
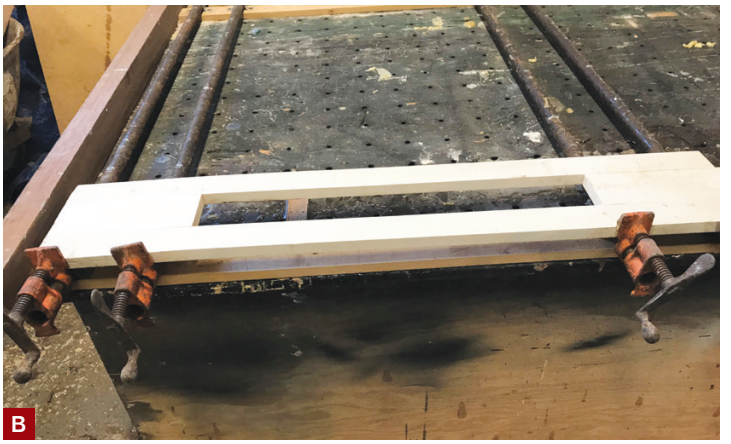


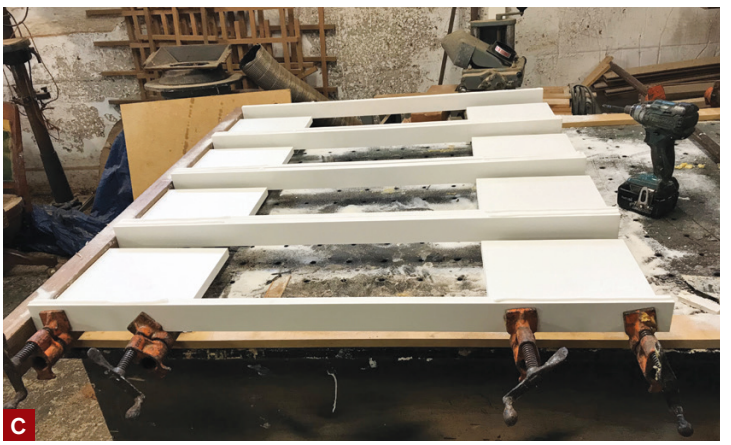


PHOTOS BY ROBERT KIEFER

**Figure 1. After cutting the stiles and rails to size from ¾-inch-thick PVC stock and setting up his gluing station (A), the author used fast-cure PVC cement to glue up the frames one at a time (B). Switching to a slow-cure adhesive allowed him to glue up several frames at once (C), but the frames needed to remain clamped for an hour.**

# Building Recessed-Panel Post Sleeves

by Robert Kiefer

Curved railings are one of the signature design features on the outdoor living spaces that my company builds, and on a recent project, we decided to add an elegant touch: recessed-panel posts and columns. As we did for the railings, we built the frame-and-panel design out of low-maintenance PVC to contrast with the home's ipe decking and accentuate the "beach house" feel of the Staten Island, N.Y., home.

## PVC Frames

We cut the stock for the frames from ¾-inch-thick PVC sheet goods in our shop, ripping eight square-edged stiles to about 2 inches wide and 39 inches long for each of the 4x4 pressure-treated posts that we had bolted to the deck framing. We also ripped some longer stiles to make the sleeves for the 6x6 columns supporting the deck's pergola. Next, we ripped sheet stock into 3½-inch-wide pieces, which we cut into 8-inch-long-by-3½-inch-wide lengths for the rails.

We assembled the frames a couple of different ways. One was to use a fast-cure PVC cement, clamping each frame up one at a time. Because we set up two pairs of clamps, we were able to take advantage of the cement's five-minute cure time to assemble, glue up, and clamp one frame and then quickly move on to the next one (**Figure 1**).

We also tried gluing up several frames at once. To do this, we used slower-curing Extreme White Hot PVC adhesive, a white, high-strength glue with a longer, 60-minute cure time. While this gave us

enough working time to glue and clamp multiple frames, it meant that we also needed to leave the frames clamped for about an hour, which actually slowed production.

When the adhesive had cured, we cleaned up the glue joints with a random orbit sander and 120-grit sanding discs. Then we used a router with a rabbeting bit to cut a 3/8-inch-deep rabbet around the inside edges of each frame to accommodate its panel.

For the panels, we cut 3/8-inch-thick PVC sheet stock into pieces that measured 4 5/8 inches by 23 3/4 inches and clipped each of their four corners at a 45-degree angle to fit into the rounded corners of the rabbeted frames. Then we glued the panels to the frames using the White Hot glue (**Figure 2**).

## Fabricating the Post Sleeves

Now that the frames were glued together, complete with panels, we ran them through a table saw to cut clean 45-degree miter angles along the edge of each stile. Then we assembled the frames into post sleeves, gluing them together with White Hot adhesive and tacking the corners together with stainless steel 1 1/2-inch gun nails. During assembly, we carefully checked the glue-ups to make sure they were square.

After the glue dried, we spackled the nail holes with exterior putty, sanded the post sleeves smooth, and gave them a coat of Benjamin Moore MoorGlo soft-gloss paint in white to make the post sleeves more mildew-resistant and give them the look of painted wood.


**Figure 2. On most frames, the author cut a 3/8-inch-deep rabbet with a router around the inside back edge, then glued the 3/8-inch-thick PVC panel to the frame. Clipping the panel edges at a 45-degree angle allowed the panels to fit the rounded corners of the rabbet (A, B). For a deeper, 3/4-inch panel reveal, the panels could simply be glued and stapled to the back of the frame (C, D). The edges of each frame were ripped to 45 degrees so that they could be glued together to form the post sleeves (E).**

## Caps and Base

Before packing the post sleeves up and taking them to the jobsite for installation, we fabricated the post caps from a sheet of 1 1/4-inch-thick PVC. First, we cut the sheet into 10-inch squares. Then we ran the squares through the table saw on edge with the bottom face against the fence and with the blade tilted 12 degrees, repeating this cut on all four sides of each square (**Figure 3**).

We also cut 1 1/2-inch-wide lengths from the 3/4-inch PVC stock, then cut a cove-shaped profile along the bottom edge with a router. We used these strips to build mitered boxes sized to fit snugly around the frame-and-panel post sleeves, pinning the miters together with fast-cure PVC cement and stainless brads. After the PVC cement cured, we cleaned off the excess glue, and then glued and tacked the boxes to the bottoms of the post caps.

We also used the 1 1/2-inch-wide stock that we had ripped from the 3/4-inch sheet stock to make bases for the post sleeves. Instead of creating a cove profile, we used a roundover bit to ease the top edge of the bases with a slight radius, then assembled them the same way.

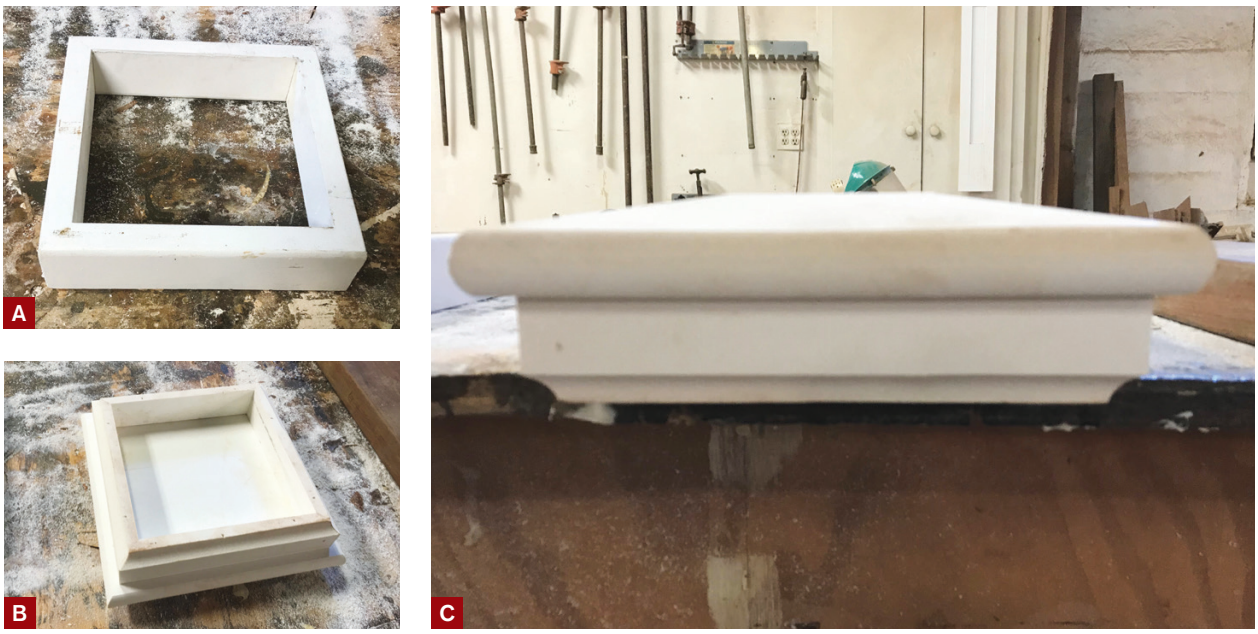

Figure 3. Cut from 3/4-inch-by-1 1/2-inch PVC, the sleeve bases (A) and cap trim (B) were sized to fit snugly over the post sleeves. The cap trim boxes were nailed and glued to the caps, which were cut from 1 1/4-inch-thick PVC stock (C).

Figure 4. The author sanded the sleeves, caps, and bases and gave them a coat of 100% acrylic latex paint, then assembled all of the components on the jobsite (A). The rails were fastened to the posts with 4-inch-long screws (B).

## Assembly

After cleaning everything up with the random orbit sander and 120-grit sandpaper, we gave the bases and post caps a first coat of paint and brought all of the pieces to the jobsite. Earlier, we had packed out each post with a pair of 5/4x6s on either side to allow for some adjustment when we were installing the frame-and-panel sleeves. We slipped the post sleeves into place over the posts and inside the bases (**Figure 4**).

We used temporary shims to plumb the sleeves and when fitting the rails, which we attached directly to the posts through the sleeves with 4-inch screws. Once the rails were in place, we removed the shims to allow for movement of the PT posts within the sleeves. We also didn't nail the bases to the post sleeves, but we caulked the joint after the sleeves were fastened in place.

After we installed the railings and low-voltage lighting fixtures, we slipped the post caps down over the post sleeves and completed the assembly. To finish up, we gave everything a second coat of paint. ❖

*Robert Kiefer owns Decks by Kiefer, in Martinsville, N.J.*