

Garden Grace

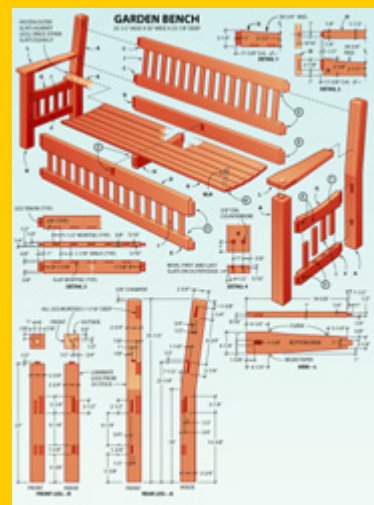
How to build a classic cedar garden bench.



If the only thing you do in your yard is mow the lawn, maybe it's time to add some creature comfort to your outdoor space. Our stately cedar bench is ideal for relaxing in the fresh air, enjoying the greenery and just getting away from it all. And, it's more than just a great place to sit. Featuring a design influenced by the Arts & Crafts style, the piece will bring an upscale look to any yard. Best of all, the construction details are solid and simple, giving you a long-lasting piece of outdoor furniture that's relatively easy to build.

We used red cedar for the bench--a material that's generally available at lumberyards and home centers throughout the country. Since cedar is widely used for outdoor decking and trim, it's usually not kiln-dried and is often sold with a high moisture content. For the best results with this project, buy the material at least two to three weeks before beginning construction. Stack the lumber in a dry location with spacers between the boards, allowing for good air circulation so the material will dry. And, be sure to

use a glue designated for exterior use. We used Titebond II to assemble our bench.



MATERIALS LIST--GARDEN BENCH

Key	No.	Size and description (use)
A	2	2-3/4 x 5 x 35-1/2" cedar (rear leg)
B	2	2-3/4 x 2-3/4 x 23-1/2" cedar (front leg)
C	2	1 x 3 x 51" cedar (back rail)
D	2	1 x 4 x 51" cedar (seat rail)
E	1	1 x 2-1/2 x 51" cedar (front rail)
F	2	1 x 2-1/2 x 17-3/8" cedar (side rail)
G	2	1 x 3-1/4 x 17-3/8" cedar (side rail)
H	1	1-1/2 x 3-3/8 x 17-3/8" cedar (center rail)
I	22	3/8 x 1-1/2 x 6-1/4" cedar (bottom slat)
J	14	3/8 x 1-1/2 x 8-3/4" cedar (back slat)
K	6	3/4 x 2-1/4 x 54-1/2" cedar (seat slat)
L	2	1 x 4-1/4 x 20-5/8" cedar (arm)
M	36	1-1/2" No. 8 fh woodscrew
N	36	3/8"-dia. cedar plug

Misc.: Exterior glue; 120-grit sandpaper; Cabot No. 1400 Decking Stain, Clear (Samuel Cabot Inc., 100 Hale St., Newburyport, MA 01950; www.cabotstains.com).

Preparing The Legs

The 2-3/4-in.-thick legs are made by gluing together thinner stock. To make each rear leg, crosscut a pair of 2 x 6 cedar pieces to about 40 in. Use a roller to spread glue on the mating surfaces of the boards (Photo 1) and clamp the pairs together to form the leg blanks. For the front legs, follow the same procedure with 30-in.-long 2 x 4 stock.

When the glue dries, rip the rear blanks to a width of 5 in. and use a band saw to trim them to 2-3/4 in. thick. Then saw the front legs to 2-3/4 in. square. Plane the cut surfaces smooth and crosscut the front legs to finished length.

Lay out the side profile of the rear legs on the cedar blanks (Photo 2) and cut to the waste side of the lines with a band saw (Photo 3). Then plane the sawn surfaces (Photo 4). Use a sanding block or scraper to smooth the inside corner of each leg where the plane won't reach.

Use a plunge router with a spiral up-cutting bit and an edge guide to remove most of the waste in each leg mortise (Photo 5). Square the mortise ends with a sharp chisel (Photo 6).

Notice that the arm mortises in the rear legs are cut at a 7-1/2° angle to allow the arms to be level. To start the angled mortises, clamp a block with a square end to the vertical face of a leg and use it as a guide to drill out most of the waste (Photo 7). Then, use a sharp chisel to finish each mortise. Crosscut the top end of each rear leg so that it's square to the angled face of the leg. Chamfer the ends with a block plane (Photo 8).



Apply glue to pairs of 2 x 6s, and then clamp them together to form the rear leg blanks. Use 2 x 4s for the front legs.



Band saw the rear leg blanks to 5 in. wide and 2-3/4 in. thick. Plane them smooth and lay out the side profile.



Use a band saw to cut the rear legs from the blanks. Be sure to keep the saw kerf on the waste side of the layout line.



Use a sharp plane to smooth the sawn surfaces. Switch to sandpaper or a scraper at the back inside corner.



Mark the mortise locations on the front and rear legs, and use a plunge router and edge guide to make the cuts.



After the routing has been completed, use a sharp chisel to square the rounded ends of each leg mortise.



To cut the angled arm mortises, clamp a board to the leg to act as a guide. Bore holes, then finish with a chisel.



Crosscut the leg top so that it's square to the angled face of the leg. Use a chisel or block plane to chamfer the end.

Bench Rails

Rip and crosscut 1-in.-thick stock for the rails. Also, cut a piece of 2 x 4 stock to size for the center seat-support rail. Use a scrap stick as a beam compass to mark the 39-3/4-in. radius on the top side rails and center rail, but don't cut the curves at this point. Install a dado blade in the table saw and cut the tenons on the ends of the side, front and back rails (Photo 9). Use the table saw rip fence as a stop to ensure that the tenons are of equal length. Readjust the blade height to cut the shoulder at the top and bottom edge of each tenon.

Clamp a scrap fence to the table saw fence and position it so that only 1/2 in. of the dado blade will be exposed. Turn on the saw and raise the blade to a height of 7/8 in., and cut the tenons on the top ends of the front legs (Photo 10). Readjust the saw again to cut the tenons on the ends of the center seat-support rail.



Use a dado blade in the table saw to cut the rail tenons. The rip fence acts as a stop to ensure tenons of equal length.

Next, mark the locations of the slat mortises in the side, front and back rails and use a plunge router to cut them (Photo 11). Since the rails are narrow, clamp a second board to the workpiece to help support the router base. Square the mortise ends with a sharp chisel. Work carefully when making these cuts, as there are no shoulders on the slats to hide oversize mortises.

Lay out the mortises for the center seat-support rail in the front and back rails. Use a Forstner bit in a [drill](#) press to remove most of the waste (Photo 12), and square with a chisel. Then, cut the curved profiles on the side and center support rails, and rip and crosscut the bench slats to finished size.

Assembly

Begin assembly by joining a set of slats to the side rails (Photo 13). It isn't necessary to glue the slats in place since they will be held captive between the rails, but if they fit too loosely, you can place a spot of glue in the mortises to prevent them from rattling.

Spread glue in the leg mortises and on the side rail tenons, assemble one of the bench sides, and clamp until the glue sets (Photo 14). Repeat the process for the other side.



To cut the tenons on top of the legs, raise the dado blade into a scrap fence to yield a 1/2-in.-wide x 7/8-in.-high cut.



Route the slat mortises in the bench rails. Clamp a second board to the workpiece to help support the router base.



Mark the mortise locations for the center seat-support rail. Use a Forstner bit to remove most of the waste.



13 After cutting the curved rail profiles, press the side slats firmly into their mortises. It's not necessary to use glue.



14 Spread glue in the leg mortises and side rail tenons, and assemble one of the bench sides. Clamp until the glue sets.

Join the slats to the front rails. If necessary, use three or four clamps to press the slats all the way into the joints (Photo 15). Then, spread glue in the front and back rail mortises and on the center rail tenons, and join the parts (Photo 16). Use a clamp to pull the joints tight, and set the assembly aside to let the glue dry (Photo 17).

Assemble the back rails and slats and join this subassembly to one of the bench sides (Photo 18). When the glue cures, join the front and back seat rail assembly to the same side. Complete the bench frame by joining the opposite side to the rail ends.

Rip and crosscut 3/4-in. stock to size for the seat slats. Adjust the table saw blade angle to 9-1/2° and bevel one edge of the front and back slats. Leave the rest of the slat edges square. Use a combination bit to bore screw pilot holes and 3/8-in.-dia. x 5/16-in.-deep counterbores in the seat



15 Use three or four clamps to squeeze the front rail assembly, pressing the slats to the bottom of the mortises.

slats. Then, fasten the slats with galvanized deck screws. Maintain an equal space between the slats. Use a 3/8-in. plug cutter in your drill press to cut screw plugs in a cedar board (Photo 19). Then, spread glue in the screwholes and on the plugs, and insert a plug into each hole (Photo 20). When the glue dries, pare each plug flush.

Rip blanks to 4-1/4 in. wide for the arms, and crosscut them a few inches longer than finished length. Use a dado blade in your table saw to cut a square shoulder tenon on the end of each blank. Then, lay out the angled shoulder and cut the finished tenon with a sharp backsaw (Photo 21). Refine the cuts with a sharp chisel where necessary. With the tenons done, crosscut the arms to finished length.

Mark the location of the mortise on the underside of each bench arm, and use your drill press with a Forstner bit to bore overlapping holes that remove most of the waste. Then, use a sharp chisel to square the mortise walls. Note that the arm mortise is elongated so the tenon at the opposite end of the arm will easily slide into the leg mortise.

Lay out the finished shape of the arms on the blanks and cut to the lines with a band saw. After smoothing the sawn edges, join the arms to the bench using two clamps to ensure pressure is applied to both joints while the glue sets (Photo 22).

Finishing

Sand the bench with 120-grit sandpaper. Brush off all sanding dust before applying a finish. We applied a coat of Cabot Clear Decking Stain to our bench. This finish is easy to apply and provides good protection for outdoor pieces. Brush on a liberal coat and allow it to dry for at least 24 hours before using the bench.



16 Spread glue in the shallow center rail mortises and on the seat-support rail tenons. Then join the parts.



17 Use a clamp to pull the front rail and back rail assembly tight to the center seat-support rail.



18 Join the back to one of the bench sides. When the glue cures, add the front and back seat rail assembly to the same side.



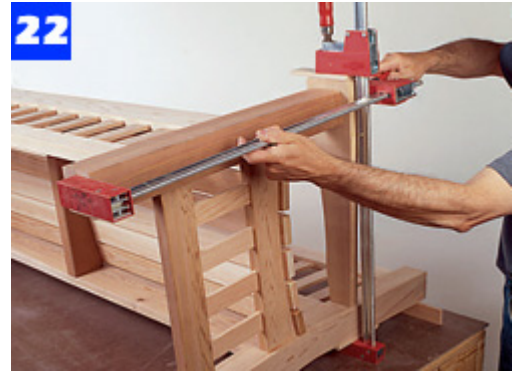
Use a plug cutter to make cedar plugs to cover the seat screws. Pop the plugs free with a flat-tip screwdriver.



Spread glue in the holes and on the plugs and place a plug into each hole. Pare each one flush with a sharp chisel.



After cutting square tenons at the arm ends, use a backsaw to cut the angled shoulders. Refine tenons with a chisel.



Join the arms to the bench using two clamps so pressure is applied to both joints while the glue sets.

