Trimming a Houseful of Windows — Production Style

Making parts and preassembling them in the shop cuts days off the trim schedule

by Mike Rand

As the owner of a custom mill shop that works exclusively for Baud Builders in Narragansett, R.I., I'm always on the lookout for ways to deliver the highest quality woodwork as expediently as possible.

On the new-house project shown in this article, for instance, I took on trim installation for 58 windows. Although the house had both double-hung and casement windows, they were all getting the same trim treatment — making it the perfect opportunity to use a measuring and cutting system I've developed over the years.

Prefab Window Trim Details

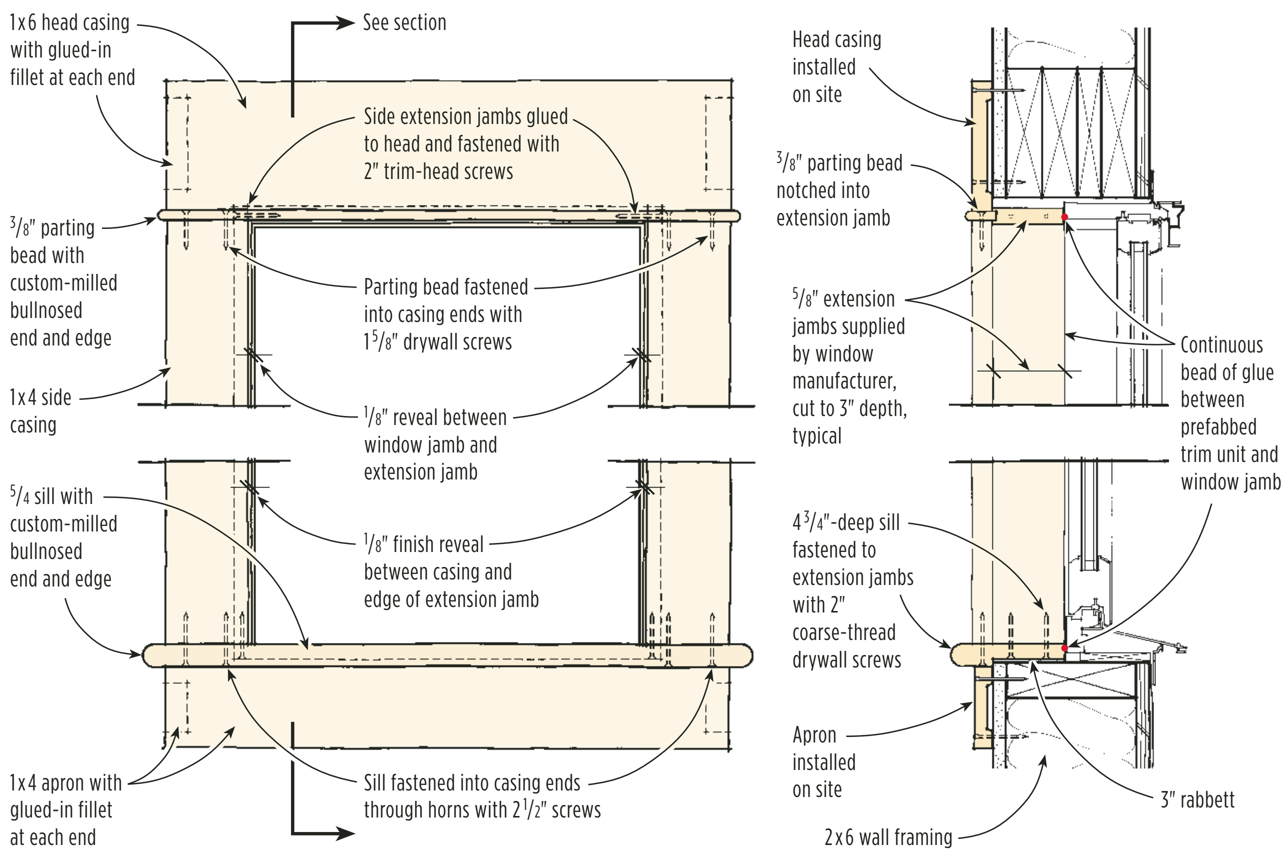

Figure 1. Window trim kits ship to the site in three pieces: the jamb extensions with sill, side casings, and parting bead attached; the head casing; and the apron.

You might look at the fabrication work involved here and wonder, “Why bother? Why not just buy the material and turn a pair of carpenters loose for a couple of weeks?”

The reason is that there are advantages to my method that you won’t get with conventional site carpentry. Most important is the quality of the installation: The parts fit together quickly and accurately, with no joints opening up down the road.

Also, we can get to work on the trim even before the wallboard-and-plaster phase starts. Site installation takes a few days, rather than weeks. And even if you’re not fitted out with a millwork shop, most of the tools and techniques I describe are totally transferable to the job site.

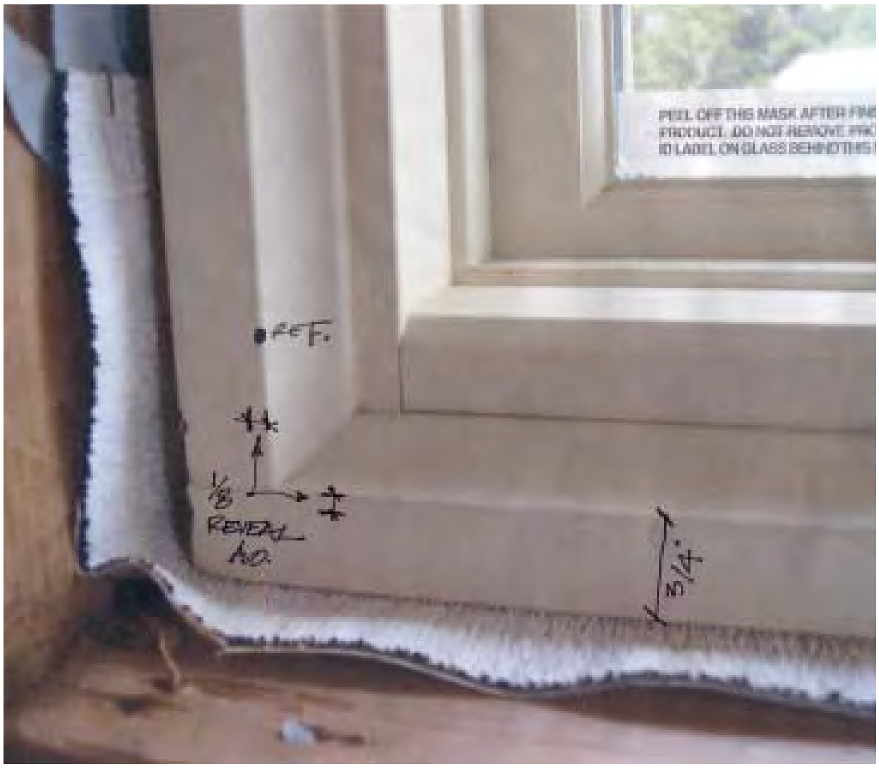

Figure 2. Digital photography provides a foolproof record of special site conditions. This printout has been marked up for concise shop reference.

Taking Stock

The design for the trim included nominal 1-inch-by-4-inch square-butted side casings, a 1-inch-by-6-inch head casing with a 3/8-inch parting bead along its inner edge, and a 5/4 sill with a 1-inch-by-4-inch apron (see Figure 1, previous page).

Pine extension jambs were supplied with the window order and were 5/8 inch thick.

I drew the components at full scale and included a 3/16-inch-deep relief plough on the back of the casing material to accommodate irregularities in the skim-coat plaster walls. The trim was to be painted, so we specified the stock in poplar. We ordered the material custom-milled from a local molding supplier and had it delivered to the shop.

At the job site, I measured each window, noting the interior distance between the head and sill and between the side jambs, and assigned each a number that denoted size and type; this job had five casement sizes, numbered 1 through 5, and five double-hung sizes, numbered 6 through 10. Then I labeled each window with a piece of masking tape stuck to the glass.

I recorded each window’s number, type, jamb interior width and height dimensions, quantity, and any special considerations such as proximity to a corner or another window or door unit. And — as always — I took digital photos of details, including all combination configurations; these would give me a reliable visual reference back at the shop (Figure 2).

Next, I had to determine a standard width for the extension jambs. I first gauged the distance from the window jambs to the face of the wall studs by scribing a scrap of wood. I ended up with a series of lines that averaged 2 7/16 inches. I added 9/16 inch for the thickness of the gypsum board and plaster skim coat, which resulted in a final “standard” jamb extension width of 3 inches.

Each window trim package had nine individual pieces — extensions, head, bead, stool, and casings. With 58 windows, that meant I had a total of 522 pieces to process.

Since one of my primary concerns is efficiency, from this point on I made no further use of a tape measure, other than to transfer the site measurements to a master layout stick.

Figure 3. Here, the author's layout stick is clamped to an auxiliary fence on his chop saw (top). Colored lettering matches the layout stick to the white offset stick, which provides the lengthening dimensions for reveals, stock thickness, and overhangs (center). With a stop block clamped at the appropriate layout mark, the author can cut side extension jambs two at a time (above).

Cutting to the Layout Stick

On this job, my layout stick was a length of 1-by about 2 inches wide and slightly longer than my longest trim dimension (Figure 3). I clamped it to an auxiliary bed on my chop saw with a stop block under the clamp.

When I use a layout stick, I don't set the end flush with the saw blade. That's because there are several offsets to take into consideration: the reveal between the window jamb and the extension jamb; the reveal between the extension jambs and the casing; the overhang of the parting bead beyond the side casings; the stool horns that extend beyond the apron; and the thickness of the side extension jambs, which rest on top of the sill piece.

To keep track of these differences, I make a pair of "offset sticks," one for the casements and one for the double-hung windows. These hold the marks for the various offsets.

I cut a small reference kerf on the correct side of each offset line to avoid error, aligning it with a kerf cut into the auxiliary bed of the miter saw.

I hold the offset stick against the bed, with the saw kerf properly aligned, then slide the layout stick till it bumps the offset stick. I clamp the layout stick to the fence, then place the stop block on the correct line for whatever component I'm cutting.

Color-coding provides a quick way to sort and keep track of all the parts during assembly and installation.

For example, here I used a red marker to label the casement head and apron layout marks, and a green marker to label what I call the legs, or side components. I used blue and black markers to label the comparable double-hung marks.

Every component receives a label.

As I cut each component, I lay out the pieces side by side, facedown on a worktable. Once I'm done cutting, I label the identical pieces with the appropriately colored marker; I do this all at once, across their backs.

Ganging Material Is More Efficient

Breaking the whole process down into the smallest repetitive steps, rather than treating a single component to two or three operations one piece at a time, is key to saving time and eliminating confusion.

This is the order of my cutting operations:

• Rip the jamb stock slightly on the heavy side and gang-feed it on edge through my planer to take it to a uniform finished width of 3 inches.

• Cut extension head jambs to length

Figure 4. A routed groove in the extension jamb head will receive the $3/8$-inch-wide parting bead, making a strong, self-aligning connection between the two parts.

Figure 5. Three-piece extension jamb sets are laid out on the table for assembly, six at a time (A). Polyurethane hot-melt adhesive provides a strong 30-second bond between parts, allowing accurate and secure alignment (B). Trim-head screws add strength to the glued joint (C). Completed jamb sets are stacked to one side, awaiting the next assembly step (D).

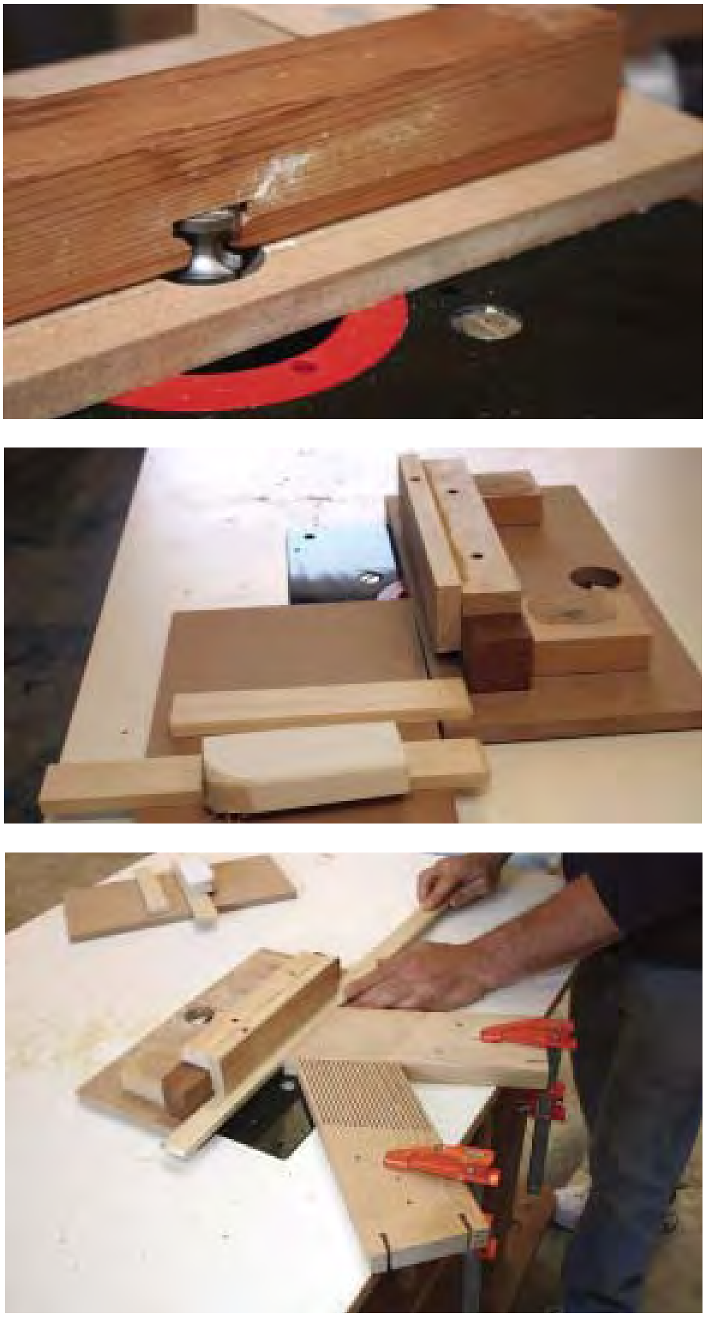

Figure 6. The author's shop-made router fence has a built-in dust port to reduce chip buildup (top). A hold-down is screwed to the fence to control the stock feed, while front and rear stops on the end-milling sled help prevent grain tear-out (center). After rounding all the ends, the author sends the long edges through the router table. This sequence wipes out any minor tear-out that may have occurred during end-milling. Dual feather boards ensure absolute stability (above).

(I cut several extra pieces to serve as spreaders during jamb assembly).

- Rout a 3/8-inch-wide groove in the head jambs to receive the parting bead (Figure 4, previous page).
- Cut extension side jambs to length.
- Cut stool stock to length.
- Cut head casings to length.
- Cut aprons to length.
- Cut parting bead.

Note that I don't cut my side casings to length yet. I wait until I've assembled the extension jambs, sill, and parting bead to double-check the exact dimension.

Assembly

For this particular project, I first assembled the extension jamb sets (Figure 5, previous page).

Holding the pieces down against the worktable to align the edges and square up the joint, I glued the sides to the head with a couple of spots of Titebond Hi-Purformer (Franklin International, 800/669-4583, www.titebond.com). This polyurethane hot-melt adhesive has a 30-second set time and a bond strength of 1,360 psi after 24 hours.

I also drove a couple of 2-inch trim-head screws in at each end for good measure.

Routing Bullnose Profiles

Next, I milled the bullnose profiles on the sill and parting bead with table-mounted routers. I own enough routers to dedicate individual tools for each bit. Since the routers have custom polycarbonate bases attached, I can simply drop them into a matching recess in the tabletop. When I'm done with one bit operation, I switch routers.

Rounding the end grain on a piece of trim tends to break the grain out, so I always profile the ends first, then the edges. A zero-clearance fence reduces grain blowout, and a good exhaust port prevents chip buildup between the cutter and stock (Figure 6, previous page). Chips interfere with the cutting action and cause irregular milling.

To make the fence, I began by carefully pushing it straight across the running bit, freehand. Then I glued it to a square of 3⁄4-inch MDF that I'd drilled with a clearance hole for the bit. Finally, I hot-melt-glued the MDF to the router base. The MDF base allows me to use a stock sled made from the same material to guide the workpiece across the cutter during end milling.

Hot-melt glue is plenty strong for this application — it takes a hammer and chisel to remove the fence when I'm done with it.

After I'd bullnosed all the ends in one operation, I ran all the long edges. Working in this order cleans up any minor blowout that may have occurred in end milling.

Notching Sill Horns

My next step was to notch the sill horns.

I clamped a stop block to my table-saw fence and raised the blade all the way to minimize overcutting. Although I crosscut the waste pieces on my band saw, this could also be done on site with a table saw or chop box.

I notched the parting bead the same way; it's recessed in the extension head jamb but extends past the side casings on both sides.

Head and Sill Assembly

I spot-glued the parting bead in the grooved extension heads, using a gauge block to determine the offsets (Figure 7). Then, using a temporary spreader and parallel-jaw clamps to hold the sides the exact distance apart, I glued the sills to the bottom ends of the jambs.

Two-inch coarse-thread drywall screws completed the connection.

Figure 7. A spot of hot-melt adhesive (A) at either end of the parting bead groove provides fast installation of the bead, which — like the sill — has horns. A wood stop-gauge sets an accurate casing overhang for the parting bead (B). The author "tacks" and squares the sill to the jamb ends with two dots of hot-melt (C), then makes it permanent with a pair of countersunk drywall screws (D).

Figure 8. The author uses wood joining biscuits to govern his casing reveals. The backing fence against which the stock is being pressed is hot-melt-glued to the workbench and has center marks along its top edge to guide the biscuit joiner. Stock stacked five deep in front of the fence receives a series of slots in a single, repetitive operation (top). Cardboard hot-melt-glued to the biscuit joiner deflects chip exhaust onto the floor (above).

At this point, I had an actual fixed distance between the parting bead and sill horns. I checked it against my layout stick, made adjustments where needed, then cut all the side casings to length.

Adding the Casing

There was a 1⁄8-inch finish reveal between the casing and the edge of the extension jamb in this house. Over time, I've developed a technique involving wood biscuits to quickly maintain an even reveal, and I used that technique here.

First, I hot-glued a temporary backer square to my tabletop with a series of 12-inch-on-center reference marks penciled along its top edge (Figure 8). Then I set my biscuit joiner to cut a groove 5⁄8 inch down from the edge of the casing stock. I stacked the casings on edge, backside out, six at a time, in front of the backer, and I slotted each piece, following the reference marks for consistency.

With all the casings slotted, I laid out the assembled jamb sets faceup on the table. I glued biscuits into the slots, then hit the exposed face of the biscuits with a dot of hot glue and pressed them against the outside of the extension jambs (Figure 9, page 9). The biscuits thus maintained the precise reveal.

The glue held things together while I shot 2-inch finish nails to permanently fix the casings.

I then screwed the parting beads and sills into the casing ends, using 1 5⁄8-inch and 2 1⁄2-inch screws respectively.

This completed the in-shop assembly.

Filling the Fillets

Because the head casings and sill aprons were relief-ploughed to account for plaster irregularities, the back-relief would be visible on the ends. So I used a glue-in fillet to give the installed ends a finished appearance.

Figure 9. With a completed jamb assembly on the bench, the author prepares to attach the side casings. Hot-melt holds the biscuits in the slots (above) and the casing against the side jambs' exterior face, automatically governing the finish reveal (above right). Finish nails complete the assembly (right).

I cut and planed the fillet stock to the exact width and depth of the plough, then chopped it into 1-inch lengths. With a stack of casings lying facedown with staggered ends, I applied a bead of HiPur and pressed the fillets down flush with a block of wood (Figure 10).

I left the fillets slightly proud of the ends, belt-sanded them flush, then wiped spackle into the end grain to fill the pores. I finished by touch-sanding with a 120-grit sanding block, which provided a smooth surface for painting.

For ease of transport and installation, I left the heads and aprons loose. I also left the common side casings off any units to be ganged on site; they would require custom fitting, best done in place.

Figure 10. Fillets hide the gaps at head casing and apron ends. The author uses a block of wood to press the fillets down flush in a bead of hot-melt glue.

Site Installation

I installed all the stand-alone units first, working alone.

It's common to install extension jambs to window frames with long screws or nails, but instead I used Excel Xpress (AmBel, 800/779-3935, www.excelglue.com), a fast-setting polyurethane adhesive (Figure 11). It has an open time of about five minutes and sets in 30 minutes or so. Using this adhesive eliminates the need for fasteners, which really speeds up installation.

Excess glue foams out of the joints as it cures, and this needs to be removed within about 15 minutes, while the adhesive is still relatively soft. Otherwise, it has to be chiseled off, and that's a chore.

To install the trim kits, all I needed was a good supply of bar clamps. I opened the window and added clamps to close the joint; not much clamping force was needed to draw the joints tight. I used gun nails at the top and bottom of the casings, just to hold the frames in alignment. This took took me about 10 minutes per window.

I finished up with hand nails, since they really draw the casing up tight to the plaster. But I waited until the glue had set to do the hand nailing; the clamping force was light, and hammering can shake the clamps loose.

The remainder of the trim packages — either mulled units or corner units — required some on-site assembly and another set of hands to make installation go smoothly.

In preparation, I went around and fit all the combination sills.

To support the sill stock during fitting, I hot-melt-glued temporary 2-by supports to the plaster below the windows. Once I had all the loose sills in the house cut and labeled, I glued and screwed them to their respective ganged jamb sets.

The combination trim kits were then ready to be installed using the same procedure I'd used for single units.

I wrapped up the job by installing the mulled-unit parting beads, head casings, and aprons. I brought my bullnose routers to the site to do all the extension touch-ups.

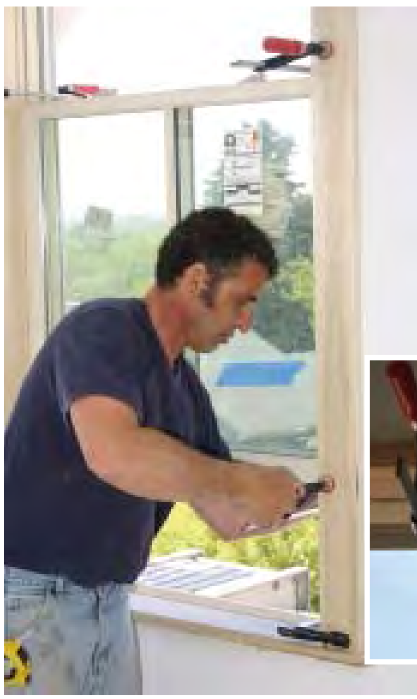

Figure 11. Here, the author applies a bead of fast-curing polyurethane glue to the edge of the extension jambs for a mulled window unit (above). Bar clamps squeeze the trim kit against the window jambs and plaster (left). The glue foams as it cures and the excess must be cut away while still pliable (below).

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