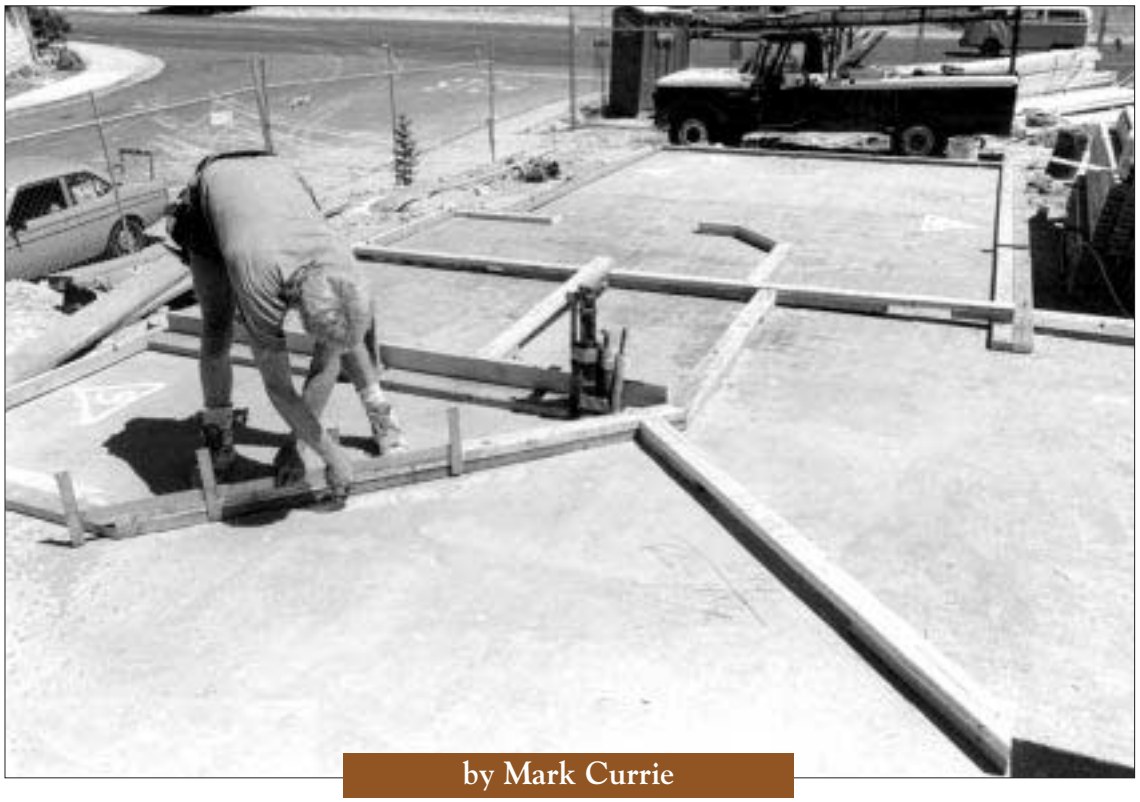
Layout for Fast Framing



by Mark Currie

In the old days, framers tackled each wall separately, a process that is still common in some areas. But for the serious framer, it's too slow. Now we concentrate on each step in the process, not on each wall.

Snap the walls, cut the plates, and detail every stud and header before you pick up a hammer

The first step, called *snapping*, is to locate and mark out each wall and its exact intersection with other walls, using a chalk line. The second step, *plating*, is to cut and temporarily nail together a top and bottom plate for each wall. The third step, *detailing*, is to locate each component of every wall — windows, doors, headers, intersections — and mark it on the plates.

This is the brain work in wall building. Once it's done, the carpenters who actually frame the walls just have to follow directions. That's why the jobs of snapping and detailing are usually reserved for the most experienced carpenter on the crew. Any mistakes made here will show up again and again, from the floor tiles to the roof stacking. On a custom crew, the company owner or his most trusted man will usually do the snapping and detailing, with a laborer to help with the cutting. Two people should average about 3,000 square feet of building a day once they're on a roll.

Snapping

To start, find the two longest exterior walls that form an outside corner (see Figure 1, next page). You'll use them to create a perfect square. Then you can measure every other wall off them to create a uniform layout. Don't ever trust the concrete to be square!

Squaring the walls. First, identify the stud size — don't take it for granted. Look for a note on the plans that might call out "All Exterior Walls 2x6." For a 2x4 wall, measure in 3 1/2 inches from each corner where the wall will stand; for a 2x6 wall, 5 1/2 inches. Snap a line between the two marks. Then find the longest exterior wall that runs perpendicular to the wall you just snapped. Measure in 3 1/2 inches (or 5 1/2 inches) from the edge of the deck along the first wall you

Figure 1. *The author begins layout at the two longest exterior walls that form an outside corner. He measures in a stud width from the edge of the slab and snaps a line along the longer wall. Then, using the 3-4-5 triangle method, he lays out the adjoining wall at exactly 90 degrees. He measures the other walls from these two, to create a perfectly square layout.*

Figure 2. *After establishing a square outside corner, the author measures and snaps long central walls next. A quick check of the plans ensures that he measures to the correct side of these walls, avoiding a costly tear-out.*

snapped and mark the inside corner where the walls will intersect. Using a 3-4-5 triangle, snap out a line from this point for the second wall. The longer the triangle sides you measure, the more accurate the job will be.

Snapping the walls. Once you've created a perfectly square corner with these two walls, use the measurements on the plans to locate the position of all the other walls relative to the first two. That ensures a uniform and square building — and a lasting friendship with your friend the tile man.

The plans will call out the measurements in feet and inches between the walls in each room. I like to snap out the long hall walls first (Figure 2). When you're snapping interior walls, be sure to note which side of the wall you're measuring to and from. A wall marked on the wrong side of the line may make the hall too narrow — a costly mistake.

Transferring the details. When you've chalked lines for all the walls, begin transferring the location of details (doors, windows, posts, fire blocks, etc.) on the slab or deck. This is done with a *keel*, an oversized lumber crayon. Keel is better than pencil because it stands up to weather and scuffing by feet.

To detail out a window, write the components in the order they appear from the top of the window on down: the upper cripples, the header, the subsill (abbreviated SS), and lower cripples.

A typical window detail written on the floor would look like this:

$$\frac{7\frac{1}{4}}{\frac{63\frac{1}{2}\quad 4\text{x}8}{\frac{60\frac{1}{2}\quad \text{SS}}{27}}}$$

That means the top cripples are $7\frac{1}{4}$ inches long, and the 4x8 header is $63\frac{1}{2}$ inches long. The subsill at $60\frac{1}{2}$ inches is exactly 3 inches shorter than the header to allow for a $1\frac{1}{2}$-inch trimmer to support the header on either edge. Finally, we have 27-inch lower cripples below the window opening. Since the subsill is $60\frac{1}{2}$ inches, this is the rough opening width for the finish window.

Doors are done the same way. The trimmers are never detailed unless

they're a special size or will be left out. Here's an example of a door detail:

7 1/4	
35	4x6
84	T

Again, the top cripple would be 7 1/4 inches tall, and the 35-inch header is wide enough for a 2′-6″ door. The 84-inch trimmers are marked since they're taller than the typical trimmers on a 6′-8″ door.

Some framers leave out the step of transferring the measurements from the plans to the deck. They prefer to wait until they have the plates cut and in place, and then detail directly on the plates. I like to put it all on the deck. Then when the plating is complete, I can come back, leave the plans in the truck, and simply transfer all my notes from the deck or slab to the plates.

Figure 3. *Plating goes quickly because the author leaves his tape measure in his belt and makes end cuts by eye from the chalk lines.*

Plating

Once the walls are snapped out, it's time to do the plating. Walls include three plates: one bottom plate (also called the sill, or sole, plate) and two top plates. In plating, we cut and place the bottom plate and one top plate for each wall.

To keep the pieces from shifting around during the detailing, many framers tack the top and bottom plates in place with a few 8-penny nails. At wall framing time, it's easy to take the plates up and pull them apart. If you take the time to lay out and detail them all at once, you can be sure that every plate will be tight when you build the walls. That means the group of walls will stand straight and plumb when they're finished.

Why cut only one top plate at this point? Well, first of all, the two top plates are actually different lengths because the plates overlap where the walls tie together. Second, the lower top plate length is critical. It must be accurate so it doesn't push or pull adjoining walls out of plumb. The length of the upper top plate is much less critical. Finally, you only need one top and one bottom plate to do the detailing. A second top plate at this stage would just be in the way.

Figure 4. *The author details king studs with an X. The line coming off the X indicates the direction of the header. Note the details written in large numbers on the slab, which give the cutting list for that window package.*

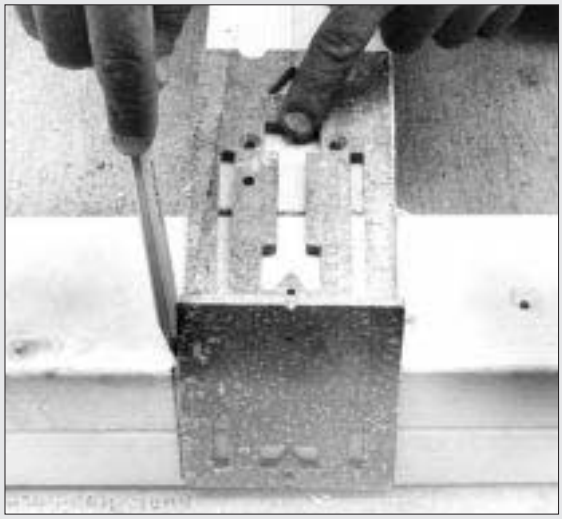
Laying out plates. When two walls meet at a corner, one makes up the corner itself, and the other, perpendicular, wall butts into it. Usually I let the longest walls run through on the corners because they'll be built first.

Always lay out parallel exterior walls the same way. If one wall runs through at the corners, the parallel wall should also run through. Also, never run one end of a wall through, then hold the other end back. This causes headaches when you raise the walls.

Begin plating by laying out the lumber, placing one end exactly where a wall stops and letting the other end extend past the marked end point. To cut off the excess plate length, sight down to the intersecting wall line that's snapped on the deck. Make a shallow test cut first, check it by eye, make any adjustments needed and cut the plate off at the correct length (Figure 3). This is a lot faster than measuring, marking, and cutting the plate's length in separate operations. You're using the saw blade to mark the board. If you practice cutting by eye, in

Tools for Fast Layout

When it's time to set the bottom plates for detailing, a ***bolt marker*** *(right) saves time. The hole that the bolt is sticking through in the photo is 3 1/2 inches from the marking pin; the notch at the end of the marker is 5 1/2 inches away, for 2x6 walls. Detailing channels is quick and easy with a* ***channel marker*** *(below); likewise, a* ***layout bar*** *(below right) speeds stud layout. These tools are made by Pairis Enterprises, 27575 Commerce Center Dr., Unit 133, Tenecula, CA 92590; 909/676-3038.*



time you'll be making twice the money as the boys who insist on fumbling with their tapes and squares.

Marking channels. The last step to plating is to mark out all the channels. Channels are installed where two walls intersect to provide firm nailing for tying the walls together and to provide backing for drywall. While all the plates are in place on the deck, the points of intersection are easy to see. This detail is simple and quick to make with a channel-marking tool (see "Tools for Fast Layout"). Place the tool on top of the plates and in line with the intersecting wall, then trace the outside edges of the tool. It's common practice to emphasize the channel detail by making a large X with keel inside the pencil marks.

Always make sure the plates are exactly in place before you mark the channels. If the channel detail is off by 1/2 inch, the intersecting walls will be 1/2 inch out of square.

Detailing Studs and Posts

When the entire house is plated, detail all the doors, windows, studs, and special notes by transferring them from the plans directly onto the plates. The framing supervisor should highlight these detail items on the plans before turning them over to the detail crew. Anything left out now will be harder to add later. But if you were thorough when transferring detail marks to the slab before plating, then detailing the wall plates should be a breeze.

Start with your windows and doors. Mark on the plates the exact location of the king studs (the studs the header nails into). Emphasize that they're king studs by adding an X on the outer sides of each line (Figure 4, previous page). Strike a line off either king stud mark with your keel to show where the header will go. I like to note the header size on the top plate as well — it's helpful if you get confused later.

Next, locate and mark out all the structural posts. Detail their exact size and location directly onto the plates. Emphasize them with a keeled X within the penciled detail. Keeled X's are used in these situations to snap your wall framer's mind back to reality when he comes to something important. The X alerts him to look for a special detail; the pencil marks explain exactly what it is.

If there are dropped ceilings, it's much easier to put in the fire blocks (or draft stops) when the walls are being built. For example, a hallway may be dropped to 7 feet to allow heat to pass down the hall. You would detail (in keel) on the plate "blocks 84 to center."

Also, sheathed balloon and rake walls require blocking every 8 feet of wall height to catch the plywood edges. A detail keeled on the plates reading "blocks 96, 192 on-center FF" (FF stands for "from floor") takes care of this. Figure it out right at this point and you'll save some dollars later.

I recommend detailing posts, fire blocks, and any special items on both the top and bottom plate and on the floor next to the wall. It's not overkill — I've had guys leave items out because they flipped the top plates over so some detail marks were hidden. If everything's written on the floor, that won't happen.

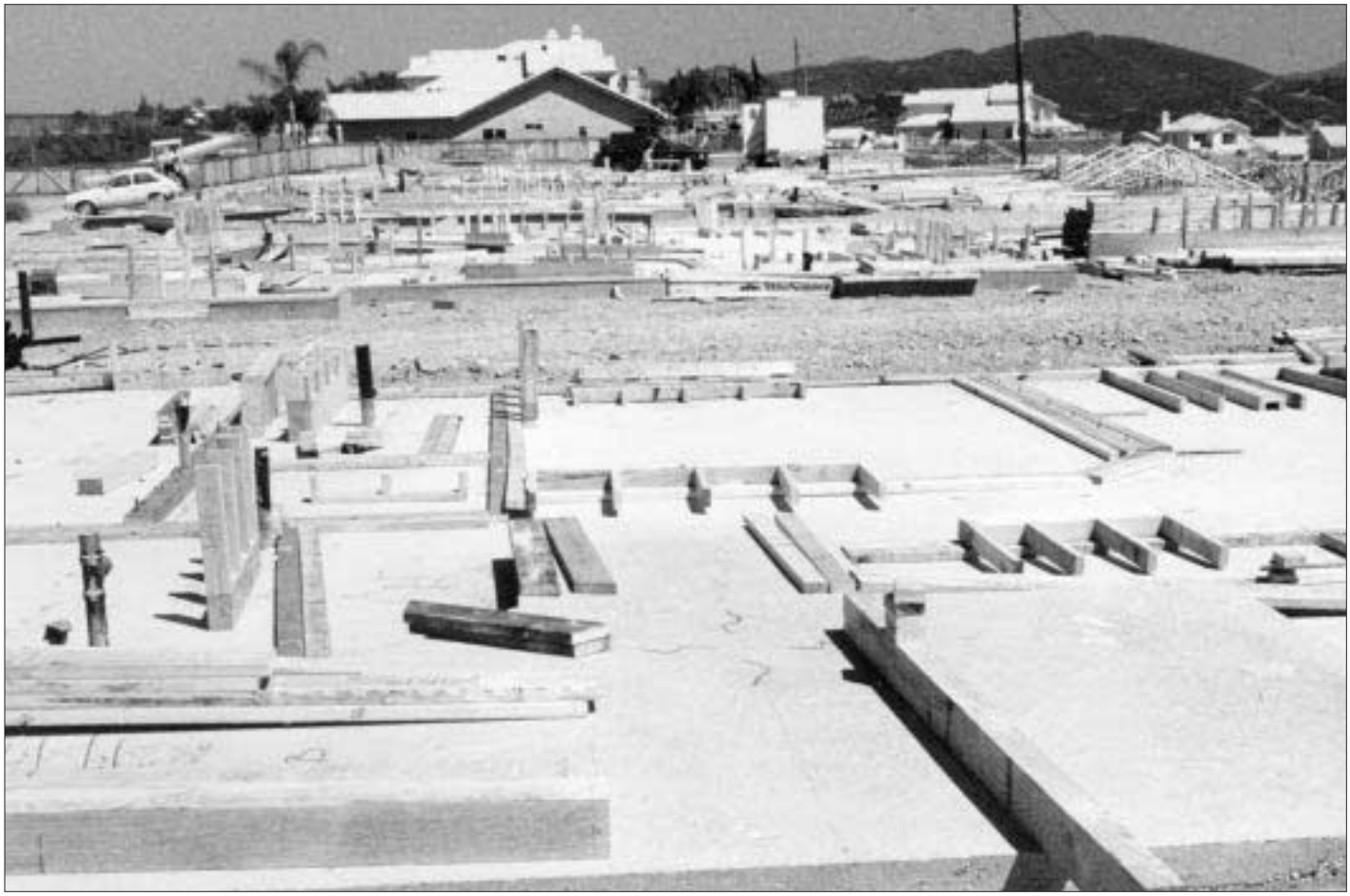


Figure 5. *Cutting posts, headers, and cripples is the final step for the detail crew. Everything is set in place, awaiting the framers. On this site, the cripples have already been nailed to the headers.*

Detailing studs. The last step in detailing is laying out the studs. It's important to hold the first stud back 3/4 inch so it lands between 15 1/4 inches and 16 3/4 inches, so you can pull a straight 16-inch on-center layout off of it. Then standard lengths of plywood will land exactly in the middle of the fourth or seventh stud.

A great timesaving tool for laying out studs is a layout bar made up of four short bars welded to another 49 1/2-inch bar that acts as a handle. The shorter bars are exactly 1 1/2 inches wide and spaced at 16 inches on-center. You just rest the bar on the plates and strike a pencil line along the edge of each of the shorter bars to mark out the 16-inch-on-center stud detail.

Lay out studs in exterior and shear walls first. Here it is important to observe a strict 16-inch on-center layout from one end of the wall to the other. When these are done, move to the interior walls. At this point you'll have channels, king studs, and special structural posts laid out on your plates. Fill in the open spaces between the king studs and the channels and the posts with stud layouts. Start at the edge of a wall and lay out studs 16 inches on-center until you come to a channel, king stud, or post. For doorways and windows, you can continue laying out right on through, between the king stud marks, because you'll need layouts for your cripples. If you approach a channel and a stud lays out directly on the channel, don't lay it out. That only adds confusion. Channels have priority — that's why I lay out studs last.

Fill in the open spaces between your details with studs, leaving no bays larger than 16 inches. Although it goes against the grain with the old school of framers, the straight 16-inch on-center layout just isn't important. Of course, if I have a 20-foot wall, I'm going to keep 16-inch bays along its length to accommodate the drywallers. But for short 6-, 8-, or 10-foot sections of bathroom and bedroom walls, I'll just fill in the spaces between any previous layout. One sheet of drywall will cover the whole wall.

Any interior wall that gets shear plywood will have a constant layout throughout its length, no matter what. The plywood has to fall out perfectly on stud centers.

The last step in snapping, plating and detailing is to cut up and spread all the headers, cripples, subsills, and posts. On small jobs, you just make a list of everything that's detailed and cut it all up at once (Figure 5). List all your cripples, subsills, headers, and posts. Set up a cut area and cut all the pieces. Finally, pile all the cut pieces next to each door and window. Some framers like to nail together all the channels as well. Others prefer to cut the cripples and subsills as they're building the walls. This works, but it takes a little more time. ■

Mark Currie, of Santa Fe, N.M., has spent 20 years in the competitive world of West Coast production framing. This article is adapted from his new book, Rough Framing Carpentry *(Craftsman Books, Carlsbad, Calif.). Photos by the author.*