A Contemporary Box Newel

Pocket-screwed frames attached to an inner plywood column made for efficient assembly

by Gary Striegler

I've always enjoyed building box newel posts. They give a stairway a custom look, and give me a chance to showcase my woodworking skills. So I was intrigued when a client showed me a photo of the style featured here, which has a contemporary Craftsman flavor. To simplify construction, I built the newel in three sections, with moldings hiding the transitions. An interior post reinforces the assembly and provides secure attachment points.

I started by determining the height of the handrail and the exact location where it meets the post, then transferred the dimensions to a story pole. I also made a full-scale drawing on a piece of ¼-inch plywood to work out the details and make sure I was satisfied with the newel's size and proportions.

Tapered Frames

1. The tapered center section of the newel is made up of four frame-and-panel assemblies. I transferred the dimensions and angles for the stiles and rails from my full-scale drawing, cut them to width and length from ¾-inch poplar, and joined them together with pocket screws and glue.

2. I then cut a ⅜-inch rabbet around the inside of each frame with a router to accommodate the plywood panels, which I would make from readily available ¾-inch birch plywood.

Panel Cuts

1. To safely cut the tapered 3/4-inch plywood panels, I made a plywood sled for the table saw and used the drop from the first angled cut as a spacer for cutting the remaining edges.

2. Instead of squaring the corners of my rabbet in the back of the frame with a chisel, I clipped the corners of each plywood panel with the miter saw.

3. I applied yellow glue to the rabbets, dropped the panels in place, and secured them with headless pins while the glue dried.

4. In preparation for assembly, I ripped 3/4 inch from the 1 7/8-inch-wide stiles of two of the frames. I also cut a 15-degree angle on the bottom rail of each frame, using the table-saw miter gauge and the wedge-shaped spacer to hold the frame square to the blade.

Frame and Panel Assembly

1. I glued the four frames together, pinning them to each other with my 23-gauge headless nailer to hold the assembly in place while I set up my clamps.

2. The clamps provide the pressure, while the headless pins keep the panels aligned.

3. Setting the two wider frames slightly proud of the two narrower frames made it easier to flush-trim the joints with a router after the glue dried; this resulted in better-looking joints. I cleaned up the 26-inch-high assembly with a random-orbit sander and 120-grit paper.

4. While the tapered glue-up was drying, I made the four rectangular panels for the 9-inch-high upper assembly in the same way.

5. I again used headless pins to keep the panels aligned as I clamped them together.

Inner Post

1. Next I made the column that would reinforce the panel assemblies. I used 3/4-inch plywood and sized the column to fit snugly — keeping in mind that, because the plywood panels extend 3/8 inch past the inside of their frames, the overall clearance inside the upper assembly was reduced by 3/4 inch.

2. After flush-sanding the joints on the two panel assemblies, I slid them over the column and nailed them in place, starting with the tapered section.

3. I used the story pole to make sure the top paneled section would end up flush with the top of the inner column.

4. At the bottom, before nailing off the base of the tapered panels, I built out the column with plywood fillers.

5. The fillers will provide backing for the base detail once the newel post is in place, and are positioned so that the base will align with the bottom of the tapered section above.

Bullnose Trim

1. I made the trim that hides the joint between the two paneled sections with a large beading bit mounted in a handheld router.

2. After cutting the profile in 5/4 poplar stock, I ripped off the 3/4-inch bullnose.

3. I ran the trim through a planer to clean up the surface, then glued and pinned it in place.

Post Cap

1. To make the cap, I glued up a 2-inch-thick block using two lengths of 4/4 poplar. I ripped the stock to equal half the width of the top of the post plus another 1/2 inch for the overhang. I then ripped a 35-degree bevel angle on one surface.

2. That is a potentially dangerous cut, so I used a feather board and push stick. On the miter saw, I cut four triangles from the block and assembled them to form the square cap.

3. I fastened the cap to the post with glue and headless pins.

1. Before setting the post, I marked the location of the center of the handrail on the landing, then lined up the center of the post with these marks. This helped me locate the blocking needed on the floor and riser for mounting the post.

2. After a dry fit, I covered the blocking with plenty of construction adhesive and slid the post into place, shimming it plumb and then fastening it to the blocking with long structural screws driven in from three sides.

3. Finally, I finished the post with a $9\frac{1}{2}$-inch-wide plywood base, mitering the corners and adding a chamfered cap to hide the joint.

4. Later, after I was finished installing the treads, handrail, and balusters for the landing, my painter added the finishing touches.

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