Making Trim From MDF

Medium-density fiberboard mills and paints well whether you're creating straight runs or curves

by Jay Goldman

I had just finished renovating a library when the clients asked about the passageways in the main circulation area of their home. The passageways had drywall corners and no trim, and they were large—36 in. wide by 7 ft. high. They seemed to call out for more definition, but not with typical 2½-in. ranch or colonial casings. They wanted something with a wide profile that would accentuate the passageways and stand up to the wallpaper pattern surrounding them. And there was another wrinkle: The passageways were arched. So if I trimmed these openings, the trim would have to be custom-made.

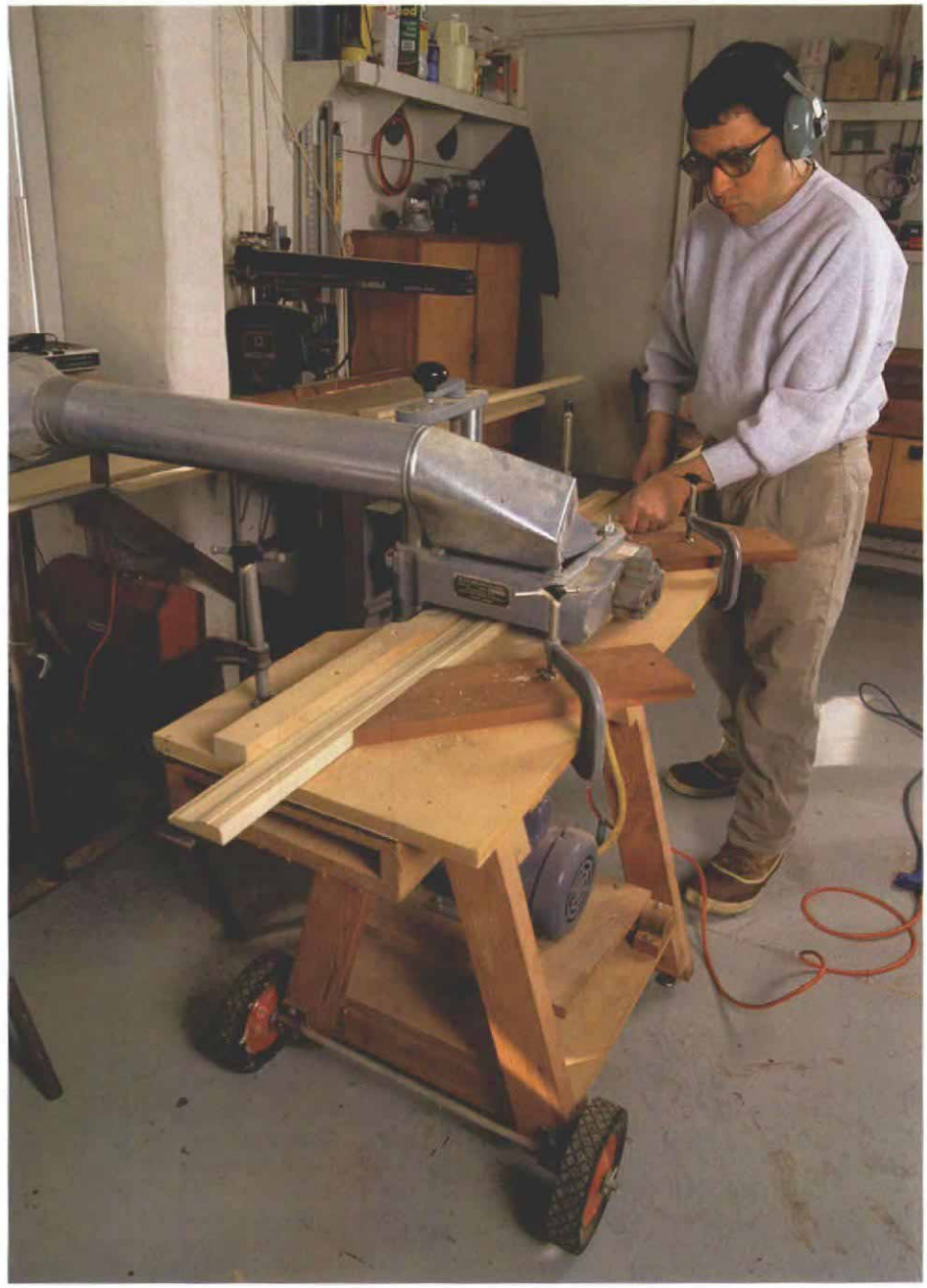
MDF is the choice for paint-grade work— With eight arched openings to trim, I had to figure out how to make custom casings efficiently and cost-effectively. It seems as though solid wood's high cost, diminished quality and scarceness make this effort more and more difficult.

My clients wanted to paint the casings, so I chose medium-density fiberboard (MDF) for the casings. MDF is a composition panel made of resin-bonded wood fibers. About as dense as soft maple, MDF mills and paints well and would allow me to cut the curved casings from sheet stock. This option meant a big savings in labor costs for my clients. The alternative method of making curved casings is to glue segments of solid wood end to end and to shape the assembly into a curve. MDF's cost, about $27 for a 4x8 sheet of ¾-in. material, and its ready availability make it a good alternative to solid lumber.

A molder/planer shapes the profile—To turn flat stock into profiled moldings, I use a Williams & Hussey molder/planer (Williams & Hussey Machine Co. Inc., P. O. Box 1149, Wilton, N. H. 03086; 800-258-1380] (photo right). This machine, which costs about $1,600 from the factory, is an open-sided planer that also profiles panels and casings. The cutting is done with a pair of knives bolted on a spinning arbor.

The open-sided design means there's no limit to the width of the material you can feed into the machine. The knives, however, can be no longer than 7 in., so you're limited to planing or profiling a 7-in. swath at a time. On the other hand, you can do straight or curved trim work with the same knife setup.

Among the advantages of using the Williams & Hussey for milling casings out of MDF is the dust-



Molder/planer shapes casings. Driven by a separate motor on the bottom shelf of the tool stand, the molder/planer transforms flat stock into profiled casing. A strip of MDF is sent through the tool, which has spinning knives that cut the profile. Placing a vacuum duct over the molder/planer's chip deflector removes virtually all of the dust.

collection capability. It's simple to fit a vacuum intake over the tool's chip deflector and catch nearly all of the dust. Bulletproof dust collection is a requirement because milling MDF is like an explosion in a pillow factory, only a lot more insidious because the resin in MDF is urea formaldehyde, a toxic compound.

My molder/planer has power infeed and outfeed rollers that send the stock through the machine steadily for uniform results. Because of snipe—the different depth of cut that occurs when stock is held by only one, not both, feed rollers—I make the runs of trim longer than necessary, and then cut off the sniped ends.

Although the molder/planer figures prominently in this article, it's possible to use a heavy-duty router table to profile moldings. With a router table, however, stock is milled on edge, which is inherently more dangerous than milling stock as it lies flat, as it does on a molder/planer. Also, dust collection for a router table must be provided above and below the table surface.

Rip the MDF to size and send it through the molder/planer—It's simple to make straight casings. Using a table saw, I rip a 4x8 sheet of MDF in half, making it easier to handle. Then I rip strips on the table saw at the finished width of the casing. A 60-tooth carbide blade leaves virtually no blade marks on the edges of the MDF strips, and I can go directly to the molder/planer. Alternatively, you can cut the material slightly oversize with a carbide-toothed rip blade and then clean up the saw marks on the joiner.

Earlier, I had designed the casing profile. I drew the appropriate knife to mill the casing and sent the knife's dimensions along with the drawing to a machine shop (Charles G.G. Schmidt & Co., 301 W. Grand Ave., Montvale, N. J. 07645; 201-391-5300). The machinist ground a pair of identical knives; both are bolted to the cutterhead. Setting knives is simple on the Williams & Hussey because the backs of the knives register on a steel stop that's part of the cutterhead, eliminating tedious adjustment.

The molder/planer has a table, or bed, but no fence. So I made a fence-and-base fixture that I clamped to the molder/planer's bed. I positioned the fence so that the casing was centered with the knives (top photo, p. 54). Knives are fabricated slightly longer than the width of the casing, which makes for clean edges on the milled casing. Then I cranked down the molder/planer head, which contains the cutterhead, using the machine's built-in scale to gauge the cutting depth for the first pass. I also clamped featherboards to the fixture to keep the stock tight to the fence and aligned as it passed through the molder/planer.

MDF mills well, so I make only two passes, an initial heavy cut and then a final cleanup pass. I milled 32 eight-ft. lengths, four lengths for each passageway, and turned my attention to making the curved casings.

Draw the opening to lay out the curved casings—When figuring out the sizes of the curved casings, I made full-size drawings of the passageways. Then I used the drawings to scribe the inside and outside edges of the curved casings and head jambs. First I measured the width of a passageway and its height at the sides and at the center. Back in my shop, I struck a line on a sheet of plywood to represent the floor and three perpendicular lines to represent the sides and the centerline of the passageway. Then I located the top of the arch and the top corners. From these three points, I had to find the center of the circle that formed the arch. Finding the center would have been easy if the arch had been a half-circle, but it wasn't. The arch was a segment of a circle, and I had no idea what the radius of the circle was. I found the radius by using the method shown in the drawing on p. 55.

Knowing the radius of the arch, I screwed a length of wood to the centerpoint on the drawing. The wood, pivoting at the centerpoint like the hand of a clock, made a trammel (top photos, p. 55). I marked and bored one end of the trammel and then stuck a pencil in the holes to scribe the arched opening, the curved jamb and the curved casing. I drew the circle for the casing ⅛ in. larger than the circle for the jamb, giving

Use MDF for paint-grade trim. Once clad in drywall only, these arched passageways look better with custom jambs and casings. The side jambs are solid poplar; the curved head jamb is laminated bending plywood, and the MDF casings are biscuited together and nailed to the jamb. The entire unit was prefabricated and installed like a prehung door.

Molder/planer requires a fence. A base-and-fence fixture is clamped to the molder/planer and adjusted so that the fence aligns with the knives. A knife, custom ground with the casing profile, is bolted to the molder/planer's arbor.

Profiling carved stock. An oversize base, made of MDF, and fitted with a fence and guide blocks, keeps the casing from shifting as it feeds into the molder/planer.

me a ⅛-in. reveal. Then I used the layout to make a second trammel a bit different from the first. After boring a 1-in, hole in one end, I removed the plastic subbase from a plunge router, chucked in a ½-in. straight carbide bit and screwed the router to the new trammel. The bit extended through the 1-in, hole in the trammel arm. At the other end of the trammel, I marked and bored two pivot points. These points corresponded to the inside and the outside radii of the curved casings. By attaching the trammel at the pivot points, I could cut with the router a curved casing from a piece of MDF.

To hold the MDF, I screwed it to the worktable, making sure the screws weren't in the router's path. A ¾-in. block under the pivot point held the trammel arm level with the ¾-in. workpiece.

I cut the outside edge of the curved casing first, then attached the arm at the second pivot point to cut the inside edge of the casing. I made cuts in three passes.

With one curve complete, it was a simple matter to reproduce the quantity needed. On another piece of MDF, I cut the curved casing oversize with a jigsaw and then, using the original as a pattern, flush-trimmed the oversize curve with a top-bearing, flush-trimming bit in the router (for more on pattern routing, *see FHB* #89, p. 76-79).

Next, I profiled the curved casings on the molder/planer. To guide the curved trim through the molder/planer, I clamped an oversize base to the machine (photo bottom left). The base was a U-shaped piece of MDF to which I fastened guide blocks and featherboards. The base also had a fence that kept the curved molding stock registered under the right part of the knives as it passed through the molder.

Trim package includes jambs—I planned to attach casings to jambs and then pop each unit into its opening, like a prehung-door unit without a door. The side jambs were ripped from 4/4 poplar, which holds fasteners better than MDF, allowing the casings to be nailed more securely. The curved head jambs were made by laminating three pieces of ¼-in. bending plywood over a bending form (sidebar facing page).

After cutting the jambs to size, I screwed a curved head to a pair of side jambs. The casings were mitered and joined with biscuits and then nailed to the jambs, leaving a ⅛-in. reveal. The casings stopped short of the bottom by 8 in., leaving room both for plinth blocks and for shoe molding, which I installed on site after the units were set in place. Only one side of the casings was attached to the jambs to allow the units to be installed. Before leaving the shop, the assembled units and the loose casings received primer and a top coat.

A temporary batten was attached along the bottom to support the assembly. Once the units were shimmed plumb and nailed to the existing openings, the trim on the opposite side was applied. Then the casings were filled, caulked and finish painted (photo p. 53). □

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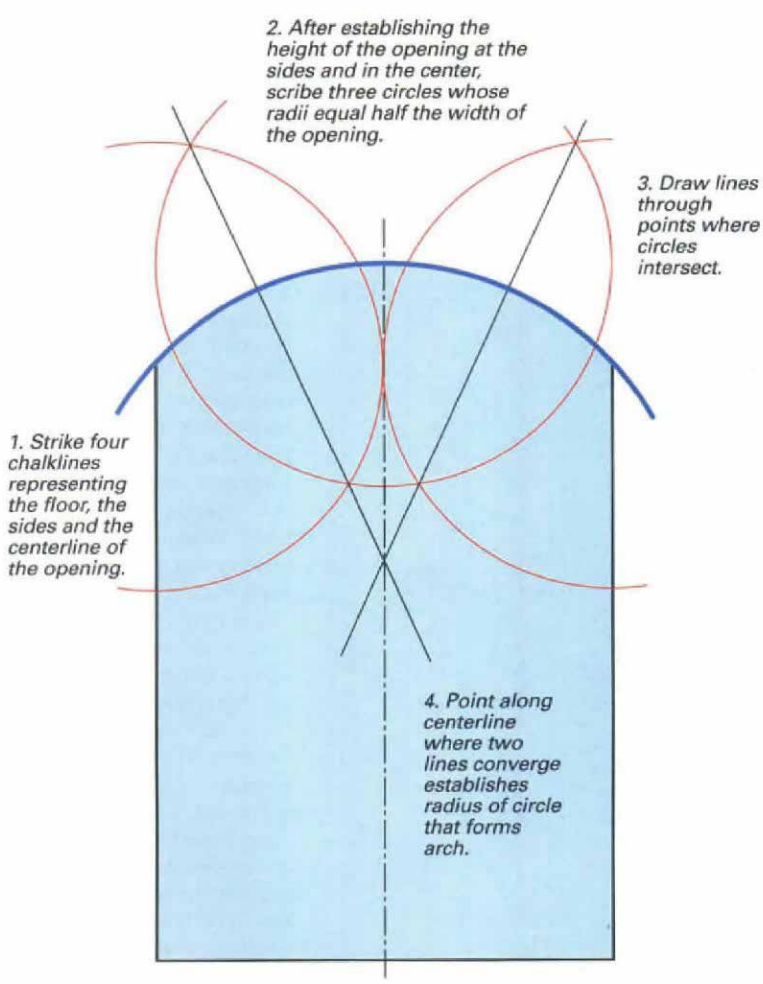
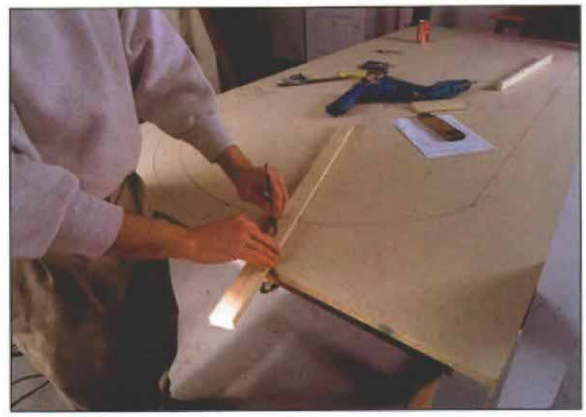
Figuring the radius of a head casing

The arches featured in this article are not half-circles, so determining each arch's radius was not a simple matter of measuring half the width of the opening. After making full-size drawings of the openings, the author found the radius of each arch by following the steps outlined in the drawing below. The length of the radius was then used to make a trammel and fabricate the casings as shown in the photos.





Carved casing from sheet goods. A trammel is screwed to the sheet of MDF and bored so that a pencil can scribe the arched casing.

A trammel guides a plunge router. Once the MDF is clamped and screwed to the worktable, the casing's outside radius is cut with a router on a trammel.

Making curved jambs

When I cut the curved casings on this job, I had leftover radiused cutouts of MDF that I used as a bending form (photo top left) to make curved head jambs. Because the router bit had removed ½ in. of material, the cutout's radius was slightly different from the curved casing's. So I padded the radius out to the size of the casing. The padding material also provided purchase for spring clamps when I laminated the jamb.

The top half of the bending form was simply a strip of ¼-in. hardboard. Four notches at the bottom of the MDF form provided purchase for pipe clamps.

The curved jamb was made with three layers of ⅜-in. bending plywood to create a 1⅛-in. thick curved jamb. Each layer was ripped slightly wider than necessary and trimmed to size once the jamb was fabricated. I rolled glue on all of the mating surfaces, laid the lamination on the bending form and then applied the pipe clamps.

When the jamb was dry, I loosened the clamps. Bending plywood is so flexible that the lamination did not spring back as I removed it from the form. One edge was scraped free of glue and passed through a jointer to establish a straight edge. Then the other edge was ripped to width on the table saw.

Having made the jamb longer than necessary, I used the drawing of the passageway to determine the length of the head jamb and the angle of the end cuts. Then I set up a clamping fixture, using the table saw's miter gauge (photo bottom left). I oriented the head jamb in the clamping fixture and adjusted the angle of the sawblade. Then I cut the ends of the jamb.-*J. G.*

Drawing: Dan Thornton. Sidebar photos: Jay Goldman.