Beautiful

FRAMED BY SOLID WOOD

Two approaches, a world of possibilities

Thibodeau builds veneered furniture in two ways, framed by solid wood or mitered seamlessly. Either way, the veneer is a design playground, allowing techniques not possible in solid wood.

MITERED CASES

Cases from Plywood

Smart joinery turns eye-catching panels into sturdy furniture

BY CRAIG THIBODEAU

A lot of articles have been written about making veneered panels with a vacuum bag. Most of these take you as far as trimming the panel and popping it into a door frame, or maybe applying edging and turning that panel into a tabletop. Those techniques are important, but there's much more you can do.

I've been building entire case pieces with veneered panels for years. With them, I can make pieces that are simply not possible with traditional methods. I love the creative freedom: the variety of exotic woods and dramatic figure available, the ability to make patterns with these veneers (see Master Class, *FWW* #240), and then being able to wrap these woods and patterns around an entire piece. Another great benefit of veneered panels is that I can give the interior of a case a completely different look.

Although there is not a lot of information available on building furniture this way, I've learned how to make the process easy and the results flawless. The first secret lies inside the panel itself.

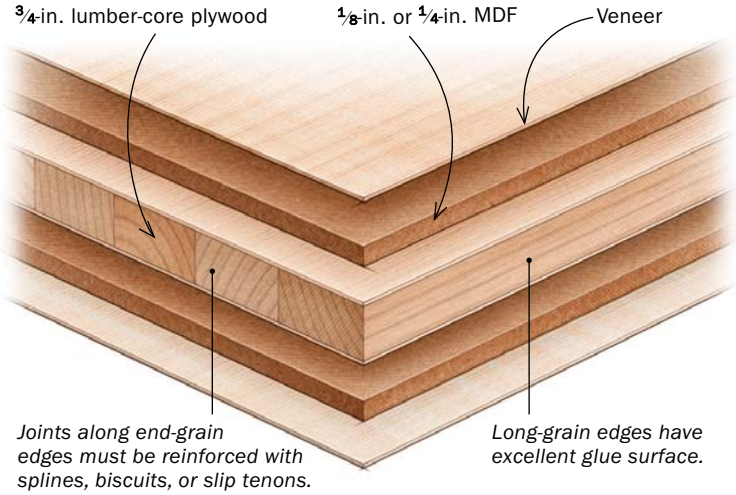
The core is the heart of the method

How you build with veneered panels depends a lot on what they're made of. The usual candidates for core materials involve a trade-off. Baltic-birch plywood, for instance, is very strong and stable, and holds fasteners well, but it's expensive and heavy. MDF, which I used for years, is cheap and

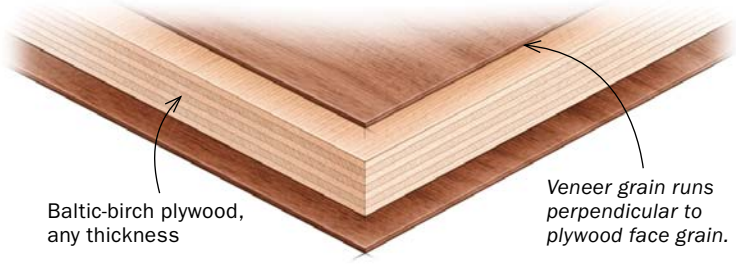
BETTER SUBSTRATE FOR VENEERING

Thibodeau's main substrate is lumber-core plywood, skinned with thin MDF. Lumber-core is relatively light but holds glue and fasteners better than other sheet goods. MDF thickens the panel and creates a flawless surface for veneering. For thinner parts like doors and dividers, he veneers directly onto Baltic-birch plywood.

CUSTOM CASE PANELS



SOLUTION FOR THINNER PARTS



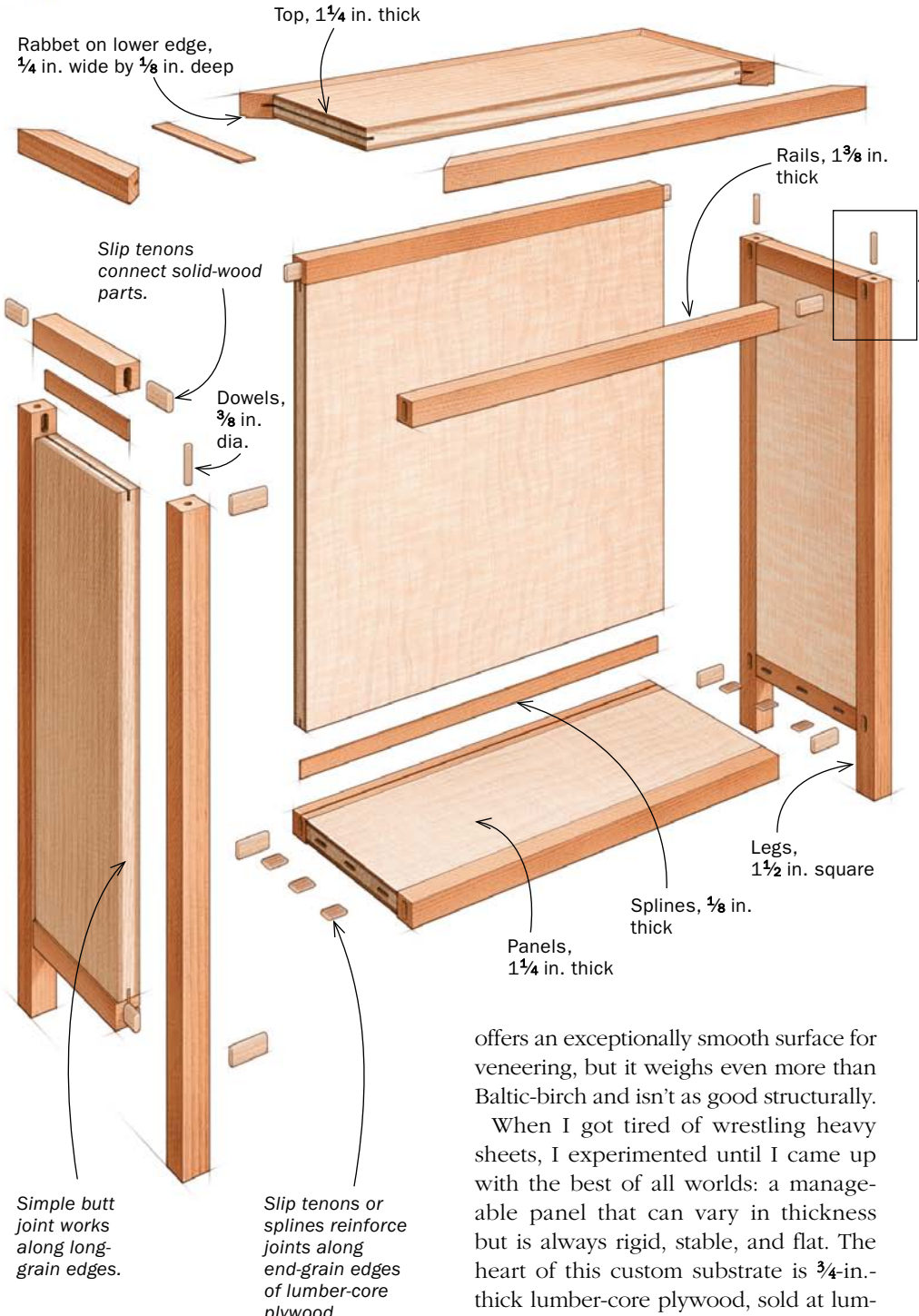
Before applying veneers, one extra step. *Leave everything oversize at this point, but leave one edge of the plywood core slightly proud to act as a reference edge when trimming the panel later. Apply glue to just one face of each layer using a ¼-in.-nap adhesives roller.*

Vacuum bag is fast and easy. *Thibodeau uses evacuation cloth to transfer the vacuum from the hose inlet to the glue-up and evacuation mesh to distribute the air pressure evenly. Both are available from vacuum-press.com (product Nos. EVC38 and EVN36).*

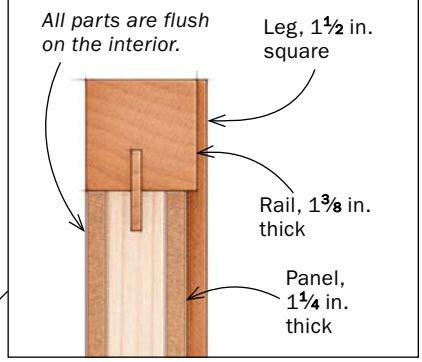
Frame-and-panel case

NEW METHOD FOR A TRADITIONAL LOOK

Thibodeau uses customized veneered panels and clever joinery to build a frame-and-panel case. He varies the thickness of the parts to create reveals and shadow lines on the outside. Inside, he keeps everything flush for a seamless interior.



THREE DIFFERENT THICKNESSES
A ⅛-in. reveal between each part creates attractive shadow lines.



offers an exceptionally smooth surface for veneering, but it weighs even more than Baltic-birch and isn't as good structurally.

When I got tired of wrestling heavy sheets, I experimented until I came up with the best of all worlds: a manageable panel that can vary in thickness but is always rigid, stable, and flat. The heart of this custom substrate is ¾-in.-thick lumber-core plywood, sold at lumber stores for $35 to $50 per sheet. It is relatively light but strong. The solid-wood core makes everything easier. The long grain along the edges creates excellent glue joints, and the whole panel takes fasteners well, such as splines, screws, biscuits, and more.

To this core I typically add a skin of ⅛-in.-thick MDF on each side. This gives me the perfect surfaces I need for veneering. If I want thicker panels I use ¼-in. MDF for the skins or add a second layer of lumber core in the center.

Making custom cores doesn't take much extra effort: it's just one more glue-up before the veneering stage. I cut the parts 1 in. oversize in each direction, so alignment isn't critical. I apply yellow glue to one face of each layer, and then put the sandwich in the vacuum bag for an hour or two. Then I apply the veneer in a separate step. One helpful tip is to leave one edge of the lumber-core plywood slightly proud so it can be used as a reference edge when trimming the panel to final size later.

For thinner case components like doors and drawer dividers, I go back to simple Baltic-birch plywood as the substrate. It's available in a variety of thicknesses. For a stable panel, be sure to run the veneer grain at right angles to the grain on the face of the plywood. These thin components tend to have exposed edges, which I veneer first before veneering the faces. To see how I do that, go to FineWoodworking.com/extras.

Frame the panels for a traditional feel

The bookcase at left illustrates how I use solid-wood members to frame veneered panels. When using this frame-and panel

Photos: Asa Christiana; drawings: Christopher Mills

START WITH THE SIDE PANELS

These frame-and-panel assemblies are the foundation for the rest of the piece. When cutting the joinery, Thibodeau references off the inside face, where everything should end up flush.

Attach the rails first. *A simple butt joint won't work on the end-grain edges of the plywood. Groove the rails and panels on the router table using a slot-cutting bit.*

Glue in splines. *For full strength, cut the splines so the grain runs across the short dimension.*

anatomy, I vary the thicknesses of the parts to create reveals (little steps), while keeping everything flush on the inside surfaces to make joinery easier and the interior seamless. It's the best of both worlds: a traditional look on the outside and a nice surprise within. Make things easier on yourself by sanding all of the parts before assembly. By the way, the outside panels on this piece are curly anigre, the interior is curly maple, and the shelves are also curly maple, edged with cherry.

I always build the side assemblies first, because they act as a foundation for the

Trim everything to width. *Now rip both edges clean on the panel-and-rail assemblies. The plywood panel was left proud on both sides to ride the rip fence effectively. Thibodeau puts blue tape on the leading and trailing edges to prevent blowout.*

ADD THE LEGS

Slip tenons run between all the solid-wood parts in this cabinet. When cutting the tenon mortises, always reference off the inside surfaces.

Domino is slick and quick. *It's as easy as a biscuit joiner, and the parts can usually lie flat on the bench. The Domino is designed to center joints on ¾-in. plywood, so shim it up for thicker parts.*

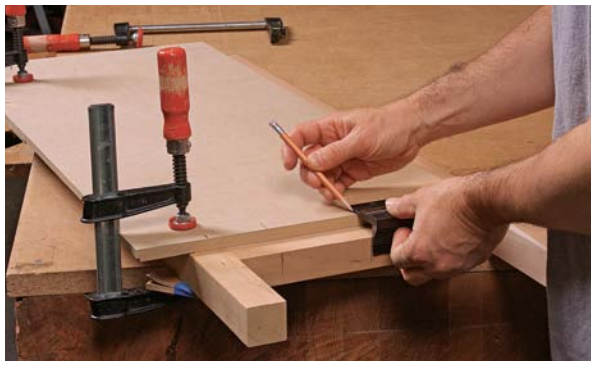
Router option. *Another way to tackle the mortising is to use a plunge router equipped with a guide bushing and spiral upcut bit. A slotted template clamped to the workpiece guides the router.*

Glue on the legs. *Thibodeau protects the pre-sanded legs with cauls. Check that the tops of the legs and back of the panel end up flush. A dead-blow mallet corrects any misalignment.*

ADD THE BOTTOM AND BACK

Glue on the rails, and then trim each panel to final width. Before joining the back and bottom to create a big L-shape, cut the mortises for the slip tenons that will join them to the side assemblies. Here Thibodeau uses the Domino system, but splines or biscuits would work, too.

Make an L. *Join the back and bottom, which share a rail. Check for squareness with an accurate framing square, making adjustments by shifting the clamps slightly. Again, use cauls to protect sanded surfaces.*



Transfer the joinery. *Dry-fit the back and bottom assembly onto one of the sides, and transfer the joinery locations from one assembly to the other (top). Thibodeau uses an MDF or plywood panel as a fence for the Domino. He uses a saddle square to transfer the tick marks to the fence (bottom).*

rest of the piece. The solid rails at the top and bottom of each panel are secured using full-length splines, a few small Domino tenons, or biscuits. I join the side assemblies to the legs using slip tenons inserted into the rails (the mortises can extend into the panel, too). You don't need splines along the sides of the panel, though you could use them to ensure alignment. The lumber-core plywood has long grain on those edges, so a simple glued butt joint is plenty strong.

It doesn't matter how you cut the mortises that join the rails to the legs, but it's important to reference off the interior surfaces so the parts end up flush there. These days I use the Domino system throughout my veneered pieces, but before that I used a simple router template (see p. 63 for a photo, and Gregory Paolini's article "A Guide to Guide Bushings," *FWW* #207, for a full explanation).

With a router jig, there is more measuring and marking to get the locations and reveals right. The Domino requires far less fussing and you can work with the panels and assemblies flat on the benchtop. The Domino centers its mortises on ¾-in.-thick stock (or close to it), but all it takes is a thin piece of MDF or plywood to shim it up for thicker panels and pieces.

At this point the top of the case is open. The actual top, with its edges framed with mitered solid-wood pieces, is simply doweled down onto the case. To be sure all the dowels line up, I use an elegantly simple guide, one of my favorite jigs (see drawing, opposite page).

The top seems to float, but that effect is created simply by cutting a small rabbet into its lower edge.

Mitered corners for a seamless look

The liquor cabinet on p. 66 is another example of the fun you can have with veneer. The main veneers and solid-wood parts are walnut, while the top panel, the interior, and the panels I cut into the sides and doors are curly anigre. The little detail beads are wenge. These window inlays wouldn't be possible in solid wood. I cut them after the cabinet was assembled, to be sure they lined up, and used a router template for the job.

This cabinet showcases my other favorite method of joinery for veneered work. Its main box—the back, two sides, and the narrow solid edging that surrounds the doors—is built with miter joints.

The case then goes onto a base that is made up of a bottom panel surrounded by a frame, with legs doweled from below. The top's anatomy is just like the one on the bookcase, except that it is beveled on its lower edge instead of sitting on a rabbet. Both top and bottom are attached with dowels, using the same type of drilling guide I made for the bookcase.

It all starts with the mitered case. I use a sliding tablesaw to cut the long miters, but careful setup of a conventional tablesaw can produce clean bevel cuts. Attach a sacrificial

Fence ensures perfect alignment. *Thibodeau uses the Domino vertically against the fence, following the tick marks.*

Add one side at a time. *Attach one side, clamp it, and let it dry. Then add the front rail and the final side as shown. Again, cauls protect the sanded surfaces.*

fence to your rip fence and bury the blade in the fence at 45°—exactly at the height of the thickness of the panel. Take time to get the fence perfectly aligned so the blade cuts a clean miter without taking anything off the top face. Otherwise, the workpiece will dive inward as you finish the cut, creating a gap in the joint. To dial it in perfectly, use a cutoff section of one of the actual panels, and then cut one more piece to make sure two miters add up to a clean, square joint. Also, make sure all of the parts are trimmed to final size before beveling them.

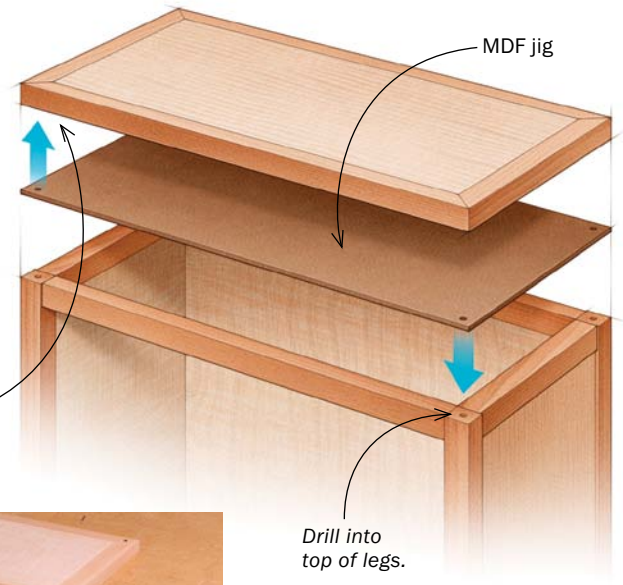
Safety note: The offcut will be trapped between the blade and fence, and it does shoot out sometimes, so stand out of the way as you make the cut.

I made the two narrow stiles that flank the doors from solid walnut, veneering the door fronts with vertically oriented walnut veneer to create continuous grain across the front of the cabinet.

Front is actually four parts—The front of this cabinet is different from the

DOWELING JIG LINES UP THE TOP

A few dowels are all you need to align and attach the top. Since it is a veneered panel, wood movement is not an issue. A slick drilling jig lines up the dowel holes.

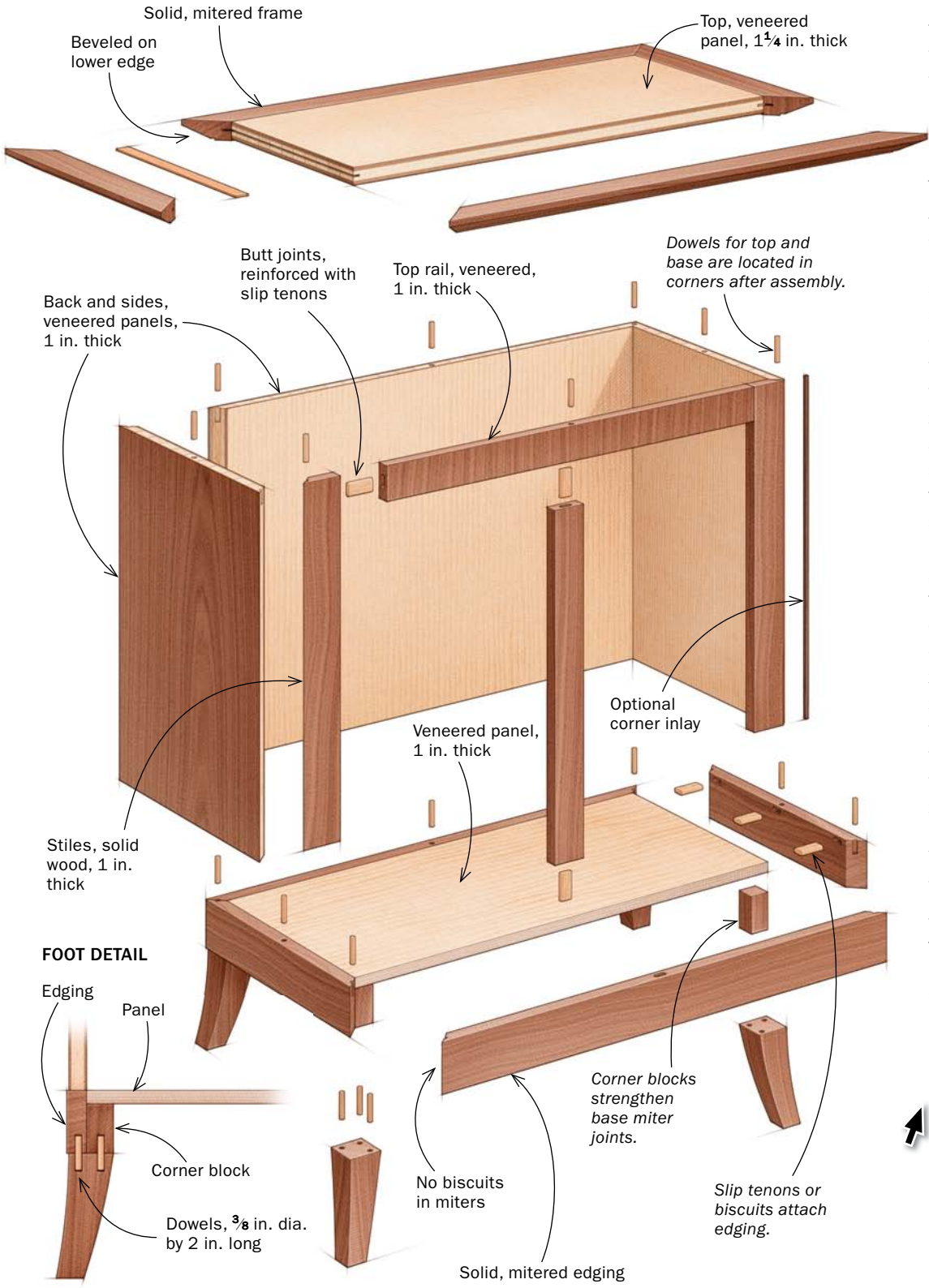


Case first. *Cut a piece of MDF the same size as the case, and mark it so the holes will land squarely in the legs. Clamp the jig to the case and drill. Put tape on the bit to set the depth. Clamp the jig to the top to drill shallower holes into its underside.*

Mitered case

MITERS ARE STRONG AND SEAMLESS

To wrap veneer seamlessly around an exterior, Thibodeau uses mitered joinery. This system is very fast, and the lumber-core plywood creates strong joints without the need for splines.



previous one, with stiles that take the place of the solid posts, and a veneered top rail that attaches to those stiles before final assembly. There is also a solid center stile, which goes in as the top and bottom are added to the case. So after mitering the edges of the side stiles, use more slip tenons to attach the upper rail that connects them. That rail is solid walnut, veneered on both sides, with the grain running vertically for invisible seams with the side stiles.

My favorite part about the miter approach is assembly. You simply apply packing tape tight along the outside of the pieces, add glue, and then fold up the miters to clamp them. I usually don't reinforce the miters with splines, since they have so much long-grain glue surface already. This is just another place where the lumber-core plywood is a big benefit.

Easy corner inlay—I sometimes inlay a strip of solid wood, like the wenge I used here, into the corners of mitered cabinets. These small details add flair, protect the veneer from dings and damage, and hide a not-so-perfect miter. You can notch the corners of small boxes on the tablesaw, but for big casework like this I use a handheld router and a rabbeting bit.

Once the case is done, build the base and top to fit, and then attach them using dowels and a drilling guide. □

Craig Thibodeau is an award-winning furniture maker in San Diego.

Online Extras

To see how Thibodeau edges flat veneered panels, like the doors on these cabinets, go to **FineWoodworking.com/extras.**

SIMPLE APPROACH TO A FUSSY JOINT

Thibodeau cuts case miters at the tablesaw, burying the blade in a sacrificial fence. It takes some trial and error to fine-tune the setup, but the results are flawless.

Buried blade is foolproof. *If the workpiece wanders, or you don't press it down near the blade, you won't ruin the edge. Just make another pass to ensure a clean miter.*

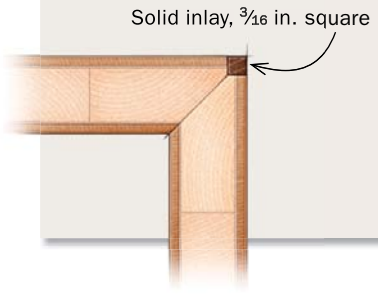
Flip 'em and tape 'em. *Flip all the parts outside-face up, stretch clear packing tape across each joint, and then run long pieces down each one to add strength and stop squeeze-out.*

Stick trick. *It's hard to turn over all of the parts without loosening the tape, but two sticks make it easy to grip and flip the panels.*

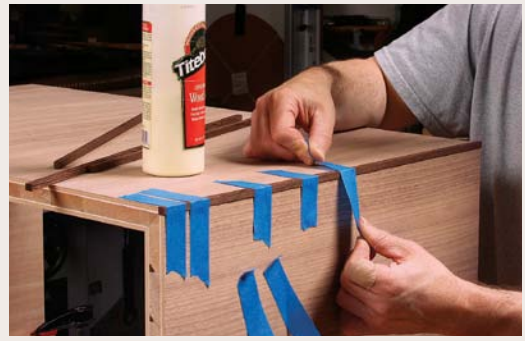
Glue and fold. *Brush a thin layer of glue on all of the mitered surfaces, and then fold up the whole assembly and add the front rail (left). Throw a clamp across that rail, and then add a spacer and clamp at the bottom of the cabinet to be sure the whole thing comes together square (above).*

Corner inlay is a nice touch

If your miter joints have a few gaps or you want a contrasting detail, it's easy to add solid inlay to the corners.



Rout a rabbet. *Use the smallest router you have, and either an edge guide (shown) or rabbeting bit to cut a square recess in the edge. Start with a shallow climb cut to avoid tearout.*



Tape trick. *Cut the edging just a hair oversize. Strips of blue tape are all the clamps you need. Stretch them to pull the inlay tight in its channel. Trim the inlay flush after the glue dries.*