

KAARHUS 14' "RAPID ROBERT" MCKENZIE RIVER DRIFT BOAT

CONSTRUCTION PROCEDURE

Rapid Robert is a type known as a McKenzie River Boat, designed by Torkel Gudmund "Tom" Kaarhus for those wild rivers with fast, rough currents. It is a raked, smooth-bottomed, sturdy rowboat, able to twist and turn on a dime, with a high buoyant stern that will shoot through rapids which would sink the best of other craft. In fact, you are safer in rapids with Rapid Robert than you are with a canoe. This boat also performs satisfactorily as an ordinary rowboat, and, for cruising on more gentle waters, a removable section of the high transom may be slipped out to attach a small outboard motor.

You need no forms or molds for this boat. Planking and frames are simply cut, beveled, and assembled thus giving the correct shape and form. Construction is of waterproof marine plywood: the 14 foot length sheet is correct for this hull. No nails are used anywhere and all screws should have lead holes drilled before fastening.

First, obtain materials needed and lay out cutting diagram for side planking on the 4' x 14' piece of 1/4 inch plywood. Also, draw six vertical lines two feet apart on the plywood to indicate future location of six frames. Then saw diagonal cut, dividing plywood into two sides, and cut both sides to shape. Frames are drawn full-size on paper patterns. Lay frame material on these patterns, mark and cut to shape. All bottom frames are 3/4 inch x 2-1/4 inch; all side frames are the same material, tapered from 2-1/2 inch to 1 inch. Bevel outer edges of frames to the given angle, beveling No. 1, No. 2, and No. 3 frames toward the bow while No. 5 and No. 6 curve in toward transom. Leave side frames an inch or so longer at the top, cutting them off to match the side planking later on. Use casein or waterproof resin glue and 1/4 inch x 2 inch carriage bolts to assemble frames. Then mark out the chine notches, but do not cut them out completely at this time; leave waste pieces in place to help align side planking flush with bottom. Transom assembly consists of 3/4 inch plywood transom with a frame similar to the other frame. Chine notches are completely cut out of transom frame at this time, and frame is glued and screwed to the 3/4 inch plywood. Cut out and lay aside removable section of transom. Next cut the stem, a triangular piece cut from 2 inch x 3 inch x 24 inch hardwood; it is not sawed off at top and bottom until side planking is attached.

With hull upside down, start assembly by screwing No. 4 frame permanently to one and then the other plywood sides, using one inch screws spaced about four inches apart. Position frame with the vertical lines on plywood sides and align bottom edges of plywood first with bottom of frame. Attach No. 3 and No. 5 frames to plywood in the same manner—and so on, pulling plywood in to attach each frame. As plywood is bent, it forms the correct rake and shape. Attach transom and stem last, applying seam compound under these joints and securing every two inches with 1-1/2 inch screws. Then cut off flush with plywood at top and bottom.

You are now ready to install the floating chines, which are not attached to frames at any point, so that they will never pull away from the planking. Finish sawing chine notches at corners of frames. With small tacks or brads attach a 3/8-inch-wide strip of Everseal Glass Channel Stripping to outer side of each chine. This fibrous, raw rubber stripping used in sealing window glass will not deteriorate or leak. If Everseal Stripping is not available, use cloth strips soaked in marine glue. Spring chines into notches with rubber strips against the 1/4 inch side planking—do not glue or paint rubber strips. Hardwood chines will sometimes twist when bent, and if you have this trouble secure chines to a frame or two with screws, but remove these screws before attaching bottom. Next screw sides to chines with 3/4 inch screws spaced three inches apart.

Before planking the bottom, mark center of each frame and stretch a string from stem to center of the transom. If string passes over centermarks on frames, both sides of the hull are alike. If not, tack a board along inside floor of boat, pushing the still-limber hull into shape. The bottom consists of a 4 x 14 foot piece of 3/8 inch marine plywood. Place on hull, mark, cut to shape, and fasten at four inch intervals along frames with 1-1/2 inch screws. Along chines use one inch screws at three inch intervals; at stem and transom use 1-1/2 inch screws at two inch intervals. Place another strip of Everseal Stripping between each chine and the bottom plywood before fastening. Use seam compound, not the rubber, on transom and stem. Trim edges of 3/8 inch plywood evenly and attach the thin, hardwood outside chine, applying seam compound liberally underneath before screwing down. At the stem, plane plywood edges smoothly and install 3/4 inch metal bumper strip.

Now turn hull right side up and attach outside gunwales to the side with 5/8 inch screws; keep screwheads inside of hull. Then bolt inwales into place with 1/8 inch x 2-1/4 inch bolts that extend through frames, side planking, and outside gunwales. Secure inwales at the stern and transom with hardwood knees or small metal brackets. Next shape oarlock blocks and glue and bolt them into place with three 1/8 inch x 2-1/4 inch bolts securing each block. Rear seat is 3/4 inch x 12 inch board set on 3/4 inch x 3 inch risers which are screwed to No. 5 and No. 6 frames with 1-1/2 inch screws. Knee rests on curved deck beam are optional; these are installed in white water boats to support fishermen who must stand upright to land a steelhead or salmon. The slanting splash deck at the stern is a necessity, inasmuch as rolling waves at the lower end of a fast rapids sometimes splash aboard before stern touches enough solid water to rise. Install oak or Masonite plates on transom, inside and out, to prevent outboard motor brackets from gouging 3/4 inch plywood. Put a string eyebolt somewhere on transom for a safety rope which is attached to the motor.

The rowing seat will be dry under the worst conditions, is adjustable for any person and will not permit oarsman to slip or slide. Its wooden parts are assembled as shown and 3/8 inch manila is woven back and forth between the uprights. Slack in rope is taken out by tightening carriage bolts that hold the one inch dowels. Grooves on uprights may be cut out with a saw or rasp; if wood lathe is available, they are quickly cut on a 12 inch length of one inch dowel, which is then sawed into two lengthwise pieces. Removable section of transom is held in place by metal or oak strips bolted to transom with 1/8 inch x 1-1/4 inch stove bolts. The 1/4 inch x 2 inch hardwood runner strips on bottom on hull are optional. They give additional protection to the boat, but some

expert riverman claim they will catch and hold on sandbars and rocks, which is not good in swift water. Floor boards should be installed, constructed of 3/4 inch boards or of waste plywood. Do not attach permanently until hull is painted on the inside. In painting, first apply one coat of equal parts linseed oil and turpentine to the inside and outside of the boat. Finish with paint or varnish.

The boat is now complete. A small bow seat may be installed for a fourth person on gentle water. With standard seven or eight foot oars you are ready to go.

MATERIALS

WATERPROOF MARINE PLYWOOD

Side Planking: 1 piece 1/4" x 4' x 14'
Bottom Planking: 1 piece 3/8" x 4' x 14'
Transom: 1 piece 3/4" x 60" x 30"
Splash Deck: 1/4"
Deck Beam: 1 piece 1/2" x 10" x 60" (may use 3/4" board)

SPRUCE, FIR, WHITE OR YELLOW PINE, CYPRESS, OR CEDAR

Frames (transom frame included)
Sides: 2 pieces 3/4" x 2-1/4" x length
Bottoms: 2 pieces 3/4" x 2-1/4" x length
Rowing Seat Risers: 1/2"
Rowing Seat Uprights: 1-1/2" x 3"
Floorboards: 1/8" x 4" boards or plywood
Gunwales
Seats
Seat Risers and Beams

OAK, ASH, OR MAHOGANY

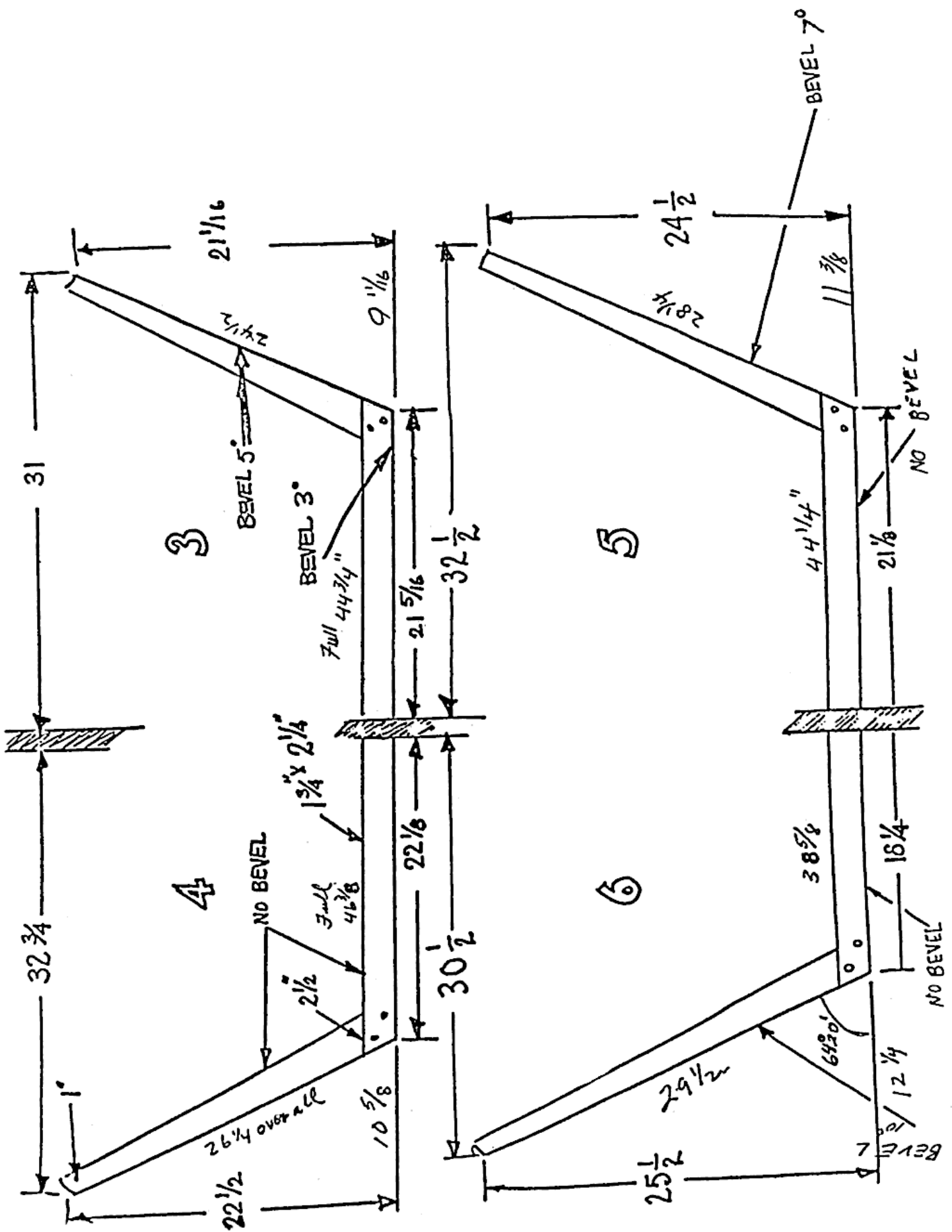
Stem
Inside Chines
Outside Chines
Inwales
Oarlock Blocks
Inwale Knees
Rowing Seat Dowels (any hardwood)

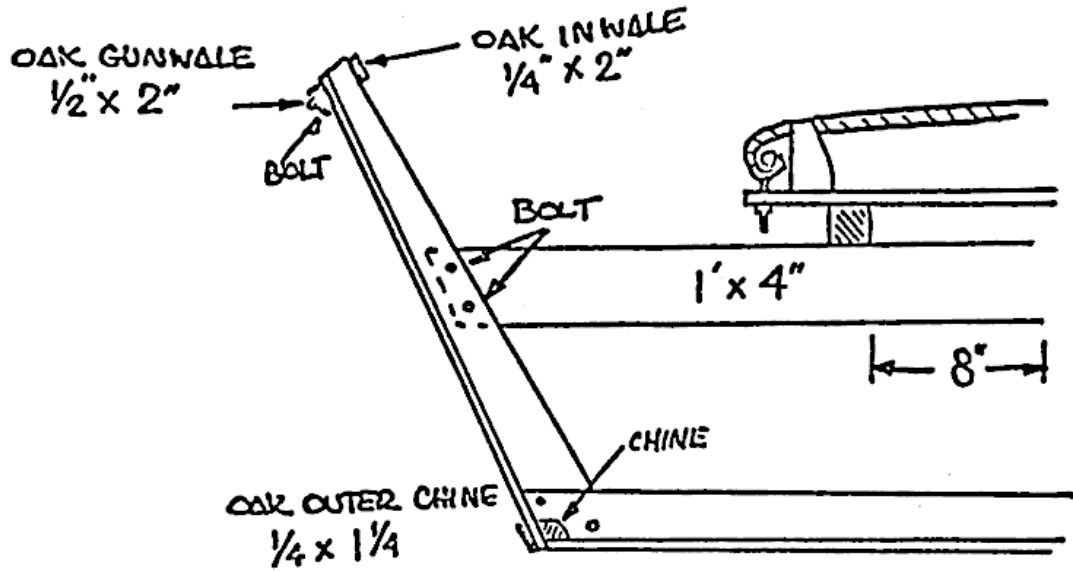
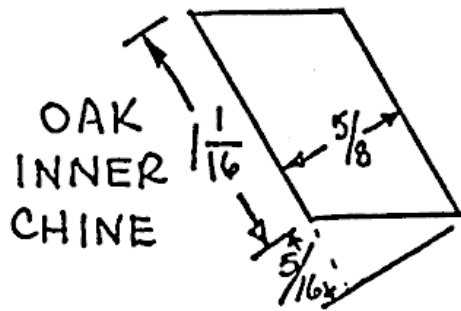
OTHER MATERIALS

4 dozen 5/8" #8 fh screws
2 gross 3/4" #8 fh. screws
3 gross 1" #8 fh screws
2 gross 1-1/2" #8 fh screws
24 1/8" x 2-1/4" galv. carriage bolts
36 1/4" x 2" galv. carriage bolts
8 1/4" x 4" galv. carriage bolts
18 1/8" x 1-1/4" galvanized stove bolts
1/4" x 14' metal half round
22" 3/4" half round metal bumper strip for stem
One quart seam compound
3/8" wide Everseal Glass Channel Stripping
4 pieces 2" x 14" metal or oak for transom sliders
34 feet 3/8" manila rope
One pint marine or casein glue

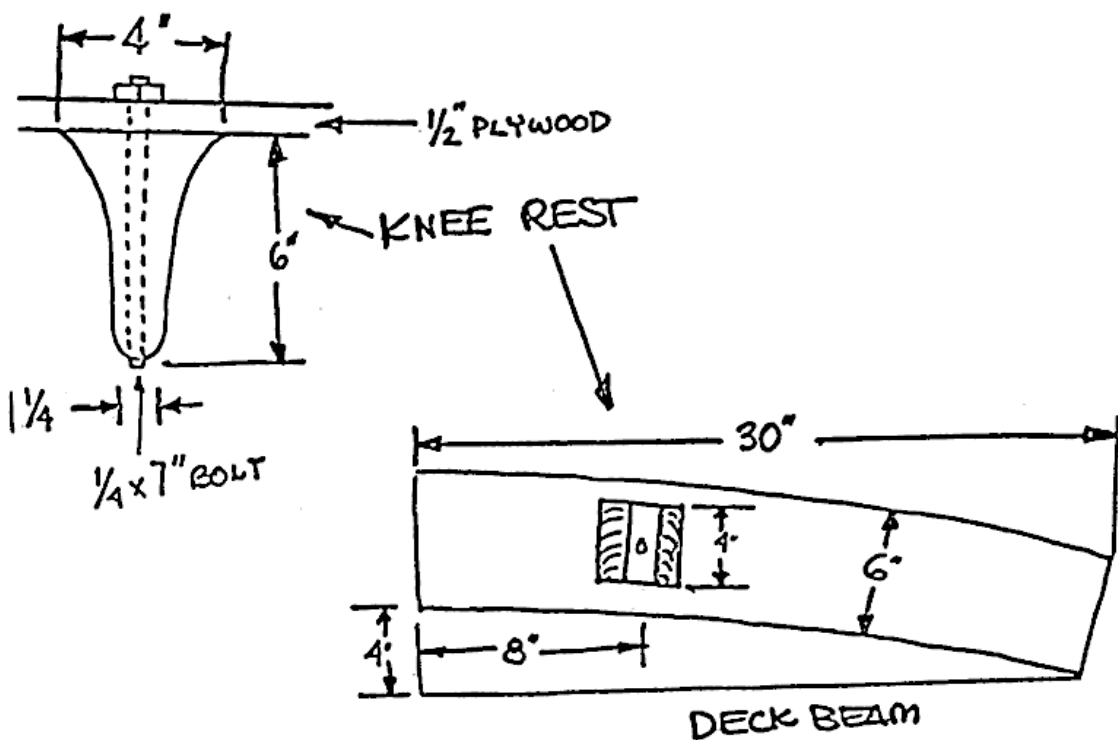
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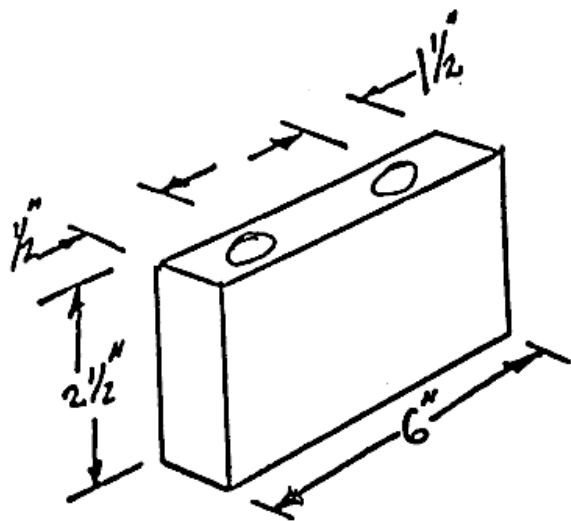
The free building plans I scanned for this publication might have been put together and released by Tom Kaarhus's son. They can be found in many Oregon libraries. More detailed plans for Kaarhus drift boats are available from Roger Fletcher:
www.riverstouch.com



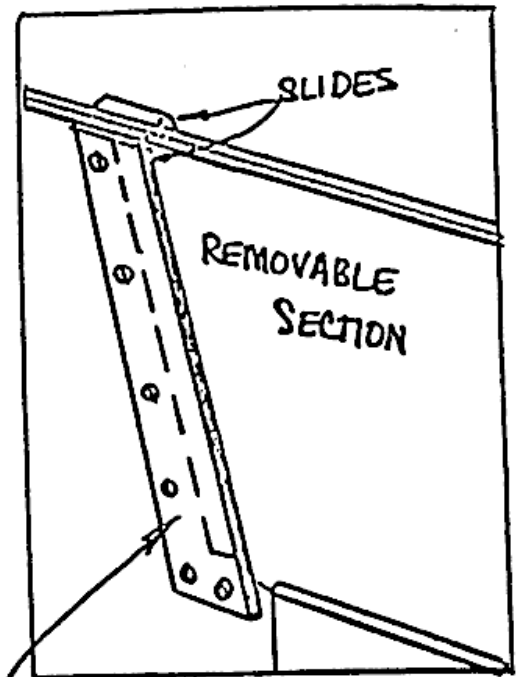


This is FRAME #3
Other seat
Beam on frame #2

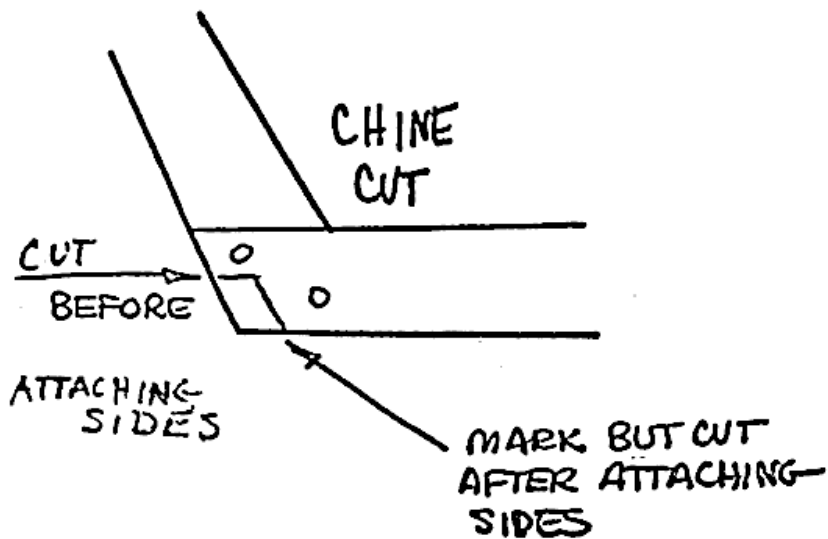


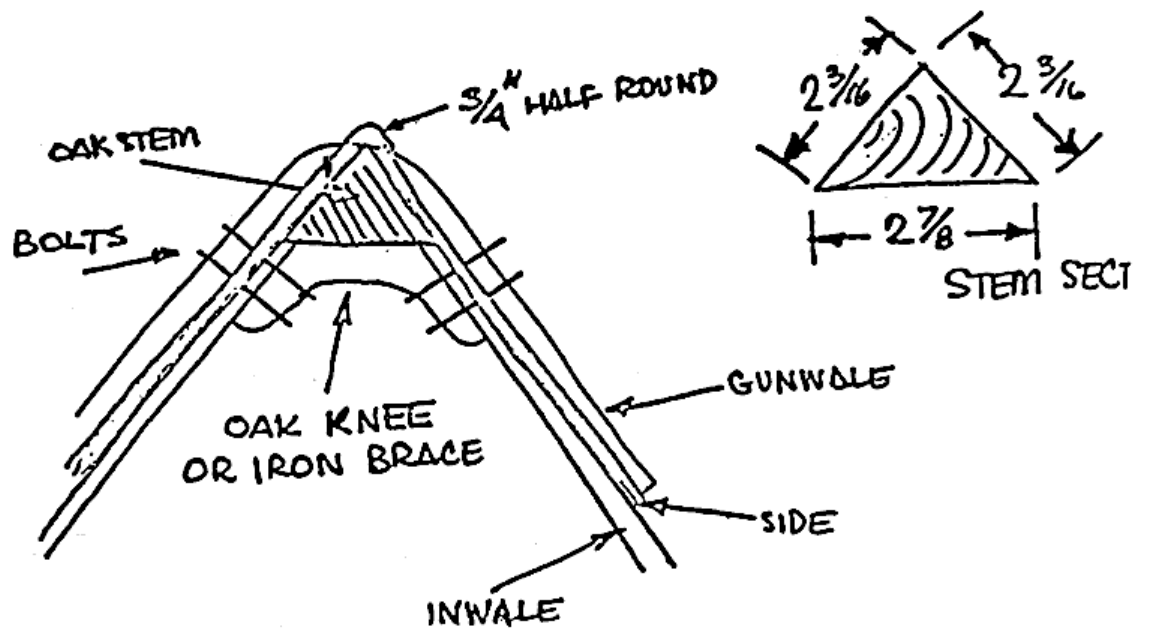
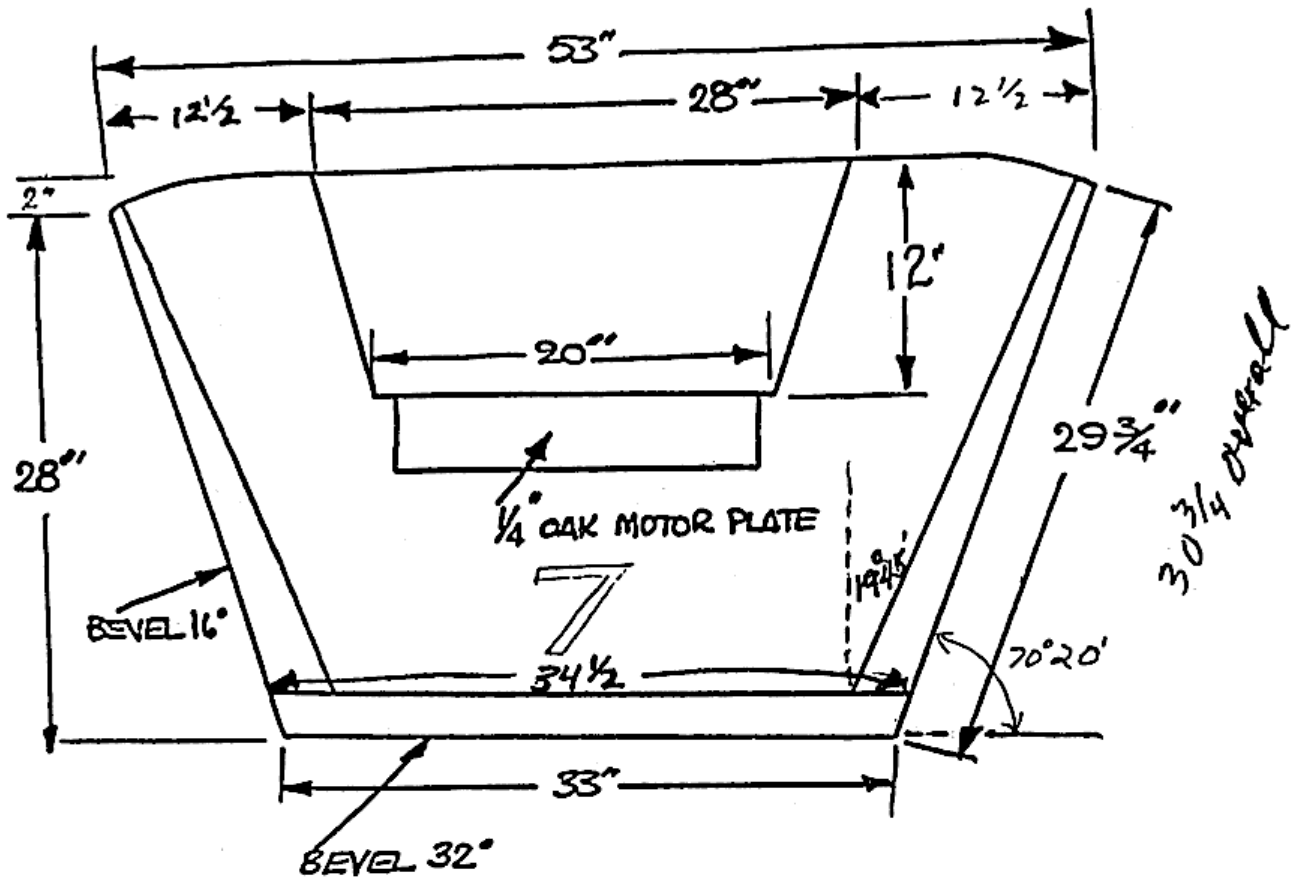


TWO SOCKETS MAKE
OAR LOCK ADJUSTABLE



METAL OR OAK
SLIDES 2" X 14"





ROWING SEAT

