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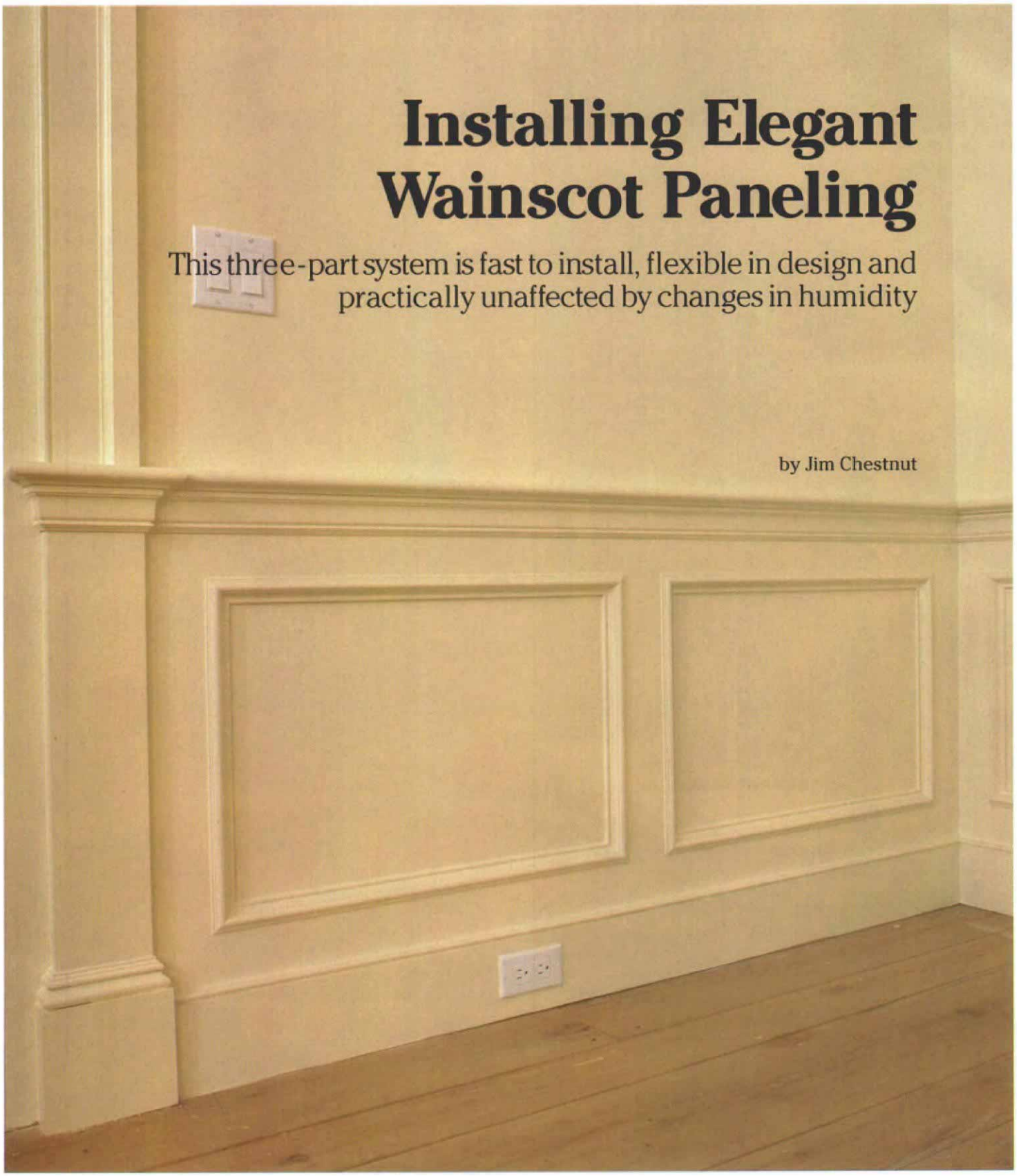
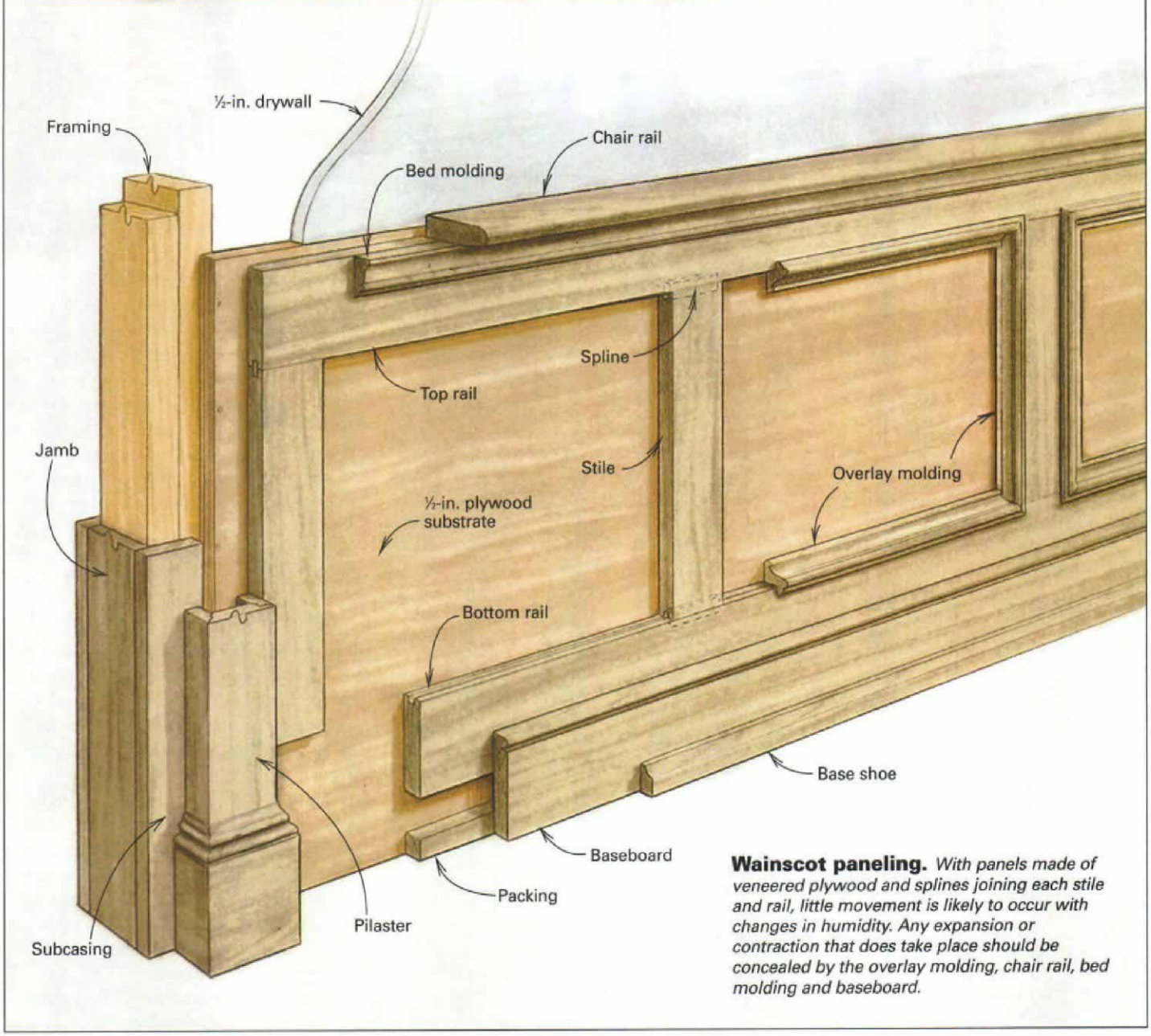
Installing Elegant Wainscot Paneling

This three-part system is fast to install, flexible in design and practically unaffected by changes in humidity

by Jim Chestnut





Wainscot paneling. *With panels made of veneered plywood and splines joining each stile and rail, little movement is likely to occur with changes in humidity. Any expansion or contraction that does take place should be concealed by the overlay molding, chair rail, bed molding and baseboard.*

As a professional trim carpenter, I see my share of finished woodworking detail. But of all the interior trim that I do, none is more satisfying than turning out a room full of fancy wainscot paneling. Whether in entry foyers or dining rooms, painted or naturally finished, nothing adds more visual appeal for the money than nicely laid out wainscoting.

I like the look of panels made up of three basic components: a furniture-grade plywood substrate, flat stiles and rails applied over the plywood and an overlay molding that covers the transition from plywood to stile and rail (photo facing page).

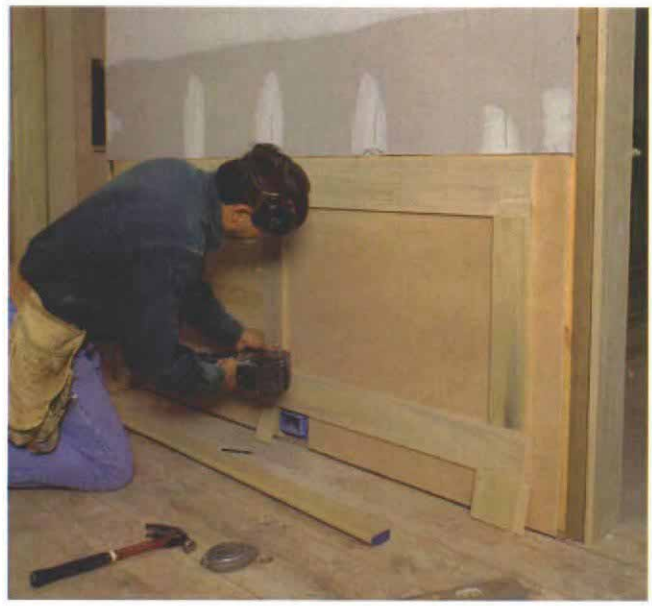
As shown in the drawing above, the plywood forms a continuous base in the same plane as the drywall. This method produces a large base/relief ratio. It also lends itself to tremen-

The plywood goes on first. A substrate of birch veneered plywood ½ in. thick, replaces the drywall from 31 in. down to the floor.

Drawings: Bob La Pointe

Chalkline marks the top of the paneling. The author holds a piece of chair rail in place while nailing the top rail to the plywood.

Splines reinforce the glued joint between stile and rail. Square cuts on both ends of each stile ensure that the stiles are installed plumb.



Offcuts make good clamps. Blocks wedged between the floor and the lower edge of the bottom rail force the rails and stiles together.

dous variation in size and complexity without significant cost increases. For instance, you can increase the thickness of the overlay molding by ⅛ in. and its width by ¼ in. and wind up with a much bolder look without adding much cost. Or you can go from a simple molding to one that will add three or more shadowlines at no additional cost.

Added to its aesthetic versatility is the fact that this style of paneling is ideally suited to job-site fabrication and is nearly immune to humidity changes. Plywood is more stable than solid-wood panels. Joints between stiles and rails are glued, clamped and reinforced with splines. And any movement that does occur is likely to be hidden by the overlay moldings.

Getting started is always the hardest part of the job (except, of course, getting a check for your start-up costs). It's a good idea to think through the ticklish details before starting, in particular the termination point of the paneling with doors and windows. More on that later.

Replace the drywall with plywood—Our typical installation procedure begins with cutting out the drywall from about 31 in. down to the floor, then installing ½-in. plywood so that the plywood joints will be buried under a stile (photo p. 53).

If the panel layout has not been predetermined, I usually sketch out what I think looks good in pencil right on the wall. This is pretty much a matter of personal preference, mine being panels that are wider than they are tall. I also am partial to tall, narrow panels in corners and adjacent to doors and windows, which sometimes enhances the layout.

Once we figure the panel layout, we install plywood, gluing and screwing scrap plywood behind joints that don't fall on studs. Our flat panel face is now in the same plane as the drywall.

Stiles and rails are grooved for splines—For the stiles and the rails, I use stock about ⅝ in. thick. If you take the time to flatten the stock on a jointer before finish-planing, you'll spend less time sanding the joints between stiles and rails once the material is on the wall.

After we plane, straighten and rip our material to width, the stiles are cut to length using a stop block on the saw's fence to ensure that panels will be the same height. Then we run a groove ¼ in. wide and about ½ in. deep along one edge of the rails and along each end of the stiles. I make the grooves with a shaper, but they could be done with a router. The grooves accept ¼-in. thick splines installed at each stile-to-rail joint. Each 1-in. wide spline is about ¼ in. shorter than the stile width.

There are two advantages to running full-length grooves in the edges of the rails. First, the

location of a stile can be adjusted easily by sliding the stile from side to side. And second, a full-length groove leaves an escape route to blow out excess glue with the air gun to avoid glue puddling. This minimizes glue setup time and the possibility of "spline telegraphing" caused by sanding over a joint that has swollen from the absorption of water from the glue. When the wood eventually dries out and shrinks, a depression can form. I have seen glue pour out of a broken biscuit joint three days after glue up because the cutter depth was too deep for the biscuit used.

Before doing any glue ups, we permanently fix the top rail to the plywood (top photo, facing page). We run a bead of yellow glue on the back of the rail close to its bottom edge to force seasonal movement away from the stile-to-rail joints. If the rail expands or contracts, the movement is then more likely to take place at the top of the top rail, which is covered by the chair rail and the bed molding.

After the glue has set up for an hour or two, we glue in the stiles and the bottom rail (center photo, facing page). This way, we can apply clamping pressure by using blocks off the floor (bottom photo, facing page). This is preferable to tying up valuable floor space with stile-and-rail assemblies held together with bar clamps.

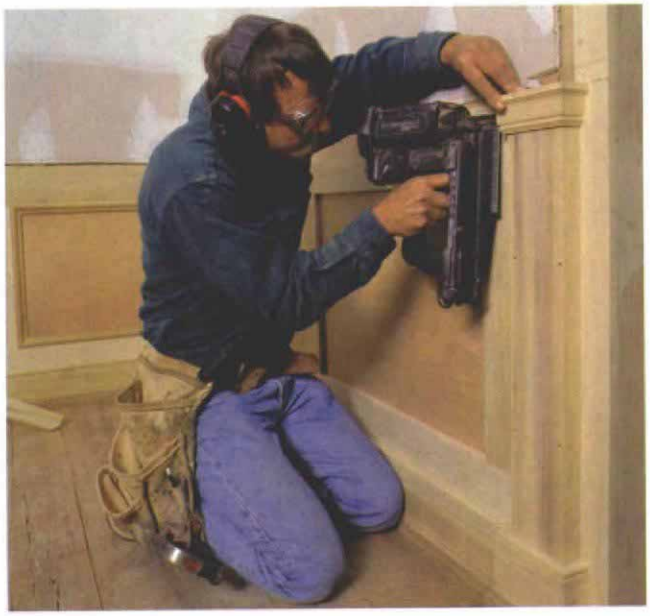
Pilasters mark the door openings—Our stiles and rails will be proud of the drywall by their thickness, and any subsequent layering, such as base and shoe, chair rail and bed molding, will add to this difference. At the floor, the bottom rail and the baseboard combined are 1¼ in. thick. Even with a thick door casing, say 1⅛ in., the rail and baseboard would stand out ⅛ in. beyond the casing.

This situation could be handled with a plinth block, but the spot where the chair rail meets the door casing presents an awkward condition as well. I solve this problem by installing a hollow pilaster in place of the casing from the floor to the top of the paneling (center photo).

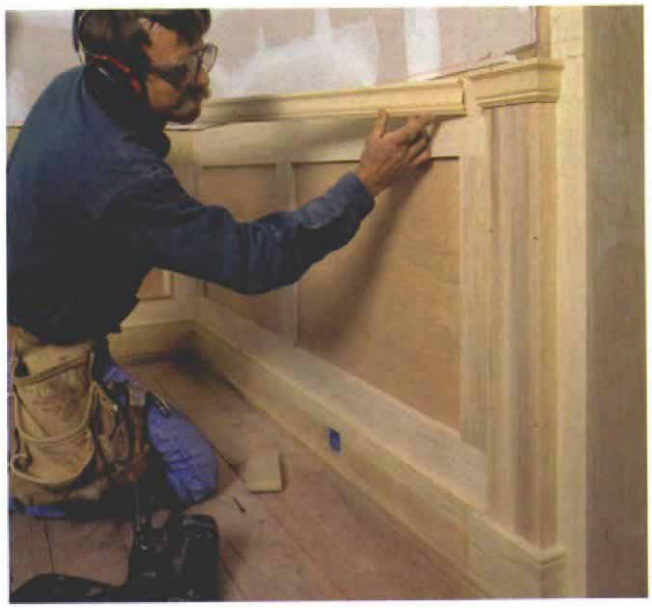
To provide a consistent surface at the door jamb for the pilaster, chair rail and casing, we install a flat piece of stock, or subcasing, ½ in. thick by 3 in. wide, at a right angle to the face of the door jamb (drawing p. 53). To make room for thesubcasing, ½ in. is ripped off each edge of the jamb. The drywall is cut back so that the face of the subcasing will be flush with the face of the adjacent drywall. The pilaster is held back from the inside of the jamb 1½ in. to 2 in. The base, base shoe, chair rail and bed molding now can wrap the pilaster and die into the flat subcasing (photos right).

Where paneling meets window trim (bottom photo, p. 56), we normally notch the chair rail over the casing and the window's stool cap over

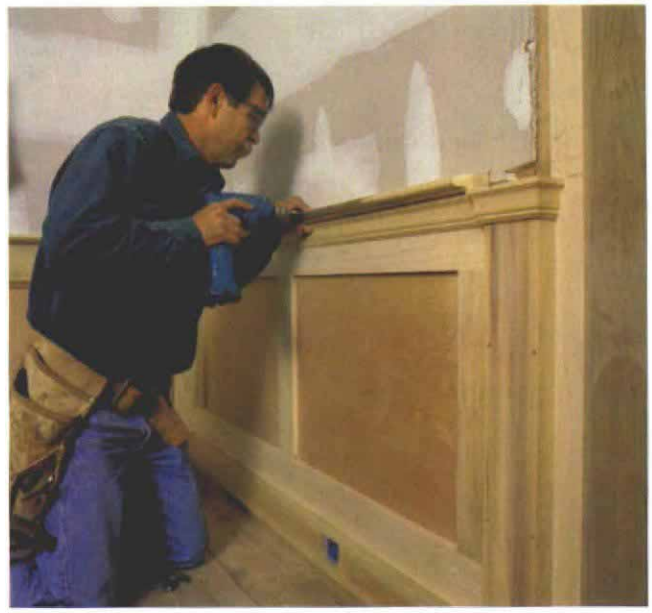
The panels end at pilasters. At each door opening, a pilaster the same height as the paneling is glued and screwed to the plywood substrate and to the flat subcasing attached at a right angle to the jamb.



Moldings stop and start at the pilasters. At door openings, the pilaster and the flat subcasing provide a termination point for the chair rail, bed molding, and base and shoe.



Bed molding dresses up the top rail. Here the author snaps a piece of coped bed molding into place. Note how the subcasing brings the jamb flush with the plane of the drywall.



The chair rail caps the paneling. The 2½-in. wide chair rail covers the plywood paneling, the top rail and the bed molding.

Chair-rail cap hides a locking miter. The author used a locking, or mortise-and-tenon, miter to join the sides of the pilaster.

Trim pieces overlap at the windows. At window openings, the stool cap is notched to fit over the stile. Note how the window casing is rabbeted to fit over the rail and stile. The chair rail will cover the exposed rabbet.

the stile. This approach works for window casings because they are less noticeable than door jambs and are often hidden by curtains.

A back-cut overlay molding ensures a tight fit—Stock overlays have a square rabbet that can leave a slight gap between the molding and the panel or the rails and stiles. I mill my own overlays so that the part of the trim in contact with the stile or rail is cut back at a slight angle (drawing facing page). This ensures a tighter fit, which is especially important in stain-grade work that can't be caulked.

With this rabbet we can maintain tighter fits when the stile thickness varies due to cupping, twisting, unnoticed end snipe or overaggressive sanding. On some jobs we've found it worthwhile to modify stock moldings by rerunning the rabbet on a router table using a dovetail bit (with featherboards) or on a table saw.

Like all moldings, overlays are subject to miss-milling and end snipe. Because of the rabbet, they are also much more delicate than most other moldings and should be handled sparingly and carefully.

After thoroughly inspecting the stock, we cut all the right-hand miters, starting with the longest pieces and working down. Then we cut the left-hand miters, using a stop affixed to the saw's fence to control the length of the cut accurately without measuring each time. Unlike the standard, square-rabbet overlay, the back-cut overlay molding is mitered while it sits on a stick that is the same thickness as the stiles and rails. This step keeps the overlay in the right position to take a miter cut.

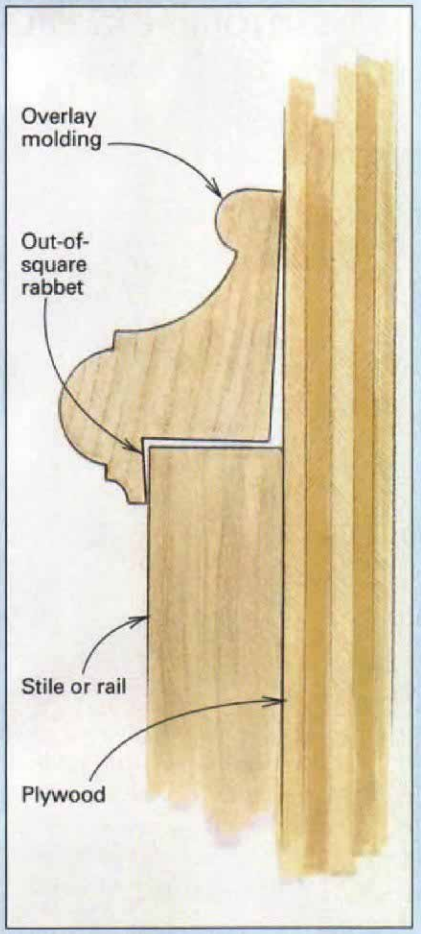
Overlays cut a tad short—The length of each piece of overlay molding can vary depending on the width of the rabbet on the back of the molding. On small moldings we usually cut the lengths so that there will be ⅛-in. minimum play both vertically and horizontally in the assembled molding within the stiles and rails (center, bottom photos, facing page). Moldings with wider rabbets can stand even more play.

I cut a few extra overlay moldings of each length in case a brad comes through the face. Extras make good mock-ups for future clients, and good kindling as well.

If you're nailing the molding together by yourself, take five minutes and make a simple fixture to hold one piece rigid while you glue and shoot the next piece to it (top photo, facing page). If your partner is doing nothing worthwhile, make him do the holding while you do the shooting. For rapid glue cleanup, we use a toothbrush and warm water. Scrub the glue with the brush; then blow the residue away with an air gun.

Before installing the overlay frames, we sometimes shoot a straightedge to the top rail with a

Custom molding makes a tight fit. *The author uses overlay molding milled with an out-of-square rabbet. This way, the trim fits tighter against the plywood and stile or rail.*



A simple fixture holds the overlay moldings square during assembly. The overlay moldings were glued and nailed together while they were clamped to fences that form a 90° angle. The fences are the same thickness as the stiles and rails.

Preassembled with room to move. The overlay molding was cut to allow about ⅛ in. of play between the rabbet in the back of the molding and the stiles and rails.

pin tacker and run the overlay up to it, ensuring a straight installation at the top of the panel, which is the most conspicuous area. Making sure of this detail is especially important on stairway paneling, where even slight variations are easy to read.

If your budget is really limited, you can make rails and stiles out of plywood because the overlay will hide all the edges. And if your budget is really, really limited, you can substitute drywall for the plywood panels.

To keep receptacles from breaking up the look of the paneling, put them in the baseboard. It's good to have the electrician run his outlet wires long with no boxes attached and to use "old work" steel boxes mounted later. □

Jim Chestnut is an interior-trim contractor and tool manufacturer who lives in Fairfield, Connecticut. Photos by Charles Miller and Reese Hamilton.

Brads hold the trim in place. The molding covers the continuous groove cut in the top and bottom rails to accept the splines.