

MARK GUMPRECHT

RIDGELINE DESIGNS

GLIDER

11' 10" Cat Rowing Skiff



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GLIDER

Glider is small dory-hulled catamaran skiff for recreational rowing and exercise. It is a stretched version of my 8' cat skiff, Lil' Nip. It has a sliding seat and 9'6" long oars. It is easy to row, and is a very stable design. The sliding seat gives amazing power and makes it possible to row long distances easily. It is a good boat for exploring in protected waters, rowing, sailing or with a small outboard. I recently made a sailing rig for Glider, and have been pleased with the performance. I can switch between sailing and rowing modes in about 10 minutes. The construction is a lighter version of my typical



dory construction, using 1/8" plywood sides and decks, stringers, and 1/4" plywood bottom and seat. I veneered the hulls sides and decks with ribbon grain mahogany just for fun. If you would like more information on how to do this, please contact me. Here are the basics of building Glider.

MATERIALS

- 4 sheets 1/8" plywood (3-mm okoume or 1/8" luan door skin)
- 2 sheets 1/4" plywood (6-mm okoume or 1/4" luan door skin)
- 6 5/8" x 5/8" x 12' spruce stringers
- 2 5/8" x 3/4" x 12' spruce stringers
- 2 3/8" x 7/8" x 12' mahogany rails
- 2 1/2" x 7/8" x 8' mahogany rail
- 7/8" mahogany for rail blocks
- 3/4" x 3/4" mahogany for beams
- 2 1/4" x 7/8" x 8' mahogany for seat trim
- 3/4" x 3 1/2" mahogany for keels

INSTRUCTIONS

1) Cut a 16" X 96" strip off a piece of the 1/4" plywood, which will later be used for the seat. Layout the frames and transoms for both hulls on the rest of the sheet, and cut out. Add cleats on the tops of each frame so you can screw them down to the bench. The cleat on the transom is cut with a 16-degree angle. Mark the location of notches for the stringers. I round 2 corners of the stringers with a 1/4" radius router bit. I make a jig for notching the frames out of a strap of 1/2" plywood. Clamp the jig at the location of each stringer, and use a 1/2"-diameter pattern bit (the bearing is at the top of the bit) to rout out each notch. The rounded edges of the stringer will fit perfectly in the notches. The 5/8" x 3/4" bottom stringer is rounded only on the top edge, and is later beveled to match the angle of the bottom.

2) Cut 6 20" wide strips out of 3 sheets of 1/8" plywood. Cut 2 of the strips in half (48"). Each 8' piece is scarfed to a 4' piece to make the hulls' side panels. Cut the scarfs using the jig shown on the plans, or whatever method you are used to. It works great on plywood 1/8"-1/4" thick. Clamp the plywood to be scarfed flush with the edge of your workbench. The cleat on the edge of the jig will guide on the edge of the workbench, and the plywood will be held down on the bench by the jig while the scarf is being cut. Test the jig on a scrap piece to get the depth of the bit set right. Glue the scarfs together carefully with epoxy and a little thickener. If you are painting the boat you can staple or nail a

strip of wood over the scarf, with the plywood between pieces of waxed paper. If you are bright finishing the boat, use a cleat slightly longer than the piece, with a screw through each end into your workbench, and wedge some sticks between the ceiling of your shop (if it's not too tall) and the cleat to clamp the scarf down in the middle. When the glue dries, carefully sand the scarfs flat with a sanding block. Don't use butt blocks to glue the panels together; they won't lay flat over the stringers!

3) Cut 3 12" wide strips of 1/4" plywood for the bottom panels of the hulls. Cut one piece in half, and adjust the depth of the bit in the scarfing jig so it works on 1/4" plywood. Cut scarfs on one end of the 4' and 8' strips, and glue together one 4' and one 8' strip. Sand the scarfs flush with a sanding block.

4) Cut out the 1/4" plywood stems shown on the plans. Add some small cleats at the back top of the stem to temporarily fasten it down to the workbench. You will need a flat bench 2' x 12' long on which to build the hulls. Draw a centerline on the workbench and measure the distance from the bow of the frames and the transom. Draw a perpendicular line at each location and mount the frames and transom. Use some scraps of plywood to hold the frames square to the bench. Mount the stem at the bow, on the centerline, and keep it aligned vertically with a centerline on the back of frame 1. Fit the stringers in the notches on the frames, and one-by-one, trim them to fit inside the transom, and then bevel the front to fit on the side of the stem. The stringers should land on the stem 3/8" back from the front edge. Once all the stringers fit correctly, they can be

glued in place to the frames. DO NOT GLUE the stringers to frame 2, as it is a temporary frame! When the glue is dry, fair out the framework where the stringers meet the frames, transom, and the stem. The stem is beveled to a point at the bow with a fair line into the stringers.

5) Loft out one of the hull side panels, cut it out, and fair the edges with a block plane. Clamp it onto the frame, and see how it fits. At the bow it should be resting on the bench. Clamp blocks on the frames at the shear line for the side panels to rest on. When the panel fits okay, use it as a pattern and make the other 3 side panels. Apply thickened epoxy to the stringers, stem, and the edge of the frames. DO NOT PUT GLUE on the edge of frame 2! Glue on one side panel using spring clamps and masking tape to hold it in place. You can use small scraps of wood between the stringers to push them tight against the hull panels. When the first side dries, bevel the edge of the first panel at the bow, test fit the other side panel, then glue it in place.

6) Bevel the bottom stringers so the bottom panel will lie flush. Remove the screws holding the stem to the bench while you can still get at them. Lay one of the bottom panels on the hull and scribe it. Cut it out and glue it on using masking tape to hold it down until the glue dries. DO NOT PUT GLUE on the edge of frame 2. Trim the bottom flush with the sides and round off the corners. Shape the stem and trim the hull sides flush with transom.

7) Remove the first hull from the bench and build the second hull using the same procedure.

8) Do any final sanding and fairing of the hulls, and put a layer of 4-6 oz. fiberglass cloth on the bottom of the hulls. Wrap the cloth onto the hull sides about 1 1/2". When the epoxy is dry, trim off the extra cloth and feather out the glass on the hull sides. Lightly sand the fiberglass on the bottom and give the hulls 2 coats of epoxy.

9) Remove the second hull from the bench and turn the hulls over. Remove frame 2 and cut the rest of the frames off at deck level. Cut out the hull side between frames 1 and 3 above the 1st stringer, for the seat. Make sure you have a right and left hull! You can use a router with a flush trimming bit to cut out this piece, using the frames and the stringer as a guide. Bevel the seat stringer so the plywood for the seat will lie flat.

10) Now you are ready to join the hulls together. Set the hulls on a couple of sawhorses so they are 25" apart on centerline. Tack nail some wood strips at the bow and stem to hold them in alignment. Rip 1/4" plywood to the height of the seat cutout at frames 1 and 3, minus 1/4" for the thickness of the seat plywood, and fit the strips between the sides of hull. Glue 3/4" square mahogany cleats to the top and bottom of the strips to make the fore and aft beams. Make the cleats a little long and bevel the ends to fit in between the hull sides. Epoxy the beams in place flush with the tops of frames 1 and 3, making sure the hulls are lined up, and leaving a 1/4" space between the beams and

the seat stringer. Fit the 1/4" plywood seat so it goes under the fore and aft beams, and scribe it to the seat stringers. Glue the seat in place to the bottom of the beams and the seat stringers. Screw the seat to the bottom of the beam using 3/4" screws. Trim the plywood flush with the sides of the stringers and add the 1/4" x 7/8" mahogany seat trim.

11) Add the angled fairing in front of the forward beam, between the hulls, using small cleats on the front of the beam, and on the hull sides. Fit a piece of 1/8" plywood between the hull side, and glue in place. Add a beveled cleat along the front edge, and trim flush with the top of the hulls. Glue 1/2" square cleats to the hull sides in the fore and aft deck areas. When dry, bevel the cleats so the deck plywood will lie flat. Add a couple of 3/8" x 1" deck beams in each bow section, making sure the hull sides look fair. Scribe pieces of 1/8" plywood for the fore and aft deck area, and glue in place using masking tape to hold the plywood down. When dry, sand the plywood flush with the sides of the hulls, and round off the corners. Rout the corners of the 3/8" x 7/8" x 12' mahogany rail (1/4" radius), and glue in place flush with the top of the hull sides using spring clamps and masking tape. Make filler blocks for the built up rail between the fore and aft beams out of 7/8" thick mahogany, 1" x 2", with one side beveled to the angle between the hull and deck. You should need about 32 blocks if you leave about 3 1/2" between the blocks. Layout the location of the blocks and glue in place using spring clamps. Round off the bottom edge of the 1/2" x 7/8" x 8' mahogany rails, and fit be-

tween the fore and aft beams. Glue the rails in place flush with the top of the filler blocks. When dry, sand flush with the top of the blocks, and round off the top corner.

12) Fit two 3/4' x 1 1/4" mahogany frames, with equal spacing between the beams, where they line up on a filler block. I use strips of 1/8" plywood and a hot glue gun to make patterns of the frames where they are notched around the stringers, and fit under the rail. Glue in place, and use a long screw and a plug down through the filler block, into the top of the frame.

13) Turn the boat over. Cut and fit the 3/4" mahogany keels, glue in place, and coat with epoxy. Use some sort of rub strip at the back to drag the boat around on. Fillet the corner where the seat meets the side of the hull with epoxy thickened with wood flour, and epoxy coat the bottom of the seat. To make a towing bridle, drill a 1/2" hole 4" down through each of the bows, and fill with thickened epoxy. Sand flush, and drill a 5/16" hole in the middle of the epoxy.

Round the edges, and tie the bridle through the holes.

14) When the epoxy is well cured, sand, and paint or varnish the hulls. Make sure any paint or varnish you use is compatible with epoxy. Epoxy coat the floor on the inside of the boat, and paint or varnish the inside of the hulls and the deck.

15) You will need some nice, light, long, 9'-10', oars, and a sliding seat. The plans show the layout of the sliding seat, outriggers, and footrests I used. The oarlocks should be

about 10" out from the sides of the hulls, and 48" back from the forward beam. I built laminated outriggers from 4 layers of 1/8" mahogany veneer to mount the oarlocks on. I used a long bolt, with an aluminum backing plate, to bolt the outrigger through one of the openings in the rail. The bottom of the outrigger has a small ss plate that screws into the bottom stringer. The sliding seat uses 4 skateboard wheels on a wooden frame. I epoxyed 5/16" ss bolts in dados on the bottom of the seat frame to mount the wheels on. I used some white plastic shower door rollers, available at most building supply stores, to keep the wheels from rubbing on the side of the track. To make the seat, I glued a piece of 1/2" closed-cell foam on a piece of 3/8" plywood and covered it with some fabric, stapled to the bottom of the plywood. For the track, I made a frame of 3/4" square mahogany, with strips of Formica screwed and glued to the bottom, for the wheels to run on. Make the track assembly as wide as possible on the bridgedeck seat, and fasten it down with 6 1 1/4" #8 F.H. screws. You can add some small blocks on the under side of the seat for the screws to go into. The footrests are built of 1/4" and 1/2" plywood and are fastened to the bottom two stringers with 3/4" ss screws. They should rest on the bottom of the hull. I built a dolly with 2 wheels to roll the boat around for launching. It has a couple of notches that fit over the back of the keels. Sit in the boat in your shop and see if the location of the sliding seat, oarlocks, and footrests feels comfortable. Then it's time to take her down to the water for her maiden voyage!

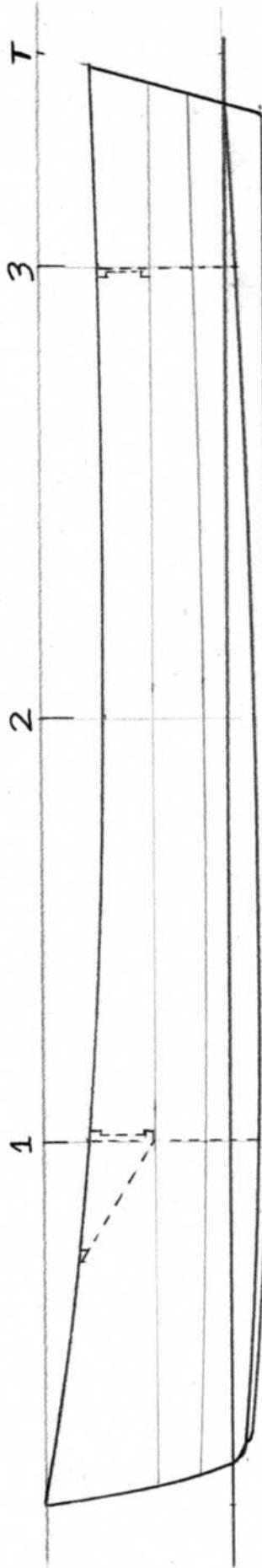
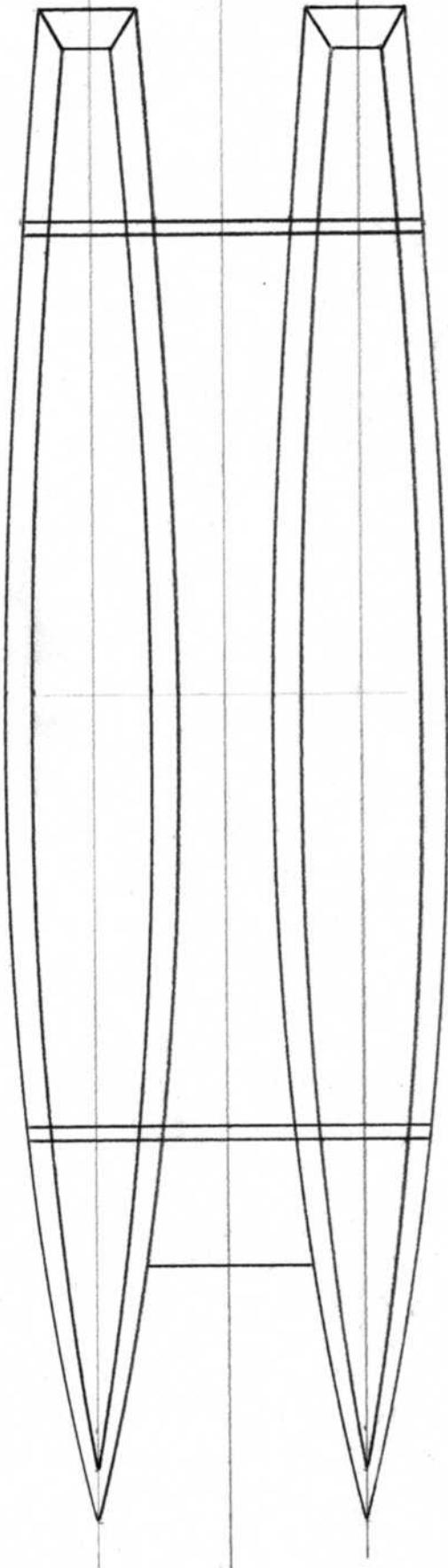
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GLIDER

CAT ROWING SKIFF

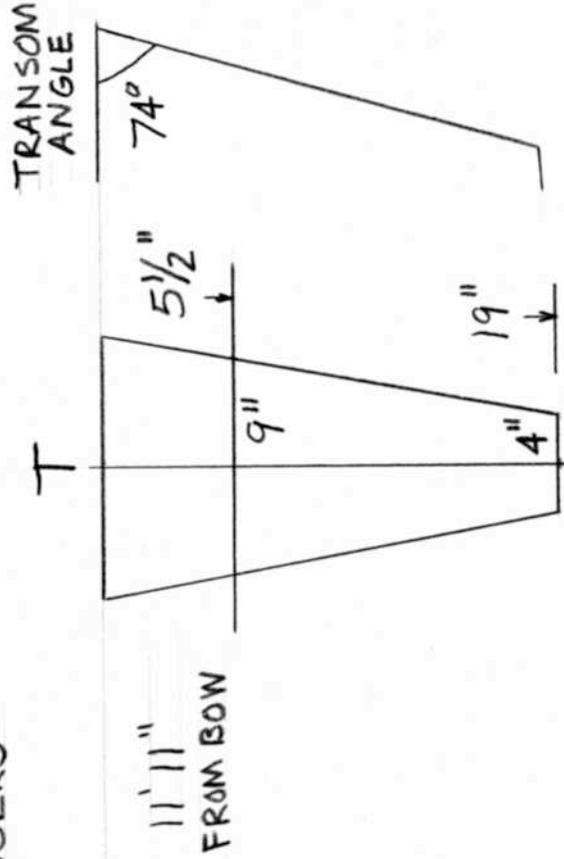
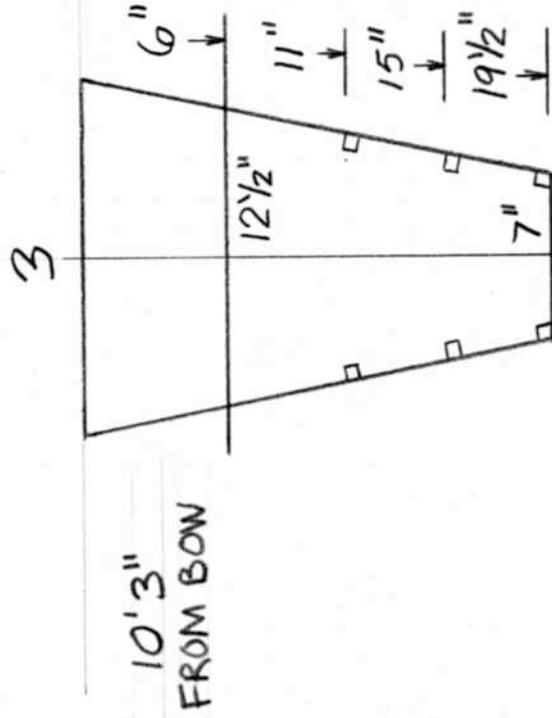
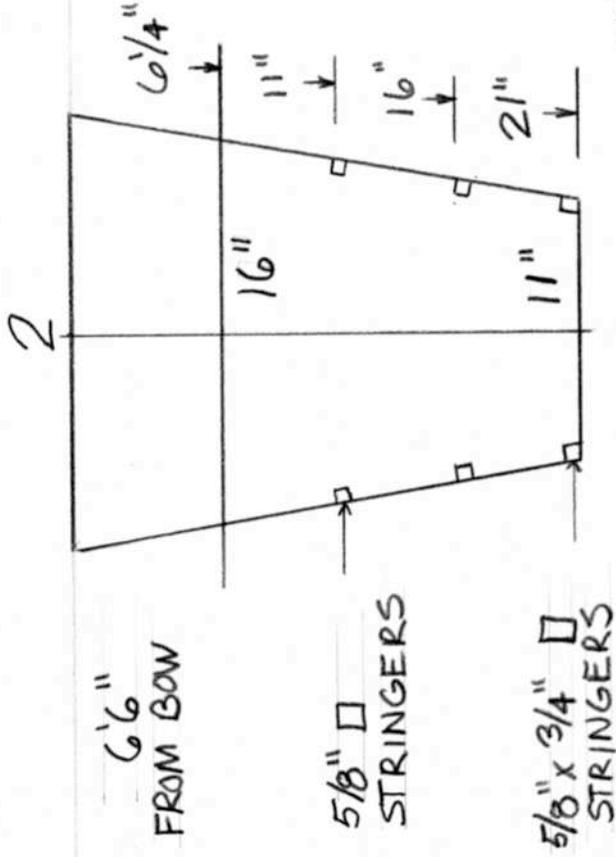
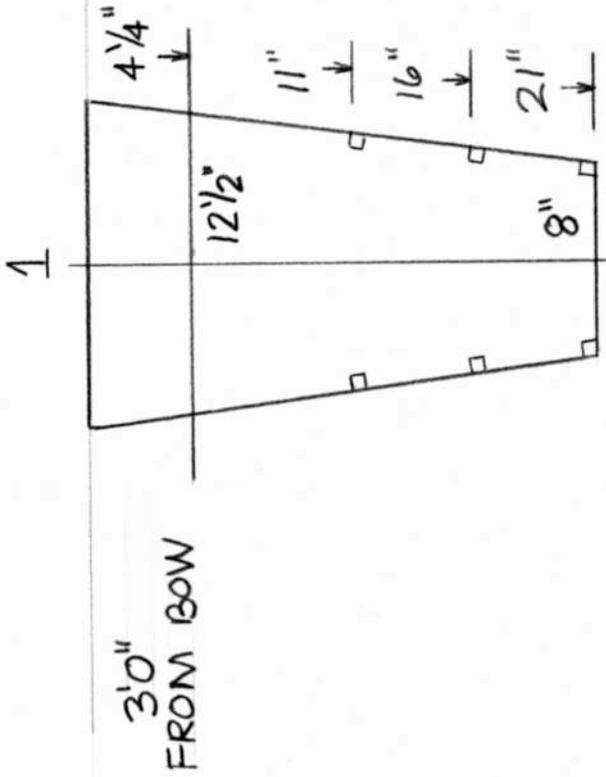
11'10" x 3'6"



$3/4" = 1'0"$

GLIDER

FRAMES 1/4" PLYWOOD

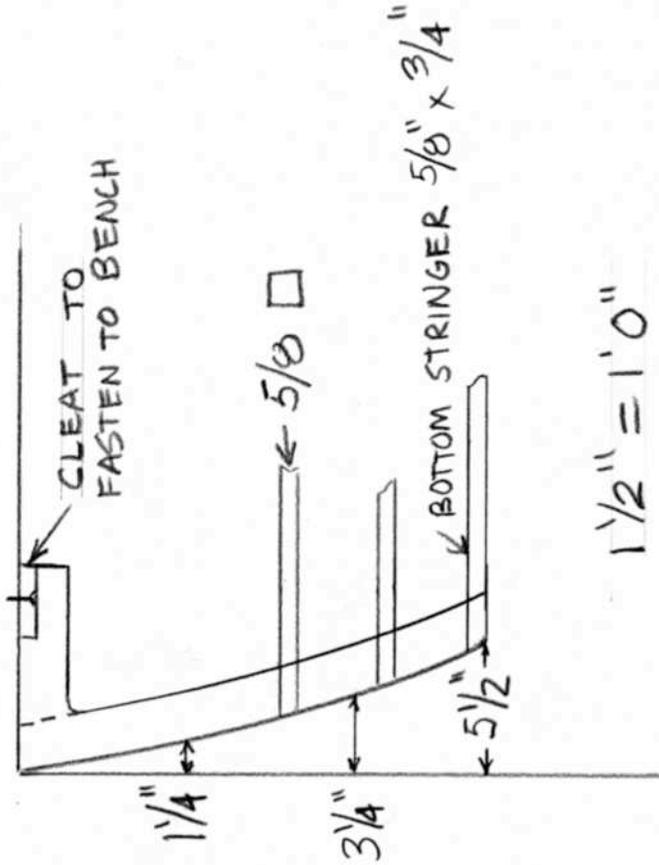


1 1/2" = 1'0"

MARK GUMPRECT 3-24-08

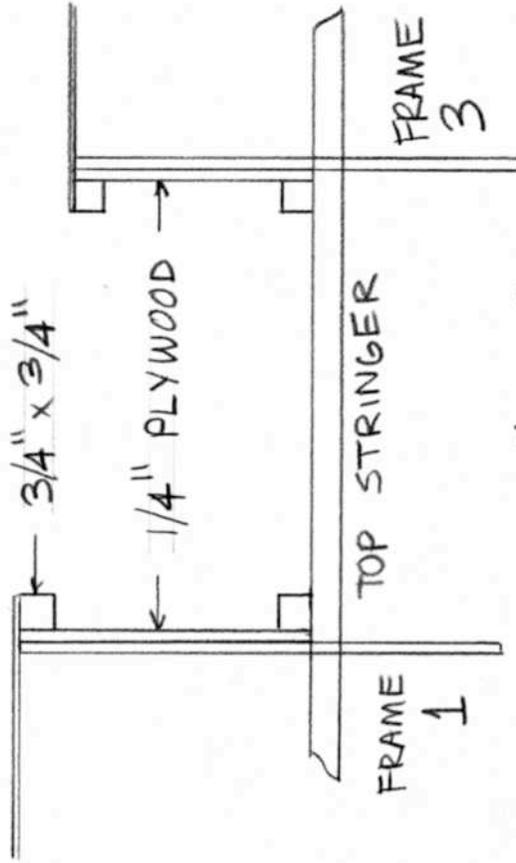
GLIDER

STEM 1/4" PLYWOOD



1 1/2" = 1'0"

FORE + AFT BEAMS



3" = 1'0"

HULL PANEL 1/8" PLYWOOD

16"	16"	16"	16"	16"	16"	16"	16"	16"	14 1/2"
1"	1 13/16"	2 1/4"	2 3/8"	2 1/4"	1 13/16"	1 1/4"	5/8"	14 1/16"	13 9/16"
19 1/2"	19 5/16"	18 7/8"	18 3/16"	17 7/16"	16 5/8"	15 3/4"	14 1/16"	2 1/2"	
5 1/2"									

3/4" = 1'0"

SCARF JIG $\frac{1}{8}$ " - $\frac{1}{4}$ " PLYWOOD

* ADJUST BIT DEPTH
FOR PLYWOOD THICKNESS

ROUTER

$\frac{1}{2}$ " BIT

ROUTER BASE

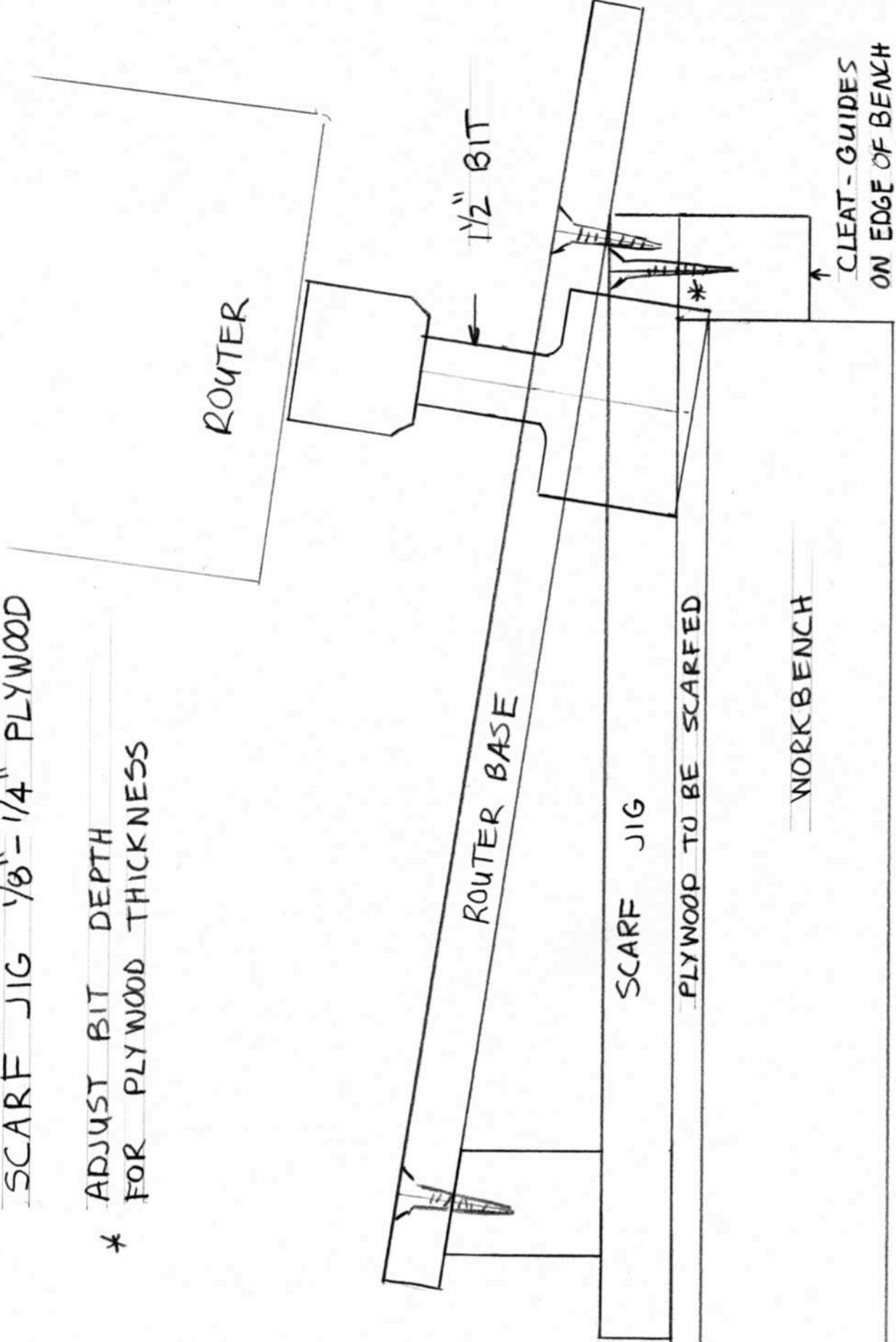
SCARF JIG

PLYWOOD TO BE SCARFED

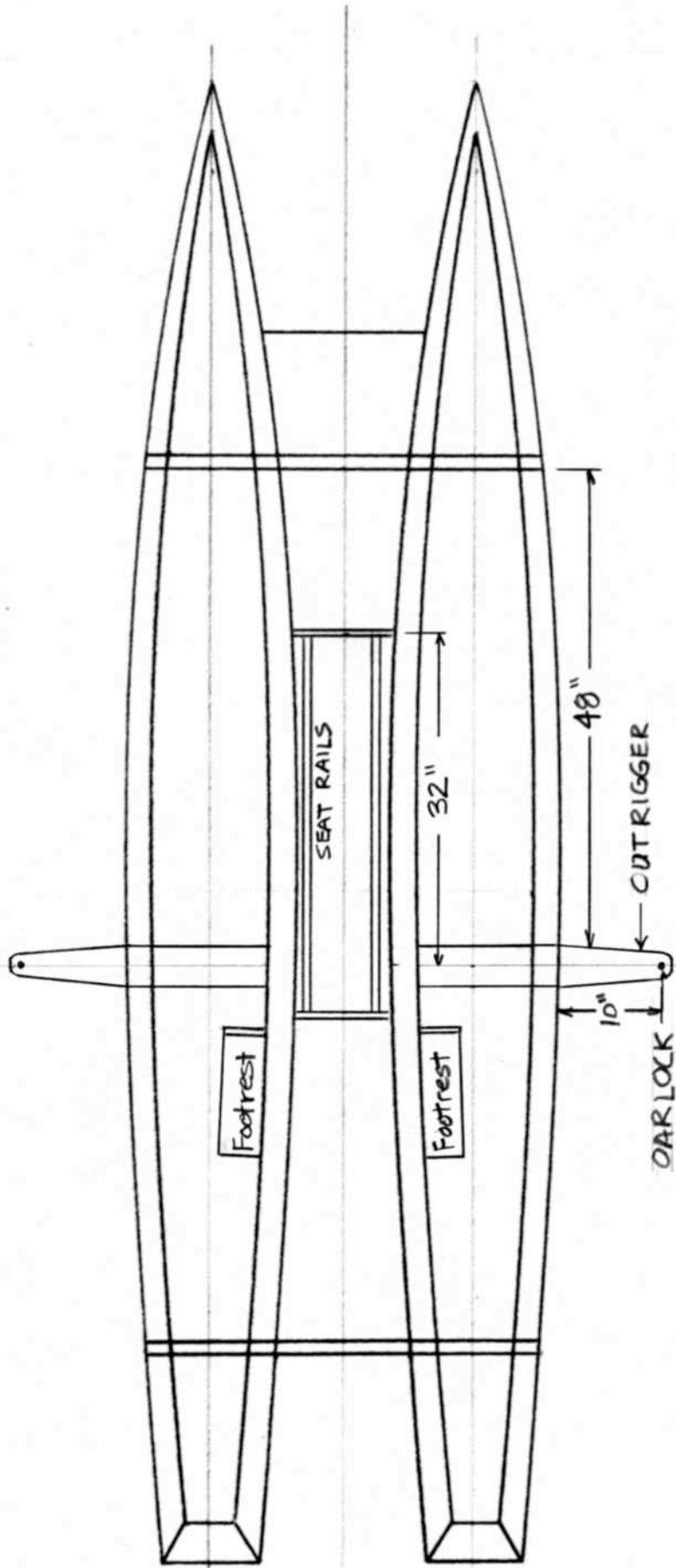
WORK BENCH

CLEAT - GUIDES
ON EDGE OF BENCH

FULL SIZE

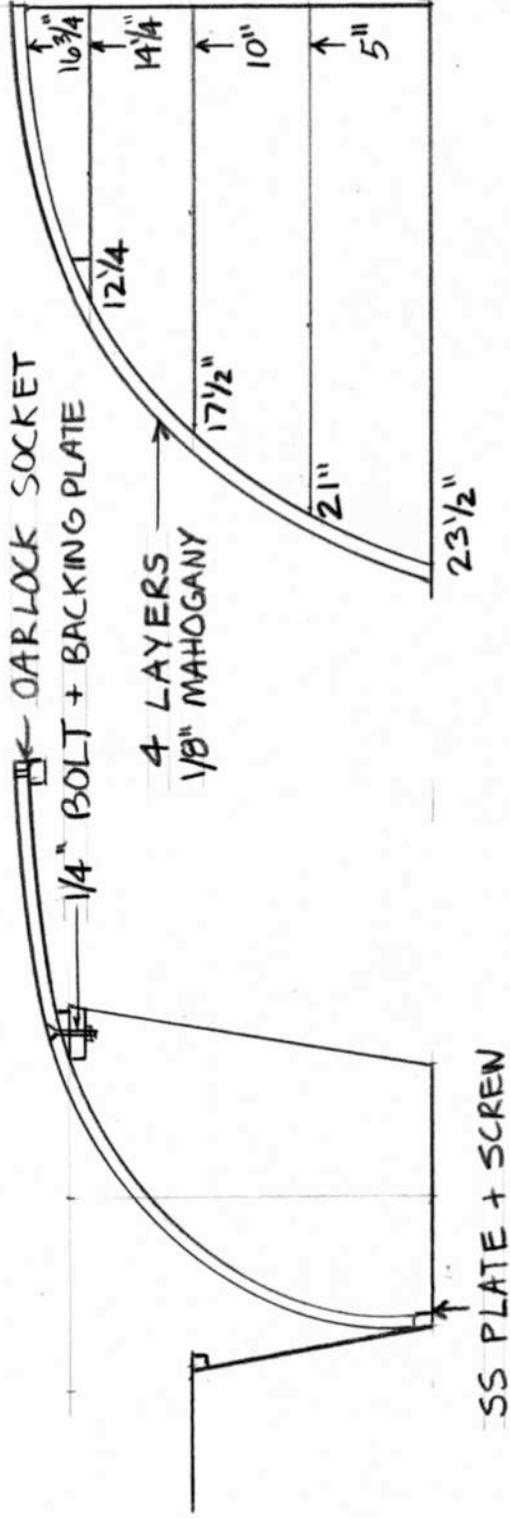


GLIDER SLIDING SEAT

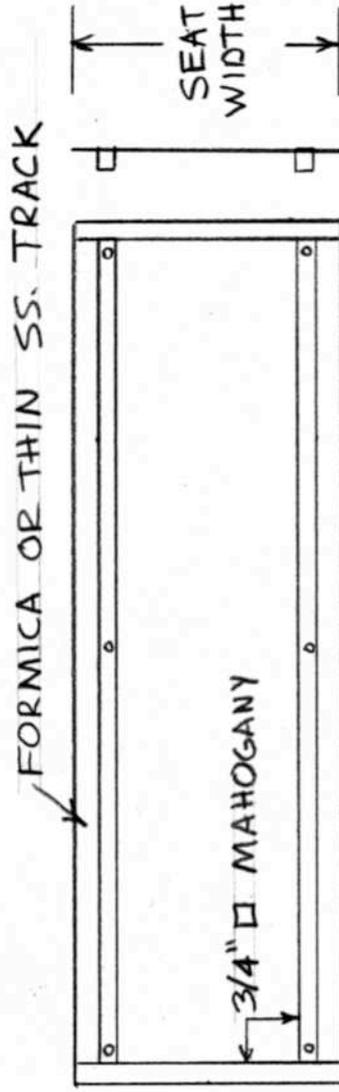


$3/4" = 1'0"$

GLIDER SLIDING SEAT

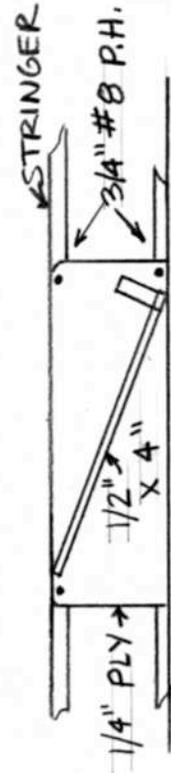


OUT RIGGERS

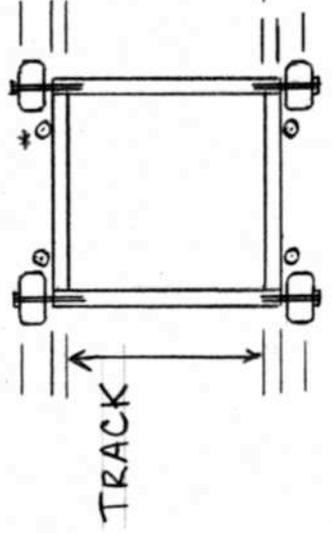


SEAT TRACK

1 1/2" = 1'0"



FOOTREST 1 R + 1 L







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