Build a Fireplace Mantel

An easy installation begins with a flat foundation

BY MARIO RODRIGUEZ

A fireplace without a mantel looks naked and lacks character. Adding a mantel gives the fireplace an elegant frame, which becomes the room's focal point. This frame can be as simple as two brackets supporting a shelf or a floor-to-ceiling extravaganza dripping with carved gargoyles and yards of molding.

Whatever the style, I've found that the secret to a solid, easy installation is the foundation—sections of ¾-in. plywood joined to surround the fireplace opening. The foundation gives you something firm to anchor to the fireplace masonry, and it serves as a flat, plumb base on which to fasten the decorative elements.

The foundation can be screwed, nailed, bolted, or glued to the existing fireplace; trim will cover the fasteners. You can make and finish individual elements in the shop, then assemble everything at the fireplace, using the trim carpenter's technique of scribing to fit the mantel snugly against the wall and floor.

Survey the site, and design to fit

Before you start cutting, carefully measure the existing fireplace. Plan your design so that the wood will be at least 6 in. away from the fireplace opening (many building codes specify this distance; check with your building department). The mantel shelf is typically 54 in. from the floor, but the overall size of the mantel, fireplace, ceiling height, and such will influence your design and affect the size (this one is 53 in. tall).

This mantel is a modern adaptation of classical elements. Plinth blocks support pilasters (pieces resembling flattened columns) that support a wide horizontal piece known as the frieze board. Separating those elements are thin moldings made with a router from solid walnut. Atop the frieze board is a wide cornice molding that supports the mantel shelf and creates a smooth transition from vertical to horizontal.

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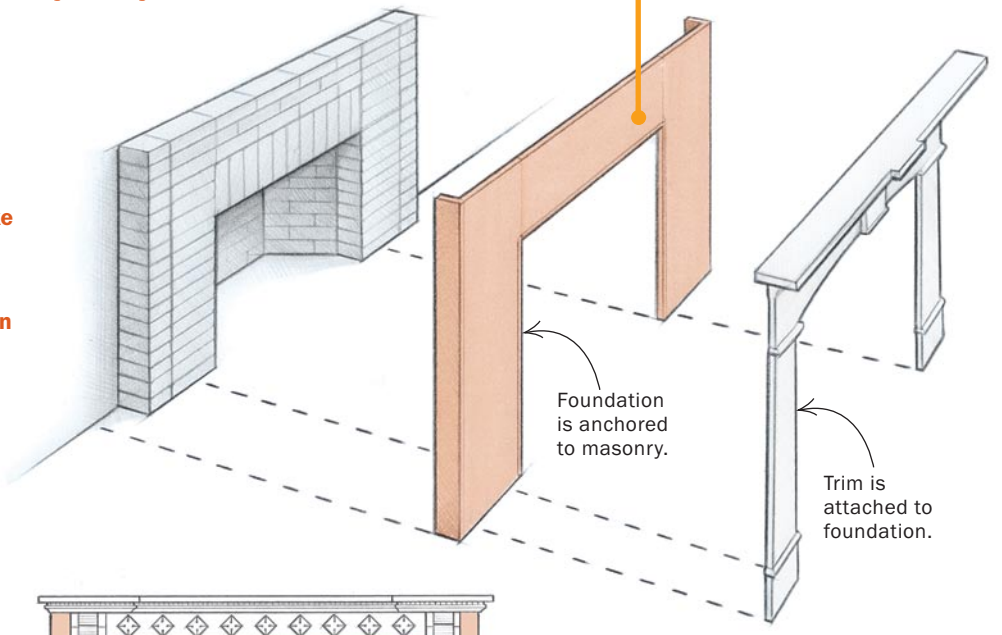
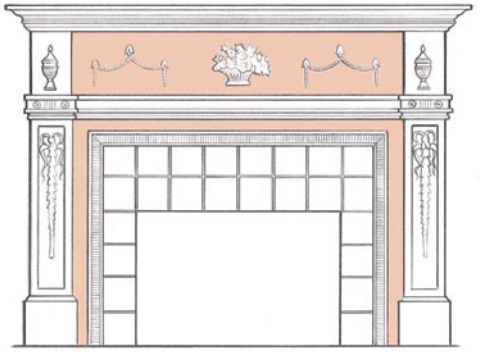
Cut the components in the shop

Once you've settled on a design, you're ready to cut plywood for the foundation, mantel shelf, and returns (narrow pieces of plywood that wrap around the sides of the fireplace to hide the masonry edges). Not only is it faster and more cost-effective to use plywood than to edge-glue solid lumber, but the plywood also minimizes seasonal wood movement. For this mantel, I used walnut-veneer plywood. Shopmade molding and

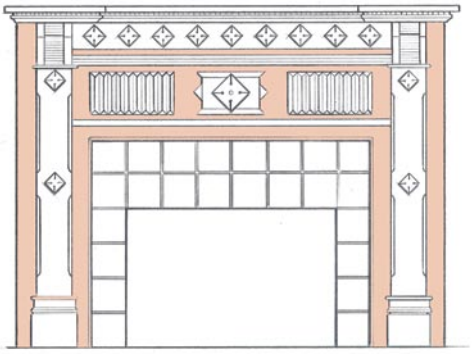
One foundation, many styles

A few pieces of plywood, joined with biscuits and glue, create a versatile canvas for a multitude of mantel designs. It all depends on the trim you attach. The illustrations here show a few possibilities. The trim can be flat with simple moldings, like the classical style of the mantel built for this article. Thick pilasters and elaborate cornice moldings denote a Georgian style. A profusion of applied moldings yields a Victorian look. A wide mantel shelf and simple trim recall the Arts and Crafts style.

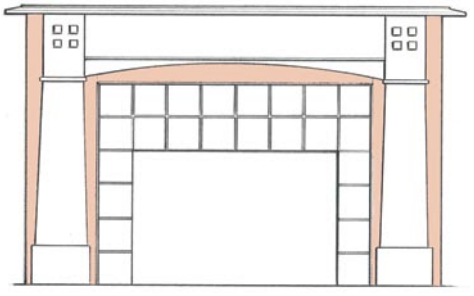




GEORGIAN



VICTORIAN



ARTS AND CRAFTS

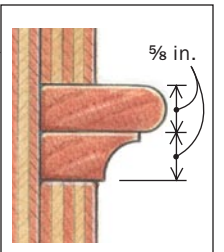
Shelf, two layers of ¾-in. plywood, edged with ¾-in.-thick walnut

Frieze, ¾-in. plywood, made up of two halves, 11 in. wide by 34 in. long

Keystone, ¾-in. plywood, conceals the gap between the frieze halves.

Cornice, mitered at corners

Support blocks for cornice



UPPER PILASTER MOLDING DETAIL

Beaded trim, ⅜ in. thick

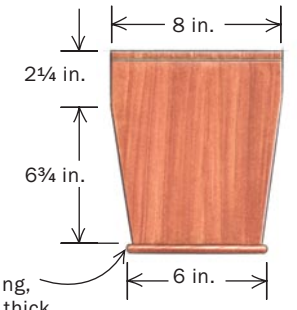
Pilaster, edged ¾-in. plywood, 9 in. wide at the bottom tapering to 7⅞ in. wide at the top

Bullnose molding, ⅝ in. thick by 1⅛ in. wide by 9¾ in. long

Return, ¾-in. plywood with edge-banding, biscuited and glued to foundation

Foundation, ¾-in. plywood, 13 in. wide, screwed to masonry

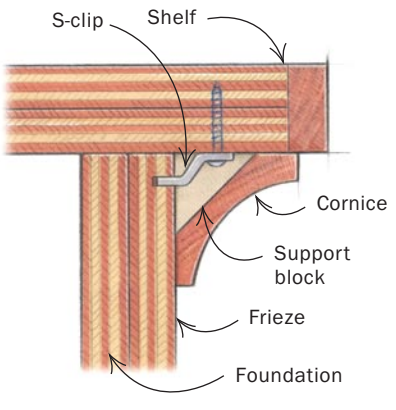
Plinth block, edged ¾-in. plywood, 9 in. wide by 8 in. long



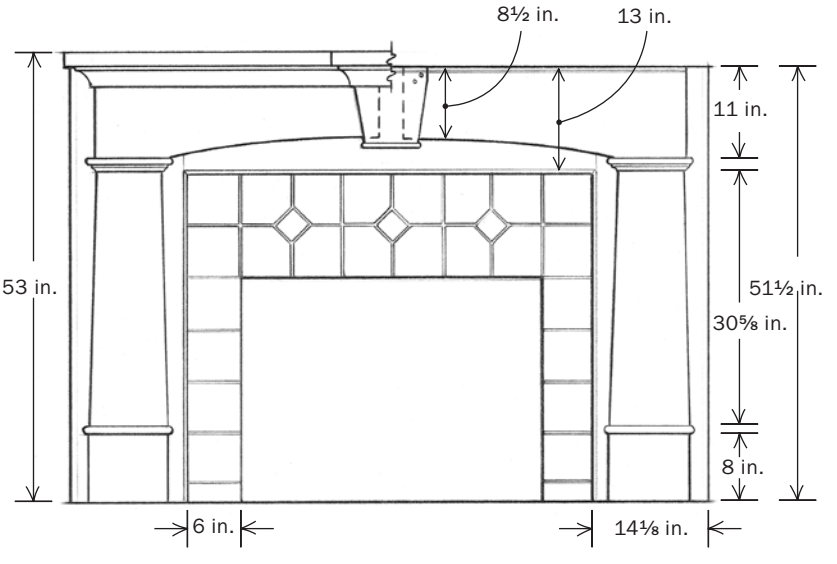
KEYSTONE DETAIL

WALNUT MANTEL

The mantel consists of trim and a shelf attached to a plywood foundation. The size of the firebox and the desired setback will determine the overall dimensions of your mantel.



SHELF DETAIL

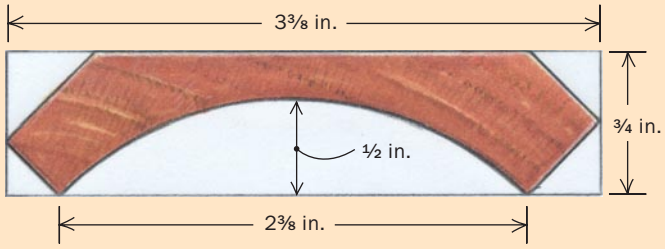


Photos, except where noted: Michael Pekovich; facing page: Andy Engel; drawings: Bob La Pointe

Make the parts in the shop

CUTTING A COVE ON THE TABLESAW

Moving a board across the sawblade at an angle produces a cove cut (left). Take multiple passes, raising the blade no more than 1/16 in. after each pass until you reach the final height. Use a push stick to guide the stock as you get closer to the blade.



ACTUAL SIZE

Scrape and sand. *The tablesaw will leave plenty of blade marks in the cove. Use a curved scraper and sandpaper to smooth it out.*

edging hide the exposed edges. Use the tablesaw to cut rabbets ½ in. deep by ¼ in. wide on the inside back edges of the returns and the vertical foundation pieces. Those edges will be scribed to fit against the wall and floor; relieving them with the rabbets makes trimming easier. Cut plinths and pilasters from ¾-in. plywood and glue ⅛-in. solid banding over the exposed edges. Cut the vertical foundation pieces and returns long, to allow for scribing.

For a mantel like this, with individual elements of ¾-in.-thick stock, you can make small moldings from solid stock, routing the profile on the face and end grain and screwing them in place on top of other trim pieces. If your design features thicker elements, you'll want to miter the moldings around the corners.

For the mantel shelf, rip two pieces of plywood and laminate them together with the best sides outward. I added a piece of walnut to cover the keystone, and milled more walnut for the front edging, attaching it with biscuits and glue. I cut a deep rabbet in the back edge of the shelf, leaving a ¼-in. by ¼-in. projection for scribing.

Tricks for cutting curves and coves

You don't need a roomy shop or a big workbench to lay out the curve on the frieze board. Instead, use a length of thin wood (1¼ in. by ¼ in. works) and a piece of string. Notch the ends of this batten and secure the string in one notch. Pull the string tight,

Do an initial dry-fit. *Lay out the pieces in the shop to check their fit and proportions. This is also the time to cut and partially assemble mitered moldings, such as the cornice, and prefinish the components.*

Scribe and attach the foundation

FIT THE FOUNDATION TO THE FLOOR

Position the foundation. *Fit the three foundation pieces together and secure them temporarily with a 1x4 batten on the rear. Lift the foundation into place against the masonry and center it on the fireplace opening.*

Notch the feet. *Mark the foundation base and notch it as needed to fit the hearthstone or scribe it to match the slope of the floor.*

like a bowstring, to shape the batten. Stop pulling when you get an arc that you like, and knot the string in the notch. Use the arched batten to trace the curve on the plywood. I bandsawed the curve from scrap plywood that I used as a template to guide a router for the final cut. But you could cut the curve directly on the plywood you're using for the mantel.

I cut the frieze in two and left a space between the pieces so that I could fine-tune their position. The keystone covers the gap. I ran the frieze boards through the tablesaw to cut a ½-in.-deep slot near the top to accept S-clips that secure the mantel shelf.

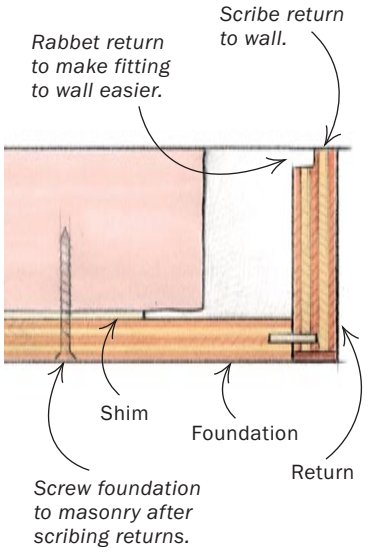
The cornice molding is a 2⅜-in. cove, cut on the tablesaw. (This is a practical way to make large crown moldings in a home workshop.) Cutting the cove involves slowly pushing the workpiece at an angle across the sawblade several times, raising the blade no more than 1/16 in. after each pass. Use a fresh, sharp combination blade. Trace the profile on the end of the workpiece and use trial and error on scrapwood to find the right angle. (For more on this technique, see "Cutting Coves on the Tablesaw," *FWW* #168, pp. 68-73.)

Once I had the desired profile, I removed the blade marks with a sharp curved cabinet scraper and P220-grit

Use tape to locate the trim. *Lay out all the trim pieces on the foundation, working from the top down (left). Use strips of tape to mark the edges of the trim. Plinth blocks, which rest on the floor, must be trimmed to match the profile of the foundation (above).*

FIT THE RETURNS TO THE WALL

Scribe the returns. *Clamp a return board to the foundation. Check everything for level, then use a compass to trace the undulations of the wall onto the return. Trim to the scribed line so that the return fits snugly.*



Anchor the foundation. *Use a masonry bit to drill through the foundation and into the masonry (above). Then screw in a masonry anchor. Before driving the anchors in all the way, add shims where needed to compensate for irregularities in the masonry (below).*

sandpaper (see photo, p. 71). Then I clamped the frieze board, keystone, and mantel shelf to the foundation and mitered the cornice to fit. I also scribed the position of the keystone on the frieze boards so that I could position it properly in the end.

I prefinished all of the components with yellow water-based dye, followed by cherry dye to bring out the color and grain, and three coats of shellac.

Do final assembly at the fireplace

Assembling the mantel on site is the best approach for built-ins like this. It's easy to tote the individual pieces to the fireplace. And it's easier to scribe pieces to fit before everything has been glued and screwed together.

First, dry-fit the foundation. Put the pieces good side down, snug them together, and screw on a 1x4 batten to hold them. Next comes a series of trial fits, where you'll scribe pieces and trim them to a gap-free fit against walls and floor. Hoist the foundation into position against the fireplace masonry. Measure to be sure it's centered on the fireplace opening, and use a level to see if it's plumb when you push it firmly against the masonry. You may have to use shims or attach furring to the fireplace with masonry screws (use the Tapcons described on p. 74) to keep the foundation plumb.

Notch and/or trim the bottom of the foundation to fit over irregularities in the hearth and floor. Check the fit and keep trimming until the wood is flush against the floor. Double-check that the foundation is level and plumb. Next, remove the batten from the foundation. Use biscuits and yellow glue to join the pieces, and reattach the batten temporarily to hold them until the glue sets.

Now it's time to lay out the trim. Put the foundation on the floor (or on sawhorses), finished side up. Starting at the top, align the frieze board and keystone with the top of the foundation and center the frieze left to right. Then position the pilaster pieces below the frieze and the plinths below the pilasters. Use blue painter's tape to mark the edges of those pieces so that you can get them in the proper position when the foundation is anchored in place.

Because the foundation is scribed to fit at the floor, the plinths will overhang the foundation. Scribe and cut the plinths to match the foundation. Fit the returns to the foundation and scribe them where they meet the floor and wall. Start by clamping the returns in place at the sides of the foundation, checking that everything's plumb and level. Then take a compass and set it to match the widest gap between the return and the floor. Holding the point of the compass

Attach trim from the bottom up

Begin at the bottom when tacking on trim. *Whether you use a pneumatic nailer or a hammer, keep nails close to the edges to make them inconspicuous (above). Align each trim piece with the tape guides as you nail it in place (right). The large trim pieces cover the masonry screws that anchor the foundation in place. When you position the frieze (far right), be sure it's flush with the top of the foundation before nailing it in place.*

against the floor and the pencil on the return, draw the compass across the board to mark the floor's profile on the wood. Cut away the waste with a jigsaw, and use a plane and chisel to pare to the scribed line. Do the same where the return abuts the wall.

Attach the returns to the foundation with biscuits and glue. Then you're ready to anchor the foundation in place. I use 3⁄16-in. by 2¼-in. Tapcon concrete anchors. These blue screws bite right into the masonry. Drill a pilot hole with a Tapcon masonry bit, sized to match the screws (the ones I chose mate with a 5⁄32-in. by 3½-in. bit). A 14.4v or 18v cordless drill has enough oomph to drill the hole and drive the screws.

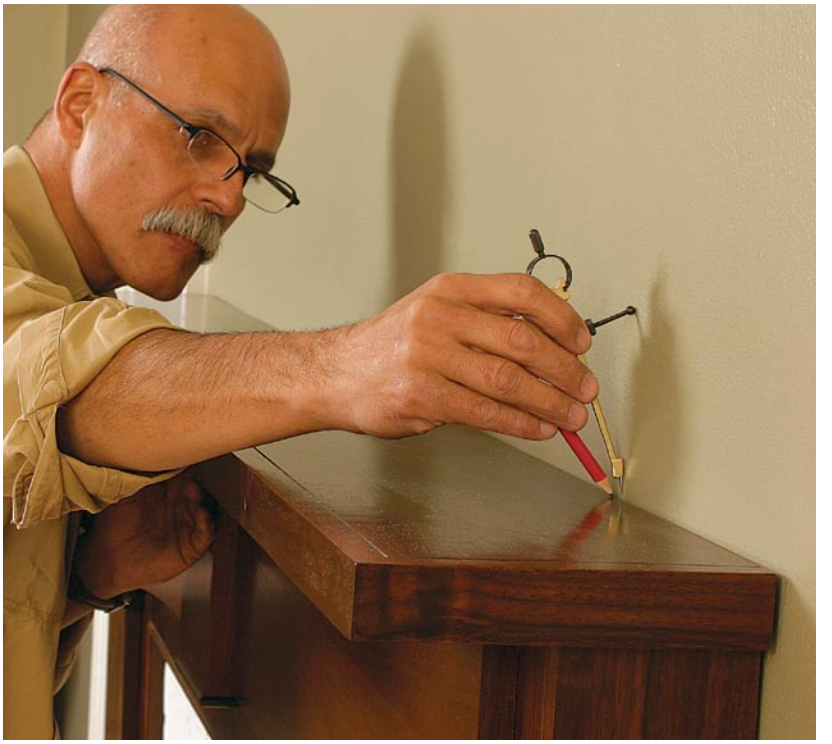
Lift the foundation into position, be sure it's centered and level, and then drill two pilot holes on each side as deep as the bit will travel. Be sure the holes will be covered by the frieze or pilasters, and countersink each hole in the foundation. Drive the screws. Tap in shims under the attachment points to compensate for low spots in the masonry before you drive in the screws all

the way. Working up from floor level, align the plinths with the blue tape and nail them in place. I use an 18-ga. pneumatic brad nailer, but you can hammer in 4d or 6d finish nails instead. Repeat with the pilasters, the frieze and keystone, the returns, and so on. Cover the exposed plywood edges surrounding the fireplace opening with molding cut from ⅜-in.-thick solid stock, mitered to fit, and nailed in place. This molding also hides gaps between the foundation and brickwork. Set the mantel shelf in place. Scribe and trim it to fit against the wall, then anchor it using table clips.

The cornice molding goes on last. Begin at the center, tacking the molding in place around the keystone, then the pieces that extend to the left and right. Set the nails and fill the nail holes. To accentuate the trim elements, I brushed on a very dark glaze, then wiped off the excess. □

Mario Rodriguez is the author of Building Fireplace Mantels, *(The Taunton Press, 2002).*

Add the shelf and cornice



More scribing and fitting. *Rest the mantel shelf on the foundation, then scribe the rear edge (above) and cut it to fit against the wall. Once you have a snug fit, screw in S-shaped clips to anchor the shelf securely (left). Attach triangular blocks cut from scrap to help support the cornice molding (below left). The molding is the finishing touch.*