on wide casing. Depending on the interior trim, you may have to do this for interior casing as well.

LONG WALLS ARE HARD TO LIFT

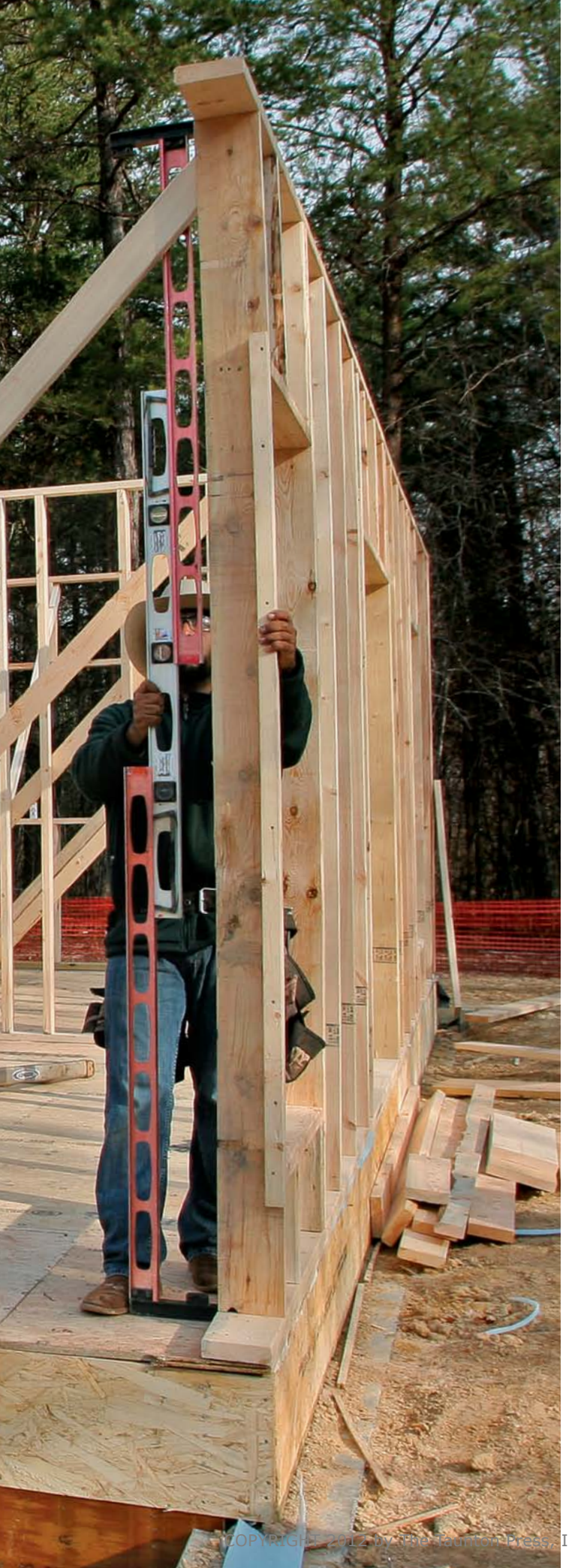
Advanced-framed walls are wobbly compared to conventionally framed walls. Even though they're lighter, you'll still need extra hands on deck. Small crews can frame walls in shorter segments to keep them under control as they're raised.

ELIMINATE EXTRA STUDS

When possible, eliminate extra jack and cripple studs by locating windows and doors so that at least one side of the opening falls within the normal stud layout. Be sure to leave room for casing, and consider the final elevation when moving doors and windows.

BRACE WALLS WELL

As with conventional framing, begin plumbing and lining walls at corners, then at intersections. Unlike with conventional framing, you may need extra bracing to make up for more wobbly walls.



How do you fasten drywall at inside corners?

LADDER TEES AT INTERSECTING WALLS

Ladder tees reduce thermal bridging and use up small pieces of lumber that might otherwise go to waste. Locate the tees so that they line up with trim elements and drywall seams.

What do you use instead of a second top plate?

INVEST IN A CONNECTOR NAILER

In lieu of a second plate, intersecting wall sections are joined with metal tie plates. Each plate requires 32 nails. Assuming each fastener takes several seconds to hand-nail, this nailer paid for itself a long time ago.

STRING FOR STRAIGHT WALLS

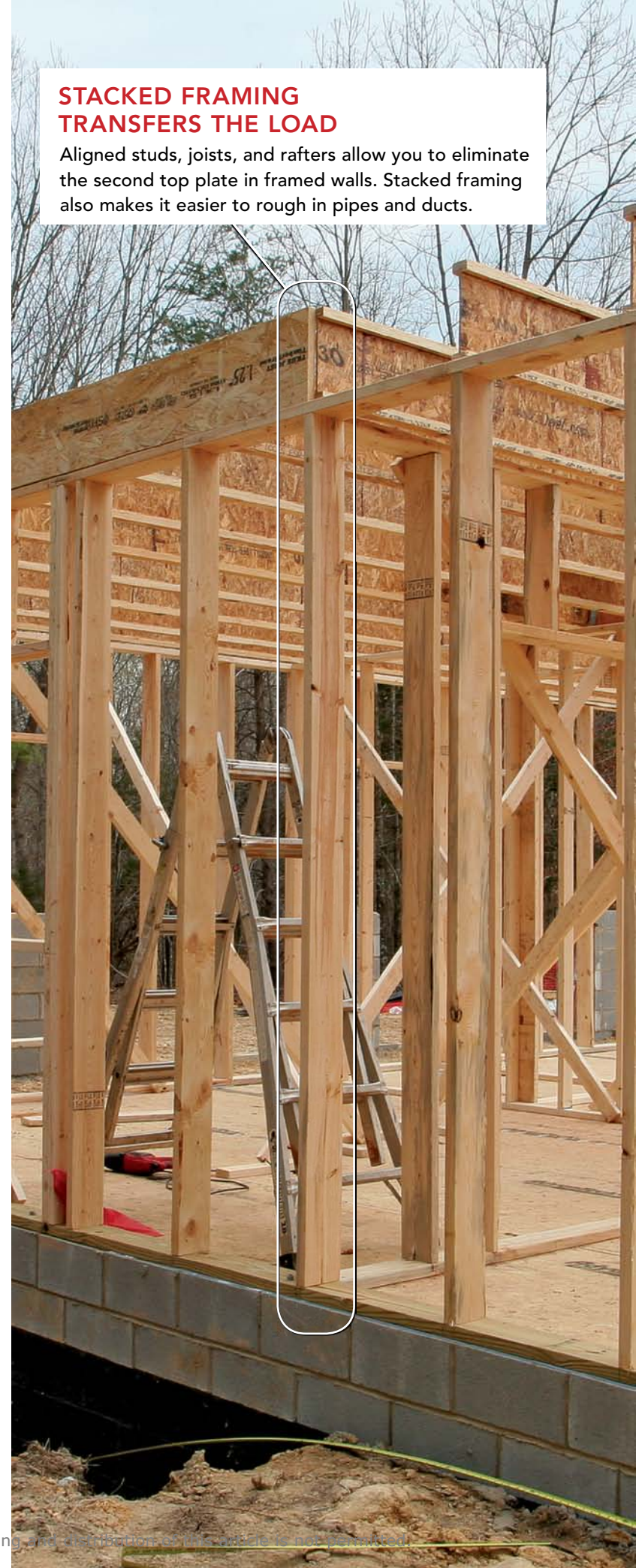
Without a second top plate, advanced-framed walls built with warped lumber will look wavy, so use the straightest lumber possible. Stringlines and bracing can help to correct any problems.

USE HEADER HANGERS

In areas where you need conventional headers, use steel header hangers to eliminate jack studs.

MOVE HEADERS INTO THE FLOOR FRAME

Window and door headers generally aren't needed in gable-end walls. Where headers are needed, the band joists (or engineered rim board) often can satisfy header requirements, as over these gable-wall windows.



STACKED FRAMING TRANSFERS THE LOAD

Aligned studs, joists, and rafters allow you to eliminate the second top plate in framed walls. Stacked framing also makes it easier to rough in pipes and ducts.

How big are headers?

SKIP HEADERS WHEN POSSIBLE

Openings in non-load-bearing walls don't need headers. In spots where you do need them, size them appropriately, and leave as much room as possible for insulation by using hangers or by moving the header into the floor above (bottom photo, facing page).

BE ON THE LOOKOUT FOR PROBLEMS

The author walks the site nearly every day. He marks unnecessary framing members for removal and indicates where additional blocking is needed.

Still have questions?

Visit FineHomebuilding.com/extras for links to additional resources on advanced framing, including articles, interactive graphics, and CAD details.