BY JIM TOLPIN

Frame-and-Panel Wainscot

LAYOUT STICKS AND CAREFUL SCRIBING ENSURE AN ELEGANT PANELED WALL

Making and installing frame-and-panel wainscot is a tough and challenging job, but it's worth the effort. The results are striking — and are guaranteed to enhance the reputation of any builder who can do it well. A knowledge of historical precedent and a bit of common sense will help you achieve a pleasing layout, while some skill with story sticks and a scribing compass will make the installation go smoothly and precisely.

Layout

If the layout of the wainscot isn't included in the interior elevations, the first step is to make a scaled sketch. Pay attention to proportion here. The ancient Greeks thought that the most pleasing proportions for any rectangle were a width-to-length ratio of five to eight — the "golden rectangle" seen in much of Greek architecture. Though it's a good ideal to strive for, every panel doesn't have to be perfect. Here are some guidelines:

- Every panel should be a simple rectangle. Avoid L-shapes around windows or other wall openings, and make sure that windows have complete panels grouped beneath them.
- Proportion the frame around the panels so that after you add the baseboard, the exposed part of the bottom rail is at least as wide as the top rail.
- The stiles at the ends of a run should be as wide as those separating the panels.
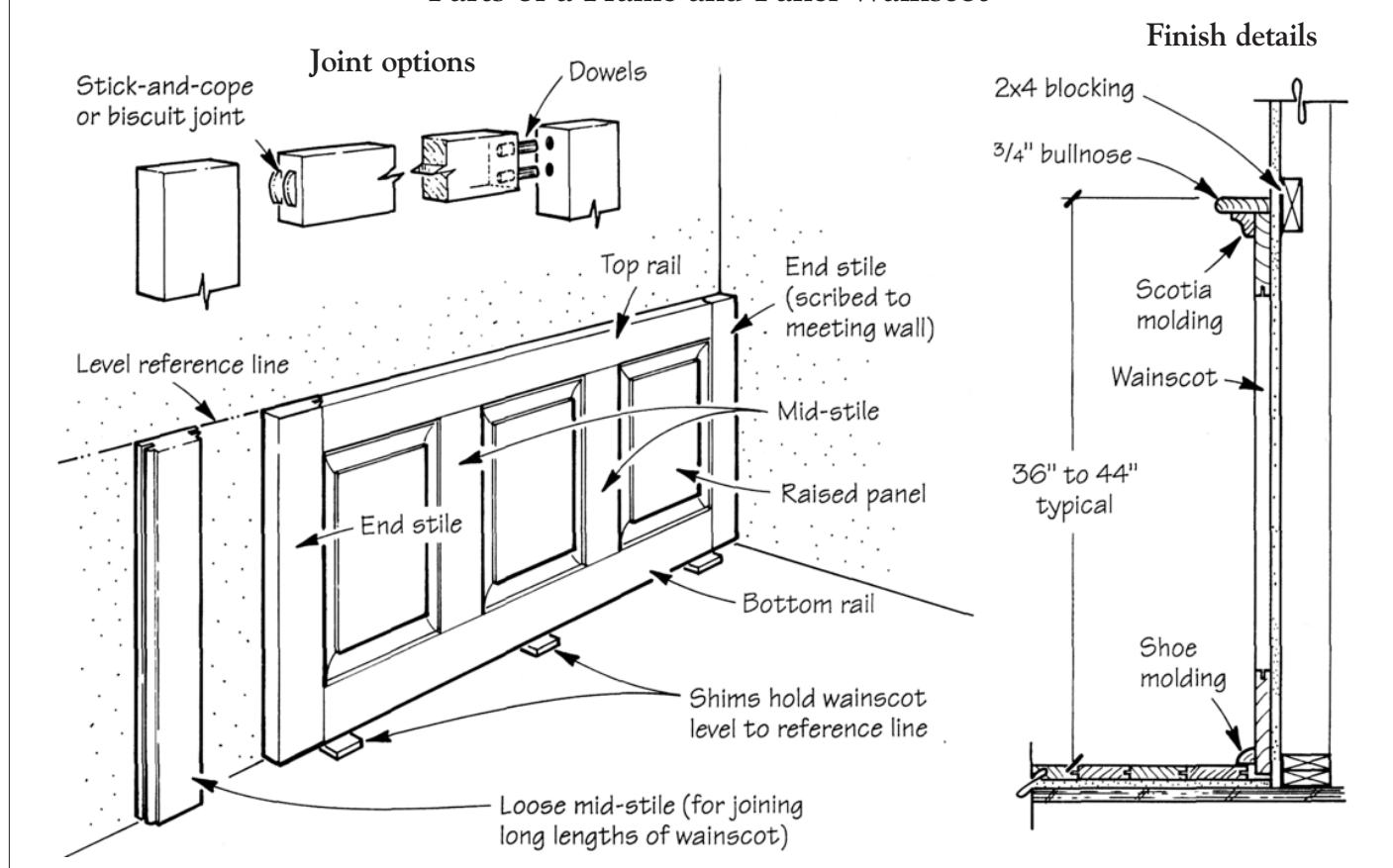
Fabrication

The parts of a frame-and-panel wainscot are shown in Figure 1, next page. If you're going to paint the wainscot, you can make the panels from medium density fiberboard. Otherwise, make raised panels from solid wood and flat, recessed panels from hardwood plywood. Orient the grain on all the panels in the same direction, usually vertical, to match the grain in paneled partition doors.

The most common way I join the rails and

In a well-designed wainscot installation, the edges of the rectangular panels line up with the edges of the window casings, and the widths of the stiles and rails all match.

Parts of a Frame-and-Panel Wainscot

Joint options

Stick-and-cope
or biscuit joint

Dowels

Finish details

2x4 blocking

3/4" bullnose

Scotia
molding

Wainscot

36" to 44"
typical

Shoe
molding

Top rail

End stile
(scribed to
meeting wall)

Mid-stile

Raised panel

Level reference line

End stile

Bottom rail

Shims hold wainscot
level to reference line

Loose mid-stile (for joining
long lengths of wainscot)

Figure 1. *Although the author uses stick-and-cope shaper cutters to join the rails and stiles of paneled wainscot, a plate joiner also works. A simple cap can be made with stock bullnose and scotia moldings.*

Measuring for Cutouts

Horizontal story pole

Level line

Vertical story pole

Plumb lines

Wall

Outlet box

Floor
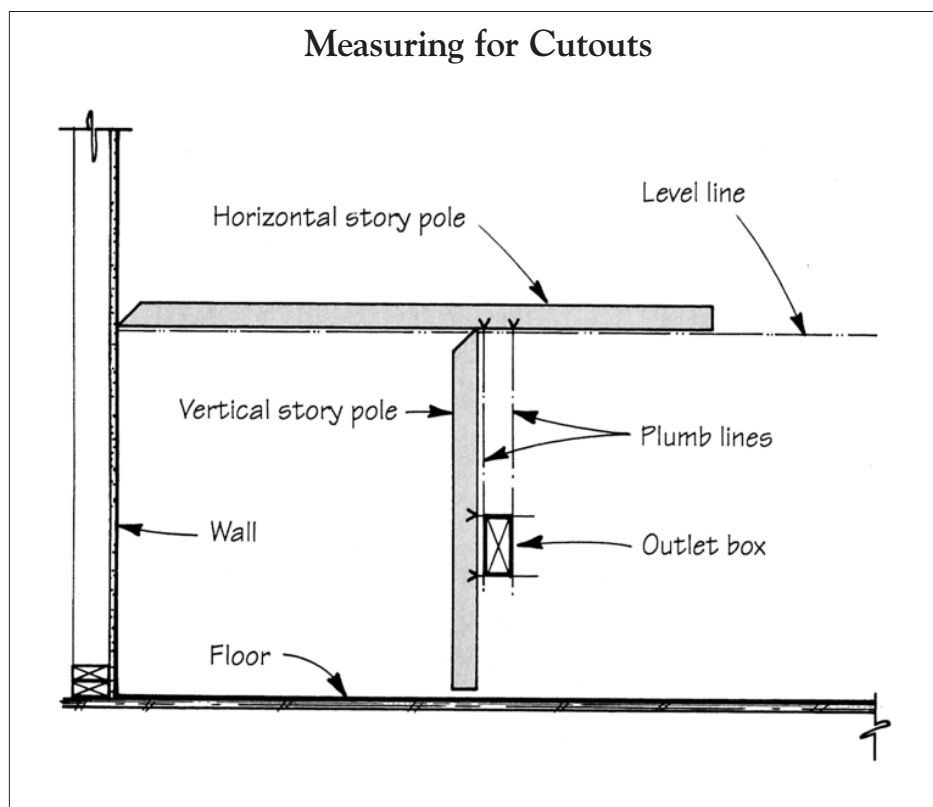
Figure 2. *To locate an outlet box, the author draws plumb and level reference lines on the wall, then uses vertical and horizontal story sticks to transfer the location of the box to the back of the wainscot.*
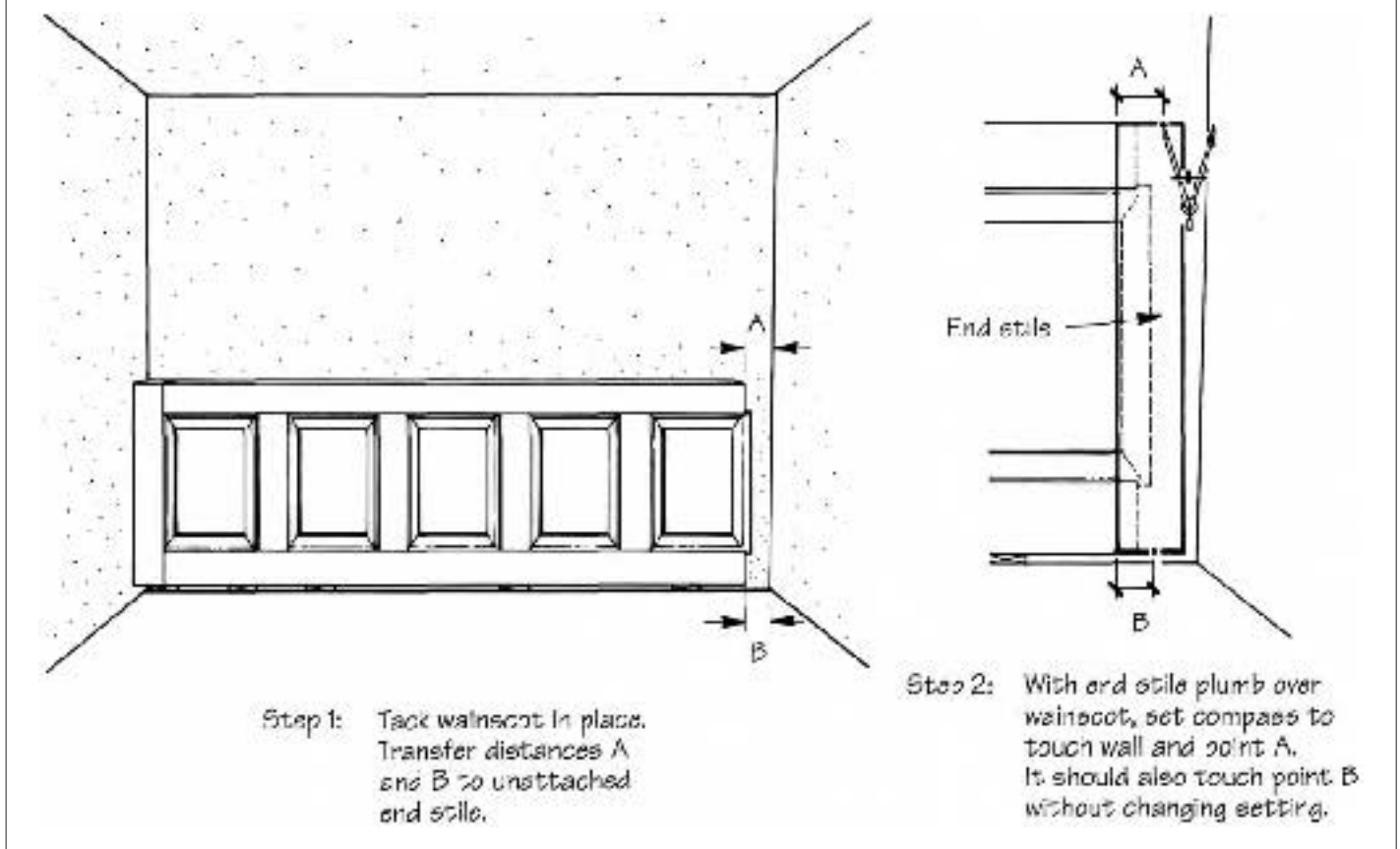
stiles of the frame is with a shaped stick-and-cope joint of the type used in cabinet doors. If you don't have a shaper, you can join the stiles and rails with spline biscuits. For strength, use at least two biscuits on each joint. Dowels are a third option.

When making wainscoting in the shop, I strive to preassemble the frames to the full length of the run. That way, I don't have to deal with joints in the middle of a wall. If you must join two sections, you can do so by leaving a mid-stile off and gluing it in place while fastening the wainscot to the wall. End stiles that meet a wall, or stiles that abut door or window casings, should be left oversized, then cut to fit on site. If you must install a run between two walls and the ends won't be covered by another run of wainscot, the fit to the walls must be perfect. In this case, omit a stile at one end of the run. Plan to install this stile when you install the wainscot.

Installation

The first step is to make a level line on the wall to represent the top of the

Scribing the End Stile

Step 1: Tack wainscot in place. Transfer distances A and B to unattached end stile.

Step 2: With end stile plumb over wainscot, set compass to touch wall and point A. It should also touch point B without changing setting.

Figure 3. *Where wainscot must fit between two walls, the author leaves one end stile off during fabrication. He temporarily tacks the wainscot in place and scribes the final stile to the meeting wall. He then removes the wainscot and glues the stile to the rails.*

wainscot. Wainscots vary in height, but most are either chair rail height (about 40 inches) or one-third the wall height (usually 30 to 36 inches). Also, remember to allow $1/4$ to $1/2$ inch for shims at the bottom.

Start by fitting the panel at the left-hand end of the run, using blocking to hold it level while scribing it into the corner. (I start at the left-hand corner because, being right-handed, I like to support the work with my left hand and nail with my right. Lefties may want to start at the right-hand corner.) Cut the scribe and test the fit, then remove the panel from the wall and lay it face down on a pair of sawhorses.

Making cutouts. Next, cut holes for outlets, heating ducts, and the like. The most accurate way to locate these openings is with a pair of $3/4$-inch-square story sticks, one for horizontal dimensions and one for vertical dimensions. Make each stick a bit longer than the longest measurement. (If the panels have been fabricated in the shop, wait until you have them on site to cut the openings — mistakes here tend to get expensive.)

Figure 2 shows how to locate an outlet box. Begin by drawing a pair of plumb lines from the box to the level line on the wall. (If an outlet happens to land on a molded or beveled edge, you may have to move the outlet.) Keeping the horizontal stick tight to the left-hand wall corner, mark the intersections of these lines on the stick. Then transfer the marks to the back of the wainscot along the top edge (use spring clamps to hold the stick against the wainscot and flush to the scribed edge that will butt the corner). Square the lines down across the back of the panel.

Now place the vertical stick against the wall, keeping the top even with the level line and the edge parallel to the plumb lines. Mark the top and bottom of the outlet box on the stick. Transfer these marks to the back of the panel, holding the top of the stick flush to the top edge of the wainscot and parallel with one of the square lines you just drew. Then hold your breath and cut your hole.

Double scribing. If the wainscot must fit between two walls, installation is more involved (Figure 3). Assuming that the right-hand end stile has been temporarily omitted, tack the wainscot temporarily to the wall, making sure that it's tight against the left-hand corner and level to the reference line. Measure the gap between the top and bottom of the right-hand rail ends and the wall, then transfer these measurements to the loose stile. Using the scribe and being careful to hold the stile plumb, transfer the line of the wall to the face of the stile. Cut the line with a 2- to 3-degree underbevel. Then remove the wainscot, glue the stile to the rails, and permanently fasten the wainscot to the wall. Finish nails are okay for installing paint-grade wainscot, but stain-grade work calls for screws — countersink the heads and cover them with wood plugs cut from the same material as the stiles. ■

Jim Tolpin is a woodworker and journalist in Port Townsend, Wash. This article was adapted from his recently published Finish Carpenter's Manual, available from Craftsman Book Company.