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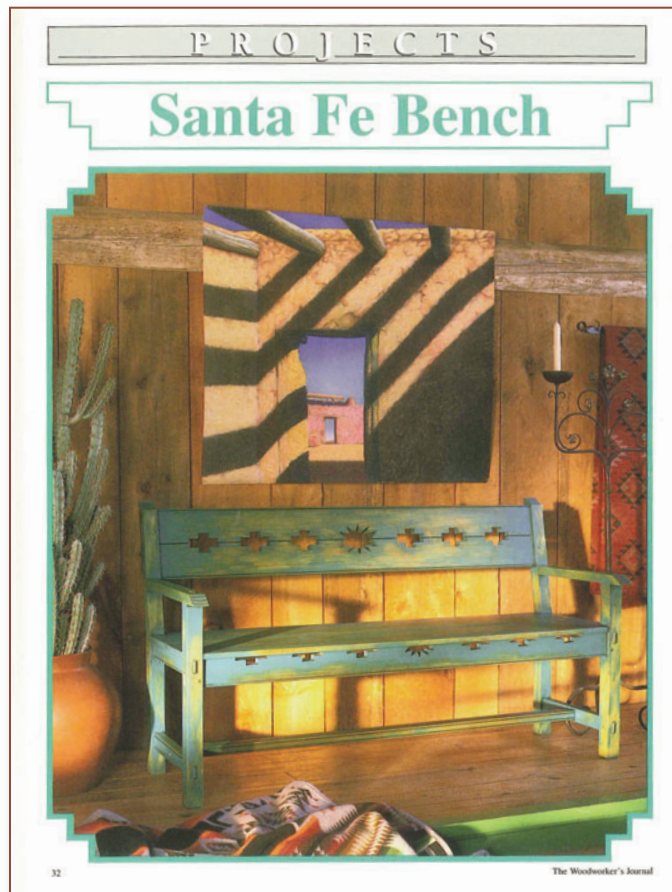


Classic Project

In this plan you'll find:

- Step-by-step construction instruction.
- A complete bill of materials.
- Construction drawings and related photos.
- Tips to help you complete the project and become a better woodworker.

Santa Fe Bench



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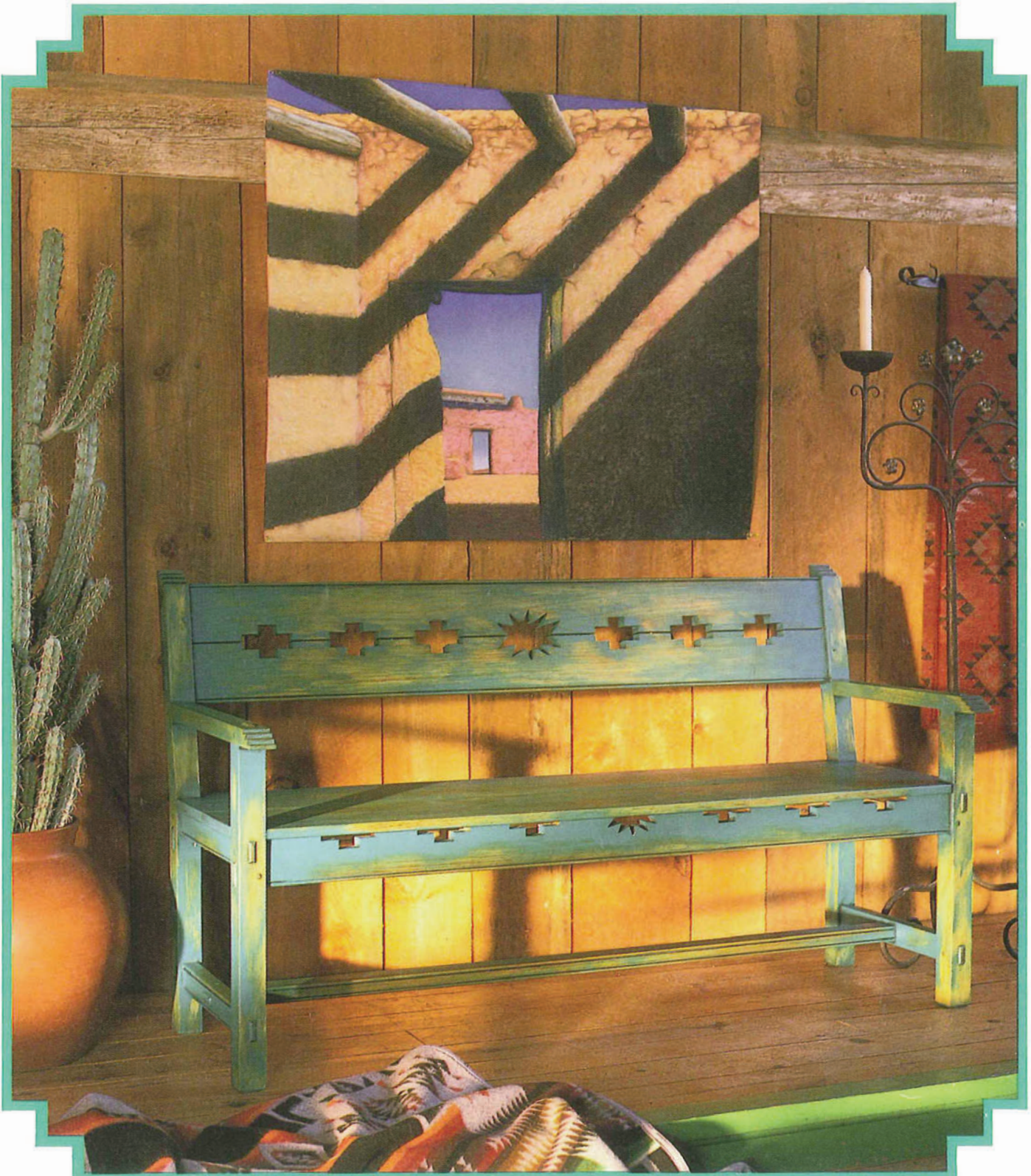
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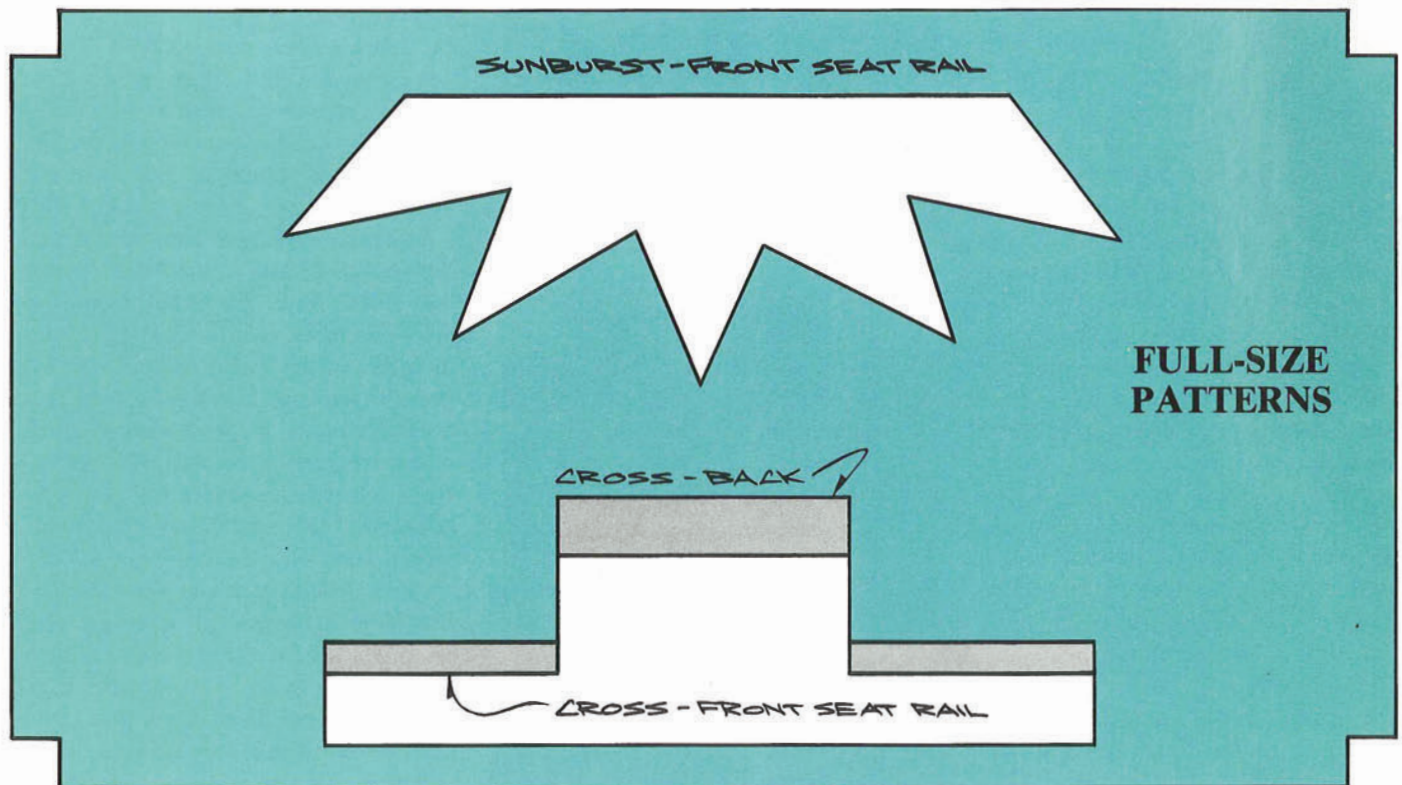
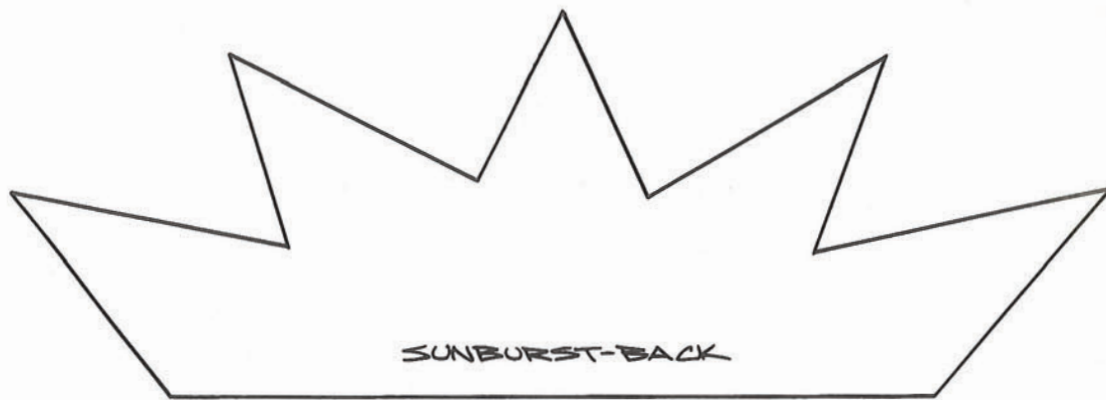
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Santa Fe Bench





The contemporary Santa Fe style of furniture is a blend of the early Mission, Spanish, and Arts and Crafts styles. Antiques from the Spanish and Mission periods in the Southwest are typically utilitarian pieces, built of pine and featuring pegged mortise-and-tenon joinery. Much of the contemporary Santa Fe style carries over this flavor, using simple joinery and gaily painted surfaces to achieve a roughly-made, folksy, Southwestern look.

Well-designed, well-constructed furniture in the Santa Fe style can be a pleasant break from both traditional and modern furniture styles. Our Santa Fe style bench, made entirely of pine, utilizes the classic pegged, through mortise-and-tenon joint. Its brightly painted finish makes this a piece that

one decorates a room around. Later on we'll explain how we achieved the bright turquoise color on the bench. For a more subtle look, you can always substitute a natural pine finish for the painted look.

Since the finish will pretty much obscure the wood, there's no reason to spend top dollar for your materials. By carefully selecting boards and framing stock from your local lumberyard, you should be able to build the bench for about \$50. The 1 1/4 in. thick parts can be obtained from two-by stock, and the legs (A, B) can be cut from four-by-fours. You'll need a four-by-four that measures at least 3 5/8 in. wide to get the 10-degree angle on the back leg, but if the four-by-four you get only measures 3 1/2 in. wide, don't worry. No one but you will ever know the difference. A

jointer and a surface planer will reduce the two-by and four-by stock to the thicknesses indicated in the Bill of Materials. Note that the back (F) is actually a single board that's ripped in half. A two-by-ten board will yield the required width. You can purchase 3/4 in. thick pine boards for the seat (J).

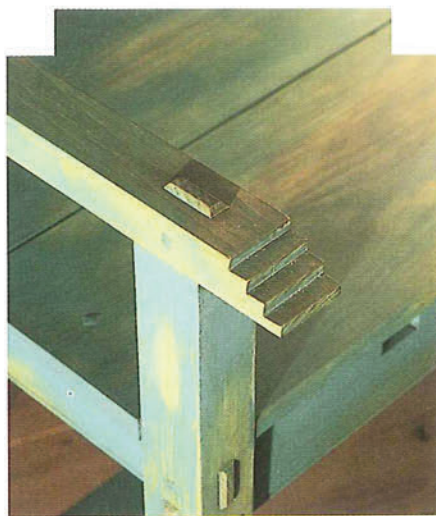
Take care that the lumber you buy is not too wet, or you may experience problems as it dries. Your best bet is to buy from a yard that stores its material in barns or sheds, as opposed to outside where it's at the mercy of the elements. To minimize the likelihood of problems later on, it's usually a good idea to sticker and dry the wood inside for several weeks before you use it. Run all the stock through the planer or across the jointer to achieve approximate thickness and width, but leaving a little extra.

By thickening and then allowing the wood to acclimate, you'll minimize problems of wood movement that usually crop up after the wood is cut and planed. After the stock has acclimated, you'll make a final clean-up cut with the jointer and planer. Actually, allowing the stock to acclimate is a good tip for whatever stock you buy, be it hardwood or softwood, but it's especially appropriate for softwoods that may have a high moisture content.

A good place to start the bench construction is with the legs. As shown in the detail, the back legs are laid out to avoid any short grain. The best way to lay out the back and front legs is to make a full-size template of both, including all the appropriate mortise locations. Use these templates to mark the legs on the stock, then cut the back leg profile with a band saw, and bore the mortise holes. Square the mortises using a chisel. If you have a mortising attachment for your drill press, you'll save some time when compared to chopping them out by hand. Use the band saw to cut the step detail on the top end of the back legs.

Next, cut the end rails (C, D), arm (E), seat rails (G, H), and stretcher (K). Note that all tenons protrude $\frac{1}{8}$ in., so the overall length of parts with tenons should include the extra length. When cutting the tenons, don't forget to add the $\frac{1}{8}$ in. that the tenon protrudes through to your setting for the shoulder cuts.

We cut the tenons on the table saw, using a miter gauge and the dado head. Before working on your project stock, be sure to check the blade height setting by first cutting a trial tenon on some scrap. If your mortises are a consistent width, and your stock is all the same thickness, one setting should suffice for all the tenons except those on the front leg and arm. Since the tenons are all $\frac{1}{2}$ in. wide, and they're all cut on $\frac{1}{4}$ in. thick stock, the blade height setting is $\frac{3}{8}$ in. The key to cutting these tenons at the same setting is to make certain that all the $\frac{1}{4}$ in. thick stock measures the same. Sending it through the planer at the same setting is the usual way to achieve consistent stock thickness. If



Bill of Materials

(all dimensions actual)

Part	Description	Size	No. Req'd.
A	Back Leg	See Detail	2
B	Front Leg	$1\frac{7}{8} \times 2 \times 24\frac{3}{4}$ *	2
C	End Rail (Top)	$1\frac{1}{4} \times 2 \times 18\frac{1}{4}$ *	2
D	End Rail (Bottom)	$1\frac{1}{4} \times 2 \times 18\frac{1}{4}$ *	2
E	Arm	$1\frac{1}{4} \times 1\frac{7}{8} \times 21\frac{3}{4}$ *	2
F	Back	$1\frac{1}{4} \times 9 \times 60$ **	1
G	Seat Rail (Back)	$1\frac{1}{4} \times 3\frac{1}{4} \times 60$ *	1
H	Seat Rail (Front)	$1\frac{1}{4} \times 3\frac{1}{4} \times 60$ *	1
I	Crosstie	$1\frac{1}{4} \times 3 \times 16$ ***	2
J	Seat	$\frac{3}{4} \times 8\frac{15}{16} \times 59\frac{3}{4}$	2
K	Stretcher	$1\frac{1}{4} \times 2 \times 59\frac{3}{8}$ *	1
L	Cleat	$1 \times 1\frac{1}{4} \times 6$	4

* Length includes tenons.
 ** Width dimension is before back is ripped in half.
 *** Includes dovetails.

you don't have a planer and have to work with stock that varies a little in thickness, then consider each tenon as a separate operation, and set your blade height to reflect the stock thickness.

Allow some extra length for the arm. Note that the tenon on the back end of the arm, where it fits through the back leg, will have a 10-degree shoulder, matching the 10-degree tilt of the back. The side shoulders of the tenon are established by angling the miter gauge 10 degrees, while the top shoulder is cut with the table saw blade tilted 10 degrees. The steps on the arm ends are cut with the band saw.

Once all the mortises and tenons are cut, cut the back (F). If you start with a

two-by-ten board, which measures $1\frac{1}{2}$ in. thick by $9\frac{1}{4}$ in. wide, after thickening, ripping in half, and jointing you would have the two halves perfectly sized. Cut the tenons on the back ends as shown in the detail.

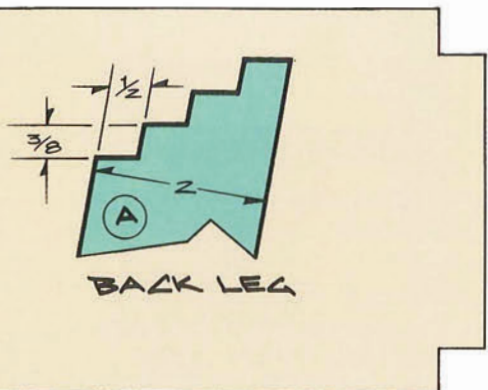
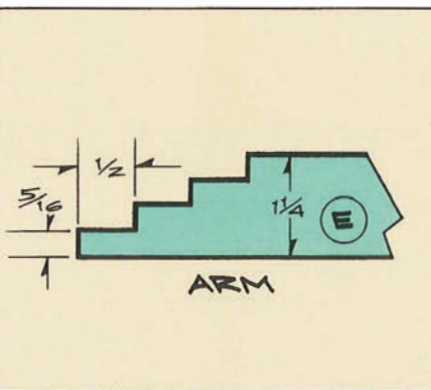
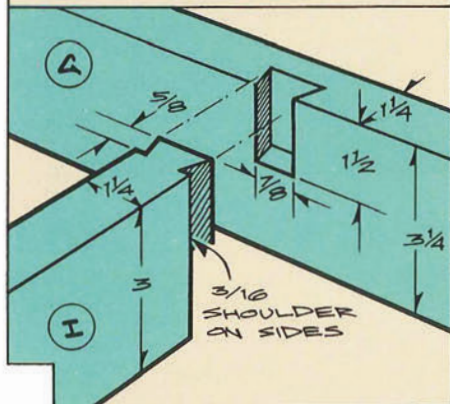
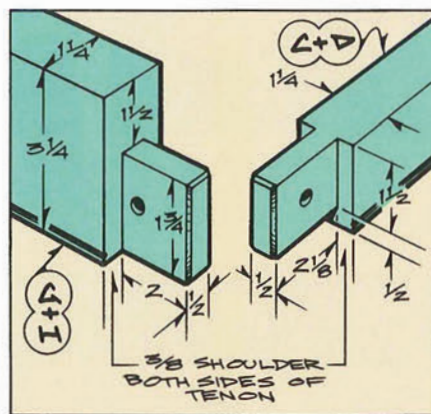
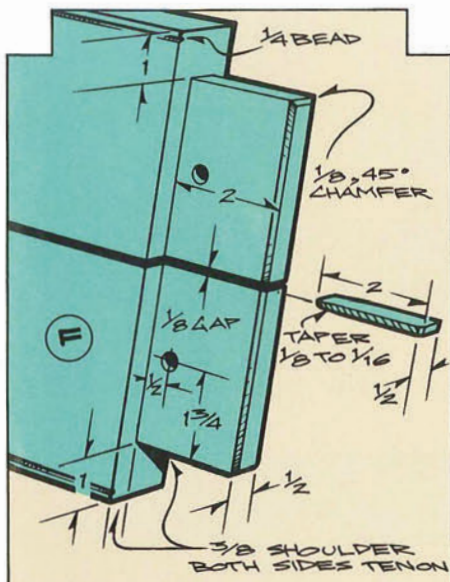
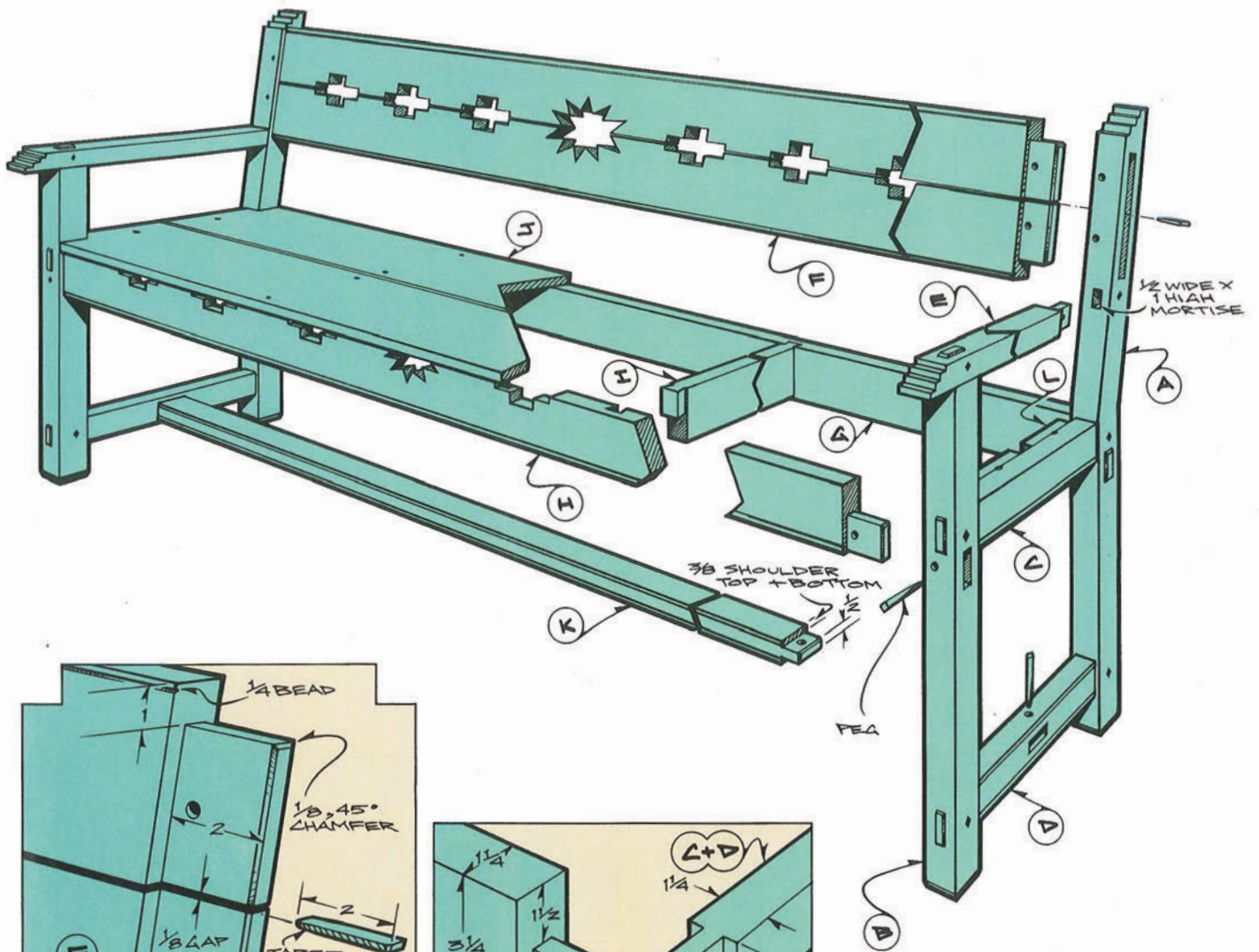
You should now cut the bead detail that appears on the end rails, back, front seat rail, and stretcher. We used a Sears molding head equipped with their three-bead cutter (their part no. 9BT 2352). Set up an auxiliary fence on the table saw so that only one of the three $\frac{1}{4}$ in. beads is exposed. The remaining portion of the cutter should be buried in the auxiliary fence.

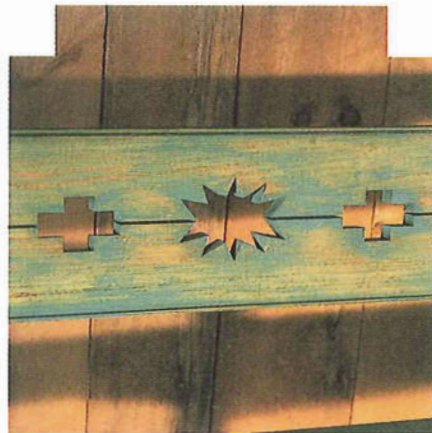
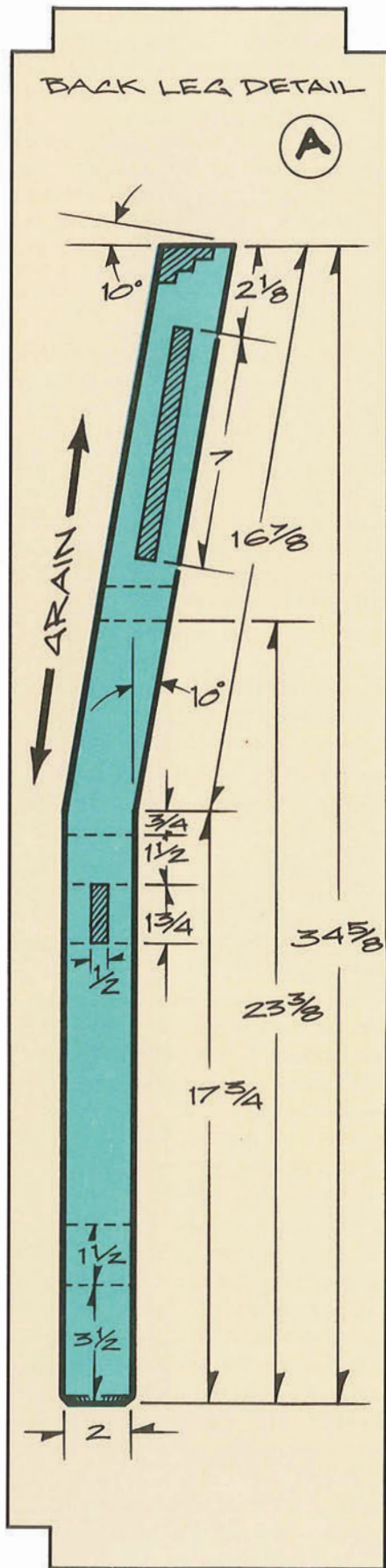
Once the beads have been cut, start on the various cutouts in the front seat rail and back. Make templates from our full-sized patterns of the cutouts; lay out as shown on the front elevation, and cut out with the hand-held jigsaw. Note that the half cross on the front seat rail is just a shorter version of the cross in the back, but that the pattern for the center sunburst is different. Clean up your cuts with a wood file.

At this point you can assemble the bench parts. There's only one way to do it. First assemble the end rails and arm onto each front leg. Then add the back leg. Mount the back, seat rails, and stretcher into one of the side assemblies, and then add the other side assembly. Note that we included two dowel pins to keep the halves of the back in register, and wedges on either end at the through-tenon to maintain the $\frac{1}{8}$ in. space between those halves (see back tenon detail). Use a dab of glue to hold the wedges.

We don't use glue on any of the through mortise-and-tenon joints. Instead, the joints are secured with pegs. Make your own pegs from scrap. The traditional method is to hand-split the pegs. Since wood splits follow the grain, the peg grain will be a true long-grain, yielding maximum strength. You can use dowels instead, but you won't get that nice square-ended detail that our pegs display.

We achieve the square peg ends by rounding most of the peg length, but leaving the end that will show square. Use a drop or two of glue on the pegs,






cut them off long, and pare them a bit with the chisel to simulate wear. Leaving the pegs a little proud of the surrounding surface lends the natural look of an antique, where the pegs may have worked out a little over the years. The chamfers on the exposed tenon ends

are done by hand with a chisel.

Now make the crosssties (I) and cleats (L). The cleats are just blocks, but the crosssties have dovetails cut across one-half their width on each end. The dovetails are cut by hand using a dovetail saw. Cut the dovetails first, then use them as a template for marking the dovetail mortises on the seat rails. These mortises are chopped out with a chisel. Stay inside your line, then final pare as needed to get a good fit. The crosssties are glued at the dovetails, and the cleats are glued to the inside face of the top end rails.

Cut the seat boards to fit, notching them where they tuck around the legs. Secure the seat with pegs, using the same technique described above. Note that the holes for the end pegs are drilled at an angle into the cleats. After a final sanding, you are now ready for our turquoise finish. 

The Finish

Our painted finish was made with Liquitex or Aquatec artist's acrylics. They're available at artist's supply stores.

The first step in the finishing process is an application of Minwax Puritan Pine stain to the bare wood. Next, mix about two parts cerulean blue with one part thalo blue and one part thalo green, perhaps weighing your mixture a little toward the green side. Add white, lightening the turquoise shade to achieve your personal preference. Then thin with water to a cream consistency.

Paint on, and then wipe the turquoise off in sections, working separately on the back, legs, seat, arms, rails and stretcher. Use a damp sponge for the wiping off, wiping away more in the areas that would have received more wear. Clean the sponge regularly in water. Work on one area at a time to avoid having the paint dry before you can wipe it off. Note that in areas of heavy wear you'll be wiping clear down to the wood.

The next step is to highlight with a darker mixture the cracks, crevices, joints, and beads where the finish would have accumulated but not worn away. To make this darker mixture, add some brown and black to the turquoise, and then a little white as needed to lighten. Use a 1-inch brush to apply the mixture around the joints, beads and through-tenons, then wipe off with a rag to feather the transition between the dark mixture and turquoise. Your eye will tell you when you've achieved the right balance.

When dry, apply a coat of McCloskey's Heirloom Eggshell Varnish. Rub out with steel wool when dry, and apply a second coat. When dry, rub lightly once more with steel wool.

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