

ASSEMBLY INSTRUCTIONS FOR FOLDING ONE-MAN KAYAK



TROOP 37 BOY SCOUTS OF AMERICA LOS ALTOS, CALIFORNIA

Revision History

Updated	April 2012	J. Mullen & K. La Plain
Updated	April 2004	J. Mullen and D. Farmer
Revised	May 1989	
Revised	February 1980	David J. Ellis, Assistant Scoutmaster
Original		Jeff Ellis, Star Service Project

Adapted from the original plans and instructions by Jess Rathburn, Coordinator of Industrial Arts, San Francisco School District.

GENERAL INFORMATION

This kayak weighs less than 40 pounds and will carry a full-sized man. It is constructed of plywood, canvas, and wood strips - all held together with contact cement! The design is for a 10-foot kayak, but 8-, 12-, and 14-foot versions have been successful.

The boys build the kayaks as a group, with adult supervision. Most of the materials needed for construction are purchased by the Troop as a bulk order at the lowest price available. Paint and sandpaper are bought on an individual basis.

First, the plywood is cut into the body panels

Then, on Day 1, the spreader boards are cut and shaped, and all of the remaining parts are cut out. The body panels will be given to the boys at the end of Day 1 which is typically two weeks before Day 2.

Before Day 2, the boy must complete sanding and painting the inside surfaces of the body panels, as they become inaccessible when the kayak is glued together.

The wood panels are assembled into a kayak on Day 2 when they are glued together with contact cement and canvas strips. Finally, all of the reinforcing wood strips and boards are glued and bolted into their proper place to complete the kayak. The paddles and seats are also finished.

All that remains is for the scout to paint the kayak with a scheme of his choice and to prepare for the thrill of paddling his own boat for the first time! The final painting of the kayak is performed by the scout at home. About thirty scout (and parent) hours are needed to complete a kayak.

The cost has grown through the years. In 1980 the cost for troop provided supplies was about \$60. In 2011 the cost was \$175. Prepayment for materials is requested before the bulk order is placed.

MATERIAL REQUIREMENTS

PLYWOOD (Troop Provided)

AC-Exterior (good one side). Marine plywood is too expensive and differs from AC-Exterior only in that it has no voids.

CANVAS (Troop Provided)

Usually sold by the duck number (smaller number means heavier canvas) or by ounces per yard. Canvas from 10 to 18 ounces per yard has been used satisfactorily. In duck canvas, a number 10 is economical, while a number 8 (as built) will give maximum durability. We have obtained canvas from awning companies in the past. It is most easily cut on a board with a razor blade or very sharp knife. Canvas should be untreated to work well with contact cement.

CONTACT CEMENT (Troop Provided)

3M FASTBOND 10 (3M ADH 10 FB Neutral) has been used since 1996. The major impact has been the shorting of exposure time. Additional adhesive may be need if drying too long. GRIP & JASCO BRAND were used previously. GRIP is green in color and may be undesirable if a clear varnish finish on the kayak is wanted. EPA regulations have made these contact cements hard to find. Whatever brand you choose, make sure that it's waterproof, and not merely "water resistant". (No ifs, ands, or buts here!)

PAINT (Scout Provided)

Any exterior paint or varnish will do. Be sure to give wood one coat of primer before applying the finish coats. "Kilz 2" latex primer is good and can be found at Home Depot. Make sure your primer is compatible with your finish paint. A flexible paint should be used on the canvas, as it is subject to folding. (An exterior latex paint works well here.) Some paint solvents may soften contact cement and cause the canvas to peel off. A latex primer coat will guard against this. The two most common painting schemes have been:

All surfaces (i.e. wood and canvas) painted with an exterior latex paint. Contrasting colors can be used.

Canvas should be painted with a flexible exterior latex, and wood painted with a hard durable paint such as Varathane®. Latex paints are acceptable for the wood finish as well.

If using enamels, be careful! New paint formulations have had problems (especially OSH paints). Both paint jobs eventually get scratched up on the rocks and may need refinishing!

LIST OF MATERIALS

(All measurements in inches)

(All listed materials are Troop provided)

Body Panels	4 pcs.	1/4 x 11-7/8 x 120
Floor Board	1 pc.	1/4 x 9 x 48
Back Rest	1 pc.	1/4 x 9 x 14
Seat Reinforcing Strip	1 pc.	3/8 x 2 x 9
Paddle Blades	2 pea.	1/4 x 8 x 15 ('02 change)
Spreader Boards	2 pcs.	3/4 x 11 x 23-3/4
Paddle Bar (fir dowel)	1 pc.	72 x 1-5/16 dia.
Inner Cockpit Edging	2 pcs.	5/16 x 3/4 x 48
Outer Cockpit Edging	2 pcs.	3/4 x 3/4 x 48
Floor Strips	2 pcs.	5/16 x 3/4 x 48
Bottom Outside Runners	2 pcs.	5/16 x 3/4 x 117
Canvas End Strips	2 pcs.	2-1/2 x 46
Canvas Side Strips	2 pcs.	2-1/2 x 96
Canvas Center Piece	1 pc.	11 in x 16 ft 6 in
Canvas Bow & Stern Tie-downs	2 pcs.	2-1/2 x 15
Contact Cement	3 qts.	(Careful workers)
Back Rest Hinges	2 ea.	3/4 x 2
Stainless Flat Head Screws	10 ea.	#10/32 x 1-1/4 (cockpit edging and paddles)
Stainless Flat Head Screws	6 ea.	#10/32 x 1 (floor strips)
Stainless Flat Head Screws	4 ea.	#10/32 x 3/4 (bottom runners)
Stainless Flat Head Screws	4 ea.	#8/32 x 1/2 (seat hinges)
Stainless Flat Head Screws	4 ea.	#8/32 x 3/4 (seat hinges)
Stainless steel Nuts	8 ea.	#10/32 (bottom runners and paddles)
Stainless steel Nuts	4 ea.	#8/32 (seat hinges)
Stainless steel Washers	4 ea.	#10 (bottom runners)
Tee Nuts	12 ea.	#10/32 (floor strips and cockpit edging)
Tee Nuts	4 ea.	#8/32 (seat hinges)
Brass Grommets	2 ea.	3/8 (bow & stern tie-downs)

TOOLS AND SUPPLIES

Power tools greatly speed construction, and will be used only under careful adult supervision. If you have one or more of the power tools listed, please bring them to the work sessions indicated. Hand tools and supplies should be brought to the indicated sessions. Tools marked with an asterisk (*) can be pooled or will be provided.

SESSIONS:

Session	Activity	Who	Time Required
Cut	Buildmaster cutting of plywood., routing hull shape, cut edging. Cutting of canvas	Buildmaster & assistants	4-6 hrs
Build Day 1	Complete cutting and shaping of parts including spreaders, paddles, runners, cockpit ribs.	Scout & parent	3 hrs
	Fill & Paint @ home	Scout & parent	4-6 hrs
Build Day 2	Kayak assembly: glue, drill, bolt & screw	Scout & parent	8-11 hrs
	Paint @ home	Scout & parent	5-8 hrs

	Day		
	Cut	1	2
Power Tools			
Table Saw for cutting plywood sheets	●		
Circular Saw for cutting plywood sheets	●		
Jigsaw for curved cuts		●	
Router for rounding edges of spreader boards	●	●	
Belt Sander - for rounding edges		●	
Power Drill & bits - for screw holes, etc. drill bits needed are 13/64(.203)", 13/32(.406), 1/4(.250)", and countersink	●		●

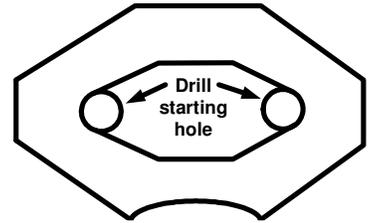
Hand Tools & Supplies

Pencil	●	●	●
Tape Measure, Ruler	●	●	●
C-Clamps	●	●	●
Work Gloves	●	●	●
Latex gloves for scout and helper			●
Saw Horses or Benches	●	●	●
Rubber Mallet			●
Utility knife to cut canvas	●		●
Cheap 1-2" Paint Brush (for glue)			●
Milk jug or Coffee Can with Lid (for glue)			●
Paper tarps			●
Phillips screwdriver & 3/8" wrench			●
Rags (to clean hands, etc.)			●
Safety Glasses	●	●	●

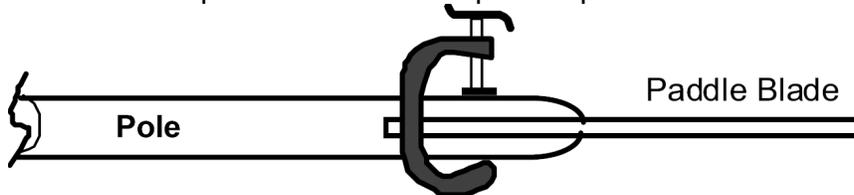
BUILD DAY 1 – FINISH WOOD CUTTING & PREPARATION

At this session, you will receive the wood pieces and perform various prep work to them.

1. With a jigsaw, complete cutting out center hole in spreader board.
2. Cut the final bottom radius with a jigsaw.
3. A power router is used to round off all edges of the spreader boards, both inside and outside.
4. With a belt sander, taper both ends of all 8 runners. Sand off the longer edge at each end on the same side of the runner. Be careful on the thick runner, it's not quite square.



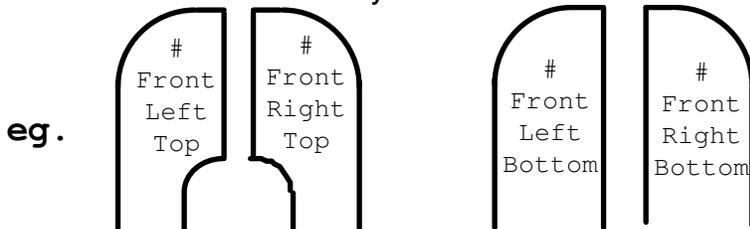
5. Also taper the ends of the paddle pole with the belt sander.



6. Trace the paddle blade outline from the template, clamp them together, and cut into the final shape with a jigsaw. Note: Having the slots in the paddle is important so the kayak can be hooked if it starts to float away.



7. The large kayak body panels should be match marked with pencil so they can be kept together as a set that will have symmetrical bow and stern curves. Pay attention to the plywood surface, the best side should be on the outside of the kayak.



8. Use a sander to lightly smooth the rough edges.
9. Cut and mark the canvas strips for the group to use at the second build day. Group leaders will show how this is done. {Usually already done as part of Cut Session}

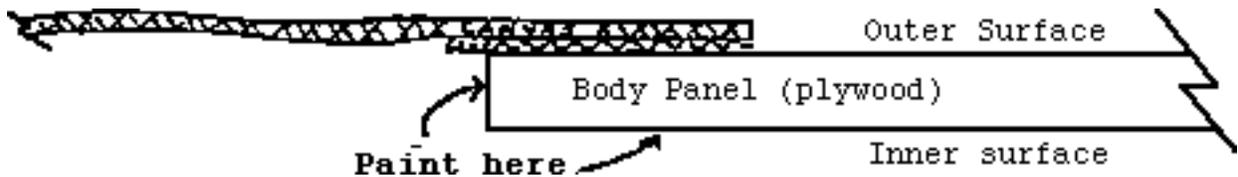
CONGRATULATIONS! YOU'RE WELL ON YOUR WAY.

BETWEEN FIRST AND SECOND DAYS:

SANDING AND PAINTING OF BODY PANELS

After the body panels have been cut out they must be sanded and painted on the surfaces that will become the inside of the kayak. The rough side with the knotholes is generally put inside. The knotholes and any voids on the edges should be patched with Bondo (available at Kragen's). This will keep the wood from absorbing water through these areas. Buy a Bondo spreader or two, as well. When the Bondo is first mixed, it is creamy and easy to spread. Working quickly, spread a thin filling layer in the knotholes. Try not to put on extra. When you notice the Bondo begin to stiffen up, STOP WORK. You'll only make things worse if you try to correct mistakes as it sets up. Sand it smooth after it's done curing.

After the edges and both sides of the panels are patched and sanded, the inner surfaces must be painted before Day 2. The edges can also be painted, but take care not to get paint on the outside as that will weaken the glue band between the outer surface and the canvas.



BUILD DAY 2 - KAYAK ASSEMBLY

Bring the following items to Day 2:

- Body panels (painted inside only)
- Other kit parts, unpainted
- Several cheap, 1" to 2" paint brushes
- Coffee can or milk jugs to put contact cement in
- Rubber mallet (if you have one)
- A pair of saw horses or benches (mandatory)
- A pair of C-Clamps
- A pencil
- A tape measure
- Work gloves
- Latex gloves
- Rags (to clean hands, etc.)
- Power Drill - for drilling holes (If you have one)
- Countersink and drill bit set (If you have one)
- Rubber Mallet (if you have one)
- Screwdriver (Electric if you have one)
- Crescent Wrench (if you have one)

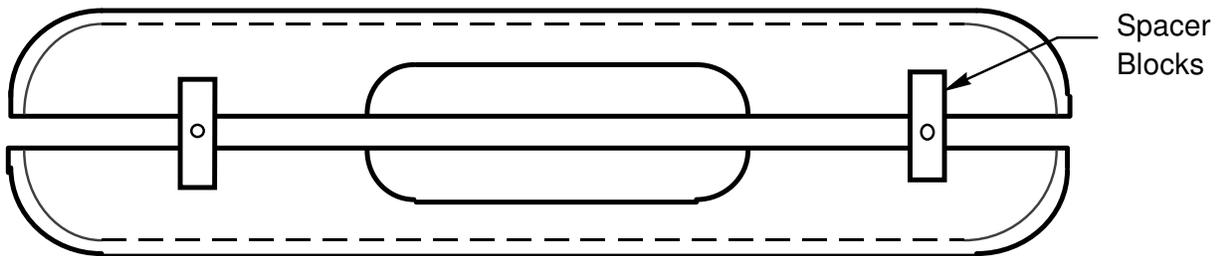
The general procedure is to glue the side strips first, then the end strips, and finally the center strip. The entire procedure takes most of the day, as the glue must dry between coats. (Each surface needs two coats of glue.)

GENERAL GLUING INSTRUCTIONS

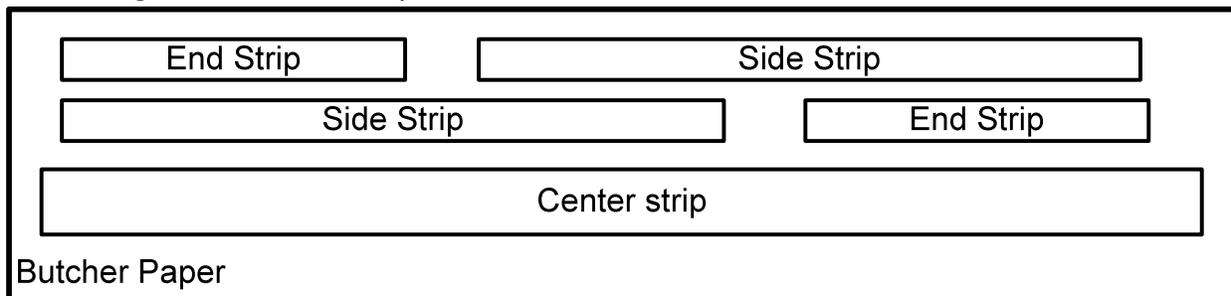
- Use cheap 1" to 2" brushes, as they are difficult to clean and are thrown away. Wear latex gloves!
- Lacquer thinner or methyl ethyl ketone (MEK) can be used to thin contact cement, and to clean it off hands, etc.
- Follow instructions on the can. Avoid gluing in cold or damp weather. Work with good ventilation (outside) as the cement solvent is rather noxious.
- **FIRST COAT:** Apply thin sealer coat to both surfaces to be joined. Allow at least 20 minutes before applying second coat.
- **SECOND COAT:** Apply glue to both surfaces and let dry. When glue is dry (at least 20 minutes) contact may be made. The surfaces should be joined within 4 hours of applying the second coat.
- **MAKING CONTACT:** Once the glue surfaces "grab" each other they cannot be shifted or moved - so line up pieces carefully before making contact. When gluing canvas to wood, rub the joint firmly with a block of wood or the back of a C-Clamp to remove small wrinkles and to "set" the joint. The joint may be further strengthened by pounding with a rubber mallet (not so hard as to splinter the wood).

GLUING KAYAK TOGETHER

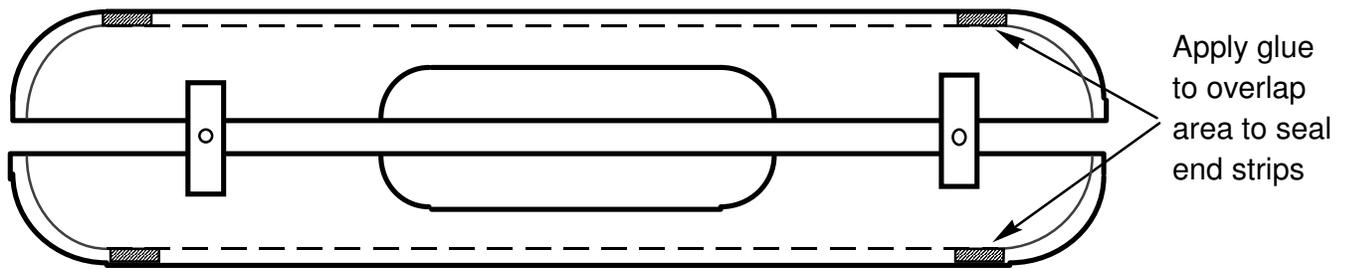
1. Preferred Troop method is to clamp the four body panels together with the spacer blocks provided. (Painted surfaces inside, curves matched.)



2. Draw a 1" margin around the entire boat, top and bottom, (above) to serve as a guide for applying glue. It's easiest to put the panels on a sawhorse from here on to save your back.
3. Mark center of strips and wood (Important!) and mark corresponding glue regions on wood panels as shown in step 11 & 12 below.
4. Apply the first coat of glue to the top and bottom panels in the marked edge regions. Be sure to place on sawhorses away from dirt.
5. While waiting for the glue on the panels to dry, lay out butcher paper about 17' long, topped with the end and side strips and the center strip. Apply the first coat of glue to the side strips.

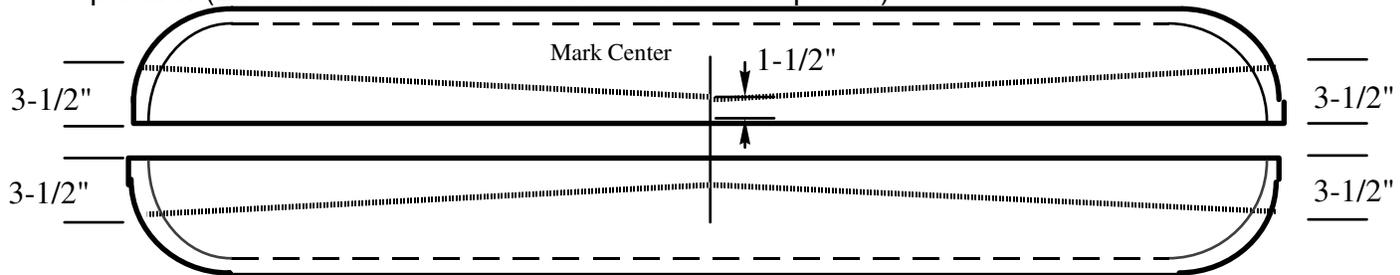


6. Apply second coat of glue to top and bottom panels.
7. Apply second coat of glue to canvas side strips and first coat to end strips.
8. While the glue is drying on the side and end strips, lay out glue margins on the center strip according using the troop's wooden template. (Mark center of strip.)
9. When the second coat of glue is dry on the panels and side strips, you are ready to put the kayak together. Work in groups of three during this step. Two workers pull the side strips taut, while the third worker carefully applies the center of the strip to the kayak edge, taking care to keep the strip even, and to avoid wrinkles. Then, working outward from the center, press the canvas against the edge of the panels, and fold it down onto the top and bottom surfaces.
10. Put on the second side strip. Work out wrinkles and "set" the joint with a small block, etc. Now apply a coat of contact cement to the last 4-5" of the side strips, where the end strips will overlap. Also apply the second coat of glue to the end strips.

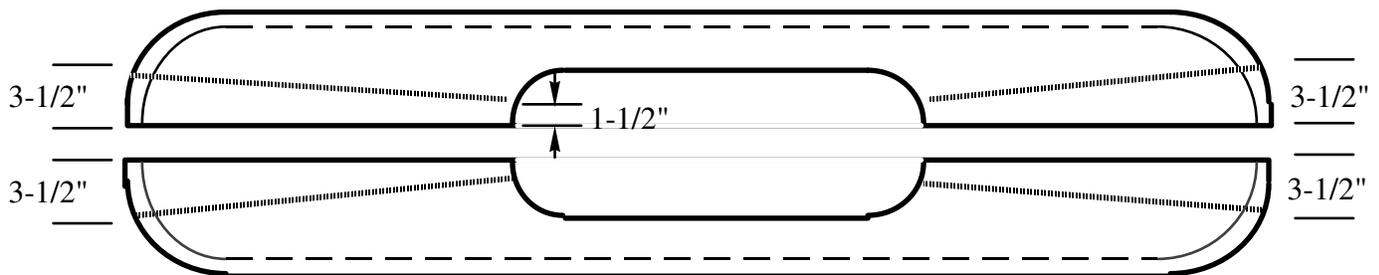


11. When the glue is dry, apply the end strips, taking care that they are even and wrinkle free. Finally, the entire margin can be pounded with a rubber mallet to set the joints.

12. Now remove the spacer blocks and get ready for gluing the center strip. In Step 2, you marked the glue margin on the top and bottom panels according to the picture. (Be sure to mark the center of the bottom panel.)



Bottom Glue Margins



Top Glue Margins

13. Apply the first coat of glue to 1) the canvas center strip and 2) the center margins of body panels and the glued-in-place canvas end strips. Put glue on the inside of cockpit where canvas will fold under (4-5 inches). Let it dry.

14. Apply the second coat of glue to 1) and 2).

15. When the second coat of glue is dry on the center strip and panels, the spreader boards are put in to open the body panels to their normal position. Place the kayak upside down on sawhorses.

16. Three workers will be needed to put on the center strip. Expert help is available and encouraged for this step. Two people hold the center strip above the kayak, while the third worker carefully presses the center of the canvas (marked with pencil) to the corresponding center of the kayak bottom (also marked with pencil). He then carefully works towards each end, taking care that the canvas is centered equally on each side, and wrinkle free. Turn the kayak over; continue to press the canvas to the tap deck, finally folding the last 3-4" under at the cockpit. Use a block to set the joints and rub out any wrinkles.

The spreader boards can now be removed and the joints lightly pounded with a rubber mallet.

GLUING REINFORCING STRIPS

Four pairs of reinforcing strips will be installed, one on each body panel surface. They are:

- Bottom runners
- Floor strips
- Outer cockpit edging and inner cockpit edging

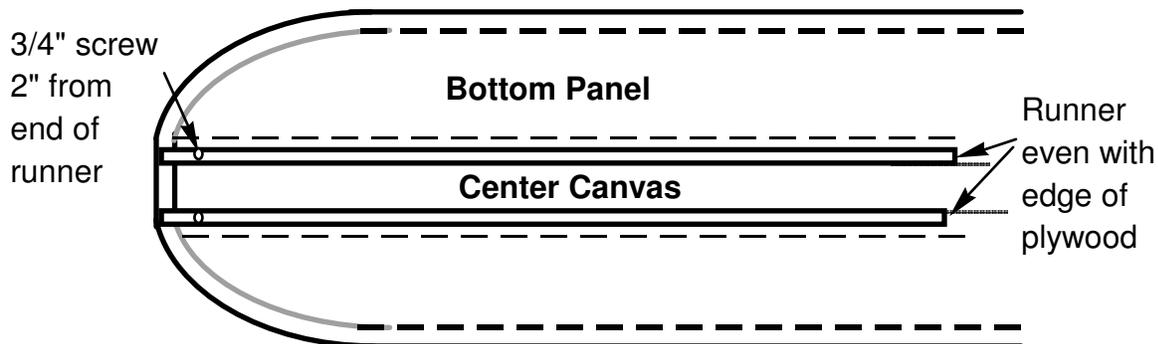
They will be glued on with contact cement, and the ends and center of each runner or strip will additionally be bolted on to prevent loosening. (See Figure 3)

BOTTOM RUNNERS 5/16" X 3/4" X 117"

1. On Day 1, you tapered the ends of the runners with belt sander.



2. Apply two coats of glue to runners and the bottom of the boat. The runners go on top of canvas just over the inside edge of the plywood panels.
3. With kayak collapsed, put the runners in place. The ends should be 1-1/2" from the end of the kayak. Keep the runners flush with the inside edge of the plywood.



4. Install the spreader boards.
5. Drill 13/64" holes 2" from each end of the runners, being careful not to drill through the top body panel. Counter sink the drill holes so that a flat head 10/32 machine screw will be flush with the runner.
6. Put the 10/32 x 3/4" machine screws through the holes, reach inside the kayak (a good job for small boys), and put the washers and nuts on all four screws; tighten.

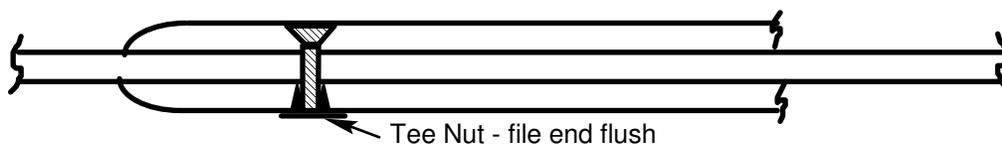
FLOOR STRIPS 5/16" X 3/4" X 48"

1. On Day 1, you tapered the ends of the strips with sander.
2. Mark the center of the strips and the center of the kayak with pencil.

3. Mark glue areas on the inside of the kayak floor according to Figure 4, tracing around the strips.
4. Apply two coats of glue to the strips and kayak floor.
5. When the glue is dry, place the strips on the floor of the kayak they should be even with the edges of the plywood panel,
6. Drill $13/64$ " holes 2" from each end and in center. Countersink the outside for the screw head, back drill the inside for the Tee-nuts with a $1/4$ " bit (don't go too deep!) and bolt into place with 10-32 machine screws and Tee nuts.

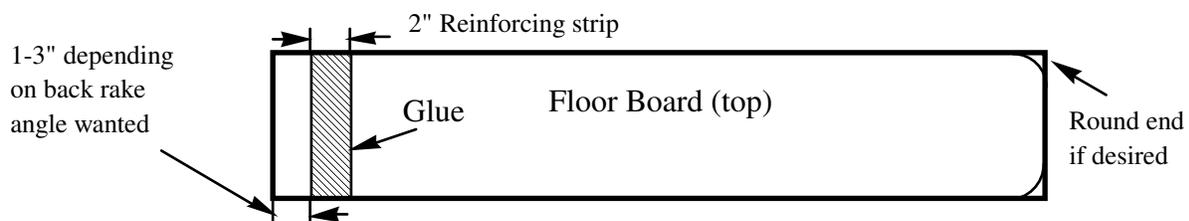
COCKPIT EDGING $5/16'$ X $3/4"$ X $48"$; $11/16"$ X $3/4"$ X $48"$

1. On Day 1, you tapered the inner and outer strips with sander.
2. Mark the center of the strips and the boat (inside and out), then trace around the strips according to Figure 4.
3. Apply two coats of glue to the strips and the cockpit inner and outer edges.
4. Place the inner and outer strips according to Figure 4, and clamp with C-clamps.
5. Drill $13/64$ " holes 2" from each end and at the centerline. Countersink the outside for the screw head, back drill the inside for the Tee-nuts with a $1/4$ " bit (don't go too deep!) and bolt into place with 10-32 machine screws and Tee nuts..



GLUING SEAT REINFORCING

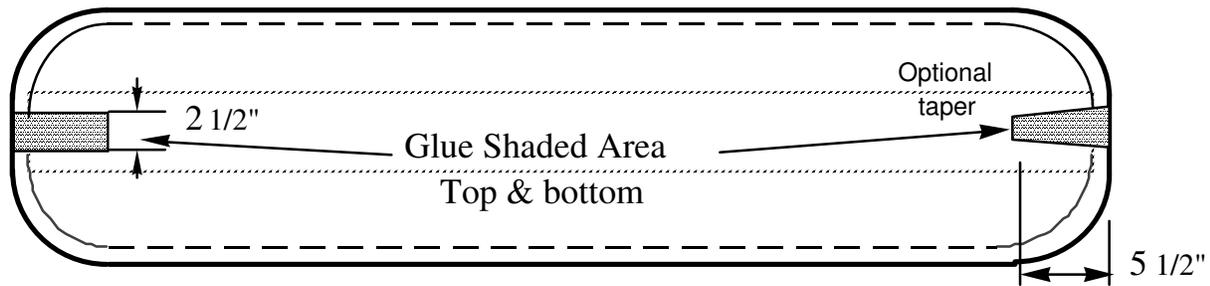
1. Mark the locations for the reinforcing strip on the floor board.



2. Apply two coats of contact cement to the floor board and reinforcing strip.
3. Carefully attach the reinforcing strip to the floorboard.

GLUING BOW AND STERN TIE-DOWNS

1. With the spreader boards in, mark the locations for the tie-downs on the top and bottom of the bow and stern. OPTION: Cut taper in canvas to reduce fold up stress on joint.



2. Apply two coats of contact cement to the tie-down canvas and the kayak.
3. Carefully attach the tie-downs to the kayak. If the ends of the tie-downs are aligned with glue areas as shown above, they will extend 2" from the boat. This extension is where the grommets are inserted.
4. At the kayak float picnic, we will install brass grommets, one on each end.

FINISH PADDLE

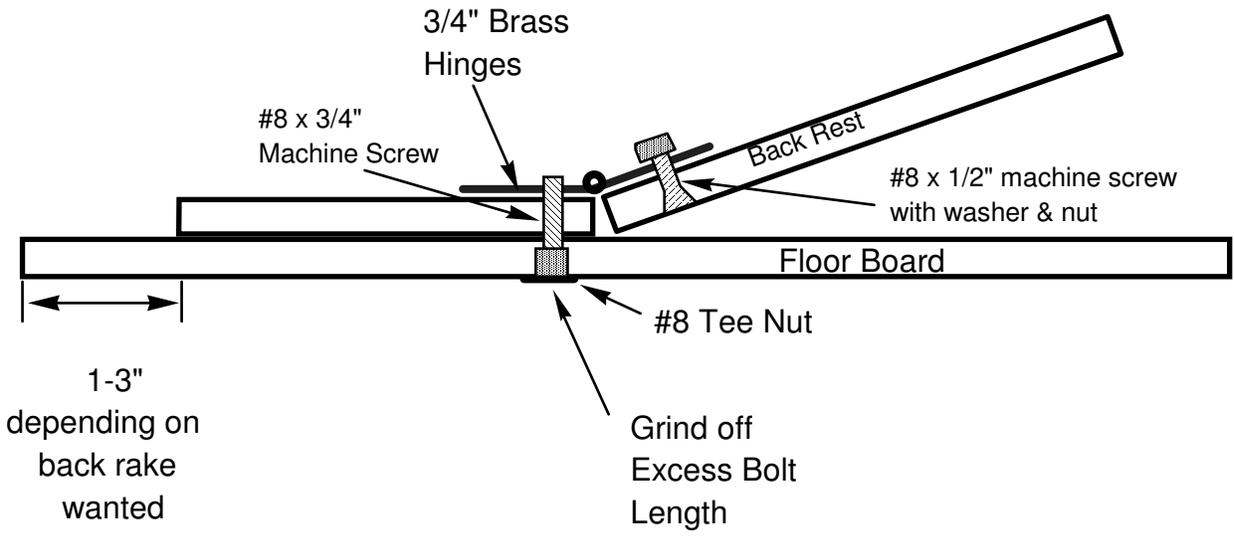
1. On Day 1, you cut the desired shape of the paddle blades with a jigsaw (Figure 5).
2. You also tapered the ends of pole with a sander (Figure 6).
3. Place precut blades in the paddle pole slots so that they are straight and even.
4. Mark around edge of the paddle with pencil.
5. Apply contact cement to blade and slot, and put blade back into position while glue still is wet.
6. Clamp the pole and blade with a C-Clamp.



7. When glue is dry, drill the pole and blade. Countersink pole on one side for the screws. Use a 13/32" drill bit to counterbore the other side for the nuts. (Figure 6)
8. Put in 10/32 flat head screws and nuts.

ASSEMBLING SEAT

1. Install two hinges using #8 x 1/2 and #8 x 3/4 machine screws, nuts, and tee nuts.



AFTER DAY 2

SANDING AND PAINTING OF KAYAK

After the kayak, paddle and seat have been assembled, they should be sanded, primed, and painted. The spreaders should have their voids filled, then get sanded, primed, and painted. Choose and color or combination of colors you like. Remember to leave plenty of time between the last coat and when the kayak will be used to allow for thorough drying of the paint. We recommend latex on outside canvas (and accessible inside bottom) because of its flexibility. Thin slightly with water for the first coat on the canvas to increase penetration.

The outside of the kayak, the seat, the spreader boards, and the paddles should be painted a bright color so they can be located in murky or dark water.

FINAL SEALING

Insert Spreader Boards

After paint is dry - place kayak upright on two sawhorses and pour a 1-qt can of Thompson's Water Seal inside the kayak. This helps preserve the wood and canvas for longevity.

CAUTION: Don't use too much as it can dissolve the contact cement.

Slosh the sealer around, turning the kayak over in order to coat the underside of the hull top and canvas side strips. Coat all inside surfaces and after a minute or two, invert the kayak and pour sealer out. Drain the extra sealer out into a tin-foil turkey roasting pan. Make sure ALL sealer is out, as sealer is a solvent for the contact cement.

Sponge spreader boards and let dry for at least one day before floating.

Note that this step is controversial and we have experienced boats becoming unglued.

FLOATATION

To assist in the flotation of the kayak when capsized, several closed containers should be stuffed into each end of the kayak behind the spreader boards. Partially-inflated beach balls (Diddams Party Supply) are excellent. Soccer balls or empty plastic 1-gallon bottles will also work well.

Figure 1

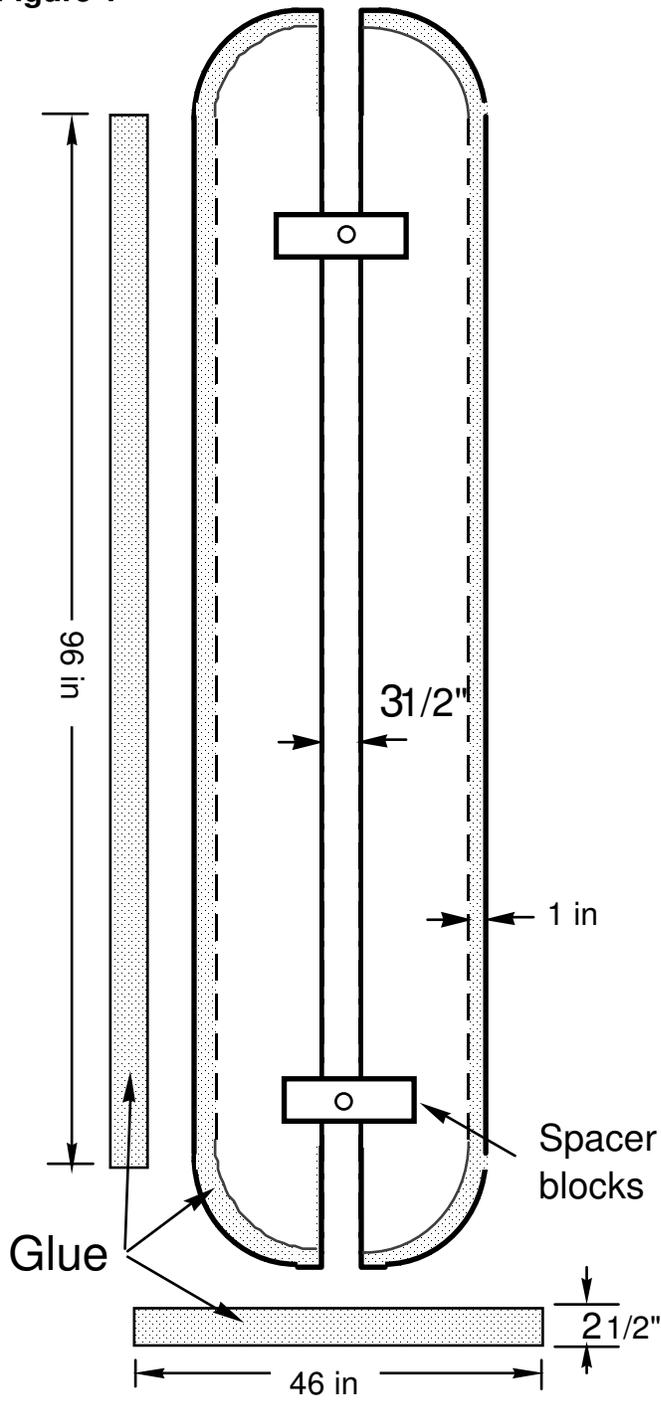


Figure 2

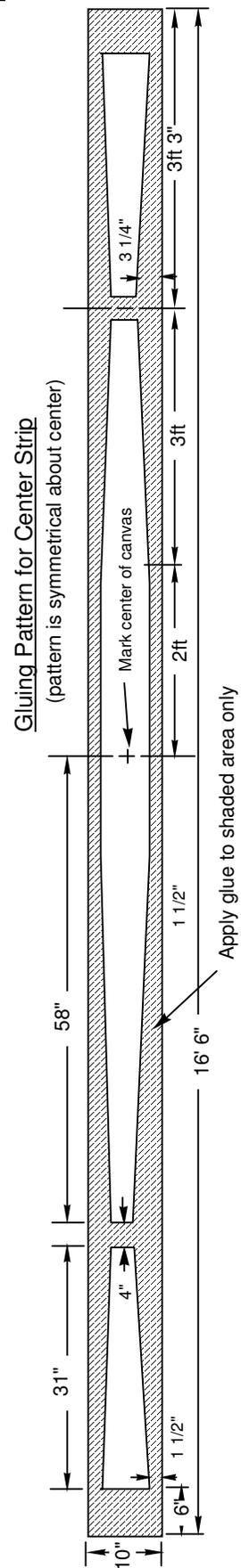


Figure 3 : Cross Section - Midship

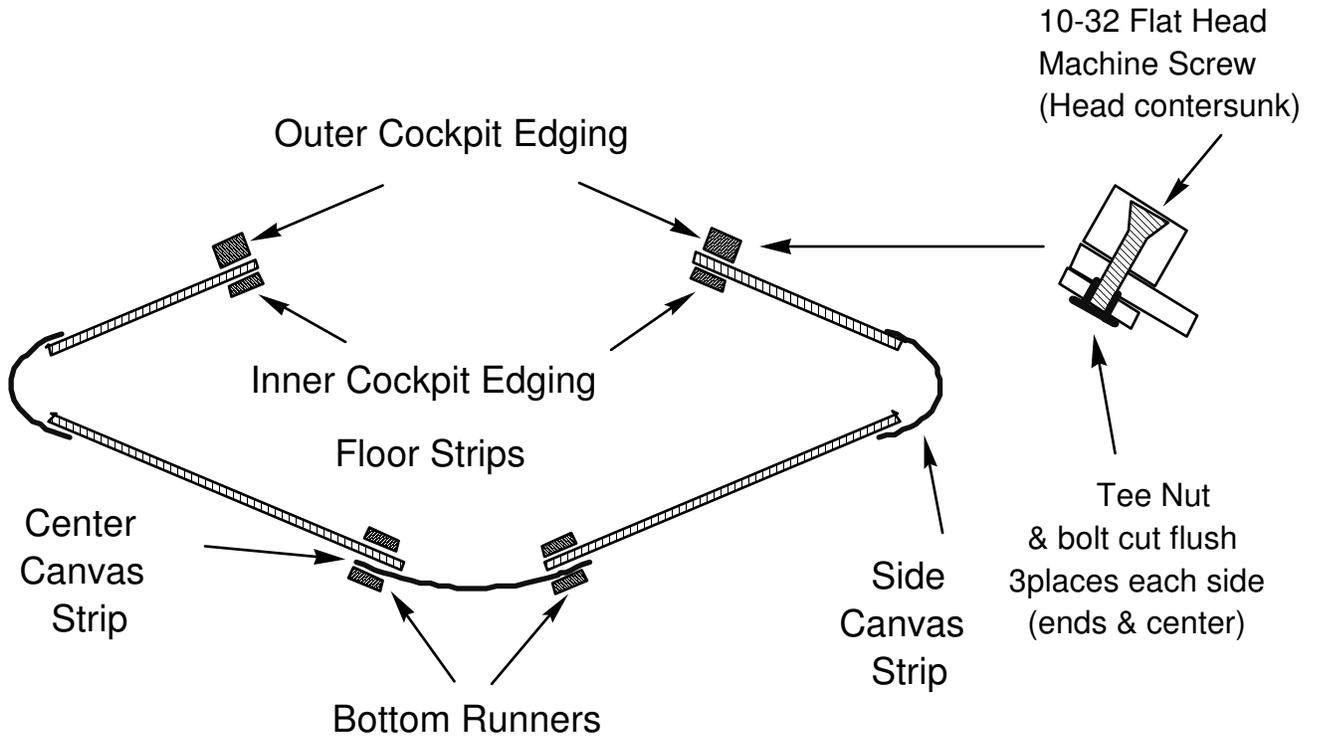


Figure 4

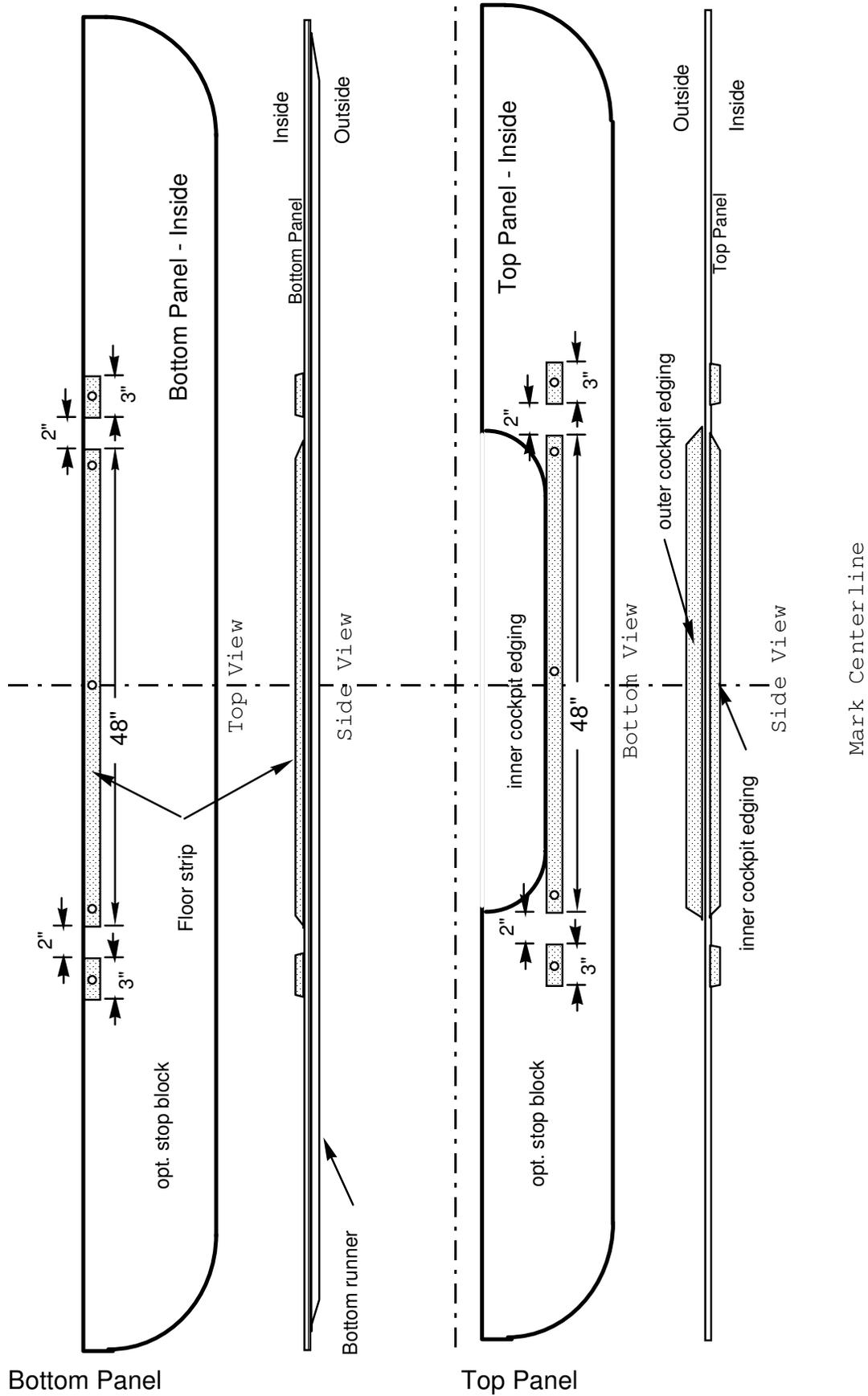
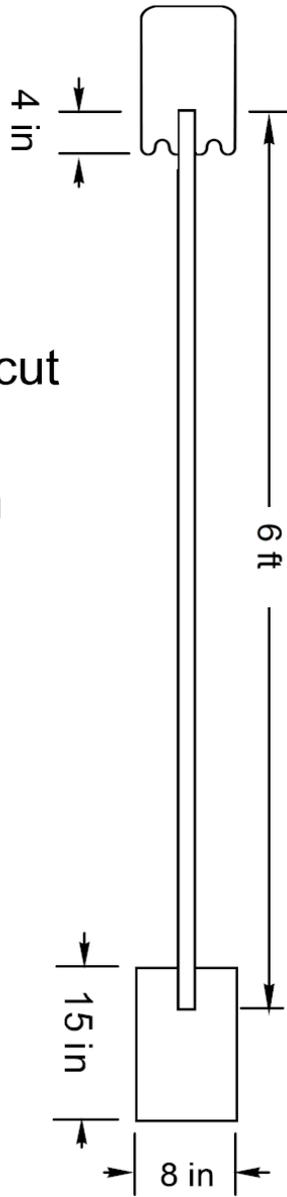


Figure 5



Paddles
may be cut
any way
chosen

Figure 6 : Cross Section Detail of Paddle

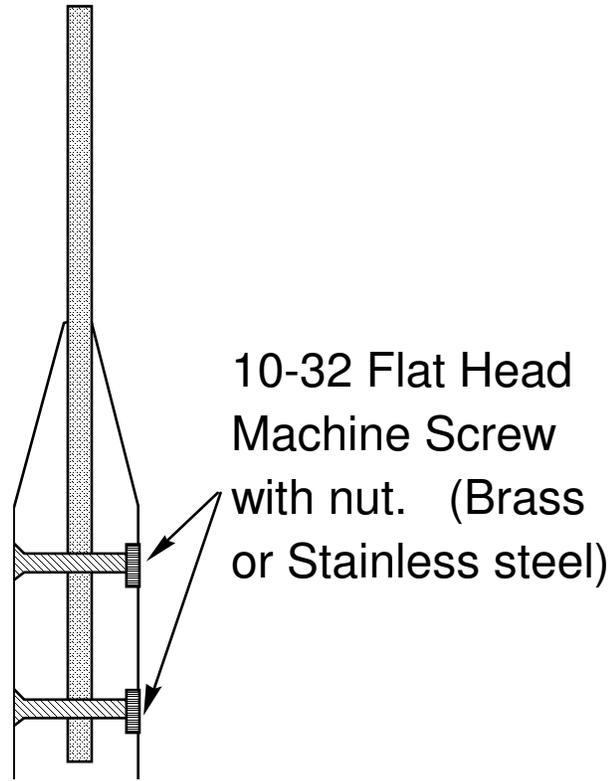
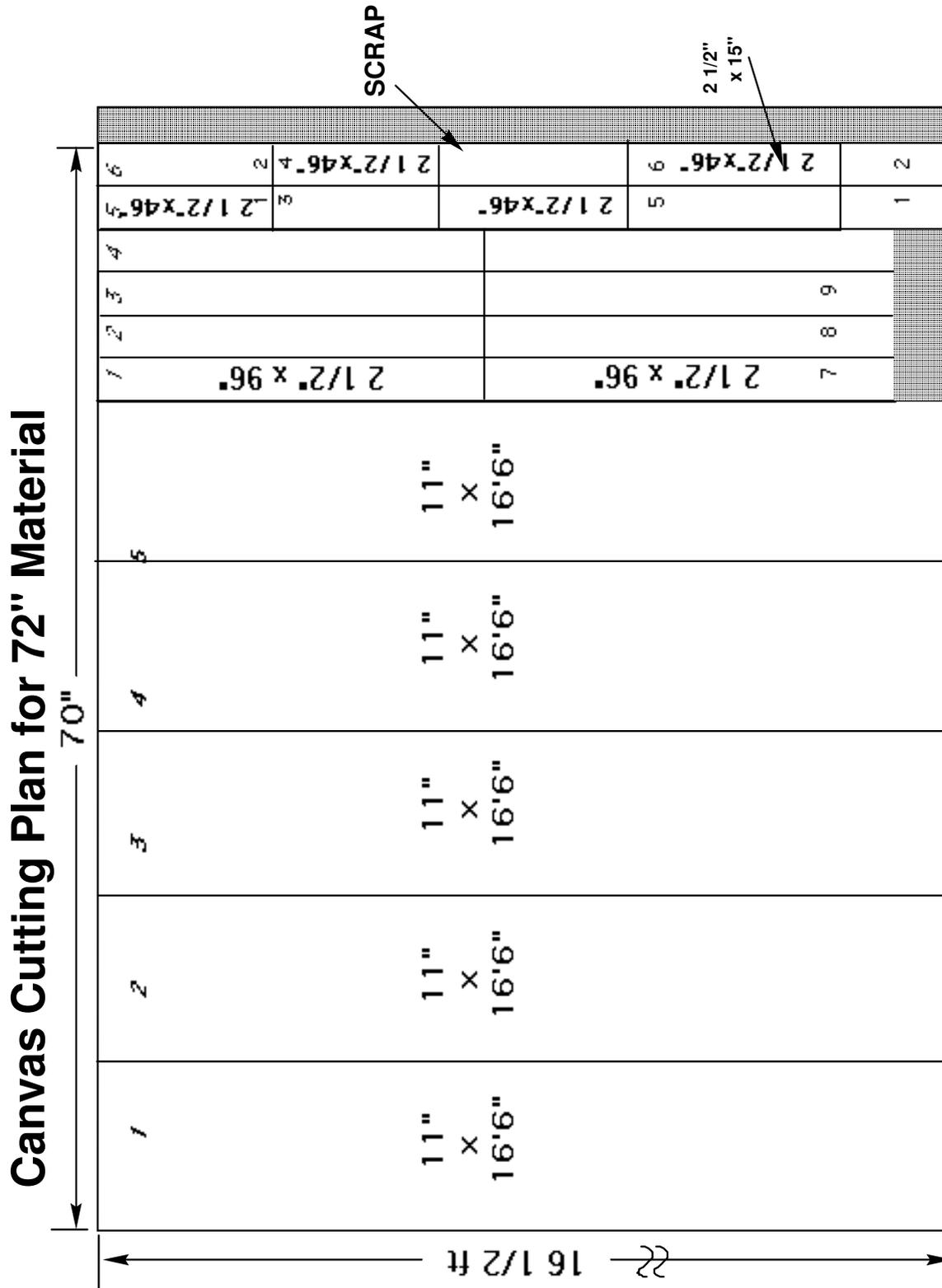


Figure 7 : Layout for cutting 11 inch wide center strips



This pattern will provide all canvas for 4 1/2 Kayaks with leftovers
 (Generally cut into 11" and 2 1/2" strips. Then cut to length)

LAUNCH DAY

Troop 37 completes the build with a Kayak Picnic at Shoreline Park. All are invited to bring their kayaks to test them on the lake waters. All kayak campers are encouraged to check out the sea worthiness of new and old kayaks. For new kayaks builders, this will be the final deadline to get the paint jobs ready (make sure the paint is dry).

Launch time includes the following:

1. Grommets in the bow and stern ties will be inserted to complete the final rope tie installation.
2. Wearing PFD's (personal flotation devices) is required.
3. Extra flotation (ie. bleach bottles, soccer balls, etc) and towels to clean up afterwards are encouraged.
4. Final water tight checkout (the real thing).
5. Scouts floating their kayak earn a Troop 37 Kayak patch.

Go have fun. Bring cameras to catch the big smiles!



MAKING AN 8' KAYAK

The standard Troop 37 Kayak is 10' long. If this length plywood is unavailable the following 8' variation of the kayak design was built by Roland Nock roland@nock.screaming.net in England from our plans. Below are his comments and recommended changes to make it work.

In fact I made very little change to the dimensions other than the overall length. I made the cockpit cutouts 42" long and 6" wide. I thought that I should make the cockpit fairly wide because I am getting a little wide round the waist myself! However, once I fitted the spreaders I realized that a narrower cutout (say 4 1/2" or 5") would have been wide enough and would leave a little more freeboard. Not an issue on flat water on a calm day, but something to consider if the wind and waves start to pick up. If I make a second kayak I might also shorten the cockpit a little - perhaps reducing it to 38" or 36". That would leave plenty of room to get in and out comfortably but with a smaller area for water to get in (rain, waves, run-off from paddles and the rest). A little more like a kayak and less like an open canoe. The floorboard/seat dimensions seem pretty much determined by the position of the spreaders so I left them as you give them. I have made a canvas spraydeck and that would have been a little easier to fit with a shorter and narrower cockpit.

The main factor in cockpit length seems to be access to the spreaders. In an 8ft boat there isn't really much choice about where to fit them. The spreaders have to be close enough to the cockpit to make fitting and removing them practical. They have to be far enough apart to allow the paddler to sit with legs fully stretched in front. Once you have shaped the nose and tail there's not a lot of straight line left to fit them in! I used the measurements on your plans to locate the spreaders and it works just fine. With a shorter cockpit opening I'd probably get away with keeping them the same distance apart but fitting and removing them would be more difficult.

I found the spreaders were a VERY tight fit so I took about 1/2" or so off both the port and starboard vertical sides. I also took about 1/2" off the "points" on the curved bottom edge. They are still a snug fit and I've no worries about them dropping out while I'm paddling. Before trimming them I damaged one spreader attempting to remove it. The 1/2" ply flexed pretty badly and started to delaminate. I have bought a small piece of 3/4" ply and someday I'll get round to making new 3/4" spreaders. I think trimming 1/2" from each side has cured the problem but having chunky and more rigid new spreaders will be a confidence booster in any case!

I was very pleased with the way the kayak performed. I stuffed the nose and tail with empty 6 pint milk containers (plastic, screw-topped) for buoyancy. I tested it first by myself, then with myself and my 9 year old daughter aboard. I am 5ft 11" tall and weigh about 180 lbs. The seam was well clear of the waterline with me alone. With both of us the seam was getting close to the waterline so there was not much freeboard - fine for a test but not something I'd risk for long. Very easy to turn and light to paddle. Even Rachel could handle it once she'd discovered the basic principles of paddling. There was a marked tendency to fishtail at first but I soon worked out how to avoid that. On still water I don't think a rudder would be necessary but some sort of fixed skeg might be useful. Once the spring arrives I intend to give the kayak a longer test run - perhaps a three or four day camping trip on one of our canals. Even with me aboard there is plenty of room for a small tent and some lightweight camping gear. Not many waves to worry about on an inland canal!

Many thanks again for giving me such a fun project to work on.
Happy paddling! Roland Nock roland@nock.screaming.net