

Beautify Doors With Divided Light



A surprisingly
painless approach
for multi-pane
doors

BY MARIO
RODRIGUEZ

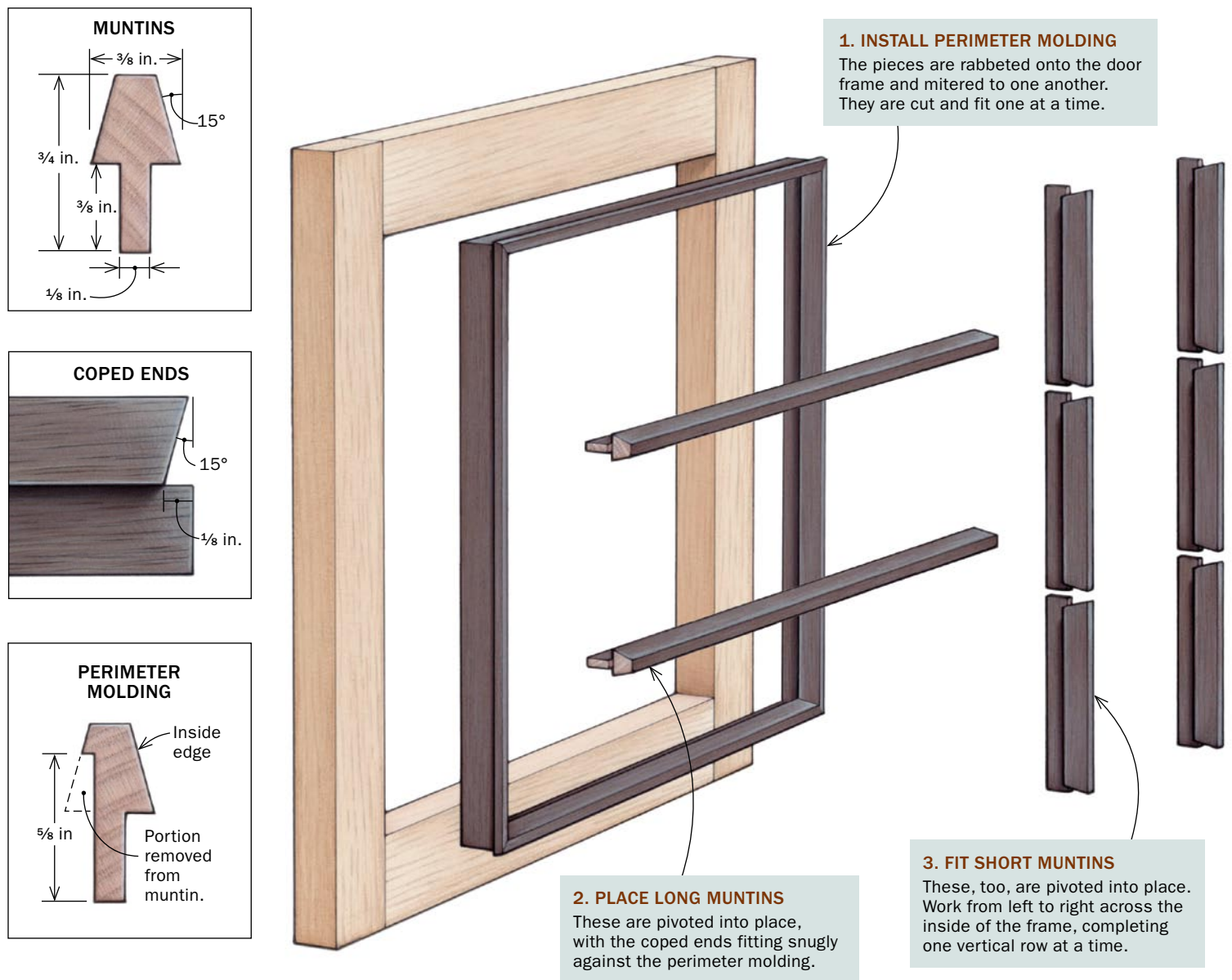
Recently, I received a commission for a small sideboard. My design, inspired by classic English Arts and Crafts pieces, was a low, three-section piece in riftsawn white oak, each section a slender drawer above a divided-light glass door.

My client and I decided the doors should be true divided lights, with individual panes and real muntins (no fake grille fitted over a single piece of glass). The originals that I liked had muntins of contrasting stock, assembled in a separate grid inside the door frame rather than as an integral part of it, which is the usual method.

Several of the original pieces also had muntins made from slender stock with a flat, beveled profile on the edges. To make the design work, I needed to produce this type of profile in stock only $\frac{3}{4}$ in. thick and find a way to create strong joints. Cope-and-stick router bits would work, but none of the profiles I found in catalogs were right. So after some experimenting, I devised a simple technique that involves milling the beveled edges on the tablesaw at 15° , and then coping the mating ends on a router table using a 15° dovetail bit, creating clean joints. Then I borrowed an age-old window-building trick, using

Smart joinery is the secret

Rodriguez simplified the handsome muntin grids for this Arts and Crafts sideboard by beveling the edges of each muntin. That made it easy to create a matching, interlocking profile on the ends of the mating pieces.



glue-soaked cloth strips to lock the thin muntins into place. It worked perfectly.

The result is a clean and modern-looking grid that contrasts beautifully with the door frames—a great option for furniture makers who want to make distinctive doors with divided light. Here's how I did it.

Mill the muntins

English Arts and Crafts designers often used ebony for muntins like these, but ebony is hard, brittle, and prone to splitting. It's also expensive and hard to find. So I used walnut instead, milling the pieces and then

dyeing them with an alcohol-soluble dye (Moser's ebony jet black powder; woodworker.com) to resemble ebony. Start with stock in lengths of 18 in. to 20 in. Thickness the stock to $\frac{3}{8}$ in. and rip the boards into 2-in.-wide strips. Each strip yields two lengths of finished muntin. Be sure to mill extra stock to use in case of mistakes.

The first step in shaping the stock is to cut the rabbet that holds the glass. I do this at the tablesaw using a dado set. To ensure accuracy and uniformity, use a zero-clearance insert and a sacrificial plywood fence with a screwed-on integral hold-down. Af-

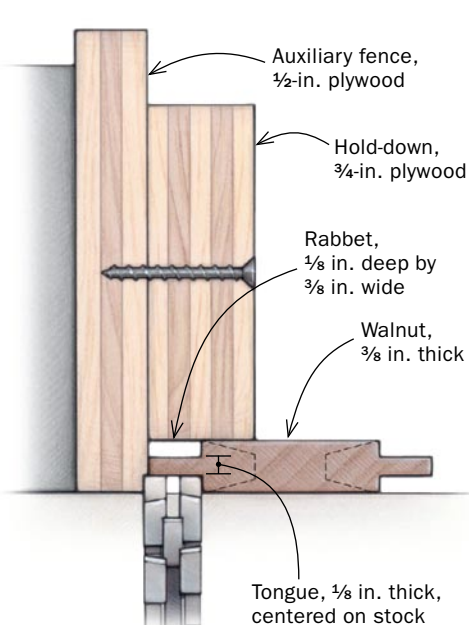
ter several test cuts, make four passes, two along each edge using a push stick on its side. After rabbeting, rip each piece into two identical strips.

Use a sled for beveling—I chose a 15° bevel for the muntin angle. This gave me enough of a mating surface for a strong coped joint, yet provided a thin, delicate profile. To safely cut the bevel on the edges of the stock, I made a sled to support each strip as it passed the tablesaw blade. The sled travels face down, riding the fence and holding the stock firmly against the table. Capturing the molding this way

Safe setups for small pieces

Rodriguez rabbets the muntins and shapes their beveled edges at the tablesaw, using both a dado set and a combination blade. Hold-downs and a hardwood sled help hold the small parts.

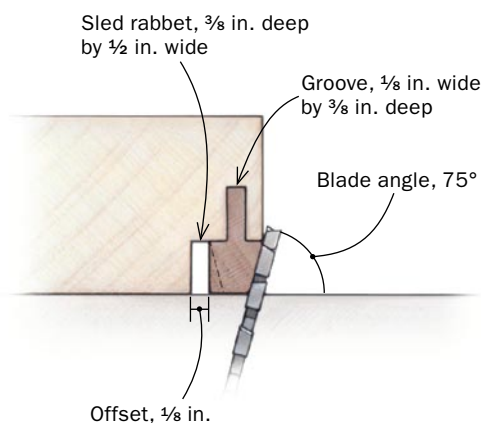
1. SHAPE THE BLANKS



Start with wide stock. Bury a dado set in a sacrificial fence (left) to mill a pair of rabbets on each edge. Screw on a hold-down to press the stock tight to the saw table, producing a muntin tongue exactly $\frac{1}{8}$ in. thick. After rabbeting, rip the stock into two $\frac{3}{4}$ -in.-wide strips (above). Be sure to use a splitter and a push stick to control the stock.

2. BEVEL THE EDGES

The sled is a length of hardwood, milled foursquare, with a groove and a rabbet along one edge to hold the workpiece against the table. The other edge rides the tablesaw fence.



Grip it and rip it. Glue a shim into the groove (above) to keep the stock from slipping. Angle the blade at 75° and set the fence so the top of the cut meets the edge of the sled (right).

prevents the stock from coming loose during the cut. Switch to a combination tablesaw blade and use a protractor to set the angle. After cutting one side of a strip, flip it and cut the other. The completed strip can be cleaned up as needed with a scraper or block plane.

The perimeter molding—Instead of a muntin profile that is integral to the door frame, perimeter molding strips are set against the inside edges of the door

frames. One edge is rabbeted and the other accepts the coped ends of the interior muntins. To cut the rabbet, put the dado set back on your saw and place the material once again into the beveling sled. This time, though, the sled is run past the dado cutter on its edge.

To install, start at the edges

To install the grid into the door frame, begin by mitering the perimeter moldings and

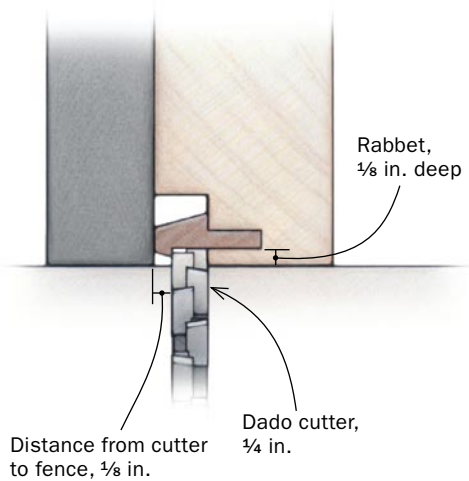
gluing them in place. With this done, turn the door face side down. Now measure the space between the top and bottom moldings, referencing from the inside face of each tongue. Cut the vertical moldings to this exact dimension for a tight friction fit.

Cut and fit the coped ends as you go—

The muntin sides are beveled at 15° , and the ends of the muntins must be coped at a mating angle. This critical operation is done on a router table with a couple

3. INSTALL THE FRAME

The beveling sled rides on edge to widen the rabbet for the perimeter moldings.



Switch back to the dado set. Extending the rabbet on one side lets the perimeter molding mate with the inside edge of the door frame. Set the dado set for a cut that is 1/4 in. wide by 1/8 in. deep.

of shopmade accessories. In addition to an auxiliary fence with a zero-clearance opening, I made a plywood sled to support the muntin upside down at 90° to the router-table fence. The sled has a sloped hardwood fence that supports the muntin as it passes the router bit. Underneath, a cleat rides the edge of the table to guide the work. With the muntin stock on the sled, raise the bit so it cuts to just below the shoulder of the muntin profile.

Use a template to fit the muntins—After making the cuts on the vertical muntins, slip them into place, setting the spacing with a plywood template. Now repeat the process of measuring, cutting, coping and fitting for the shorter horizontal muntins. Once all the muntins are in place, use the template and a straightedge to check the size and alignment of each opening.

Clever corner braces—To strengthen the coped joints, and to avoid a messy glue-up, I used thin cloth strips soaked in glue. This was a method I encountered many times when restoring glazed doors in cabinets. The thin strips harden when the glue dries, reinforcing the delicate joinery where the muntins intersect. I use the glue sold by Titebond as liquid hide glue (woodcraft.com). Unlike traditional hide glue, which requires heat to stay liquid, this glue remains workable at room temperature. And unlike yellow glue, it has an open working time of about an hour. Cut up a piece of old bed sheet into 1/4-in.-

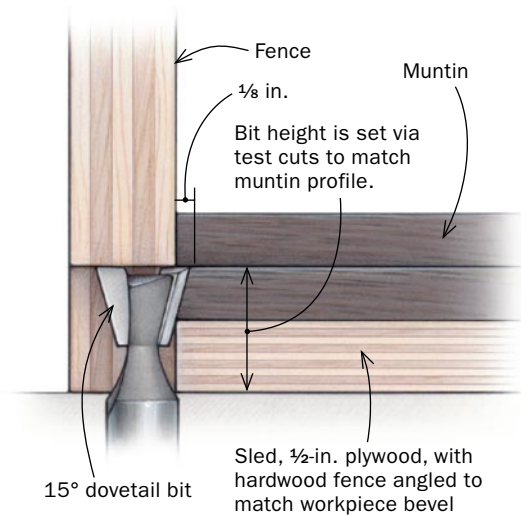


Miter and fit the perimeter moldings. For clean miters, cut the piece to rough length and trim the joints on a belt sander (above). A 45° jig lets you sneak up on the fit. Strips of blue tape secure the pieces for glue-up (right).

Install the muntins

The muntins won't stay put unless they fit tightly into place, so start by cutting each one to length for a friction fit against the perimeter molding. Then you are ready to cope the ends to complete the fit.

1. COPE THE ENDS ON THE ROUTER TABLE



A dovetail bit cuts the cope. Bury the bit in a sacrificial fence. Keep the workpiece tight against the fence and check the bit height with test cuts (left). To help ensure that the top of the muntin lies flush with its neighbor, the bit should leave a tissue-thin layer of waste material (right) that can be trimmed by hand.

2. ASSEMBLE THE GRID

Place the vertical muntins. To space them evenly, Rodríguez uses plywood templates.



wide strips about 1 in. long. After soaking the strips in a shallow dish of glue for about a minute, use a pair of tweezers and a dental pick or any other thin metal blade to work each strip all the way into its corner and press it flat. Afterward, flip the door and recheck the position of the bars.

Installing the glass

To enhance the handmade character of this piece, I used “restoration” glass (available from bendheimcabinetglass.com or VanDykes.com). This glass is designed to mimic the wavy, inconsistent thickness and



Install the horizontal muntins. Use the plywood templates to set the spacing.



Work from left to right. Work across the inside of the frame, completing one vertical section at a time.

3. GLUE THE JOINTS



Time-tested trick. Cloth strips soaked in liquid hide glue dry hard and create strong joints with no smearing or squeeze-out. Hold the strip with tweezers and smooth it into place with a dental pick or similar tool.



flatness that characterizes the glass in antique furniture, as well as the “seeding” caused by air bubbles in the glass. This specialty glass can be cut just like regular glass. I used a straightedge and a handheld, carbide-wheel cutter available at most home centers. To get the glass panes past the cloth strips in the joints, I cut the panes a hair smaller than the templates used to space the muntins.

Glazing the doors—To secure the panes, I used an acrylic glazing putty (Aqua Glaze) that would dry fairly quickly and do a good job of conforming to—and

holding—the irregular shape of the restoration glass. To match the color of the wood, I tried a trick suggested by David deMuzio, the senior furniture conservator at the Philadelphia Museum of Art: I tinted the compound with powdered pigments (available at earthpigments.com). A mix of dark chocolate brown and jet black gave me the color I needed without altering the working properties of the putty.

With a small flat-bladed knife, apply a small dab in each corner of the muntin grid. Then set the glass in place, squishing the putty. These initial dabs cushion each

corner, leveling each pane and preventing any rattling. Next, carefully apply putty along the edges of each pane, using the knife to push it against the muntin and a single-edge razor blade to smooth the angled surface. After allowing the putty to set up a bit, use the putty knife and razor to carefully remove any excess from the muntins and the glass. Once the putty dries, after an hour or so, the glass is secure and the door is ready to hang. □

Mario Rodriguez is a longtime contributor who is a teacher at the Philadelphia Furniture Workshop.

Glazing holds glass firmly



Color the putty. Use powdered pigments to darken the putty so it more closely matches the muntins. Work in small batches so the putty doesn't begin setting before it's applied.



Apply the glazing. Use a flat-bladed knife to apply putty along the edges of each pane and draw it onto the muntin at an angle. Then use a single-edge razor blade to smooth the glazing. Don't wait too long to do this, because acrylic putty sets up relatively quickly. Once the glazing sets up a bit, use the razor to remove the excess from the glass and muntins.

