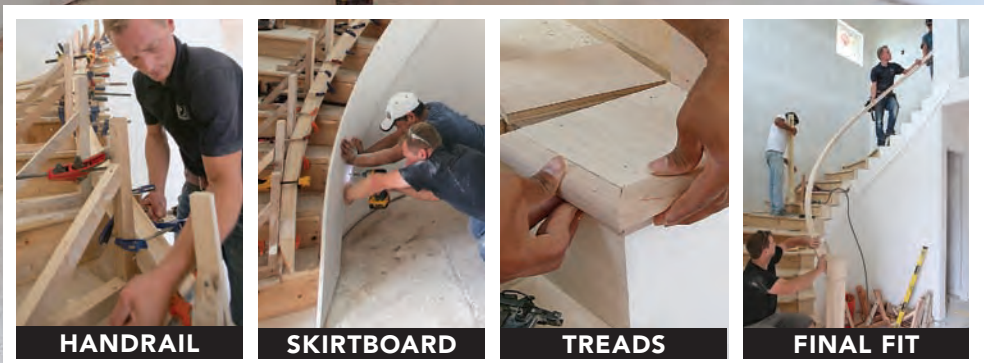


Trimming Curved Stairs



Site-laminated handrails, flexible skirtboards, and off-angle miters are standard on winding walkways

BY JASON MOLLAK



HANDRAIL

SKIRTBOARD

TREADS

FINAL FIT

Most of the whole-house finish carpentry my crew tackles includes basic stair packages—skirtboards, false treads for the ends of the rough risers and treads, one or more newels, and a handrail with balusters. So it's a nice change of pace when we're thrown a curve.

While I don't recommend that your first set of stairs be curved—or even your fifth—the skills needed to do this work aren't new to finish carpenters, just slightly different than on a standard stair. Rather than treads with a consistent depth, you're faced with pie-shaped treads. The 45° miters on open-stringer nosings are replaced with off-angle cuts to bridge the curvature of the skirtboard, which must be bent to fit the ascending curve of the stairway rather than just following a simple rise and run on a standard stairway. The key to all of this curved work is to think of the framed stairway as your template. Following this method, and using materials suited for the job, your task is simply to bend, measure, and fit the pieces to the curved template provided by the framers.

It's common practice here in Nebraska for stairs to be fully carpeted, so the framers usually set the stage with particleboard treads that have a rounded front edge. But many jobs, including this one, are trimmed to accommodate false tread ends and a swath of carpet that mimics the classic look of a carpet runner. Our process starts with cutting off the radiused front edge on both sides of each tread to make way for false tread and riser caps.

On straight stairways, we normally use prefabricated false treads, which are squares of plywood with solid-wood molding attached to the edges. These caps are cut to fit along both sides of each rough tread, leaving space

BEND THE HANDRAIL FIRST



Prep the rough stairs. Radius-edged rough treads are cut flush to the rough risers to create an accurate reference point for measurements and to clear the way for the false tread caps that come later.



Bending brackets. Fastened 6 in. from the open end of each tread and parallel to the face of the risers, site-made brackets become the handrail bending form. The brackets at the upper and lower ends of the stairs are also braced laterally (inset) to resist the forces of the rail as it's pushed against the form.



Aim for a fair curve. After its laminations are coated with wood glue, the poplar handrail is sandwiched together, held with a few bands of shrink wrap, and pressed into place against the form. When the rail is properly positioned, it should be tight to the face of each bracket, set down against the angled stops on each bracket that match the slope of the stairs, and twisted so that the bottom face is flat to the top of the treads. Holding the rail tight to all these critical areas requires a lot of clamps, so have plenty on hand.

THE SKIRTBOARD FOLLOWS THE FRAMING

Flex and fasten. The flexible PVC skirtboard is cut level along the bottom, then pressed into place and temporarily fastened at each tread with screws. Most of the holes will be covered later by the tread returns.



Mark in place. With the skirtboard fastened tight, it's easy to scribe level and plumb cuts at the upper end (top) and then to mark the back side where the board will be notched for the treads and risers (bottom).



Easy notching. Laid out flat, the skirtboard can be notched using a sliding miter saw. The tread cuts are straight 90° chops, but the saw is beveled to make the riser cuts so that these edges can be mated tightly to the finished riser stock that comes later.



Shims for the win. To ensure a tight miter between the skirtboard and the riser stock, slide shims behind the skirt to square its face to the top of each rough tread.

for the carpet to be fastened between. The concept is the same on curved stairways, but those false treads have to be fabricated on-site to fit the off-angle joint between tread and curved skirtboard.

The stairs are the bending form

The best way to create a handrail that matches the curve of the stairway is to bend it using the stairs as your guide. To do this, you need bendable railing stock—a profiled handrail made up of strips of wood that are glued together on-site—and rigid brackets to form the rail against. (We sourced this and other stair parts from fitts.com.)

Some carpenters have metal brackets for this task, but I've done fine with site-made versions assembled with clear framing-

lumber offcuts. Whatever your bracket type, make sure they are built square, positioned the same distance from the end of each tread, and screwed down securely. When forming the rail, you can push it tight to the treads, but we like to add angled spacer blocks to the brackets to raise it up off the treads for easier clamp placement. Whichever method you use, I recommend reinforcing the uppermost and lowermost brackets with lateral bracing because these supports are susceptible to rolling as the handrail is pushed into place.

Some stairbuilders prefer glue with a long open time for this job, but I use conventional Titebond II wood glue and find that the open time is fine for getting things into place and clamped before the adhesive starts to set up. But a stress-free glue-up demands thought-

ful prep work, including having plenty of clamps on hand (more than you think you will need) and at least a few helpers to push, pull, twist, and clamp the rail into position. Remember that the railing must be clamped against the brackets so that its bottom edge is flat to the treads; otherwise, it will lead to problems during the installation of the balusters. While the glued handrail is setting up—a minimum of 24 hours is best—work can continue on the skirtboards.

Modern materials make for an easier skirt

Veneered plywood ripped into ¼-in. strips can be laminated around the stair brackets to create stain-grade skirtboards. If the job calls for paint-grade skirts, I prefer to use a single

DRESS UP THE TREADS AND RISERS

Start with a scribe. With the riser stock mitered and joined to the skirtboard, the false tread can be aligned with the face of the skirt, then scribed along its back edge to trace the angle for a tight fit.



Mark the overhang. Once the fit between the back of the false tread and the riser is tight, the underside can be traced and cut off flush with the face of the riser before final fastening with construction adhesive and finish nails.

Off-angle miters. Hardwood nosing conceals the ends of the plywood false treads. The curvature of the stairway means that the angle where the front edge of the tread meets the skirtboard will be beyond 90°, and the small miter return at the rear will require a slight back bevel.



Set the newel. The last step before fitting the curved rail is to set the newel at the bottom (and top, if included in your design) to provide a reference point to use when marking the cuts at the top and bottom of the handrail.

piece of PVC trim because it saves time compared to doing another laminated glue-up.

The PVC board is tacked into position so that it can be marked on the back side at each riser and tread. Then it is unscrewed and laid flat for easy cutting on the miter saw, where each tread gets a straight cut and each riser gets an angled cut to marry up with the riser caps that come next.

For a tight fit at the mitered joint between riser caps and skirtboard, you'll likely have to do some shimming at each tread location to counteract the tendency of the skirt material to bend inward along its top edge.

The final fit

After 24 hours, the handrail can be removed from the clamping brackets, stripped of its temporary clamping pads, and sanded

smooth on the top and bottom with a belt sander and random-orbit sander.

It's best to tackle any minor repair work during the rougher belt-sanding stage. I look for voids in the lamination and stress splits that may have occurred while pushing the rail against the bending brackets. Both can be filled with wood glue and clamped for 30 to 60 minutes before being worked down with the belt sander.

Once the newel has been notched and set into place, we temporarily support the curved handrail at its planned height, but slightly offset from where it will be located so that it clears the newel at the bottom and the wall at the top. This lets us mark the cuts along the top and bottom of the rail, which we then sneak up on with several rounds of cutting and checking in place. It sounds like

guesswork, but this is where confidence in your finish-carpentry skills is a must. The tendency for a steep-curved handrail to twist out of alignment once it's unclamped makes it difficult to gauge the miter and bevel settings using levels or math, especially when the railing may need to be muscled back into place for final fastening, as on this job. Resigning yourself to a few trips back and forth to the saw is a fair compromise for a railing that fits tight between the top and bottom fastening points and that follows the stairs with a fair curve. When the fit is tight and the railing is fastened at the top and bottom, balusters can be installed just like on any other job. □

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PREP AND FIT THE HANDRAIL



Sand in stages. The sanding process starts with a belt sander, using 80-grit paper perpendicular to the grain and then 120-grit paper with the grain. Final sanding is done with a random-orbit sander, working from 120 grit to 150 grit and finishing with a final pass of hand sanding.



Sneak up on the cuts. After the railing is held in position on the stairway and marked where it crosses the top and bottom connection points, it's brought to the saw and held in place as the angle is tweaked and checked until the fit is perfect.



A centered screw. The railing is secured to the wall at the top of the stairs using a single heavy-duty screw through a counterbored hole.



Twist, then fasten. A long clamp on the handrail offers leverage for twisting the rail into alignment for fastening to the newel.