

~~Dining Table~~



An exotic wood from Africa, zebrawood gives a new look to this classic extension-leaf dining table. Zebrawood is not easy to work; your tools and saw blades must be extremely sharp to handle it. But the dramatic grain of zebrawood is unsurpassed by any other. If you prefer a more subdued look, use any hardwood that is available as veneered lumber-core plywood, such as oak, teak, walnut, or cherry.

The veneered plywood top is trimmed with mitered hardwood edge strips; it measures 35 1/2 inches x 56 inches and rests on a bearer rail and two leaves. Each leaf is 22 1/2 inches x 35 1/2 inches, including the edge strips. The stationary bearer rail supports the top when the two leaves are pulled out. The leaves are screwed to tapered slides, and as they are withdrawn from their storage position, the taper of the slides causes the table top to rise gradually. When the leaves are fully extended, the table top drops onto the bearer rail (see diagrams on opposite page, bottom left). It is a good idea to use your hand to support the top so that it drops gently. Dowels glued into the

underside of the top are seated in the bearer rail to keep the top in position. To return the leaves to their storage position, lift the table top and slide the leaves back under it (see illustration opposite).

In order to prevent scratches, the underside of the top is covered with felt where it touches the leaves. To compensate for the thickness of the felt at the ends of the top, plastic laminate is glued to the underside of the bearer rail.

In the chart the dimensions for the legs are given as though they were a single piece of wood; actually, each leg is made from two pieces of hardwood, each 1 3/8 inches thick, glued face to face. Be sure the slides are perfectly straight or the leaves will not operate smoothly. Wood of a thickness of the slides (1 1/2 inches) is likely to change shape after being cut because of the release of fibers. Therefore, it is a good idea to cut the wood close to the required width, joint it again (see Step 7), and then cut it to the final width. When making crosscuts, follow a similar practice; cut close to the line on the first pass, then make the second pass with the

Parts list

Part	Name	Quantity	Thickness	Width	Length	Material
A	Top	1	3/4"	33"	53 1/2"	Plywood
B	Leaf	2	3/4"	33"	20"	Plywood
C	Top side edge strip	2	3/4" *	1 1/8"	56" †	Zebrawood
D	End edge strip	6	3/4" *	1 1/8"	35 1/2" †	Zebrawood
E	Leaf side edge strip	4	3/4" *	1 1/8"	22 1/2" †	Zebrawood
F	Leg	4	2 3/4"	2 3/4"	28 1/2"	Zebrawood
G	Side apron	2	1 1/2"	2 3/4"	48"	Zebrawood
H	End apron	2	1 1/2"	2 3/4"	27 1/2"	Zebrawood
I	Bearer rail	1	3/4"	8 1/2"	33"	Plywood
J	Bearer end edge strip	2	3/4" *	1 1/8"	32 1/2" †	Zebrawood
K	Bearer side edge strip	2	3/4" *	1 1/8"	11" †	Zebrawood
L	Slide	4	1 1/2"	1 1/4"	49 1/2"	Hardwood
M	Center support	1	1 1/2"	2 3/4"	30" †	Hardwood
N	Slide stop dowel	4	3/8" dia.	—	1 1/2"	Dowel
O	Joining dowel	16	1/2" dia.	—	3 3/4"	Dowel
P	Positioning dowel	2	1/2" dia.	—	2"	Dowel

*Buy 1 1/8" thick stock and plane to 3/4".

†Measurement is approximate; cut to fit during construction.

Tools and materials: Table saw with fine-tooth carbide-tipped blade, carbide-tipped rip blade, miter gauge, and crosscut tray. Circular saw with plywood blade. Router with 1/4" straight bit, 1/2" or 3/4" straight bit, 1/4" rounding-over bit, and 3/4" core-box bit. Drill with 1/2" twist bit, countersink bit, and doweling jig. Tenon saw, 1 1/2" chisel, wooden mallet, rabbet plane, smooth plane. Steel tape rule, combination square, framing square, straightedge, pencil. Standard screwdriver, spiral-ratchet screwdriver, awl. Vise, two quick-action clamps, two 6" C-clamps. Bar or pipe clamps as follows: seven 3', five 4', four 6'. Two sawhorses. White glue, contact

cement, masking tape. Nos. 80, 100, 120, and 150 sandpaper. No. 220 open-coat silicon carbide paper. 0000 steel wool. High-gloss polyurethane varnish, paste wax, paraffin, cloths. A 4' x 8' panel of 3/4" zebrawood lumber-core plywood. Solid zebrawood milled to 13/16", 1 3/8", and 1 1/2" (see chart and Step 7). Hardwood milled to 1 1/2" (see chart), 1/2" plywood scraps. Two 1/2" hardwood dowels 3' long, a 3/8" hardwood dowel 6" long. Plastic laminate 8 1/2" x 32 1/2". 2/3 yd. felt. Four furniture glides for bottoms of legs. Flathead wood screws: eight 1 1/2" No. 8, four 2" No. 10, two 1 3/4" No. 12, ten 2" No. 12, and two 2 1/4" No. 12.

blade on the outer edge of the cutting line. This technique will give the cut a straighter surface.

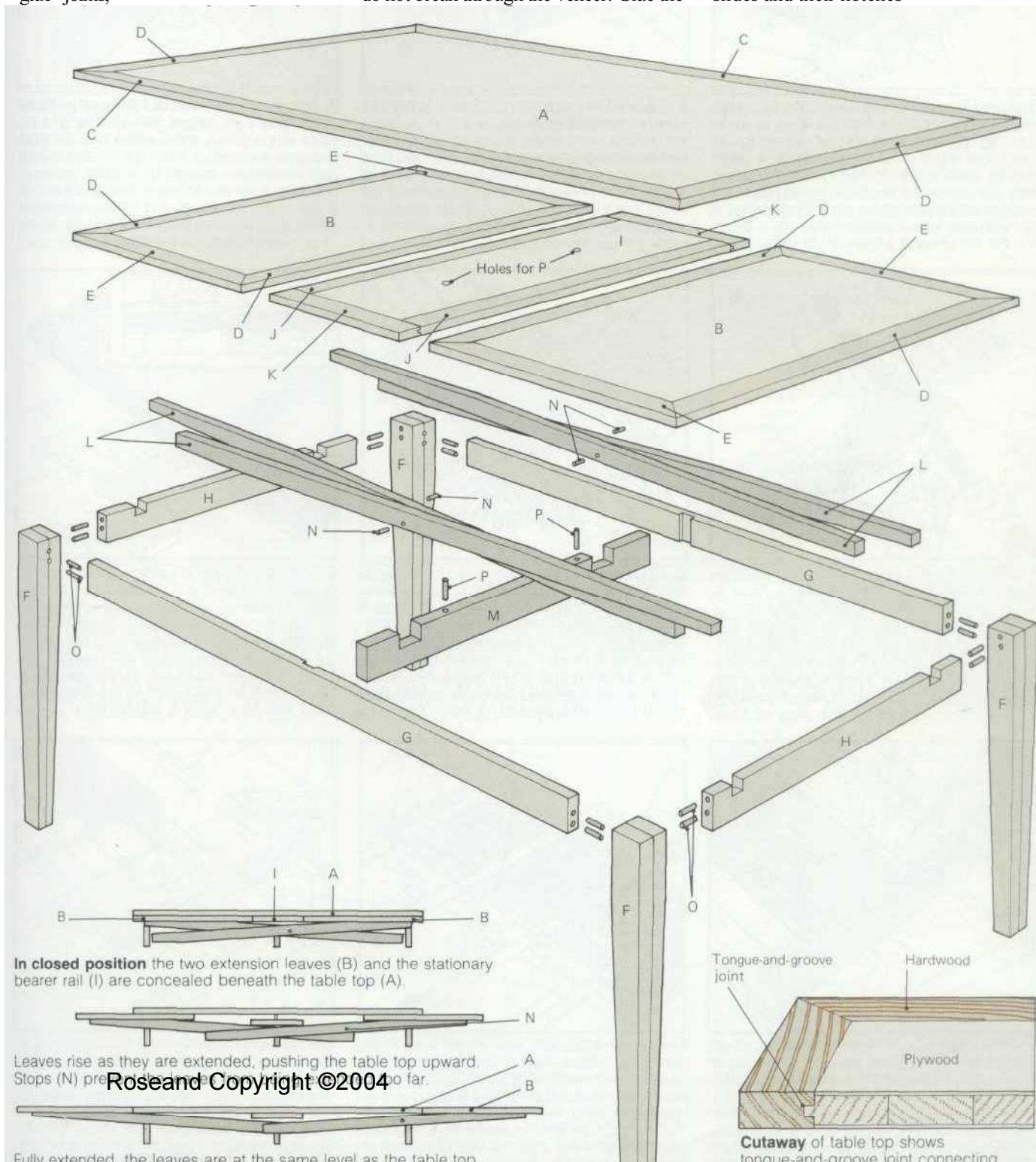
The project calls for a number of bar or pipe clamps in several sizes. If you use pipe clamps, you will need seven pairs of head and tail pieces; then you can buy black pipe, threaded on one end, cut to the required lengths. Whenever you glue joints,

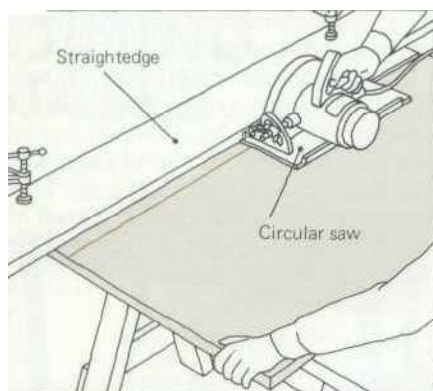
have someone on hand to help wipe off the excess glue, position the clamps, and move heavy assemblies.

After you complete the step-by-step instructions, remove the top and leaves; then sand and finish all parts. Sand the hardwood with Nos. 80, 100, 120, and 150 paper; sand the plywood surfaces carefully with Nos. 100 and 150 paper so that you do not break through the veneer. Glue the

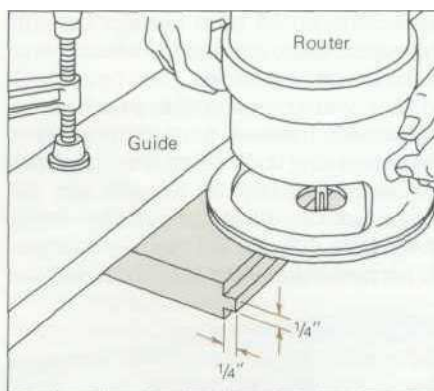
felt to the underside of the top and put furniture glides on the legs.

This dining table was finished with four coats of high-gloss polyurethane, sanded between coats with No. 220 open-coat silicon carbide paper. A coat of paste wax was then applied with 0000 steel wool. (Alternative finishes might be tung oil or Danish oil.) Paraffin was used to wax the slides and their notches

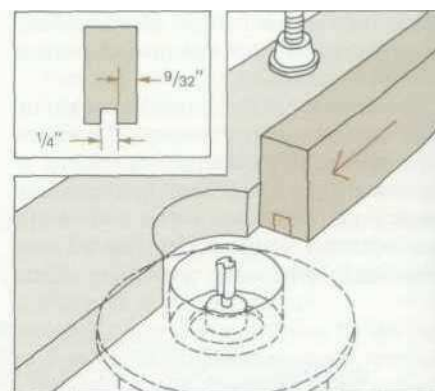




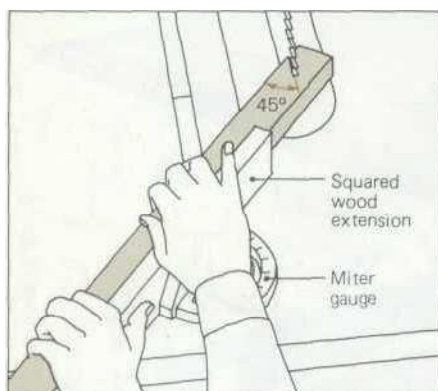
Top and leaves: 1. Rip plywood lengthwise on table saw, making first cut 33 3/8 in wide; then turn piece around and rip other edge to get a final width of 33 in. (This gives a clean cut on both edges.) Place cloths on sawhorses to protect plywood, then rest plywood on sawhorses with better side down. Using a circular saw with a straightedge as a guide, cut the top (A) and leaves (B) to length.



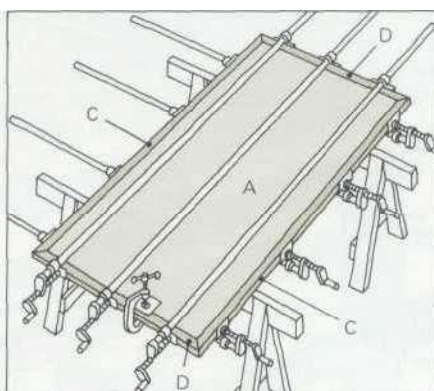
2. Practice this and the next step on scrap wood before cutting tongues and grooves in top, leaves, and edge strips. Using a router and any straight bit larger than 1/4 in., clamp a guide and adjust depth of cut to make a cut 1/4 in. x 1/4 in. in plywood edges. If plywood measures less than 3/4 in. thick, reduce the depth of the cut on the underside to leave a tongue exactly 1/4 in. thick.



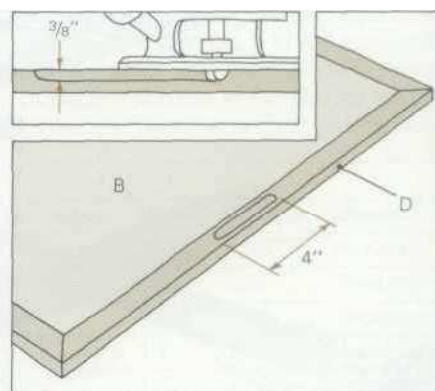
3. Rip 13/16-in. zebrawood 1 1/2 in. wide. Crosscut pieces 2 in. longer than final lengths for edge strips (C, D, and E) for top and leaves. Set up a router in a table and use a 1/4-in. straight bit to cut a groove in one long edge of each strip. Set the bit so that it leaves 9/32 in. above and below the groove. (The extra 1/32 in. will be planed off later.) Mark all pieces as to their orientation.



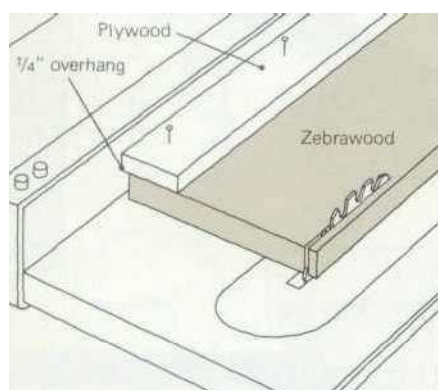
4. Extend the table saw miter gauge by screwing a squared piece of wood onto it. Mark a 45° angle on one end of an end edge strip (D); saw in two passes, the first 1/16 in. outside the line and the second on the line. Place edge strip on top (A) and mark 45° angle at other end, saw as before. Repeat for other end edge strip, side edge strips (C), and edge strips (D and E) on leaves (B).



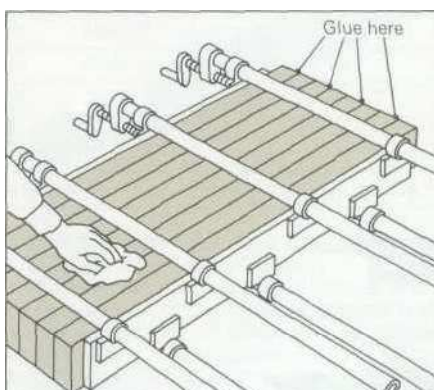
5. To glue each end edge strip to top, run a thin bead of glue on both sides of tongues and on shoulders of grooves. Clamp with three 6-ft. clamps. Then immediately glue and clamp side edge strips. (If plywood is higher than edge strip at any point, press plywood down with a C-clamp and scrap wood; be careful not to break plywood.) Wipe off excess glue with damp cloths. Repeat for each leaf.



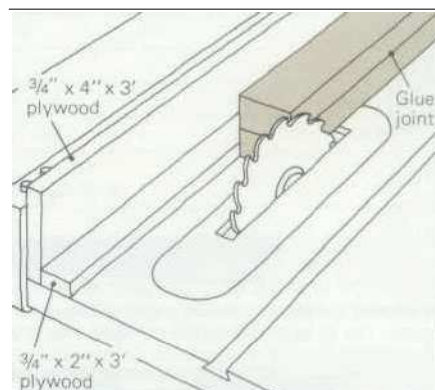
6. When glue has dried, plane upper surfaces of edge strips level with plywood, put masking tape on plywood to avoid nicking veneer. Use a router and 3/4-in. core-box bit set 3/8 in. deep to make a 4-in.-long finger groove (for pulling out leaves) on underside of each leaf. Plunge router at beginning of cut; at end turn motor off, wait until bit stops, and lift out. Sand edge strips with Nos. 80 and 150 paper.



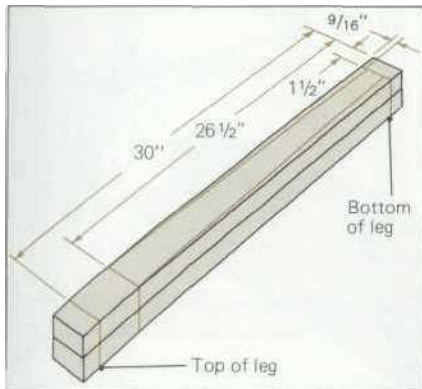
Cutting legs: 7. Joint one edge of 1 3/8-in. zebrawood stock. Make a straightedge by ripping a strip of 3/4-in. plywood about 3 in. wide. Nail it to one edge of stock so it overhangs 1/4 in. Trim 1/4-1/2 in. from other edge. Then with the edge you just cut riding the fence, rip enough boards to 2 13/16 in. wide for eight lengths of 31 in. Each leg (F) is made of two well-matched pieces glued together.



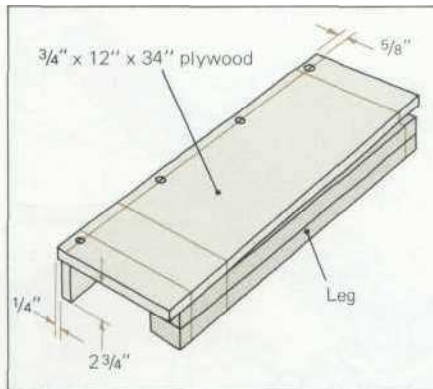
8. Lay out three 3-ft. clamps and place all eight leg pieces across clamps, inner surfaces up. Spread glue on these surfaces. Turn pieces on edge and press two glued surfaces together, making sure all ends and edges are flush. Tighten clamps and add four more clamps across top. Wipe excess glue from all surfaces. Loosen, remove, and retighten clamps one at a time to wipe beneath them.



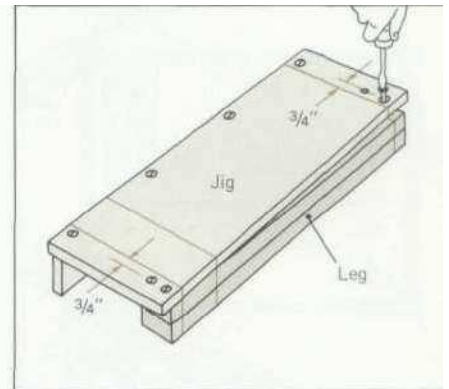
9. Screw a fence of 3/4- x 4-in. plywood to table saw fence. Screw a second piece of plywood 3/4 in. x 2 in. x 3 ft to this fence as shown. Set saw blade 2 3/4 in. high, and set fence so that blade will shave 1/32 in. from one surface of each leg where the glue joint shows. Saw all four legs; remove small piece of plywood, set saw for a 2 3/4-in. cut, and saw opposite surface of each leg flush.



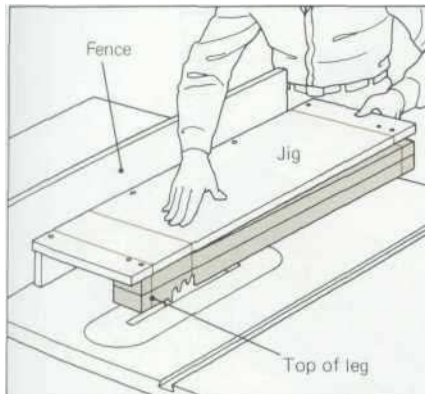
Shaping legs: 10. Use combination square to draw lines around each leg at 1 1/2 in., 26 1/2 in. and 30 in. from bottom. The span between 1 1/2 in. and 30 in. is the final length of the legs. 28 1/2 in. Mark corners of each leg for taper by measuring in 9/16 in. from each edge along first line from bottom. Use a straightedge to draw lines from these points to outer edge of each leg at 26 1/2-in. line.



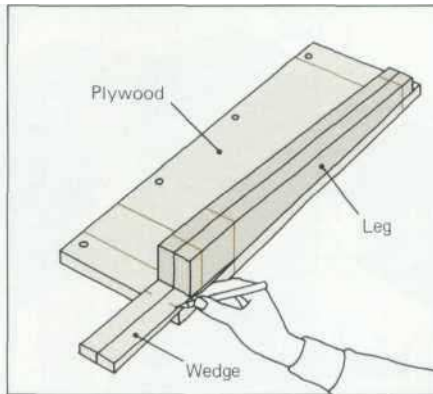
11. Make a jig for cutting tapers from a squared piece of plywood 3/4 x 12 x 34 in. Transfer the lines from one of the legs to the plywood and mark them across plywood. Draw a line 5/8 in. from one edge of plywood. Cut another piece of plywood 3/4 x 2 3/4 x 34 in. Set small piece perpendicular to large piece 1/4 in. from edge and below 5/8-in. line. Insert four 1 1/2-in. No. 8 screws along that line.



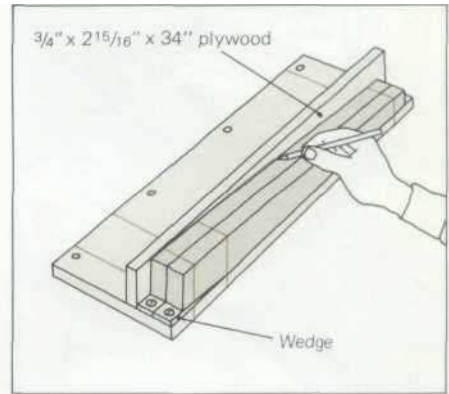
12. Drill four holes with a 3/16-in. bit in the large piece of plywood 3/4 in. outside the lines indicating the top and bottom of the leg; drill two holes at each end. Align a leg's taper line, drawn in Step 10, with the edge of the jig and match the top and bottom lines of the leg with the corresponding lines on the jig. Drill into the leg through the four holes in the jig with a 3/32-in. bit; insert 1 1/2-in. No. 8 screws



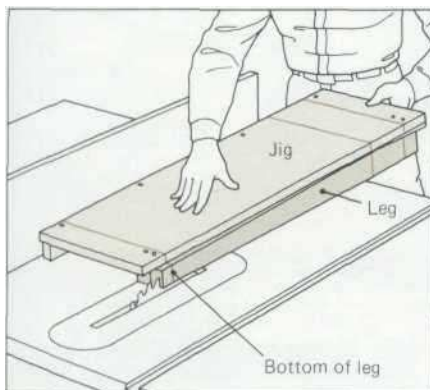
13. Set fence for a 12 1/32-in. rip cut. Because of the thickness of the legs, make several passes, raising the blade about 1 in. for each pass. Reset fence for a 12-in. cut; shave off final 1/32 in. in one pass for a clean cut. Redraw lines across cut surface with combination square. Then saw opposite surface of leg by reversing it on jig; redraw lines. Save the wedges. Repeat on the other three legs.



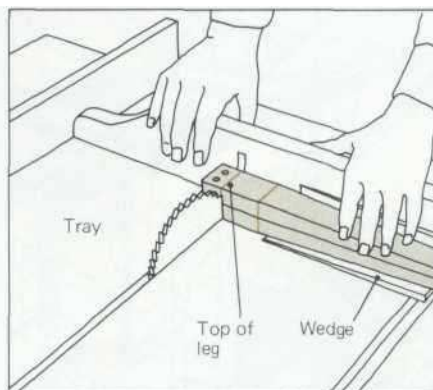
14. Before tapering other two surfaces of legs jig must be remade to fit tapers just cut. Unscrew small plywood piece. Lay large piece of plywood on table, place a leg on it, lining up top and bottom marks. Hold down tapered portion of leg, and fit a wedge between plywood and untapered part of leg. Mark wedge where it intersects end of jig, saw at this line, and screw wedge to jig.



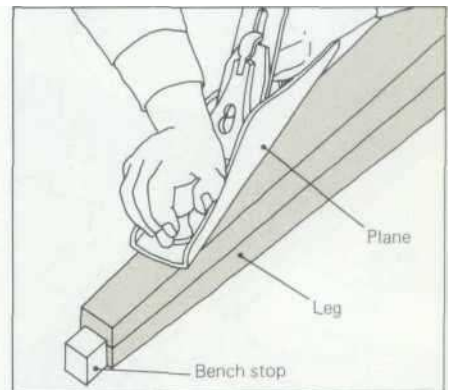
15. Mark taper on remaining surfaces. Screw a leg to large plywood piece, tapered surface up. Cut a plywood piece 3/4 x 2 15/16 x 34 in. Hold this against leg and mark taper on it. Unscrew leg, nail large plywood piece along taper line just marked, and saw along that line with fence set at 12 in. Remove nails. Screw tapered piece to underside of large plywood piece, as before, with edge just cut down.



16. When you cut the final two tapers, the leg must always be oriented the same way on the jig, with the bottom of the leg being fed through the saw blade first. Saw the tapers in several passes, raising the blade for each pass, with the fence set first at 12 1/32 in., then at 12 in., as you did in Step 13. Once again be sure to redraw all the squared lines as soon as you finish cutting each surface.

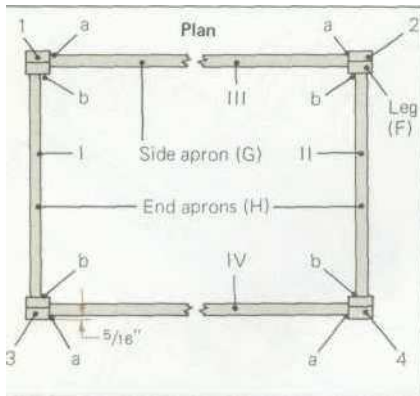


17. To saw legs to final 28 1/2-in. lengths, you will need a crosscut tray wide enough to accommodate the length of the taper. (If you have a radial arm saw, use that instead.) Put leftover wedges beneath and behind each leg to square it with the back and base of tray. Cut off excess at tops of legs. Reverse wedges, set a stop on tray so that all four legs will be the same, and make cuts at bottoms.

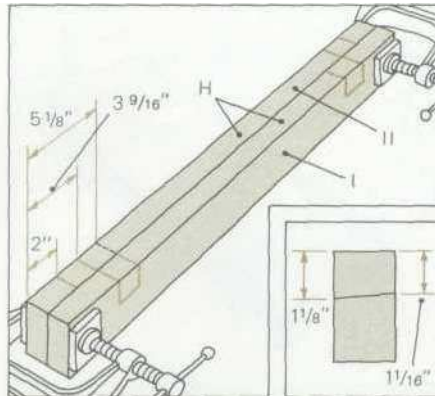


18. To remove saw marks, plane tapered surfaces very lightly with a smooth plane. Do not touch untapered parts. Decide on placement of legs (glue joints should face ends of table), and number them 1-4. Designate each joint surface as a or b; a will be joined to a side apron, b to an end apron. On a plan label aprons I-IV (see next step), and write on each joint face the part to which it will be joined.

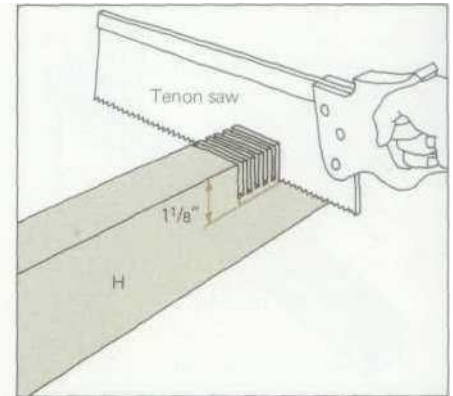
Dining table



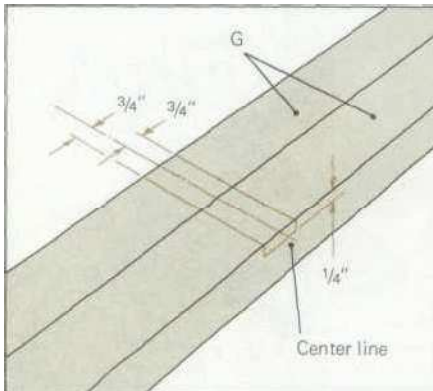
Making the aprons: 19. Joint 1 1/2-in. stock, using method shown in Step 7. Rip and crosscut aprons (G and H) slightly larger than their final widths and lengths. Then joint each piece; rip and crosscut to final widths and lengths (Joining twice helps ensure straightness, as wood changes shape when fibers are released by sawing.) Mark end aprons I and II, side aprons III and IV.



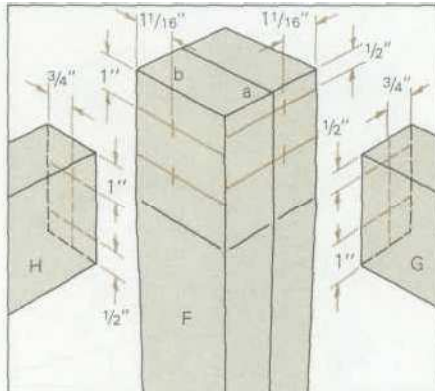
20. To mark end aprons (H) for slide grooves, clamp them inner face to inner face with ends flush. Using combination square, draw lines across top at 2 in., 3 9/16 in., and 5 1/8 in. from each end. Unclamp. Draw lines across both faces of end apron I at 3 9/16 and 5 1/8 in.; draw lines across faces of end apron II at 2 in. and 3 9/16 in. Mark depth of grooves: 1 1/16 in. on the outer faces and 1 1/8 in. on the inner faces.



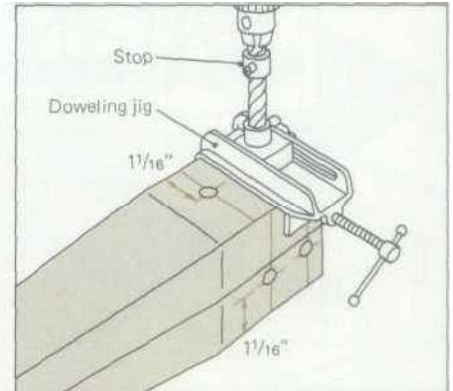
21. Set crosscut blade on the table saw to height of 1 1/16 in. and make parallel cuts in the grooves, keeping the blade inside the lines drawn (or use dado head in table saw). Use a tenon saw to angle the cuts to the 1 1/8-in. depth on inner face. Use a 1 1/2-in. chisel and a wooden mallet to chop out the remaining waste. Clean the bottom of the cut with the chisel held beveled side up.



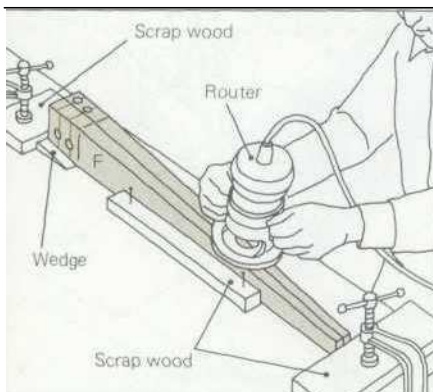
22. Clamp side aprons (G) side by side, and mark a center line across width of their inner faces (those that will face center of table). Draw lines 3/4 in. to each side of center line for grooves. Unclamp pieces; mark grooves for 1/4-in. depth. Cut these 1 1/2-in.-wide grooves with a dado head in the table saw, or use a router with any straight bit. Plane outer surfaces of all aprons to remove saw marks.



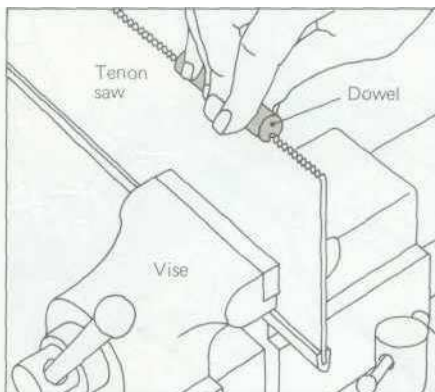
23. Lay out positions of dowel joints on apron ends. For joint a on side aprons (G), measure 1/2 in. from top and 1 in. from bottom. Using a combination square, draw lines across ends of aprons. For joint b on end aprons (H), draw lines 1 in. from top and 1/2 in. from bottom. Clamp each leg in vise and hold matching apron at right angles to it. Transfer lines to leg, using sharp pencil. Draw lines across legs



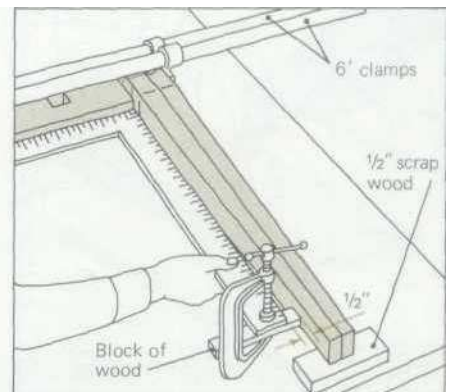
24. Set commercial doweling jig so that dowel holes will be 3/4 in. from outer faces of aprons. Use a 1/2-in. twist bit, and set a drill stop at 2 in. plus the thickness of your doweling jig. Align the doweling jig with marks made on apron ends. Drill holes, pushing down on drill and withdrawing it several times to get rid of waste. Set jig to drill holes in legs 1 1/16 in. from corners of legs.



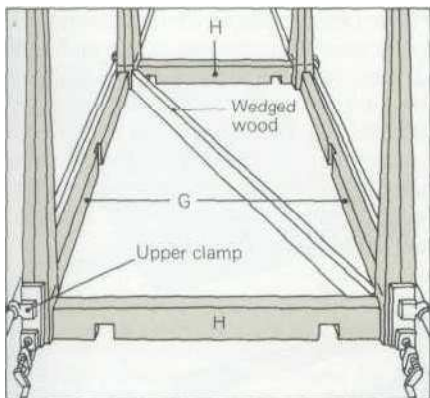
25. Round corners of legs with a router and a 1/4-in. piloted rounding-over bit. To hold a leg while doing this, wedge it between bench stops or scrap wood clamped to work surface. Nail or clamp another piece of scrap behind leg to prevent its moving away from router. Start router at small end of leg and move it to the other end. Turn leg to do other



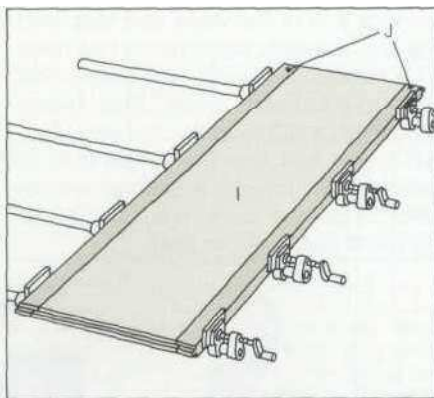
26. Cut 16 dowels (O), each 3 3/4 in. long. Fit them in joints; if any dowels are too tight, sand them. Make a glue channel in each dowel by clamping a tenon saw in a vise, teeth up, and rubbing the dowels on the saw teeth. Test-fit legs and aprons. To check squareness of legs during assembly, clamp a small block of wood so it protrudes 1/2 in. from outer edge of



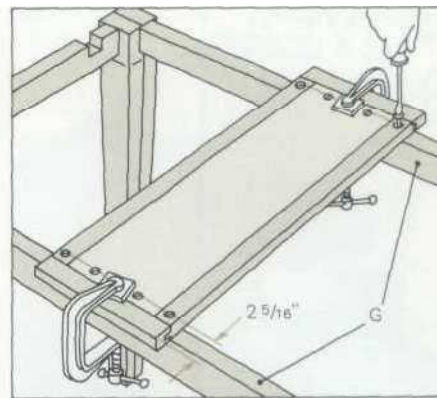
27. When gluing legs to each end apron, apply glue around edges of holes, on ends of dowels, and on joint surfaces. Rest bottoms of legs on 1/2-in.-thick scrap wood. Clamp across top and face of apron with 6-ft. clamps. Check squareness of legs to apron. Measure from work surface to each leg bottom; distance should be 9/16 in. Wipe off glue; if it leaks into



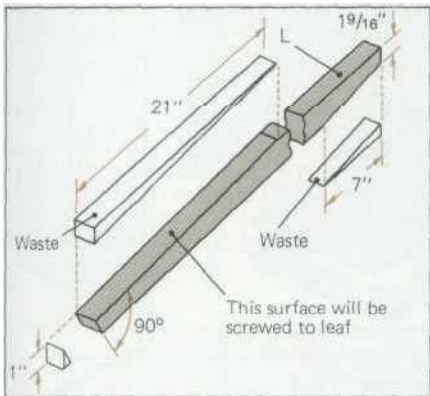
28. Glue side aprons to end assemblies, placing two 6-ft. clamps on each side. Check squareness. Adjust legs by manipulating clamps: tighten upper clamp to bring legs closer; tighten lower one to spread legs. Measure corner to corner; if measurements are unequal, cut a piece of wood the length of shorter measurement plus half the difference between the two. Wedge it diagonally.



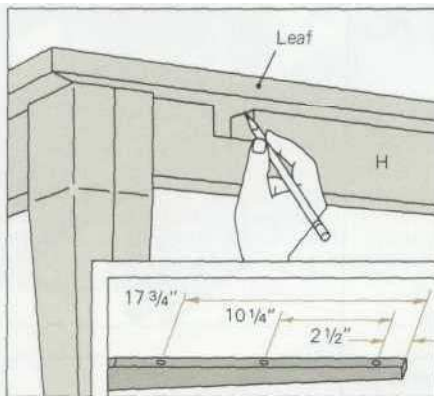
Understructure: 29. Glue plastic laminate to underside of bearer rail (I). Cut grooves in edge strips (J and K) as you did in Step 3. Cut tongues on long edges of bearer rail, and glue on end edge strips (J). Then cut tongues on short edges of bearer rail and across ends of edge strips just attached (corners are not mitered). Glue on side edge strips (K). Plane edge strips flush with plywood and laminate.



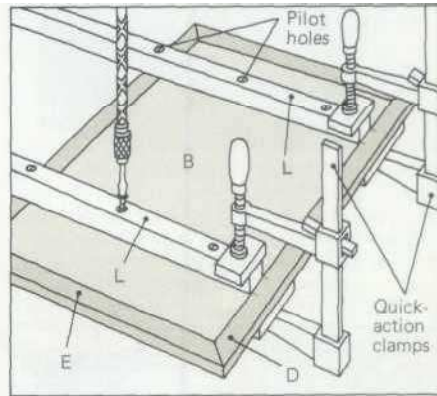
30. Center the bearer rail on side aprons, and make sure it overhangs them exactly the same distance on each side. Clamp the bearer rail in place. Draw a line 2 5/16 in. from each short edge of bearer rail. Drill and countersink pilot holes for four 2-in. No. 12 screws along the line on each side—two through the edge strips and two through the plywood. Insert the screws.



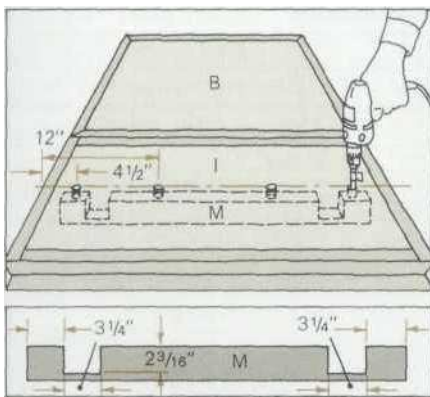
31. Mark slides (L) for taper cuts as shown. With same type of jig used for the leg tapers (Steps 11 and 12), cut the long taper on one slide, use this as a template to mark other slides. Saw those tapers, then repeat procedure for short tapers. Long tapered surfaces will be attached to undersides of leaves and will be horizontal, mark and saw adjacent ends at right angles to these surfaces.



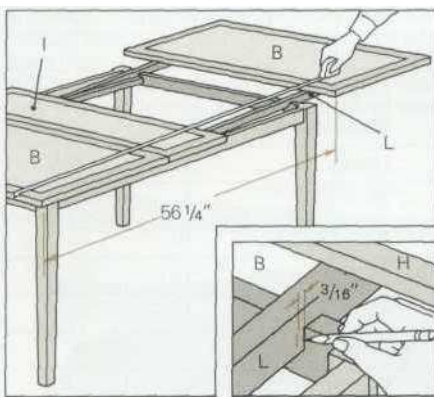
32. Place leaves in their closed position on top of aprons; mark the locations of the notches in the end aprons on undersides of leaves. Remove leaves and use a framing square to extend the lines across undersides of leaves. Mark undersides of slides at 2 1/2, 10 1/4 and 17 3/4 in. from ends of long tapers. Drill and countersink pilot holes for No. 12 screws at these points. Screws are inserted in next step.



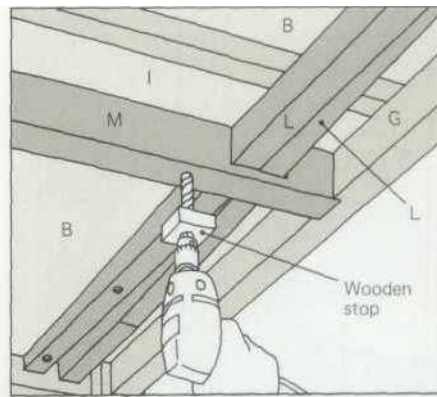
33. Center each slide between lines on undersides of aprons, aligning narrow ends with inner edges of edge strips. Clamp in place. At several points check that distance between them measures the same. Make starter holes in leaves with awl through pilot holes. Starting at narrow ends, use a spiral ratchet screwdriver to drive 1 3/4 in., 2 in., and 2 1/4 in. screws in that order, in each slide.



34. Cut center support (M) to fit into dados in side aprons. Cut notches for slides in its top 3 1/4 in. from ends, 3 1/4 in. wide, and 2 3/16 in. deep. Glue center support to side aprons. Using combination square, mark its position on top of bearer rail. When glue is dry, drill and countersink 7/32-in. pilot holes in bearer rail and center support at 4 1/2 and 12 in. from each edge of rail. Insert 2-in. No. 10 screws.



35. Position one leaf so that its inner edge is 56 1/4 in. from outer edge of other leaf. Mark inner faces of slides where they intersect notches in end aprons. Make a second set of marks 3/16 in. farther in from the first set. Drill 3/8-in. holes 1 in. deep in the centers of the slides at these second marks. Insert but do not glue slide-stop dowels (N). Repeat on outer faces of slides for other leaf.



36. Top (A) is held in place by dowels (P). Drill holes for them 11 in. from one edge of bearer rail and 13 in. from other into and through center support. With leaves closed, clamp top in position, making sure all edges are flush. Put a wooden stop on drill bit at 4 in. Drill up through dowel holes into underside of top. Taper dowels to fit holes, sand them, and glue into top only.