# Hanging and Finishing Drywall

by Felix Marti

**With the right tools and techniques, you can save time and money installing drywall with your own crew**

I began handling drywall about 30 years ago, and quickly discovered that it was heavy and introduced a lot of dust to the construction scene. After hanging the drywall on a few small jobs, I decided to try my hand at finishing the joints. Using a 5-inch drywall knife and a bread pan that I borrowed from the homeowners of the small remodeling project I was working on, I mixed my own compound and taped all the seams. The finishing process seemed to take forever, but believe it or not, the job turned out well.

Since that time, I've become much more confident and practiced in my drywall abilities. As carpenters, my crew and I cannot match the speed of an experienced drywall crew, but we still choose to hang and finish our drywall. Our "in house" approach offers more control over the quality of the job and enables us to better schedule the activities that follow — an important issue on remodeling jobs.

Whether you plan on hanging and finishing the drywall or the task is forced on you by a drywall sub who has skipped town, the techniques that follow will help you through the process.

## Sample Drywall Takeoff

| | A | B | C | D |
|---|---|---|---|---|
| 1 | | Ceiling sq. ft. | Perimeter lin. ft. | Partitions |
| 2 | First floor | 1422 | 158 | 118 |
| 3 | Second Floor | 796 | 117 | 56 |
| 4 | Garage | 624 | 100 | |
| 5 | | | | |
| 6 | Totals | 2842 | 375 | 174 |
| 7 | | | | |
| 8 | Ceiling sq. footage | 2842 | | |
| 9 | Wall sq. footage | 5784 | Function = SUM(C6x8) + (D6x2x8) | |
| 10 | | | | |
| 11 | Total sq. footage | 8626 | | |
| 12 | | | | |
| 13 | No. of 12-ft. sheets | 179.7 | Function = B11÷48 | |

**Figure 1.** *A spreadsheet speeds takeoff. The author uses linear-foot values for walls, ignoring openings, and square-foot values for ceilings. He divides total square footage by 48 to get the number of 12-foot sheets required.*

### Material Takeoff

I remember once watching a "rocker" unreel a 100-foot tape against the base of all the framed walls in a house I built. He calculated the wall area by multiplying the resulting linear feet by the wall height, and measured the floor area to calculate the amount of ceiling board required. The simplicity of his approach made sense, and I apply the same basic formulas when I perform my drywall takeoffs. This method also works well when the measurements are being pulled from a set of plans, except for very complex jobs.

I always assume we'll be using 12-foot sheets, so to determine how many sheets to order, I divide the wall and ceiling area by 48 (the number of square feet in a 4x12 sheet). However, remodeling projects may place restrictions on the size sheet that will fit through existing doors. In these situations, I base my order on the largest sheet that can be brought into the rooms.

The rule of thumb I follow is to ignore all door and window openings when taking off drywall. I've found that by carefully planning the placement of sheets, and with judicious use of off-cuts in closet and storage areas, we use 7% to 10% less material than a regular hanging crew, so I typically deduct 7% from the gross takeoff. (Most hanging crew's fees are based on the number of sheets hung, so there is little incentive to minimize waste.)

Since I use a spreadsheet to estimate my jobs, I'm able to use the linear footage values for my partitions and exterior walls, and the square footage values for the floor areas to determine the quantity of board to order (see Figure 1).

Tape and compound quantities are based on the total square footage of drywall ordered: 370 linear feet of tape and two five-gallon pails of compound per 1,000 square feet of drywall.

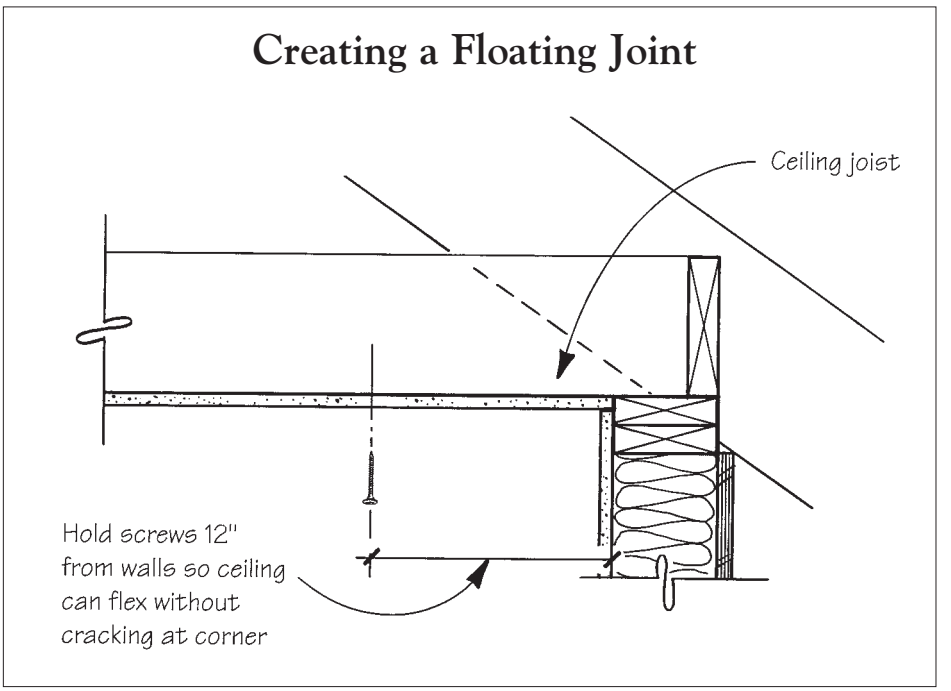



**Figure 2.** *Holding ceiling fasteners 12 inches back from the edges creates a "floating" corner, which is much more forgiving of framing or truss movement. The ceiling board must be installed first, and the supporting wall board pushed tight to the ceiling.*

### Framing Checklist

I perform a framing walk-through before the drywall delivery. I sight ceiling and wall planes, and correct any framing

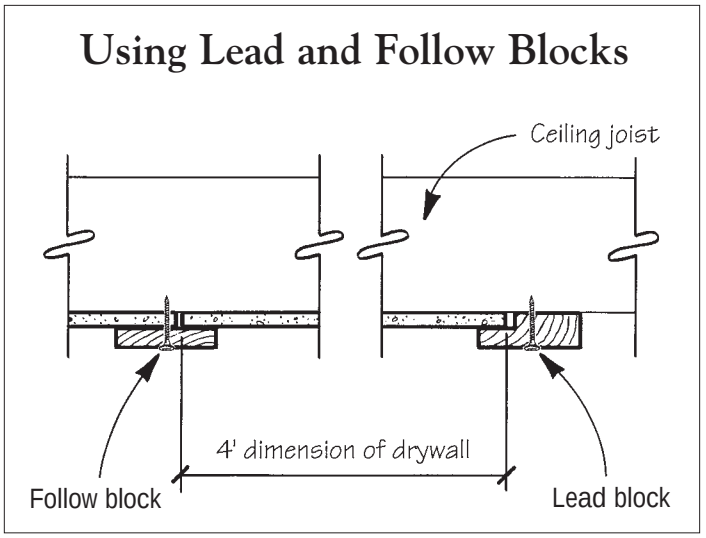
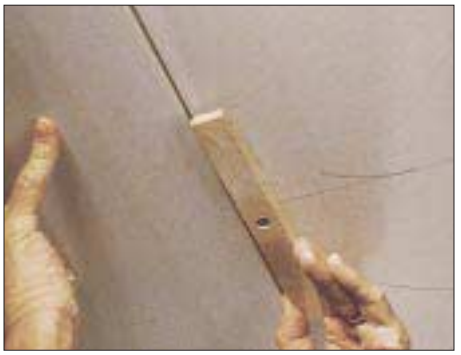



**Figure 3.** *The author uses shop-made "lead and follow" blocks to support ceiling drywall while it's being screwed in place. The blocks are screwed into the joists and rotated out of the way while the drywall sheet is lifted into place. When the sheet is in position, the blocks are rotated to temporarily support the sheet. Below: Lead (left) and follow (right) blocks in action.*



members that will cause problems in the finished wall. This typically involves straightening a few studs or joists, but occasionally in older homes requires shimming an entire ceiling or wall.

I also stay on the lookout for missing blocking. This is the last chance to easily install any blocking for handrails, towel bars, cabinets, and so forth.

At this stage, we take time to mark the centerlines of all the studs on the subfloor. This provides a reference for stud centerlines when we're installing baseboard, and is especially helpful when there are a number of intervening walls, pipes, or ducts that shifted the normal stud layout.

## Stocking the Job

Just before delivery, I go through the house and decide the number of sheets I want stocked, and against which wall. I write the number on the floor a few feet in front of the selected wall so it can easily be seen. When stocking more than 15 sheets in a given location, I'm careful to stack them perpendicular to the floor joists and within a few feet of a bearing wall.

If it's a two-story house and a boom truck delivers the drywall, you may be able to pass the sheets through a second-floor window. The window sash will generally have to be removed, and the opening protected, but this is a small price to pay for the convenience of avoiding the uphill battle of a stairway. I sometimes hold off installing a second-floor window unit until the drywall delivery is complete.

The company we purchase our drywall from provides the manpower needed to unload the truck and stocks the house. Bundled sheets of 12-foot drywall weigh over 160 pounds, and it takes experienced (and rugged) individuals to cart the stuff around without hurting themselves. Since we do all our cutting from the face of the sheet, I request that the stockers break open the bundles and flip the sheets so all finish faces are forward.

In many parts of the country, the builder will provide the material and sub out the installation. In these situations, it's important to have the hanging crew specify where they want the material placed.

## Hanging Board: Ceilings First

We always hang the ceiling (or "lid") first. If the walls are bowed or wavy, any gaps where the ceiling board meets the wall will usually be covered when the wall board is hung. Hanging in this sequence also allows the wall board to support the ceiling board at the edges. This creates a "floating joint" when ceiling fasteners are held back 12 inches from the edges (Figure 2), an important detail if you anticipate truss movement.

We start by snapping a chalk line on the underside of the ceiling joists 48 1/4 inches out from the wall plate, and use this reference line to position our starter course of ceiling board. The "odd" 1/4 inch in our layout dimension will absorb the minor discrepancies of a wavy wall plate and still allow the wall board to provide support for the ceiling board. If the first course of ceiling board is held tight to a bowed or wavy wall, gaps will result as subsequent courses are butted to the first, crooked course, and the ends of the sheets may not fall properly on the joists.

We mark the joist layout lines on the front and back of each sheet, and run beads of construction adhesive on the back of the sheet, following the layout lines. We will often dry-fit sheets that have numerous notches and cutouts before applying the adhesive. Marking the center of the joists on the face of the sheets may be viewed as "nonprofessional," but we rarely miss with our screws.

To ease the burden on our backs, we use shop-made "lead and follow" blocks to support the ceiling board while we fasten it in place (Figure 3). The lead blocks are fastened to the ceiling joists, while the follow blocks are fastened to the previously hung sheet of drywall.

As the sheet of drywall is lifted into place, the two lead blocks are pivoted to hold the sheet in place . The two follow blocks are rotated at the other edge of the panel, and *voilà!* — the sheet stays in place without any assistance.

Where the sheets meet the wall, we screw a temporary 2x2 support ledger to the wall plate, leaving a 3/4-inch gap. We slip the sheet into the gap, and depending on whether it's a starter sheet or finishing sheet, use a pair of lead or follow blocks to support the other edge.

When hanging 12-footers, we typically space the blocks 3 feet in from the ends of the sheet. Given the use the lead and follow blocks will get, it pays

to make them from hardwood stock (mine are made from maple and have lasted many years).

### Hanging the Walls

We spend a few minutes deciding which walls we should hang first. In some rooms it makes sense to leave an interior partition wall uncovered until the rest of the sheets are hung in the room. This can eliminate impossible turns in hallways and stairwells.

Drywall that is installed in the wrong order can cause trouble when fastening to backing members. The 2x6s used for backing at partitions provide a 1-inch nailing surface (Figure 4, next page). If the partition drywall is hung first, this nailing surface is reduced to 1/2 inch, and reliable fastening is almost impossible.

On walls, we apply adhesive to the studs instead of to the drywall, because we don't have to worry about drips from overhead. But we also snap a line across the studs 47 inches below the ceiling level to indicate where to stop when applying adhesive for the top course. As we hang the board, we clean up any broken corners and gouges in the drywall, screwing on scraps of plywood backing at these spots. After the sheet is in place, we fill these spots with patches made from scrap drywall.

When we cut a sheet to length, we measure the offcut, mark its length on the top factory edge, and stack it against the wall with its face forward. As the need for in-fill pieces arises, we need only to glance at the stack to see if a given piece is long enough.

### Screw It and Glue It

We use 1 5/8-inch drywall screws and construction adhesive when hanging drywall. The *Gypsum Construction Handbook* (United States Gypsum Company, P.O. Box 6721, Chicago, IL 60680; 800/874-4968) notes that adhesive provides up to 100% more tensile strength when compared to conventional fasteners. To speed the fastening process, we use an auto-feed screw gun (Quik Drive USA, 7528 Hickory Hills Ct., Whites Creek, TN 37189; 615/230-8788).

### Cutting Holes and Openings

We use a bayonet saw to cut holes for electrical boxes and plumbing penetrations. By beveling these cuts, a utility

## The Right Tools for the Job

We use a variety of tools to hang and finish drywall. With the exception of our screw guns and mixing drill, these tools are inexpensive, require no power, and are easy to maintain. Most of the tools are available at local drywall suppliers, and specialty tools can be ordered from Bon Tool Co. (4430 Gibsonia Rd., Gibsonia, PA 15044; 412/443-7080) or Goldblatt (Stanley-Proto Industrial Tools, 14117 Industrial Park Blvd., Corington, GA 30209; 770/787-3800).

One of the more ingenious finishing tools we use is the taping banjo. Don't let the name fool you — you don't need to be a musician to play a taping banjo. This uncomplicated tool takes much of the tedium out of the taping process.

The banjo has a hinged compartment that is filled with drywall mud and a spool mounted on the outside of the compartment that holds a 500-foot roll of tape. The tape is thoroughly coated with compound as it's pulled through the banjo compartment.

Our designated banjo player starts by laying down runs of coated tape over first the butt joints, then the tapered seams. After the tape is in place, a second person follows with a 5-inch knife, bedding the tape and pulling any excess mud off the seam. Taping with a banjo is so fast that the second person can barely keep up with the person working the banjo.

***Hanging tools*** *(clockwise from right): Drywall handsaw, hole compass, edge-ripping stripper, keyhole saw, Surform plane, drywall hatchet, 4-foot T-square, electric and battery-powered screw guns.*

***Finishing tools*** *(clockwise from upper right): Paddle mixer, assorted knives and trowels, pole sander, hawk, hand sander, sponge, brush, mud tray.*

***A taping banjo*** *makes quick work of bedding drywall tape. You fill the mud compartment (above), and the tape is coated with compound as it's pulled from the banjo (right).*

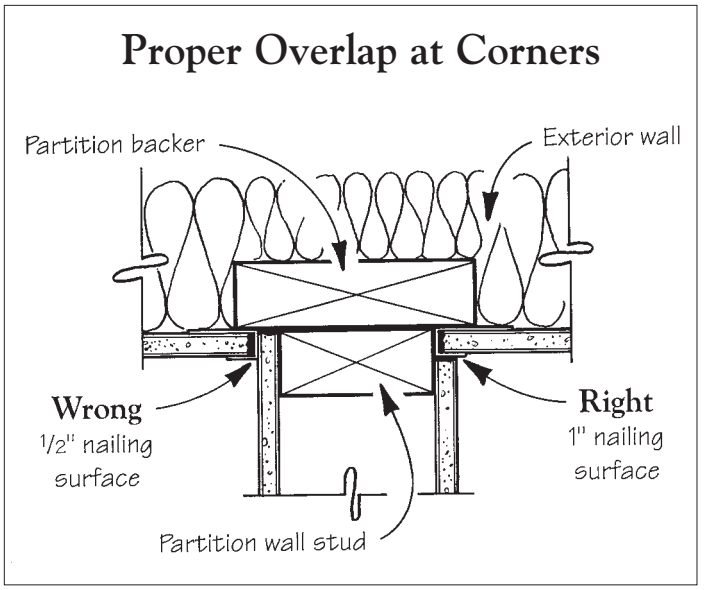



**Figure 4.** *It's important that the drywall be installed in the proper order. In the example shown, the exterior wall should be covered first, followed by the interior partition. If the interior partition is covered first, the nailing surface for the exterior sheet is reduced to 1/2 inch.*

knife can be used to easily trim the sides of the hole. There are routers available for cutting out electrical openings after the drywall is in place, but we've avoided these tools for fear of damaging the wiring inside the boxes. This also prevents us from boarding over an outlet box when cutting holes after the sheet is hung.

When sheets "break" at a door or window opening, it's important that the seam doesn't fall on the jamb line. A joint at the jamb line will almost always crack, and the built-up drywall compound used to finish the joint makes trim work difficult. We break our sheets on the header at least 6 inches from the jamb line.

## Filling Gaps

Before breaking out any mud, we check for proud screw or nail heads by dragging a 5-inch drywall knife over the drywall surface. It's frustrating and messy setting nails or screws after a coat of compound has been applied over them. Occasionally, a screw will miss the framing when we're hanging drywall. We remove the screw, and while we're checking for proud screw heads, we dimple these leftover screw holes with the butt of our taping knife.

Next, we prefill any large gaps and depressions with compound. Thick applications of drywall compound will shrink significantly, and by filling these areas first and allowing them to dry, our first taping coat will be fairly uniform in thickness. We often fill these voids with U.S. Gypsum's Durabond, a fast-setting compound available with setting times ranging from 20 to 90 minutes. This allows us to quickly follow up with the first taping coat of compound — an important benefit when finishing small areas.

## Finishing: The Tape Coat

There is no substitute for experience when it comes to finishing drywall. The graceful and fluid moves of an experienced finisher can only be acquired after many hours of practice. Finishing is done in three steps: the tape coat, the fill coat, and the glaze coat.

We use paper tape for all our drywall work. I've tried the adhesive-backed mesh tapes, but cracking occurred over some of the joints. Preferences will vary among finishers, but I like to tape butt joints first, tapered joints second, inside corners third, and any corner beads last.

In the past, we used 5-inch knives to run a bed of compound along the entire joint, then gently pressed a length of paper in place with our fingers. After the tape was in place, we bedded it firmly in the compound with the 5-inch knife. On our last job, we used a taping banjo to apply the first taping coat (see "The Right Tools for the Job" page 29). This tool saved us so much time that we wouldn't consider using our old method to apply the tape coat.

Be sure to check that all electrical cover plates and fixture plates will cover their respective openings. Oversized holes will need to be taped to size.

## The Fill Coat

Before the fill coat can be applied, any high spots left from the taping coat must be removed. Typically, we knock down these high spots with a pole sander. Some remodeling projects require that we keep sanding dust to an absolute minimum. In these situations, we use a damp sponge and rub down any high spots.

I use a 12-inch knife to apply the fill coat, covering the seams in the same order as the taping coat.

## The Glaze Coat

We thin premixed joint compound with water and apply the glaze coat. The thinned mixture produces a much smoother finish and is easier to apply than a stiff mix. The amount of water added depends on the preferences of the finisher; we seldom exceed a pint of water per five-gallon container of compound.

In a perfect world, the glaze coat would be applied and the wall would be ready for paint. In reality, we have to apply several glaze coats, touching up the seams until we get an acceptable finish. The number of passes depends on the experience of the finisher.

I prefer to use drywall trowels with a built-in curve to apply the glaze coats. The harder I press on the trowel the flatter the curve becomes. As the lead edge of the trowel is lifted from the wall, the curve becomes shallower. By manipulating pressure and angle, I can carefully control the amount of compound applied when troweling on the glaze coat.

When I'm confident that I've applied the last glaze coat, I hold a bright light close to the wall and shine it across the joint. Any small pits and pin holes I've missed show up clearly as shadows. Using a 6-inch knife, I fill these small voids with compound. Minor imperfections can often be "erased" using a damp sponge. Finally, we sand out any remaining imperfections using our pole sander and 120-grit open-mesh sanding cloth.

The choice of wall paint affects how much we fuss with the final glaze coats. A flat paint is much more forgiving and will hide minor irregularities, but a glossy paint will highlight even the slightest imperfection. Be sure to budget extra finishing time where high-gloss paints will be used. ■

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