Shaker Dining Table

Form meets function in this classic design

BY CHRISTIAN BECKSVOORT

Photos, except where noted: Tom Begnal; this page: Michael Pekovich

The posts are simple turnings

Turn the blank. *Becksvoort turns a 3⅝-in.-sq. blank to 3½ in. dia., then makes a series of 2⅜-in.-dia. parting cuts along the midsection, checking the diameter with calipers. After that, with the parting cuts serving as guides, he reduces the entire midsection to 2⅜ in. dia.*

This table is based on a piece built at the Shaker community in Hancock, Mass. (It's now in the collection of the Fruitlands Museum in Harvard, Mass.) The original, made from cherry, is almost 11 ft. long, with a third trestle to support the center. Such a length made good sense for communal dining, but it's not practical for most homes today. My version has only two trestles, and I typically make the top either 8 ft. or 9 ft. long.

A trestle table has appeal for a few reasons. For one, it can be "knocked down" without fuss. Remove the top from the base parts and the stretcher from the trestles, and you can move the table through doors and up or down stairs. Unlike most tables, which have aprons around the perimeter to stiffen the structure, trestle tables have a single center stretcher. This gives more vertical legroom. On the other hand, most trestle tables have flat feet, which tend to get in the way of the feet of diners sitting at either end. This Shaker design solves that inconvenience by replacing the flat feet with arched feet. This simple change not only makes the piece more ergonomic, but also gives it an especially graceful look.

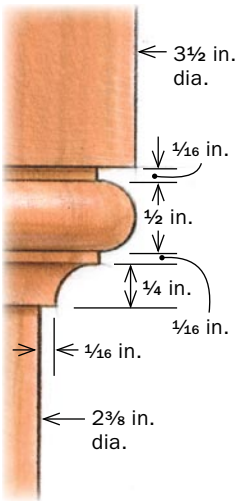
Most lathes will handle these posts

I make the posts first, using 16/4 stock. If this size isn't readily available, consider face-gluing two pieces of 8/4 stock from the same board. Using the same board means the grain and color of the pieces will be close and the glue joint less visible.

Mill the stock to about 3⅝ in. sq. and crosscut it to 24½ in. long. Then mount it in a lathe and turn it to 3½ in. dia. At a point 6 in. from the top and 4 in. from the bottom, use a parting tool and calipers to establish the 2⅜-in. diameter of the center section.

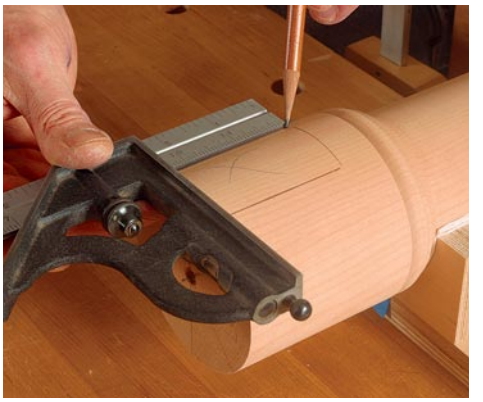
Continue using the parting tool to make a series of 2⅜-in.-dia. cuts between the end cuts. With these cuts serving as a depth guide, use a gouge to reduce the entire center section to 2⅜ in.

Coves and beads. *Each end of the midsection terminates in a cove and bead. Mark the ⅞-in. width of the detail by lightly touching a pencil point against the spinning post. Cut the cove with a roundnose chisel or small gouge, then the bead with a diamond-point or skew chisel.*

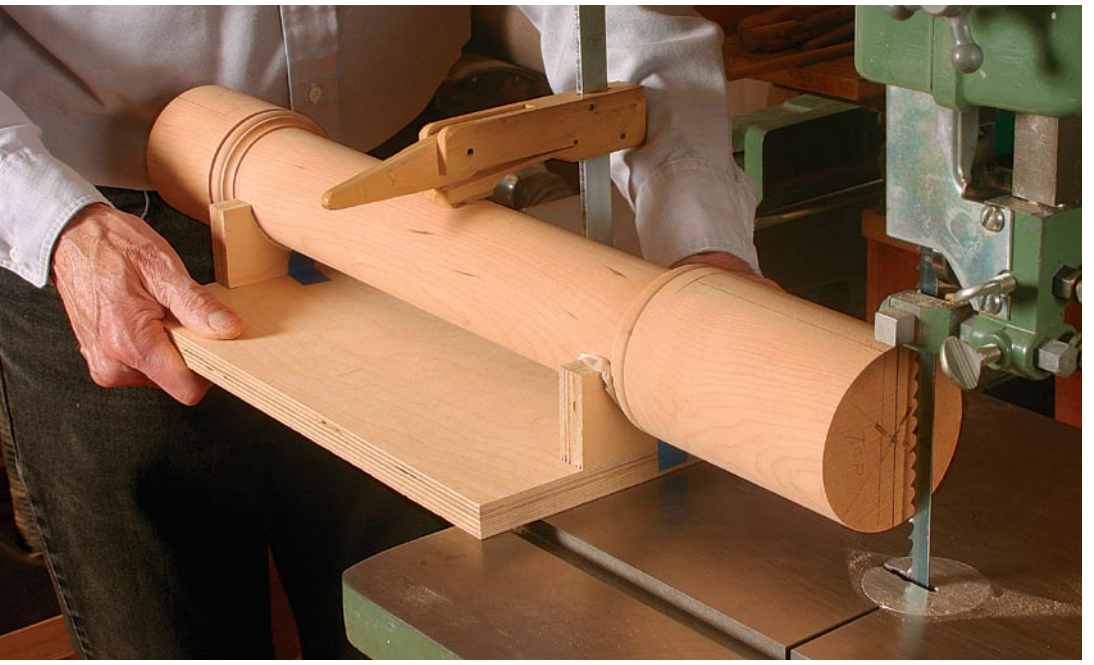


Notch the posts

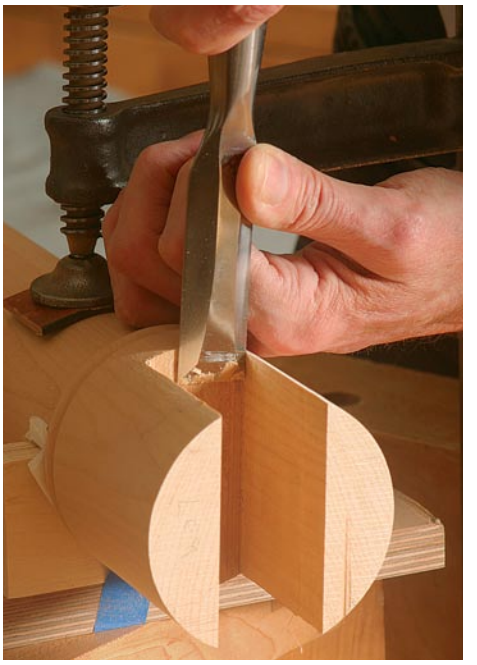
Build a cradle. *Two saddles screwed to a base, ¾ in. thick by 8 in. wide by 12½ in. long, create a cradle for the post that simplifies a number of construction steps.*



Lay out the location of the notches. *With the cradle on a flat surface, use a square to mark a vertical centerline on each end of the post (left). Measure and mark the width of the notch, then use a square to scribe the notch depth (right).*



Cut the two notches. *With the post securely clamped in the cradle, use a bandsaw to cut the notch on each end, following your layout lines by eye.*



Hand work. *Smooth the ends of the notches and the cheeks with a sharp chisel.*

dia. At each end of the center section, turn a small cove and a bead with a small flat at each end of it (see drawing, p. 73). If your turning skills are rusty, practice first on a shorter blank.

Jig simplifies post joinery

Once both posts are turned and sanded, they need to be notched for the braces, feet, and stretchers. To hold them for layout and machining, I clamp the posts to a shopmade cradle that consists of a couple of U-shaped saddles screwed to a rectangular piece of plywood. A narrow piece of paper towel in each saddle, held in place with masking tape, helps prevent scratches on the posts.

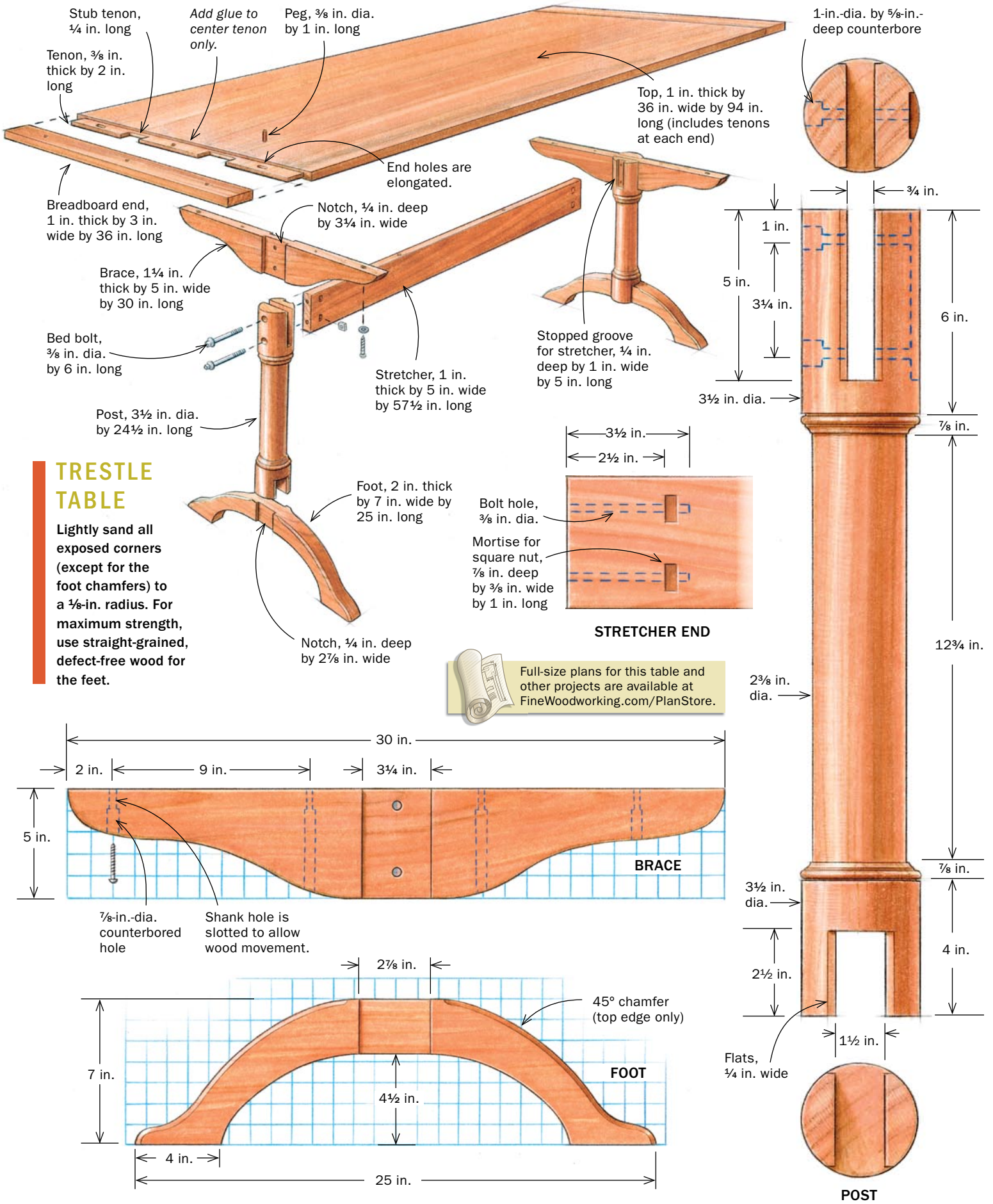
Place the cradle on a bench (with the clamp between the opened jaws of the vise so the cradle can rest flat). Use a square to lay out the width and length of the notch on each end of the post. To lay out a notch, first use a square to mark a vertical line through the center of the turning. Using that centerline as a reference, mark the width of the notch. Finally, mark the depth of the notch. The notches can be cut by hand with a deep backsaw; but a bandsaw does as good a job in less time. With the post clamped in the cradle, carefully saw between the lines to the bottom of the notch. Then, nibble out the bottom of the notch with the blade. As you switch from one end to another, you'll need to reposition the clamp so that it doesn't bump into the saw table as you cut.

Rout a shallow groove for the stretcher—There's one more machine cut to make on each post—a groove, ¼ in. deep by 1 in. wide by 5 in. long, that will accept the end of the stretcher. You can cut the groove with a chisel, but it's easier on a router table.

Again, I use the cradle to support the post. A clamp gets in the way on the router table, so I made a wooden yoke that serves as a clamp. With the yoke screwed to the base of the cradle, the post stays securely in place. Before tightening the yoke, make sure the cheeks of the slot are parallel with the router-table surface.

Install a 1-in.-dia. straight bit in the router, and raise the bit to make a ¼-in.-deep cut in the post. Adjust the router-table fence so that when the cradle slides against it, the bit is centered on the post. Also, clamp a stop block to the fence to stop the cradle

Drawings: Bob La Pointe



TRESTLE TABLE

Lightly sand all exposed corners (except for the foot chamfers) to a ⅛-in. radius. For maximum strength, use straight-grained, defect-free wood for the feet.

Full-size plans for this table and other projects are available at FineWoodworking.com/PlanStore.

Notch the posts (continued)

Cut small shoulders. *Cut a flat on each side of the notches to ensure gap-free contact between the post and the brace and foot. First, lay out each flat with a pencil and ruler (right), then make a vertical cut with a chisel to establish the end point. Finally, make horizontal cuts with the chisel to pare the stock to the layout line (below).*

Cut the groove for the stretcher. *With a U-shaped yoke screwed to the cradle serving as a clamp, use a router table to cut a stopped groove in the top end of the post (top). Square the rounded end left by the router bit with a chisel (right).*

when the groove is 5 in. long. Hold the cradle firmly against the fence as you slide it forward to feed the post in the bit.

The router bit leaves rounded corners at the end of each groove. Use a chisel to cut them square.

Fit the other parts to the posts

Templates for the brace and feet can be found on p. 75, but you'll need to enlarge them to full size. I'm not fussy about pattern stock; light cardboard or poster paper works just fine.

Use the patterns and a pencil to transfer the profiles to the stock. Cut the parts on the bandsaw, staying just outside the lines. Next, lay out and mark the location of the dadoes in the braces and feet. These mate with the deep notches in the posts. They can be cut by hand, with a router, or with a dado blade on the tablesaw. To save time, I use the dado blade set for the widest possible cut.

To support the braces and feet during the dado cuts, clamp a long fence to the miter gauge. The fence should extend at least 15 in. on either side of the dado blade. Add a pair of stop blocks to ensure that the shoulders of the dadoes align perfectly on both sides of the joint. When setting the depth of cut, I leave the areas between the dadoes a bit thick. That way, I can trim them with a rabbet plane for a perfect final fit.

With the dadoes cut, I smooth concave edges of the braces and feet using a spindle sander, and convex edges using a stationary disk sander. Smooth the curved edges further by hand-sanding.

Now use the router table and a chamfer bit to rout a ¼-in. chamfer along the top edges of the feet. Stop each chamfer at a point ½ in. from the dadoes.

Complete the trestles

Dado the legs and braces. *Cut a wide dado on each side of the brace and foot (above). Use the tablesaw miter gauge with a long auxiliary fence to support the parts during the cuts. A pair of stop blocks helps ensure that the ends of the dadoes end up perfectly aligned on both sides of the parts.*

To fit a joint, first make a knife cut at the shoulders of the dado to sever the wood fibers before trimming the dadoes with a rabbet plane. When the joint begins to engage, I mark the leading edges of the slots with a pencil, which shows me exactly where the joint is still tight. A few more strokes with the rabbet plane and the joint should fit snugly.

Once all braces and feet are fitted to their respective posts, the parts can be glued and clamped to create a trestle. A pair of clamps, each spanning from brace to foot, is all that's needed. After that, at one end of the trestle, measure the distance from the top edge of the brace to the bottom edge of the foot. Do the same at the other end. The measurement should be the same. If they differ, adjust the pressure on the two clamps until the measurements agree. Once dry, sand the bottom of the post and the underside of the arched foot until flush.

When making the stretcher, I start with slightly thicker stock. Then I make light passes with a thickness planer until the stretcher fits snugly in the groove routed in the top of the post.

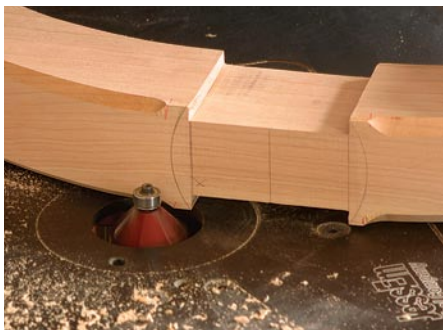
How to install bed bolts

Each trestle attaches to an end of the stretcher with a pair of ⅜-in. by 6-in. bed bolts and nuts (available from Horton Brasses; www.horton-brasses.com). Each bolt extends through a post and brace and into the end of the stretcher. The end of the bolt threads through a nut mortised into the stretcher. When the bolt and nut are tightened, the stretcher and trestle are pulled together to produce a rock-solid joint.

The bed-bolt work starts at the drill press. Once again, the cradle comes in handy. Use the yoke to secure the trestle to the cradle, with the stretcher groove facing down. Make sure the sides of the brace and trestle are parallel to the worksurface. If the parts tilt, the holes won't be square.

Measuring from the top end of the post, mark the hole centers at 1 in. and 4¼ in. Position the cradle so that a 1-in. Forstner bit is centered on the upper hole. Clamp the cradle to the drill press,

Dry-fit the parts. *Check the fit of the posts to each dado (above). If too tight, use a rabbet plane (left) to trim the sides or bottom of the dado.*



Rout chamfers. *A chamfer bit in a router table is used to chamfer the top edges of the feet. Stop the cut ½ in. short of the dado.*

Add the bed bolts

Start by drilling. *With a trestle clamped in the cradle, and the cradle clamped to the drill-press table, use a 1-in.-dia. Forstner bit to drill a ⅝-in.-deep hole (right). Then, remove the Forstner bit and use a ⅜-in.-dia. brad-point bit to drill a hole completely through the post.*

Drill holes in the ends of the stretcher. *Add a trestle to the stretcher temporarily, then use a ⅜-in.-dia. brad-point bit to extend the bed-bolt hole slightly into the end of the stretcher. After that, remove the trestle and drill deeper to complete the hole.*

and then bore a ⅝-in.-deep hole to accept the head of the bed bolt. Replace the Forstner bit with a ⅜-in.-dia. brad-point bit and bore a hole completely through the post and brace. Repeat the process for the remaining holes.

Next, clamp the stretcher in a vise and temporarily mount one of the trestles. Transfer the ⅜-in.-dia. bit from the drill press to a portable drill. Using the holes in the trestle as guides, drill matching holes in the end of the stretcher. Remove the trestle and continue drilling until the hole is at least 3½ in. deep, measured from the end of the stretcher.

Portable drills rarely produce a hole perfectly square to the stretcher ends. So, to make sure the mortise for the nut is properly located, I use a bed bolt as a guide. Allow a good portion of the bolt to extend from the hole. Then place a long ruler so it's centered along the length of the exposed bolt. Use a pencil to extend the centerline along the face of the stretcher. With the centerline showing the location of the bolt hole, measure 2½ in. from the end of the stretcher, and lay out the location of the mortise for the nut. A few minutes' work with a chisel yields a mortise just

Lay out the location of the bed-bolt nuts. *With a bed bolt in a stretcher hole serving as a guide (in case the hole isn't drilled perfectly square), mark the location of the bed-bolt nut (above). Cut the mortises for the nuts (left) just deep enough to allow the bolt to thread into the nut.*

Photos, facing page: Michael Pekovich

Assembly is easy

Put it together. *After all the parts have been sanded and finished, it's finally time to put the table together. With the table parts upside down, slide the ends of the stretcher into the post grooves and slip the bed-bolt nuts into the mortises in the stretcher. Then, insert the bolts (top right).*

Attach the top. *A screw and washer go into each counterbored hole in the braces. The slotted shank hole allows wood movement.*

big enough to accept the nut. You'll know the alignment is OK if you can slip the bolt into the hole and thread it into the nut. I use a special bed-bolt wrench (available from Horton Brasses; a 12-point socket also works) to turn and tighten the bolts.

With the holes drilled and all the mortises cut, you can mount the trestles to the stretcher.

Build the top and breadboard ends

I make the tabletop by edge-gluing 1-in.-thick stock, using three or four well-matched boards across the 36-in. width.

Breadboards are applied to either end. The original table, made from ⅞-in.-thick stock, had a ¼-in.-thick by ½-in.-long tongue cut fully across each end of the top and pinned to allow for wood movement. The tongue fit into a corresponding groove cut across the entire length of the breadboard end. I make my tenons longer for added strength (see "Keeping Tabletops Flat," *FWW* #183, pp. 32-37, for more detailed instructions).

The top is attached with screws driven through counterbored holes in the braces and stretcher. To allow the top to expand and contract in width due to seasonal changes in humidity, be sure to elongate the shank holes in the braces.

For a finish, I use an oil-and-varnish mix (equal parts of each), applying three coats to all the table surfaces, including the top and bottom of the top and breadboard ends. For added durability, the top then gets two more coats. □

Contributing editor Christian Becksvoort builds furniture in New Gloucester, Maine.