

CANVASBACK

by S. Calhoun Smith

Build this kayak with hand tools and C-clamps

THIS kayak is the answer for young people who want to build an inexpensive boat for summer fun. We turned out several Canvasbacks at exactly \$21.81 apiece—and each took only a week of spare time. A shop full of power tools isn't necessary, either. Ours consisted of a power jig saw and a quarter-inch electric hand drill. But all the work can be done with ordinary hand tools and a few C-clamps.

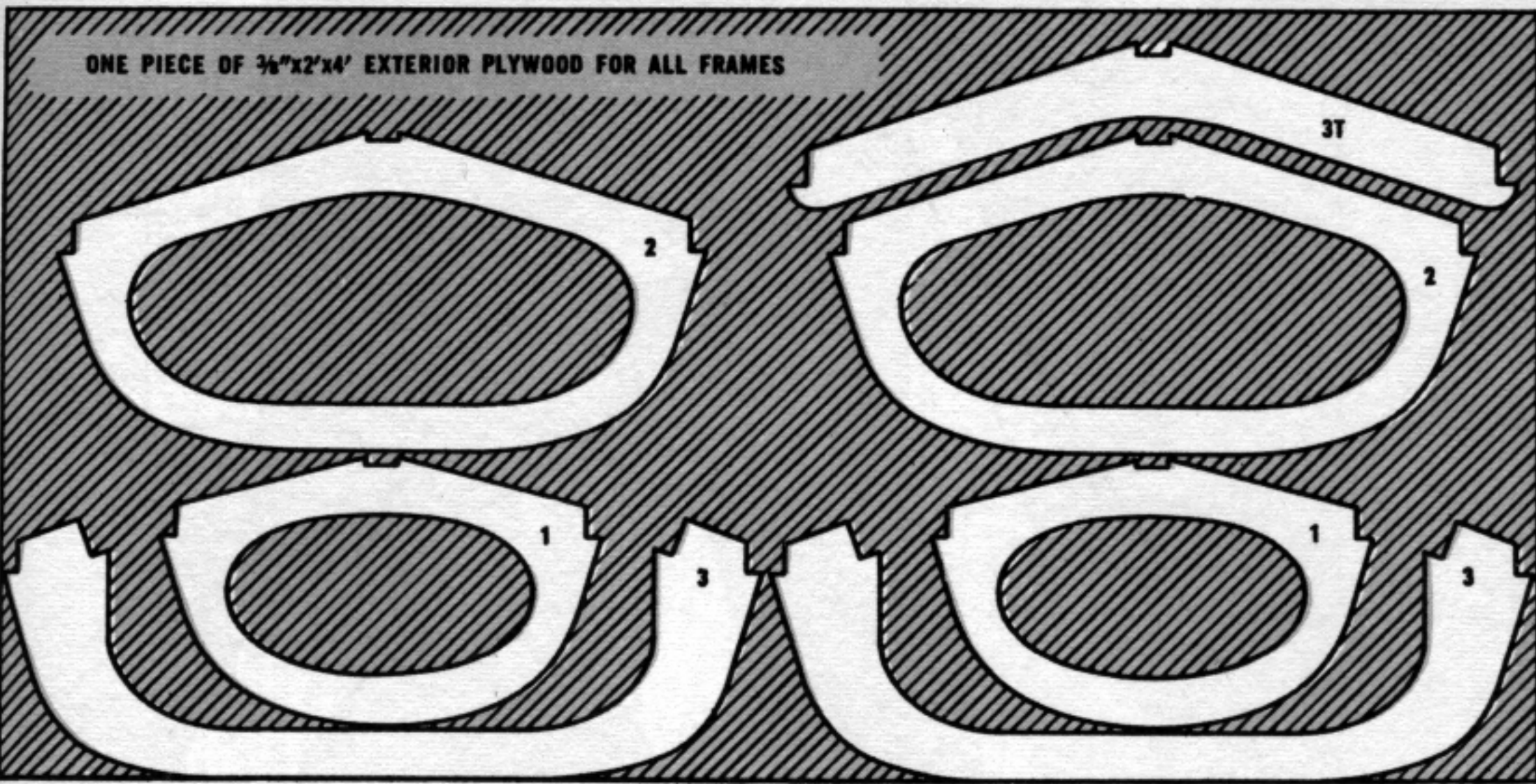
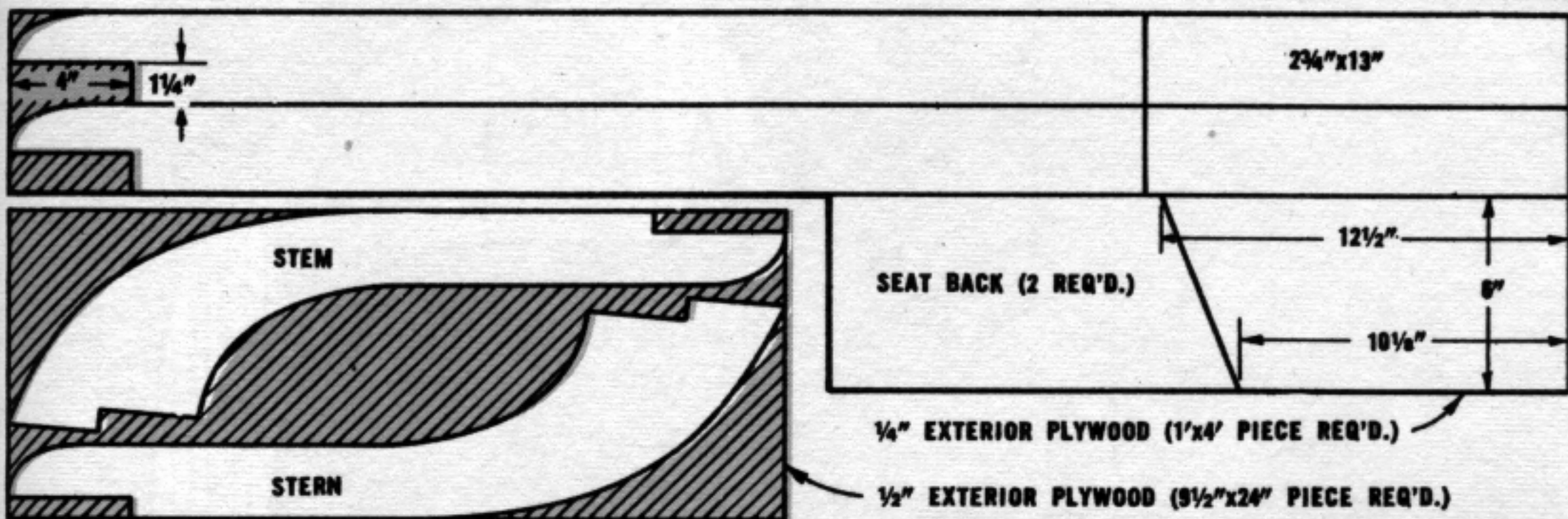
Canvasback will carry one adult but it's handiest when paddled by a youngster. The boat is stable in the water and, even though it can be turned over, it won't sink. It's also light enough to be carried with ease. Building is so simple that the "jig" consists of only two blocks and a few bricks.

Apart from the exterior plywood, boat grade spruce is the best lumber to use for Canvasback. The next choice would be a

good grade of fir. If you cannot obtain either of these, top-grade white pine can be purchased at most lumberyards. You can get 12-foot lengths of 1x4 or 1x6 (actual thickness about $\frac{3}{4}$ inch) and have them planed to $\frac{5}{8}$ -inch thickness and ripped into the three required widths.

Canvasback can be built on any flat surface. Begin by cutting the stem, stern and frames from exterior plywood as detailed in the drawing shown here. To simplify matters later on, you can also mark the fastening points for the stringers on each frame. Next cut the keelson to the exact length. You're then ready for the three steps shown in the construction drawings. Step 1 consists of gluing and screwing the stem and stern to the keelson, marking the frame locations and putting one-inch blocks under the stem and stern. In step





2, you add the frames, making sure they're vertical and square with the keelson. Then you nail temporary spreaders across the open tops of the two center frames. Step 3 calls for the addition of about four bricks at the center to hold the curve of the keelson. Then you add the sheer clamps which are exactly 12 feet long.

Before attempting to fasten the sheer clamps, look at the plan drawing for the measurements which give the frame locations on the sheer. Mark each sheer clamp at the center and then mark the frame locations on either side of the center mark. Next temporarily screw the sheer clamps to the No. 3 frames and bend them in so that you can mark their ends for beveling where they meet the stem and stern. Be sure the No. 1 and No. 2 frames are located properly when you do this or the sheer clamps will not curve correctly. After marking, remove the sheer clamps, cut the bevels with a saw and sand them smooth. Then install the sheer clamps permanently with glue and screws. Proceed from the center frames toward the



All edges of the completed boat frame must be planed and sanded smooth so that the canvas cover will not wear at any spots. This is important.

EACH SQUARE EQUALS 1"

HALF OF EACH
FRAME IS SHOWN

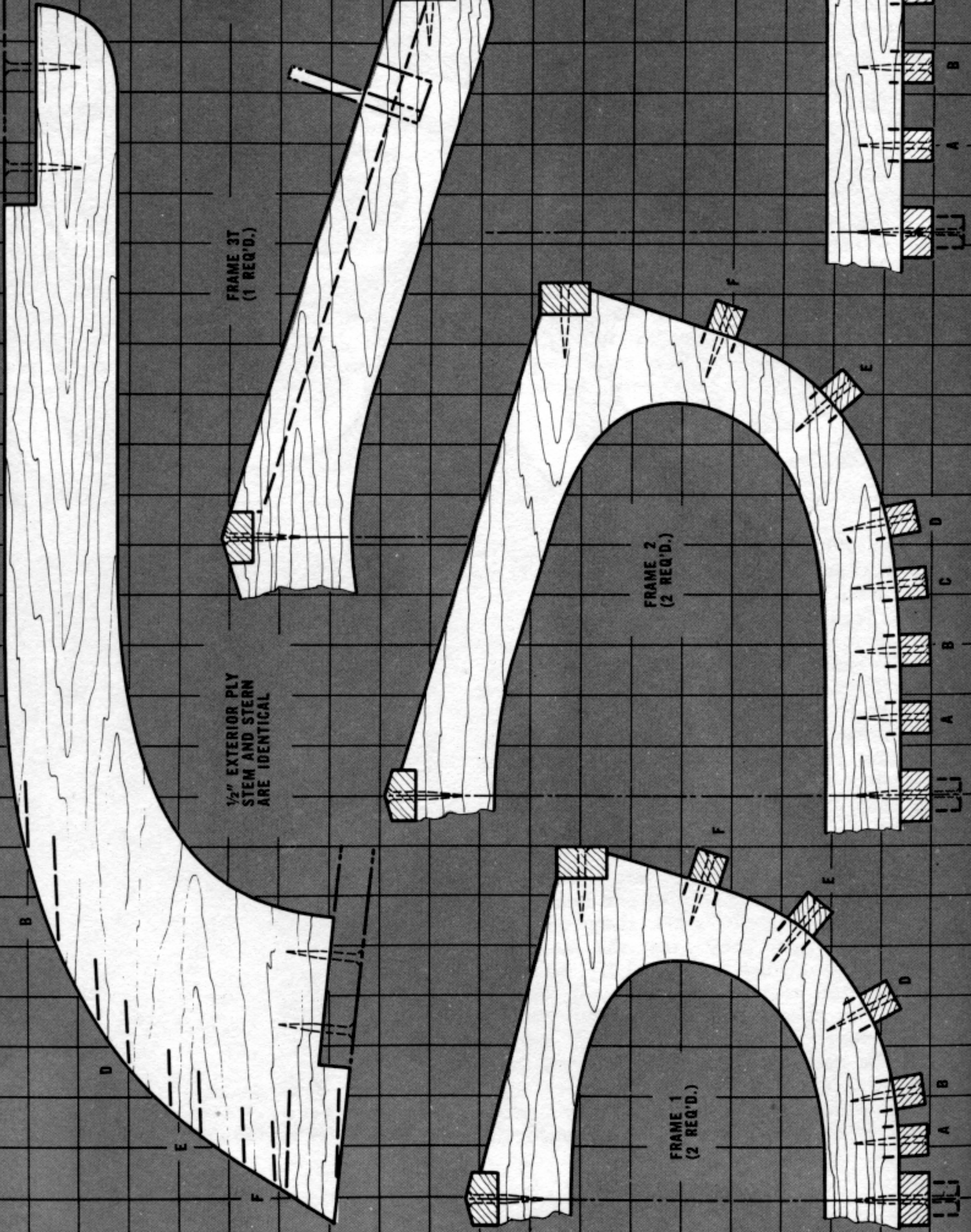
FRAME 3T
(1 REQ'D.)

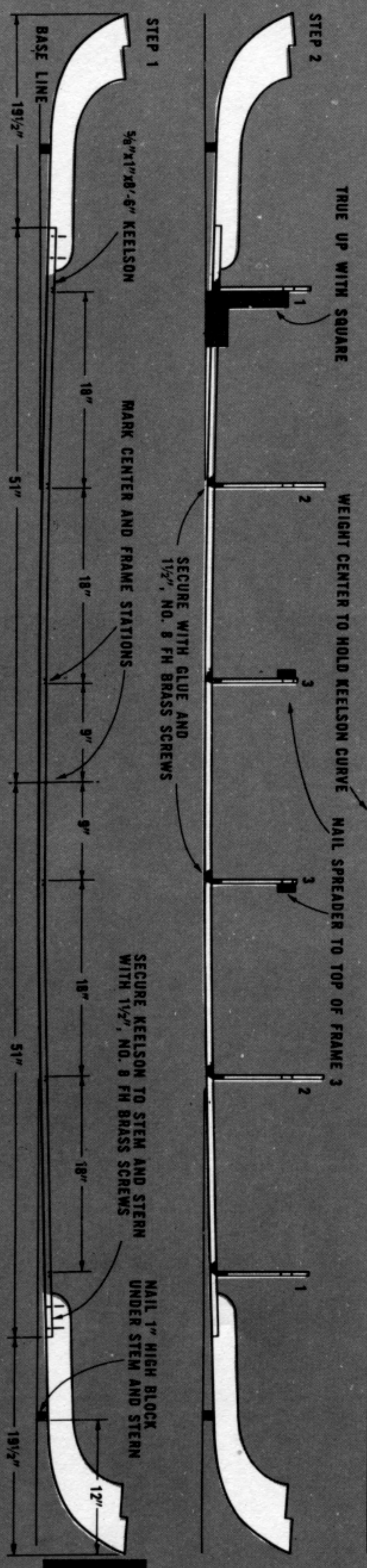
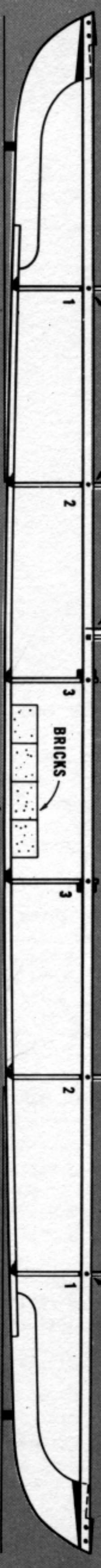
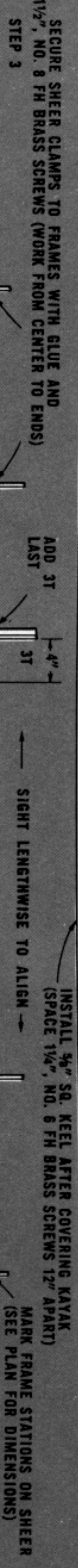
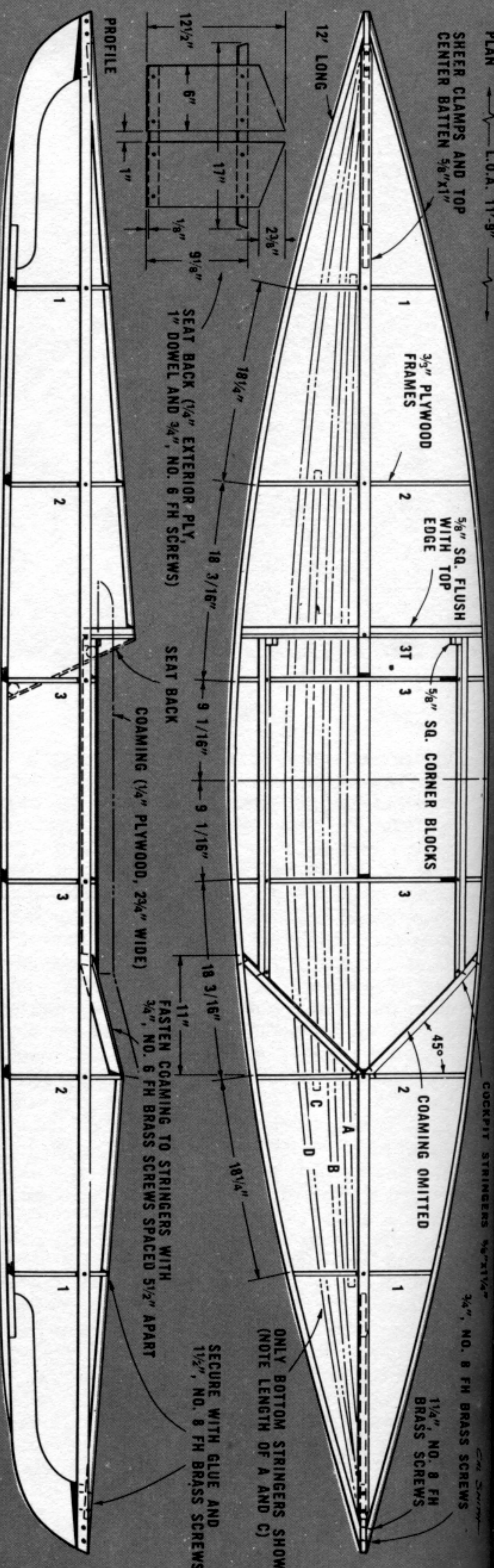
1/2" EXTERIOR PLY
STEM AND STERN
ARE IDENTICAL

FRAME 3
(2 REQ'D.)

FRAME 2
(2 REQ'D.)

FRAME 1
(2 REQ'D.)





BILL OF MATERIALS

SPRUCE, FIR OR WHITE PINE

Bottom stringers and keel.....	13— $\frac{5}{8}$ "x $\frac{5}{8}$ "x12'
Sheer clamps, keelson and top center battens.....	4— $\frac{5}{8}$ "x1"x12'
Cockpit stringers.....	1— $\frac{5}{8}$ "x1 $\frac{1}{4}$ "x8'

EXTERIOR FIR PLYWOOD

Frames	1— $\frac{3}{8}$ "x2'x4'
Stem and stern.....	1— $\frac{1}{2}$ "x19"x24"
Cockpit coaming and seat back.....	1— $\frac{1}{4}$ "x12"x48"

FLATHEAD BRASS WOOD SCREWS

Stem, stern, frames to keelson and sheer clamps, top center battens to frames, cockpit stringers....	41—1 $\frac{1}{2}$ ", No. 8
Stringers to stem and stern....	20—1 $\frac{1}{4}$ ", No. 8
Stringers to stem and stern....	20— $\frac{3}{4}$ ", No. 8
Stringers to frames.....	68—1 $\frac{1}{2}$ ", No. 6
Keel	12—1 $\frac{1}{4}$ ", No. 6
Cockpit coaming and seat back.....	24— $\frac{3}{4}$ ", No. 6

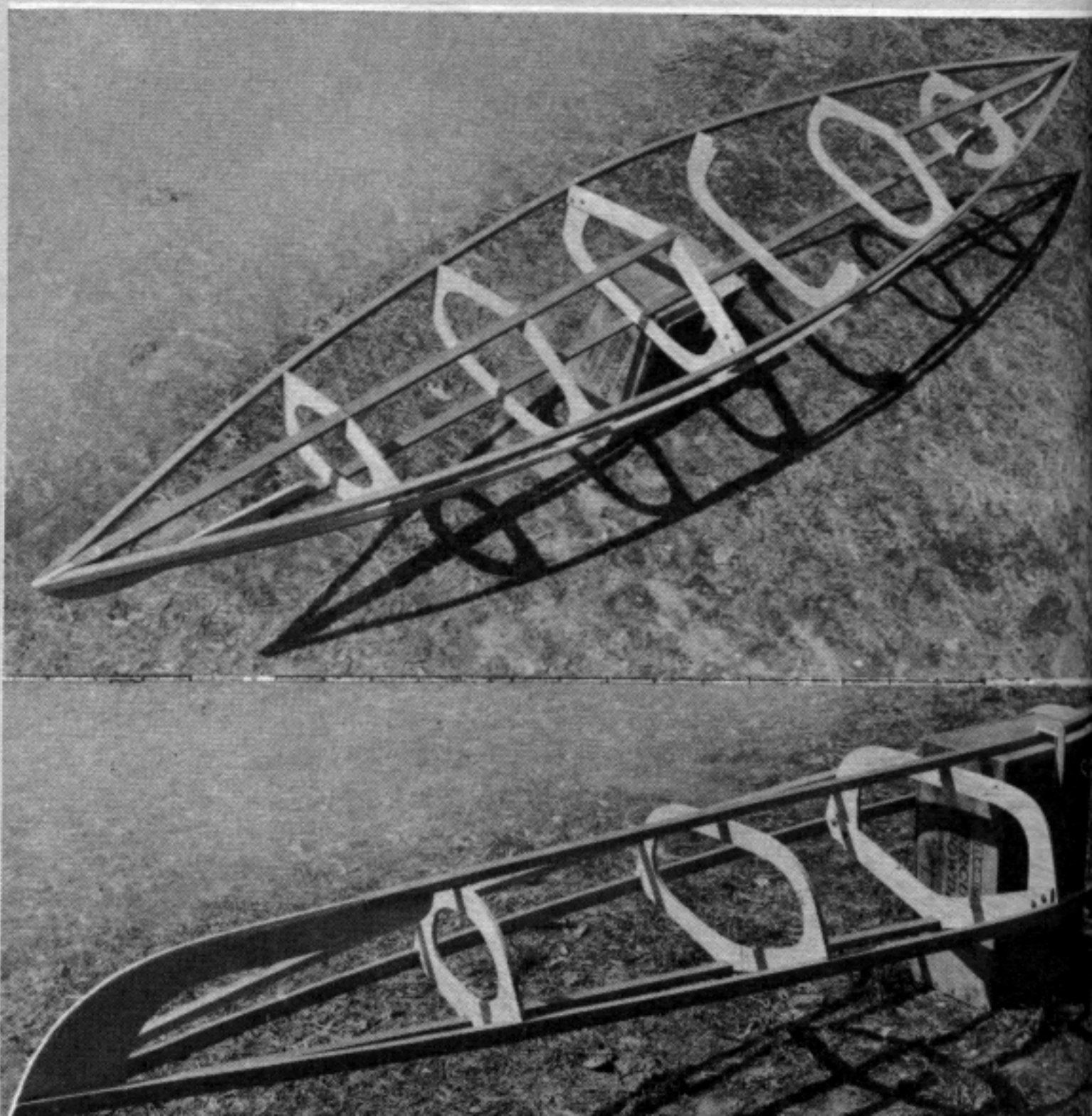
MISCELLANEOUS

Copper tacks.....	2 boxes— $\frac{7}{16}$ ", No.
Waterproof glue.....	3 $\frac{1}{2}$ ounces
10-ounce canvas.....	4 yards—4' width
Ambroid cement.....	large tube
Spar varnish.....	1 pint
Outside enamel.....	2 quarts
Clear dope (optional).....	1 gallon

ends, fastening on alternate sides to prevent twisting of the hull frame. Drill pilot holes for the screws and clamp the plywood when boring to prevent splitting.

When the sheer clamps are fastened, deck frame No. 3T is installed. Glue and nail a $\frac{5}{8}$ -inch square strip flush with the top edge of this member before fastening it between the sheer clamps. You will note a difference between the first three photos and the plans in regard to the location of frame 3T. Originally, this member was attached directly to frame No. 3. However, it was later moved four inches aft for better back slant and body weight locations; so, follow the plans when you install it.

The top center battens go in next and then the stringers. The fastening points for the stringers are shown on the frame drawings. Attach stringer B first and then fasten its duplicate on the other side of the keelson. Then do D, E and F. This method prevents any twist in the hull frame that might occur if all the stringers were fastened on one side first. Note that stringers A and C, which go in last, do not extend the full length of the hull; all the others do. Naturally, the ends which butt against the stem and stern must be beveled and the ends of A and C should be rounded off. Sand all the sharp edges smooth so



that the canvas will lie against a smooth surface. The cockpit stringers are installed last to complete the hull frame. Fit these by the cut-and-try method and then secure them with glue and screws.

The frame is now ready for covering. Take care to sand it smooth and then apply at least two coats of spar varnish, allowing each to dry thoroughly. We use 10-ounce canvas but a 12- or 14-ounce weight could be used. A four-yard length, four feet wide, is enough to cover the bottom in one piece. The decks can be covered with leftover pieces.

Attaching the canvas is a two-man operation; one pulls and the other tacks. Begin by marking a centerline lengthwise on the canvas. Start tacking at the center of the keelson, stretching the canvas and spacing the tacks about six inches apart. Work as far as the start of the stem and stern curve. Then go back to the center and stretch and tack for about a foot along one sheer clamp, spacing the tacks about three inches apart. Then go to the other side and do the same. Next add tacks in between so that the spacing is reduced to one inch. Proceed in this manner along the sheer, working toward both ends alternately. In this way, wrinkles are minimized and worked out toward the ends.

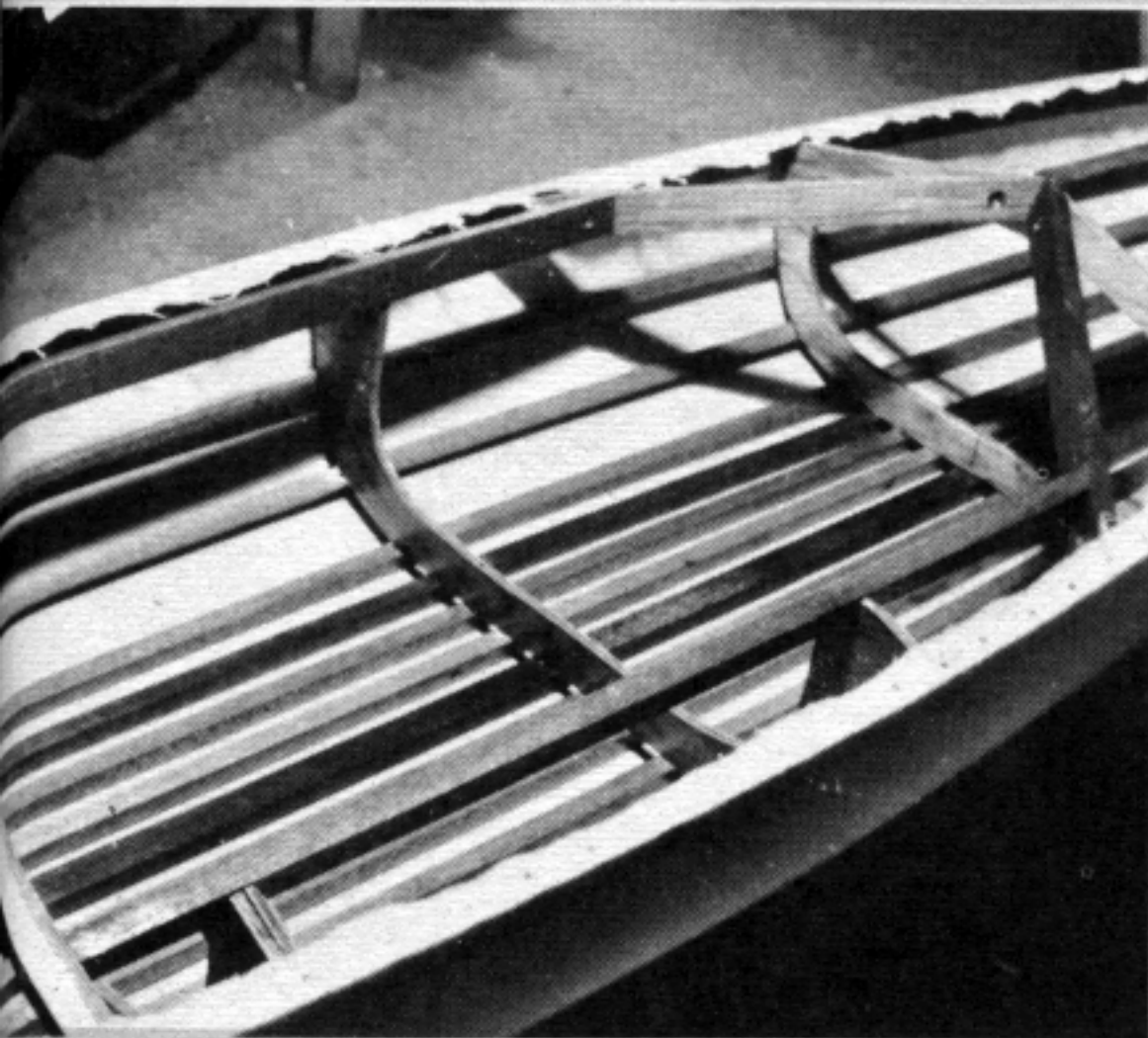
When tacking is completed along the

keelson and sheer, cut the canvas along the centerline over the curve of the stem and stern. Working at the stem first, apply a liberal amount of Ambroid cement and then pull the canvas around from one side and tack it on the other. Then apply more cement, pull the canvas around from the other side and tack it so that it overlaps. Last, give the joint a coat of cement on the outside. The same procedure is used at the stern.

Excess canvas is trimmed off about $\frac{3}{4}$ inch in from the sheer clamps and used to cover the decks. Begin at the rear, tacking the straight edge of one of the rough excess triangles along the top center batten. Space the tacks two inches apart. Then pull down and tack to the outside of the sheer clamp. Next put cement along the top center and overlap with another piece of canvas, tacking every inch. Then tack it along the sheer. Finish the rear deck by tacking over frame 3T. The sides are then covered to the junction of the side and forward cockpit stringers. Then the forward deck is covered in the same manner as the rear. Apply cement at all joints and overlap the canvas before tacking. Last, trim the edges neatly, apply cement and smooth them down.

To shrink the canvas tight, it is wetted thoroughly. Further shrinking can be accomplished by applying two coats of clear dope, but this is not absolutely necessary. Three coats of outside enamel completely seal and finish the canvas. Then, after painting, the keel is installed. The cockpit coaming, which goes on last, is given two coats of spar varnish before fastening. The seat back drawing is self-explanatory.

While a double paddle can be made, we suggest buying one. Should the cover ever be torn, a canvas patch can be applied with Ambroid cement. Happy boating! •



Two people have to apply canvas, one stretching, the other tacking. Copper tacks, one inch apart, hold the canvas in place, as photo above shows.

LARGE SCALE PLANS

of the frame, stem and stern members will greatly simplify construction. For these plans send \$2 to *Mechanix Illustrated Plans Service*, Fawcett Bldg., Greenwich, Conn. Specify Plan No. B-238, Canvasback.

