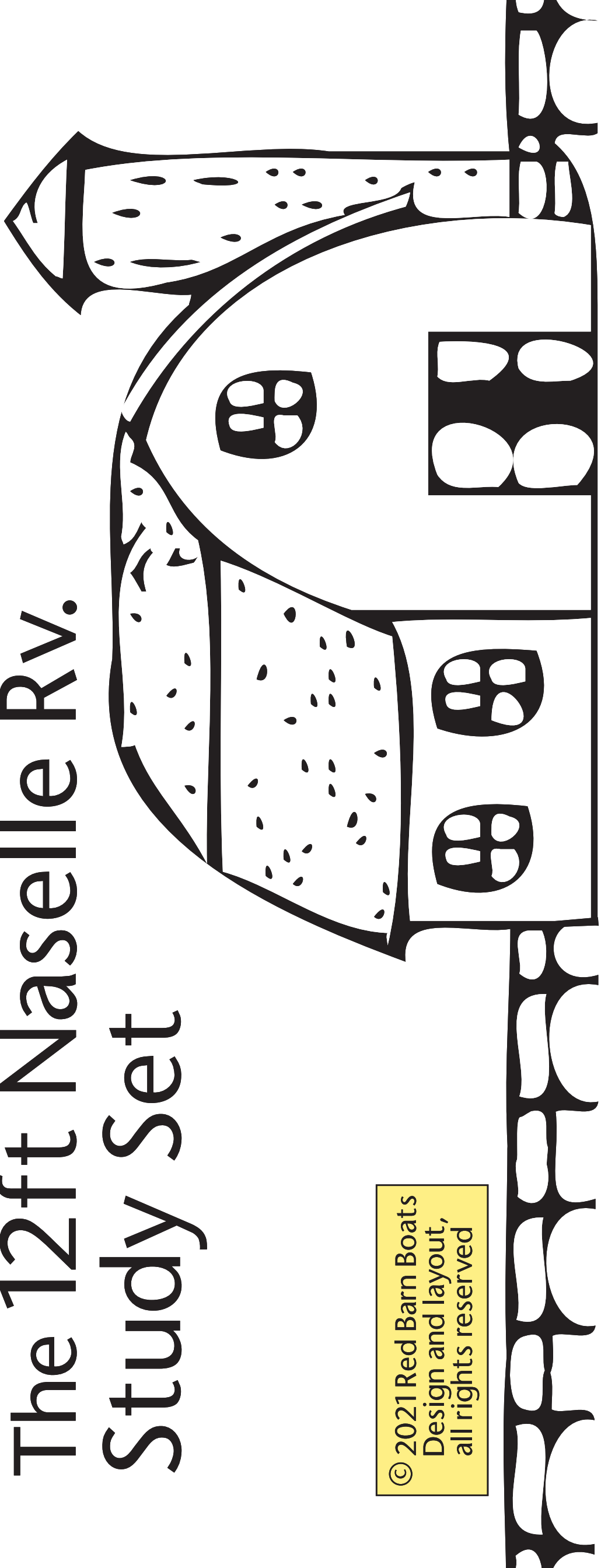


RED BARN BOATS

The 12ft Naselle Rv. Study Set

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Naselle River Drifter Version #6 01-05-2021

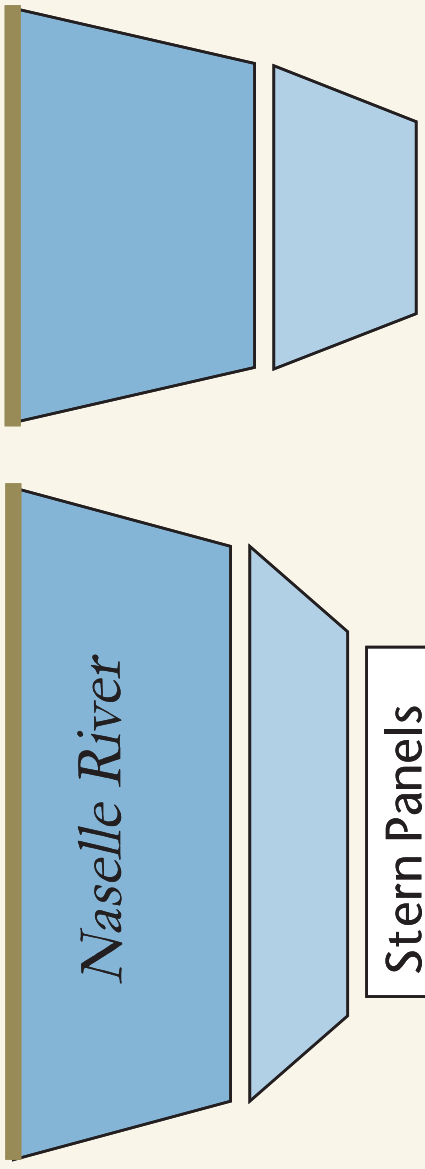
Alignment marks
to assemble model!

Model Parts!

Transom parts
on next page



Naselle River

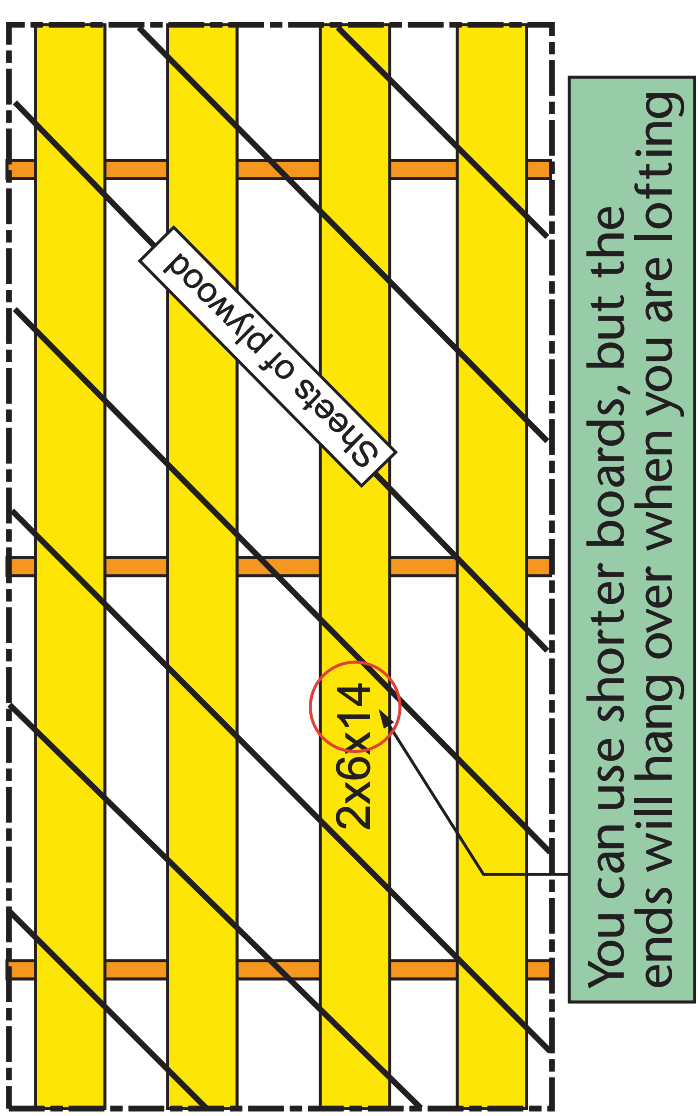


Stern Panels
for hull model

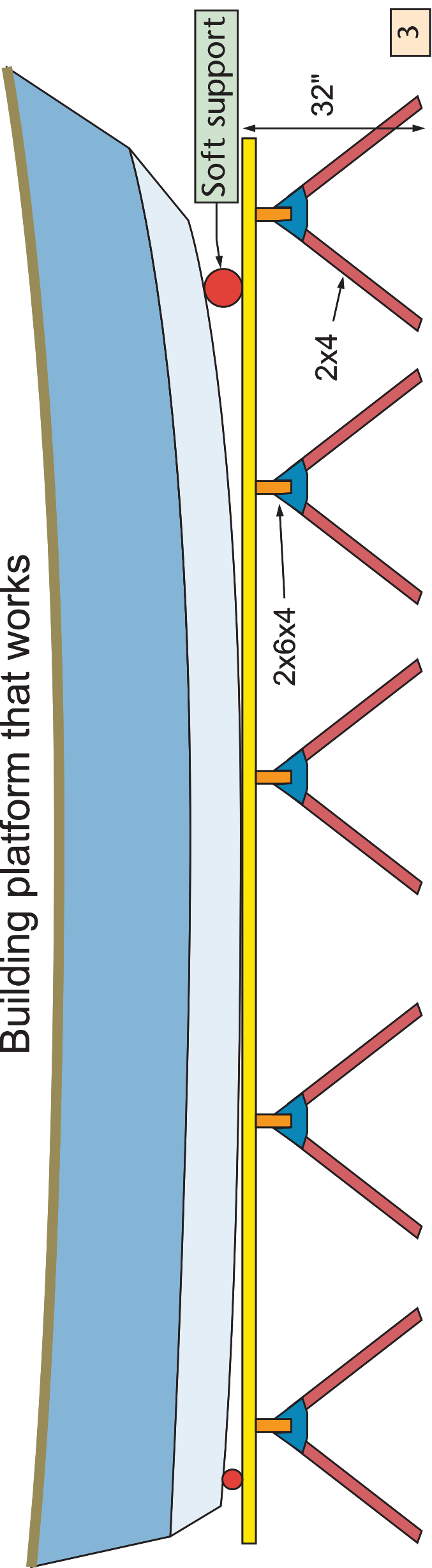
Bow Panels
for hull model

Use with the panels
on the previous page

Model Parts!

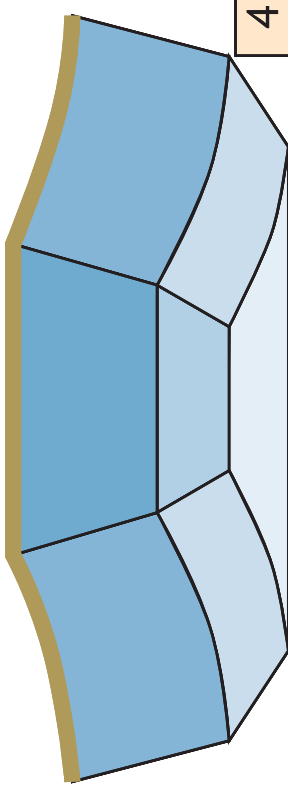
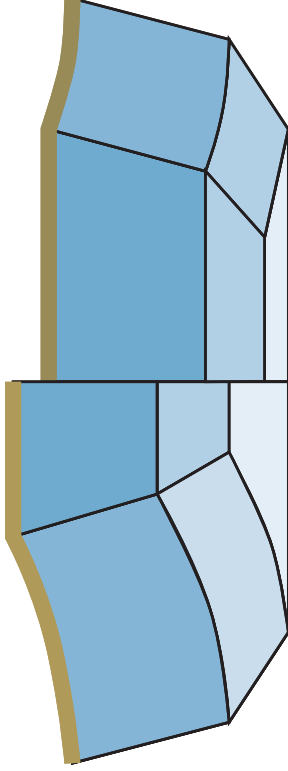
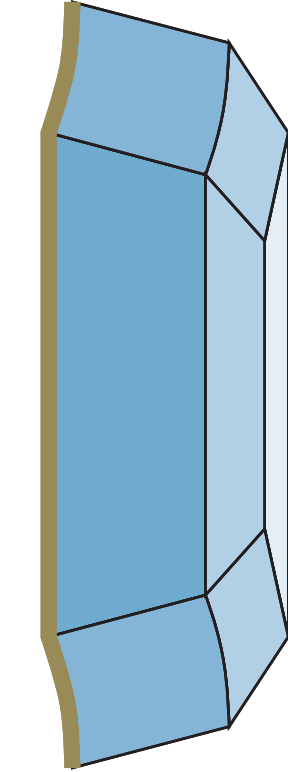
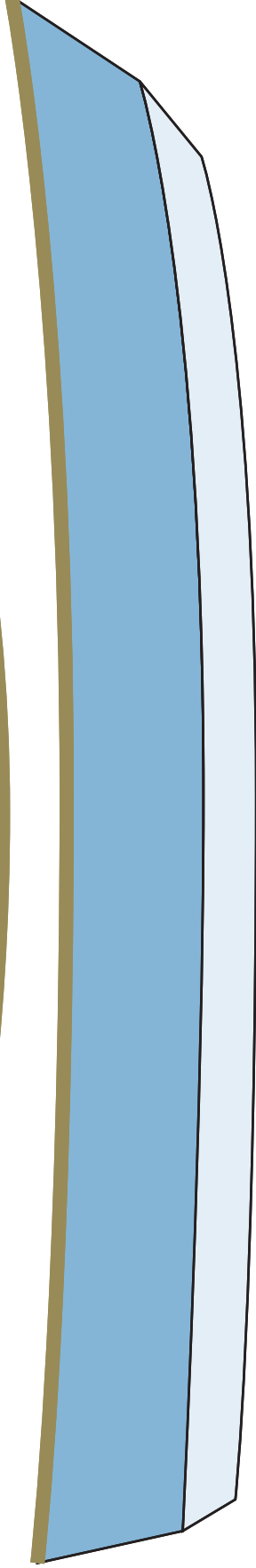
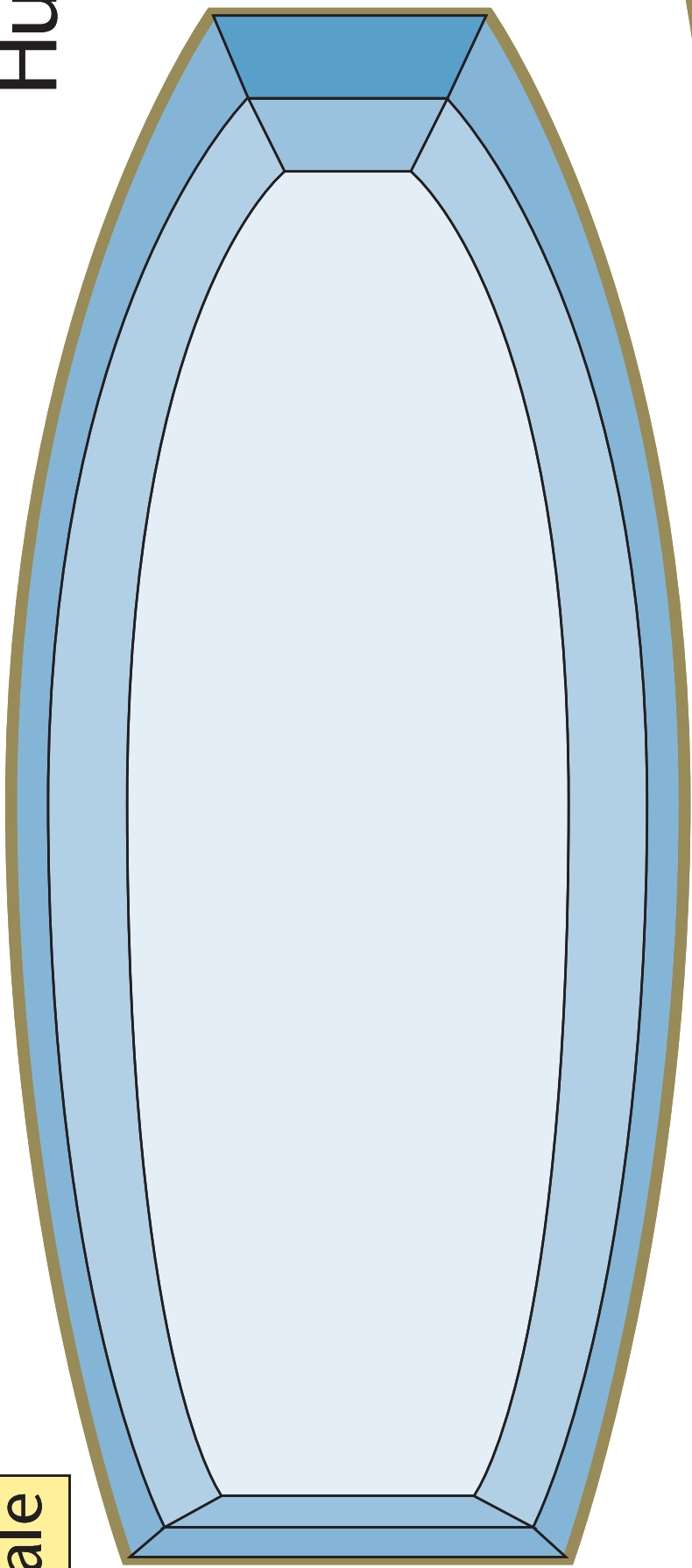


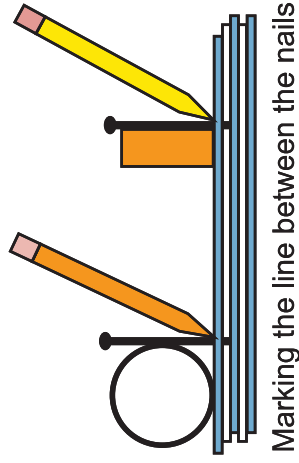
Building platform that works



Not to Scale

Hull Views

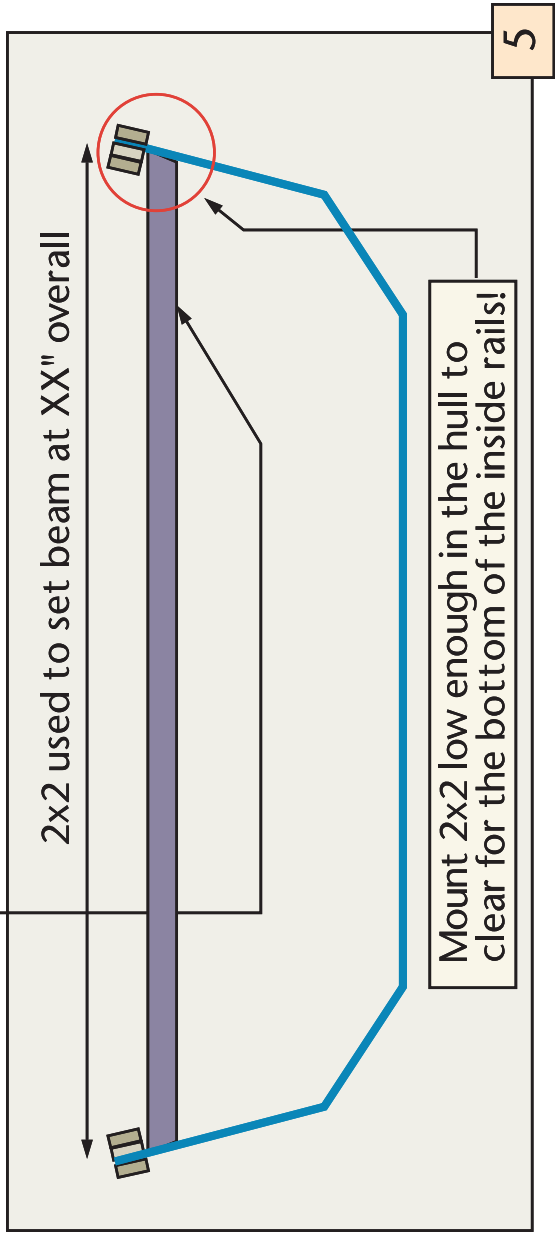
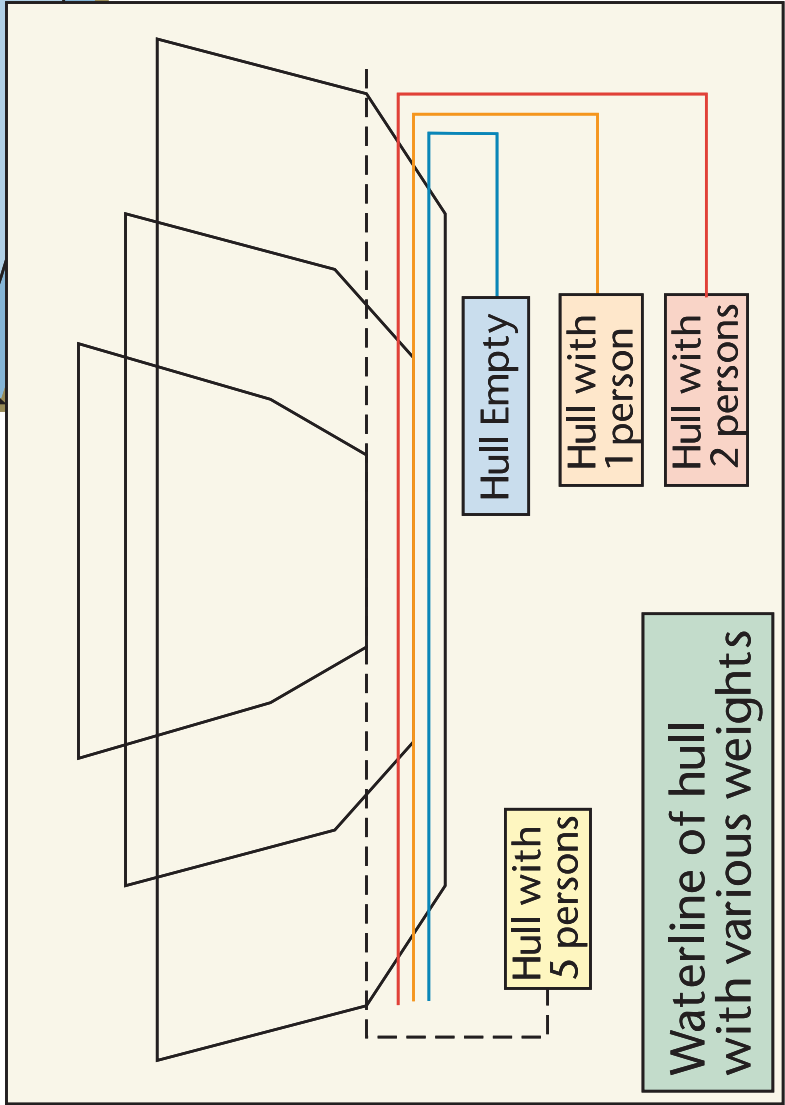




See page #XX for details on adding the "station line cut marks" when you loft and cutout the panels!

Install the 2x2 after the hull is wired up! Keep it there until the rails are in/the seats are installed

Mount the forward edge of the beam 2x2 at the 72" "station line cut marks"



Location of Payson Joints in the hull.

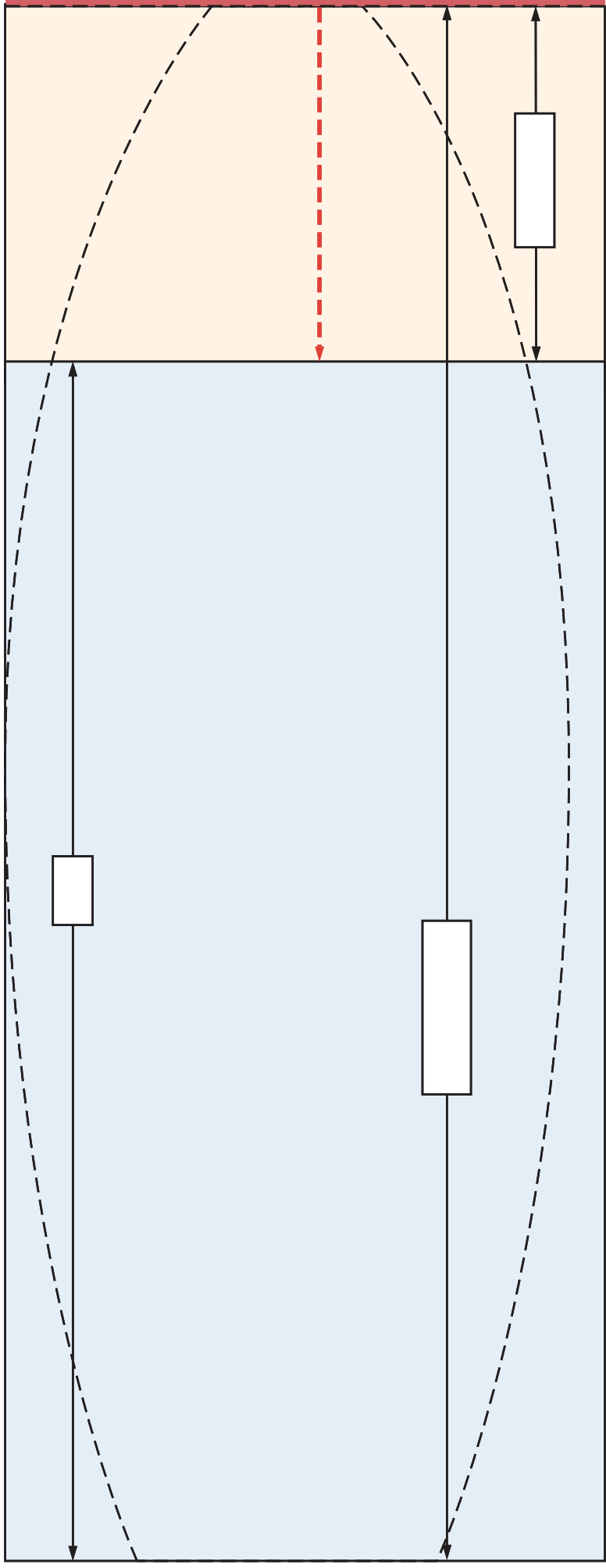
Inside, double layer of glass cloth

Location of areas where the Payson Joints will appear on the hull. The inside faces will have two layers of glass cloth and the outside will only have one layer. The bottom panel will have one layer on the outside of the seam and will also have a layer of glass cloth over the entire bottom of the hull!

Layer of glass cloth over the complete bottom and up the sides to the "upper/lower" panel seam.

Location of the Payson Joint glass cloth on the outside seams.

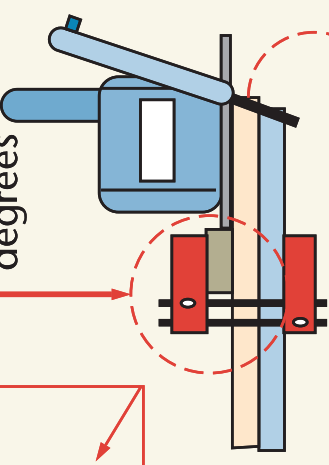
Outside, single layer of glass cloth



Note: Add an 1" to this length if you "add a bevel" to the sheets as a form of scarf joint besides the Payson joint used in the plans!

Note: Must be 100% straight, or don't do it!!

Bevel at 45 degrees



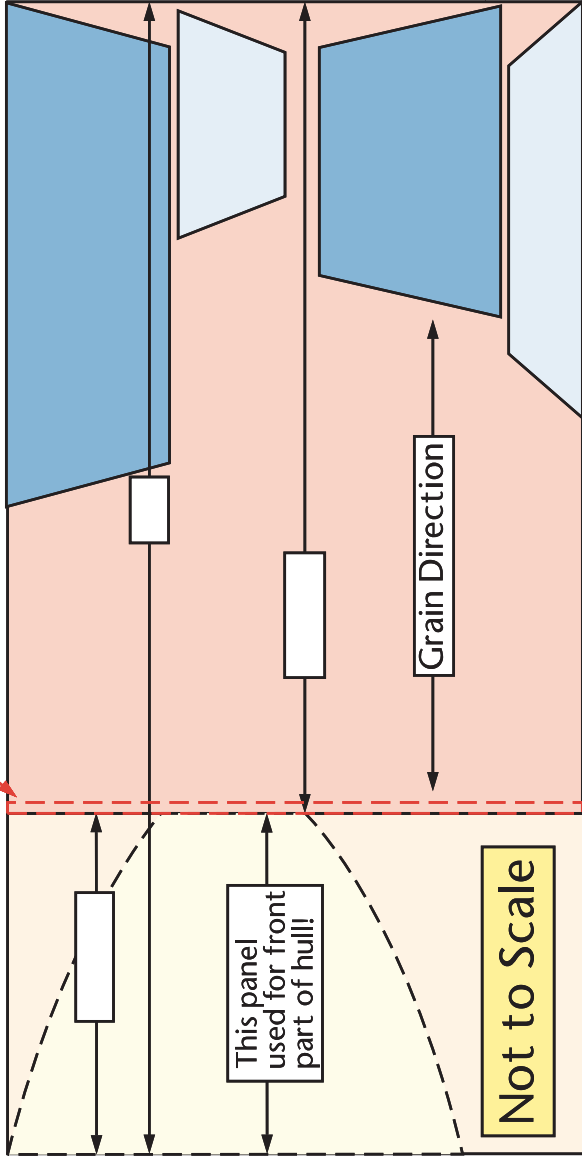
A diagram of a boat's hull cross-section. The hull is divided into two colored sections: a blue section at the bottom labeled "Stern panel" and an orange section at the top labeled "Bow panel". A red arrow points upwards from the top of the bow panel.

The bow panel is flipped over so the "longer edge" is on the bottom of the hull to give the seam more resistance to breaking if you hit a rock at speed.

2

Reduced drawing showing how the bow and transom panels can be cut out of this leftover piece of plywood used to make the forward part of the bottom panel. The panels are shown lain out so the plywood grain is going along the horizontal lengths.

This does not have to be done to get a strong Payson Joint, but can help.



Not to Scale

This panel
used for front
part of hull!

Grain Direction

Note: Add an 1" to this length if you "add a bevel" to the sheets as a form of the scarf joint besides the Payson Joint used in the plans!

Note: Must be 100% straight, or don't do it!!

Bevel at 45 degrees

Reduced drawing showing how the bow and transom panels can be cut out of this leftover piece of plywood used to make the forward part of the bottom panel. The panels are shown lain out so the plywood grain is going along the horizontal lengths.

This does not have to be done to get a strong Payson Joint, but can help.

Grain Direction

This panel used for front part of hull!

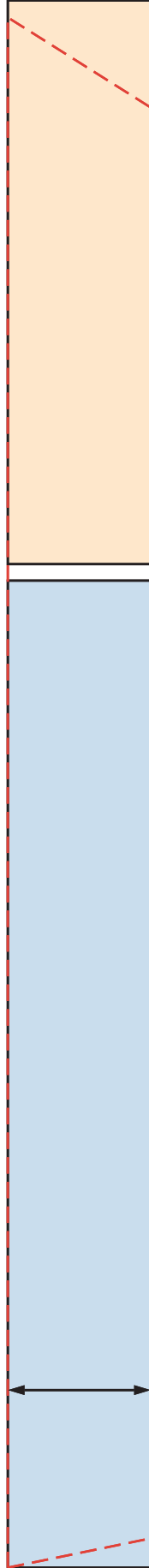
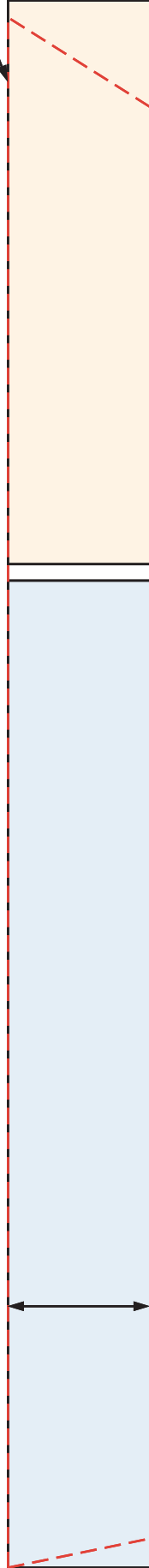
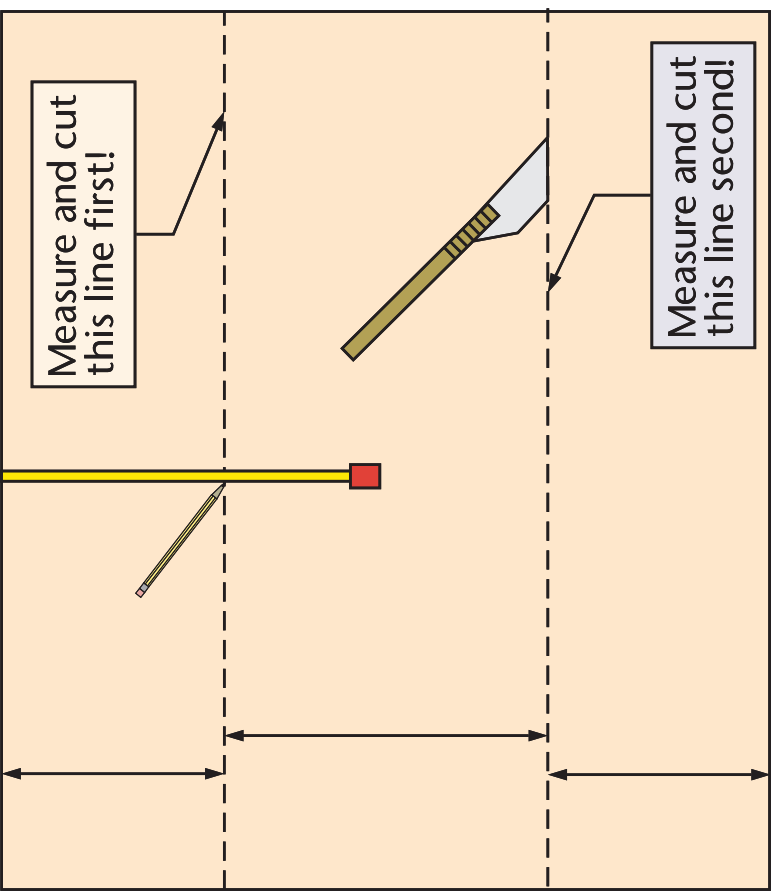
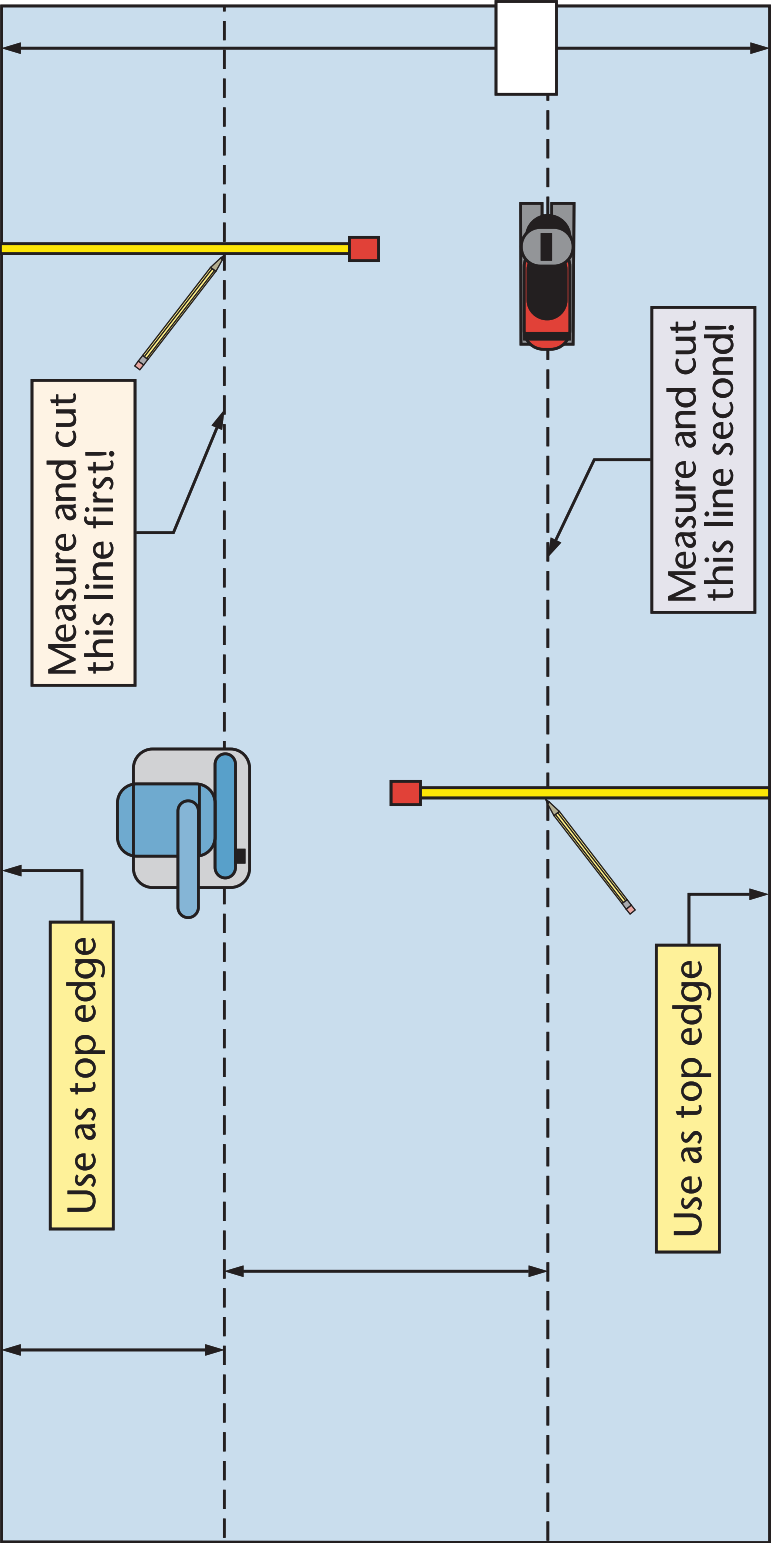
Not to Scale

Bow panel

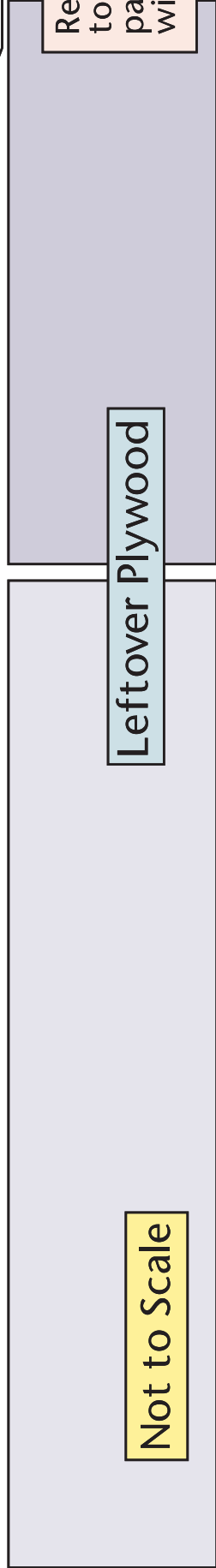
Stern panel

The bow panel is flipped over so the "longer edge" is on the bottom of the hull to give the seam more resistance to breaking if you hit a rock at speed.

7



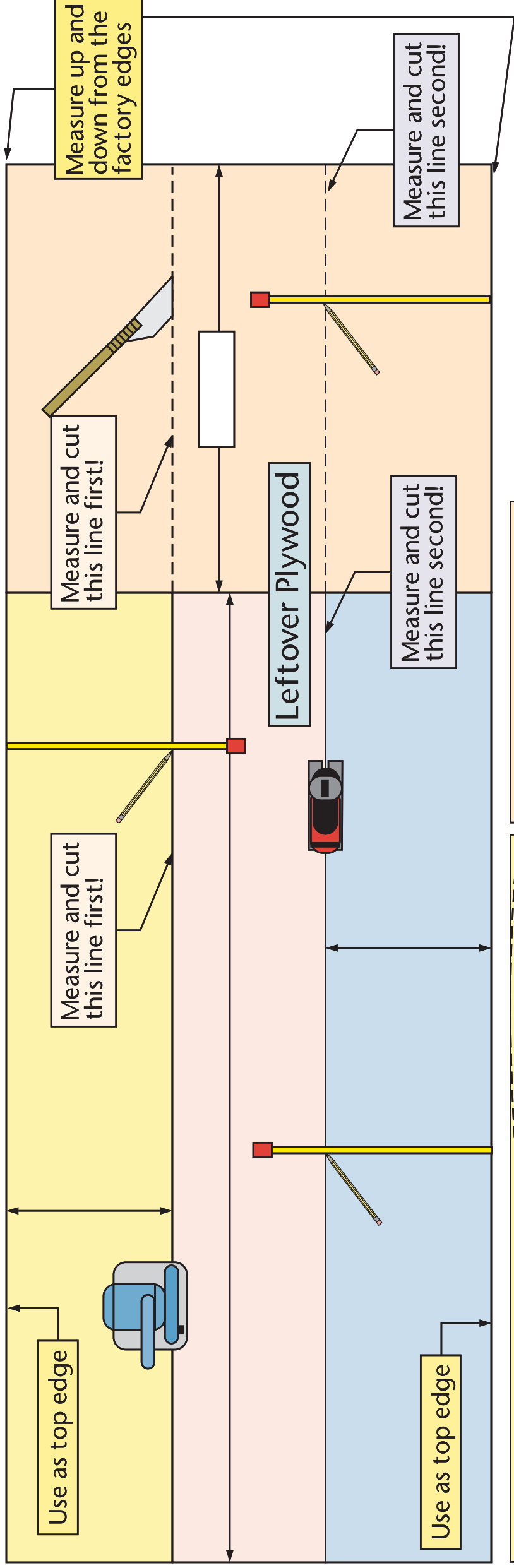
Note: The hull panels are cut from the edges so you will always have at least one straight edge to use for the setup of the Payson joint!



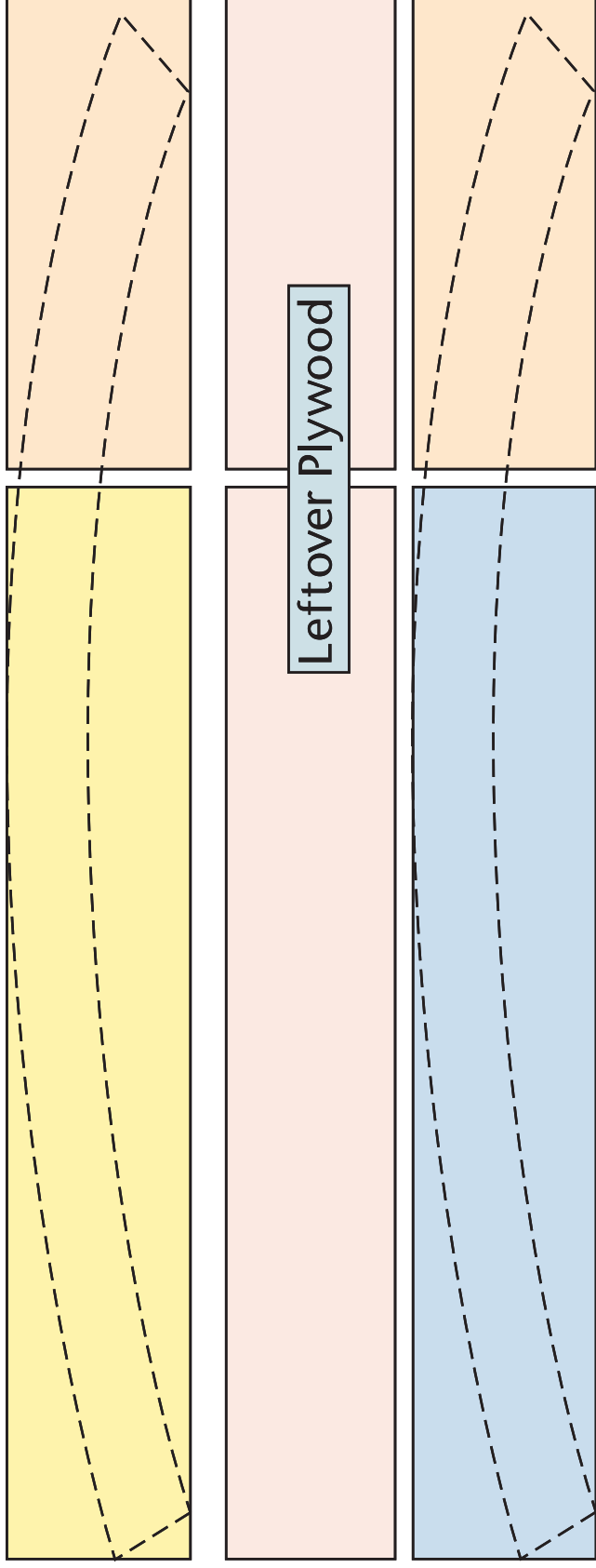
Leftover Plywood

Reduced to fit the page to show the cut out panels ready for joining with a Payson joint

Not to Scale



Note: The hull panels are cut from the edges so you will always have at least one straight edge to use for the setup of the Payson Joint!



Making the Payson Joint

Use the "factory" straight edges for the top edges!

Wet out each layer of glass cloth with epoxy. Let set for a couple hours to "turn green" and then use the utility knife to trim the tape off the edges!

Layer of 6" glass cloth with masking tape to cover the edges and to give a line to cut to when the epoxy has cured!

Install a dual layer of glass cloth on the inside seams. First a layer of 6" wide cloth and then a layer of 12" wide cloth.

Layer of 12" glass cloth with masking tape to cover the edges and to give a line to cut to when the epoxy has cured!

Note: Remember to cover work platform with plastic to keep the panels from bonding to it!

Inside of panel faces!

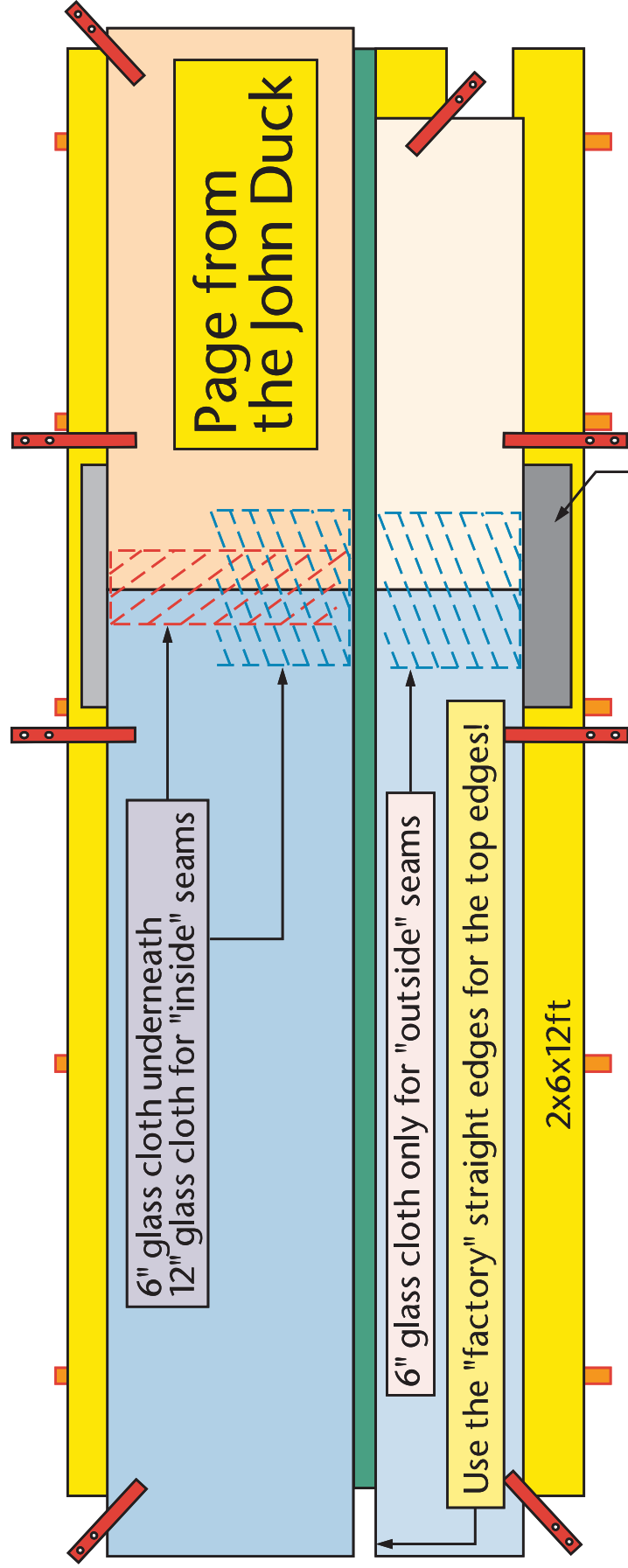
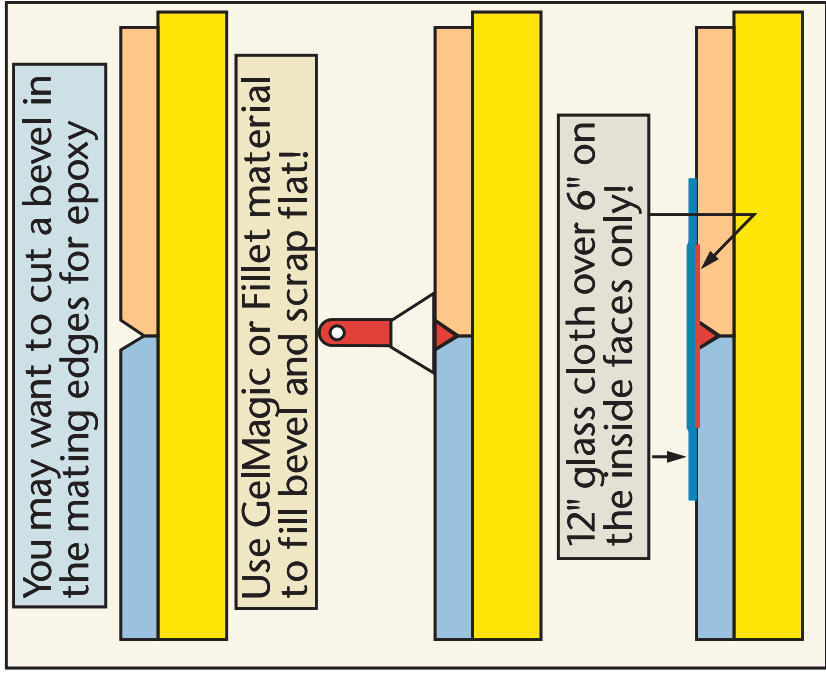
Note: Instead of using 6" and 12" for the joint you can increase them to 8" and 14" for more strength

Inside face of panels

Outside face of panels

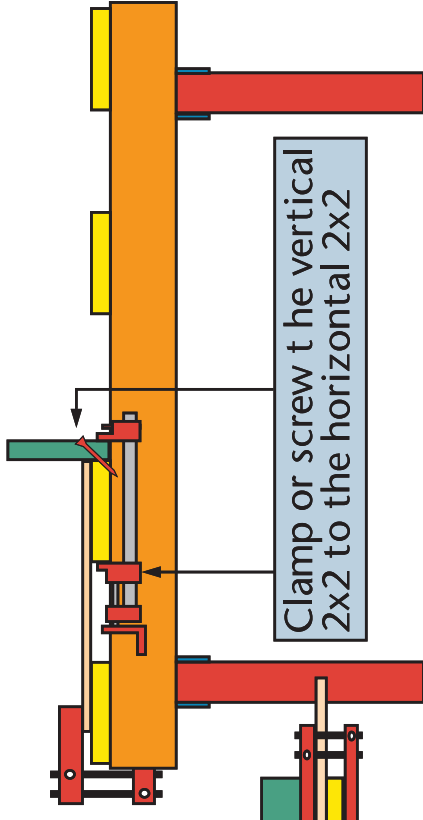
The two side panels shown

Single layer

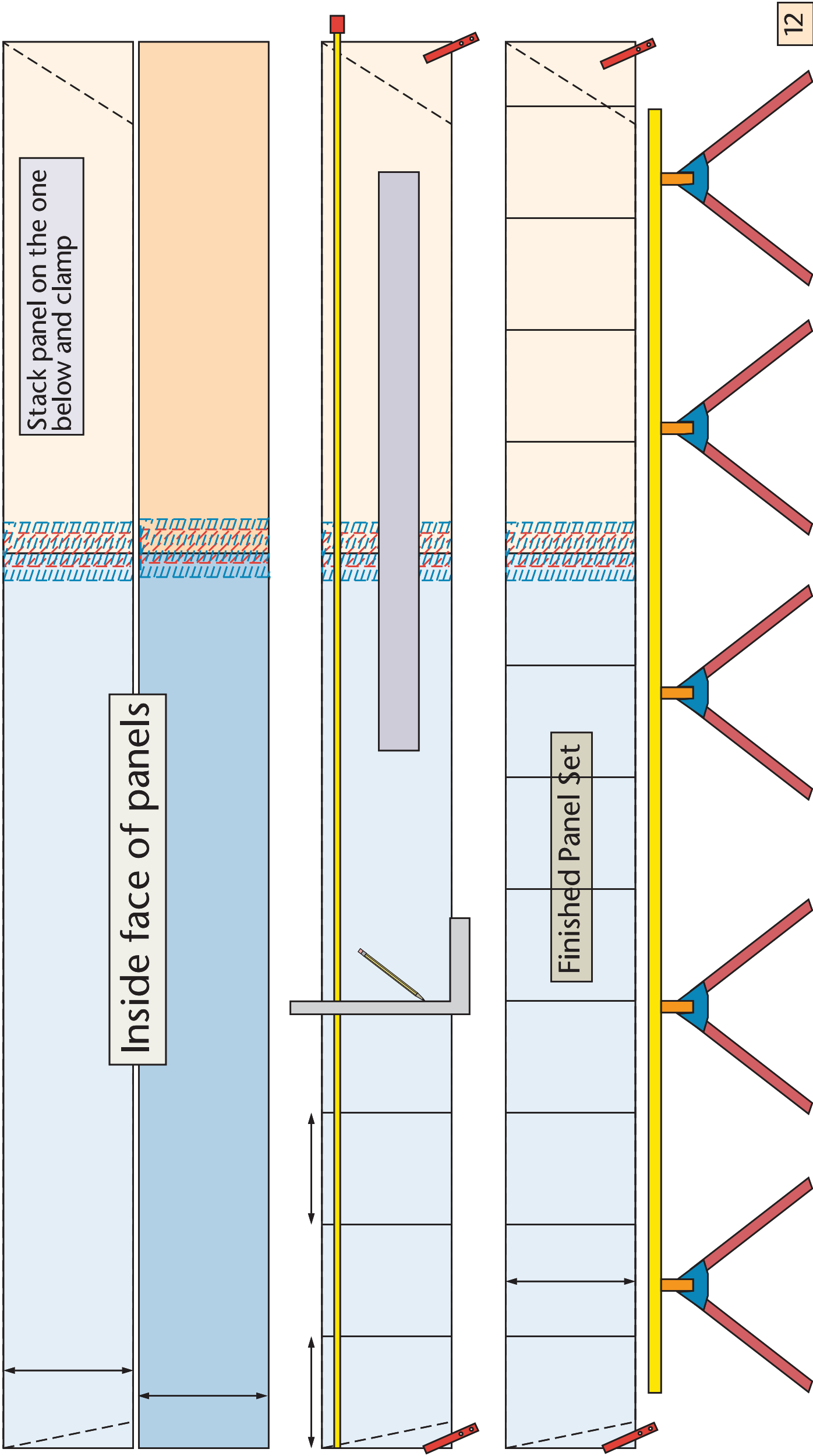


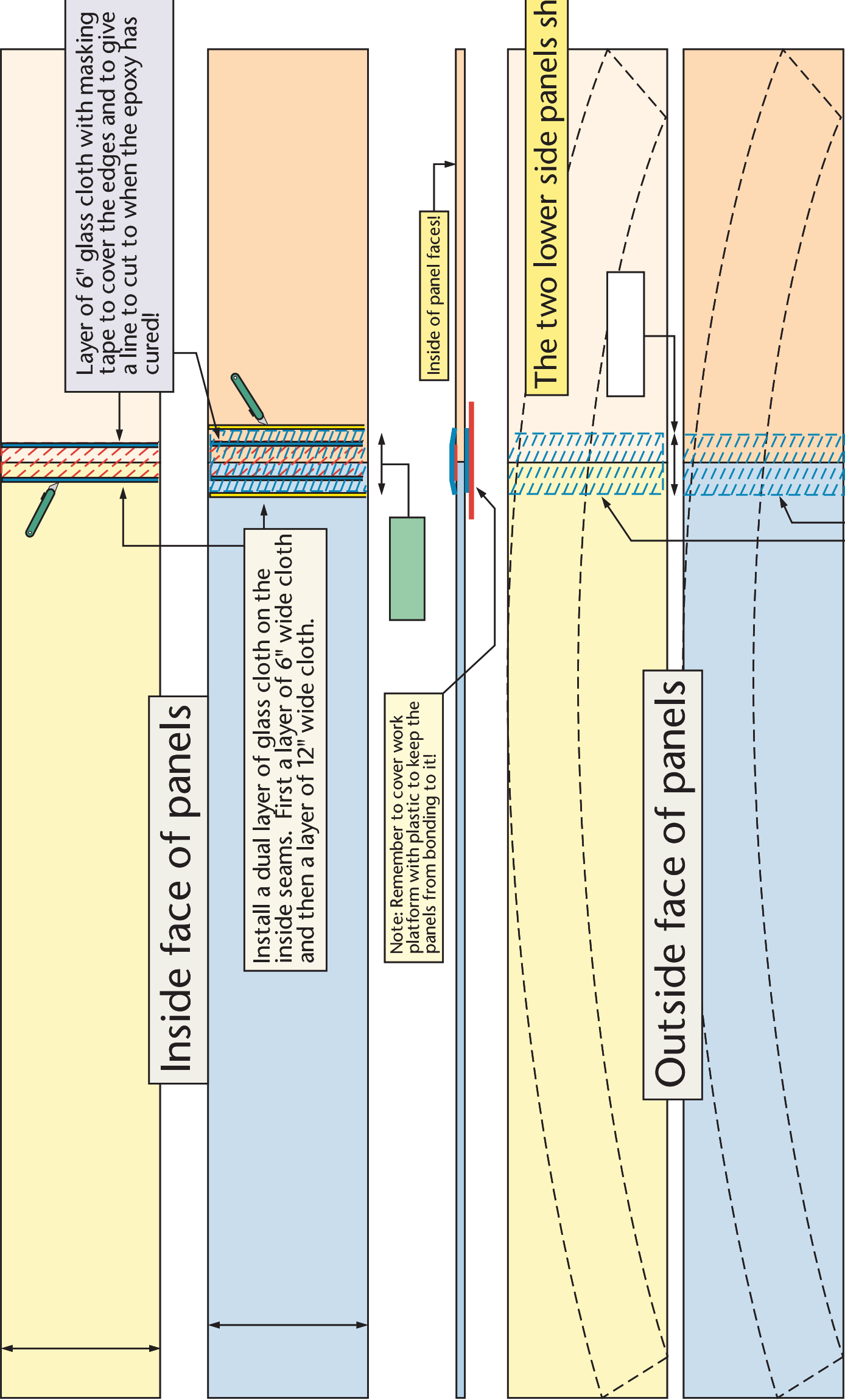
Plastic sheeting under Payson joint to keep epoxy off the bench

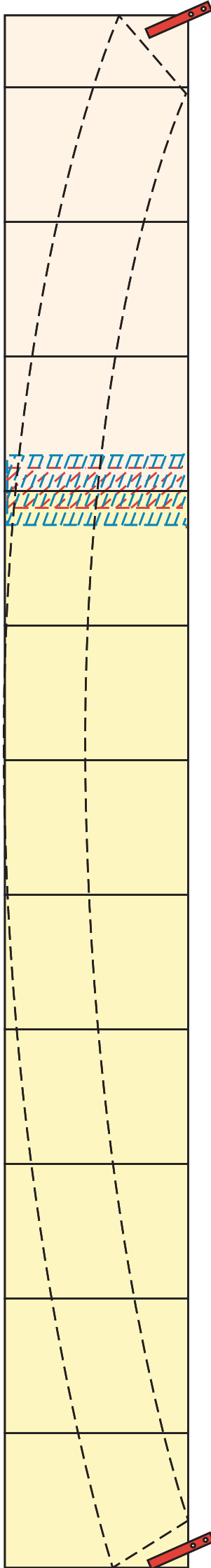
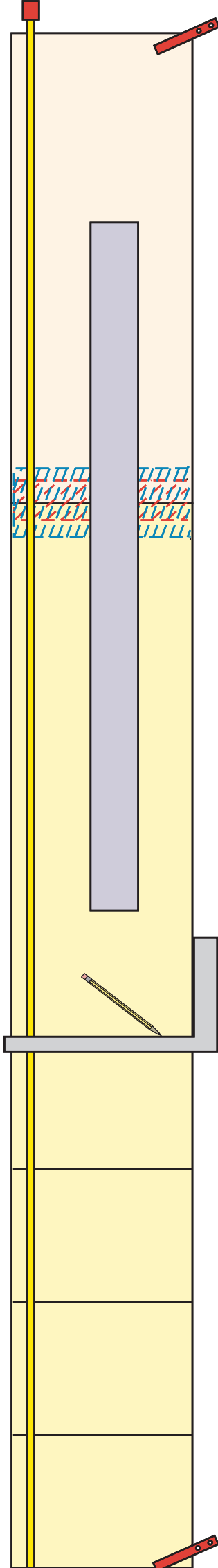
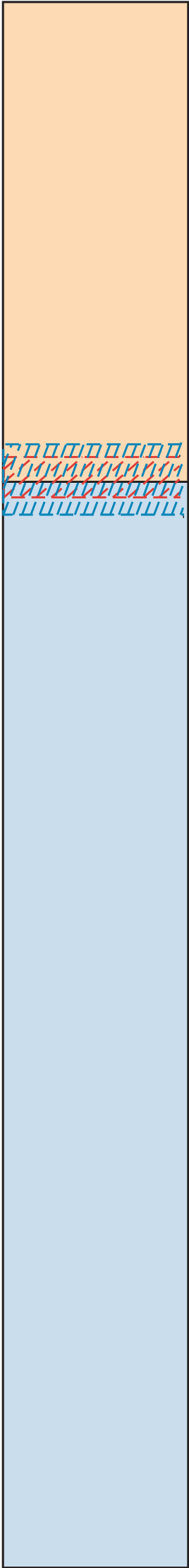
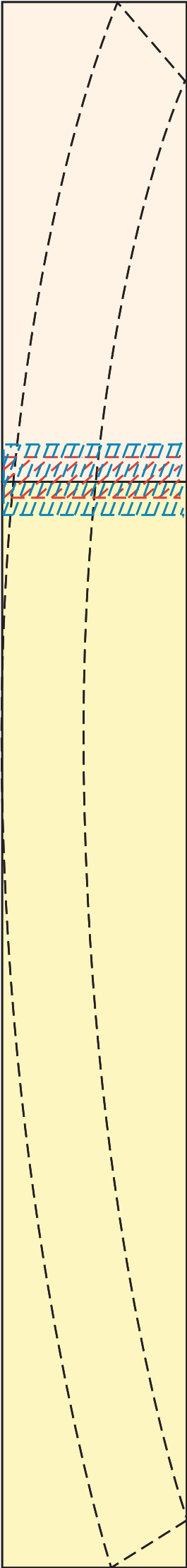
Vertical 2x6 used to keep the panels in alignment while you add the glass cloth to make a Payson joint to make the full length panel sets needed for this hull.



This page taken from the John Duck set of build plans. This hull is built the same way.





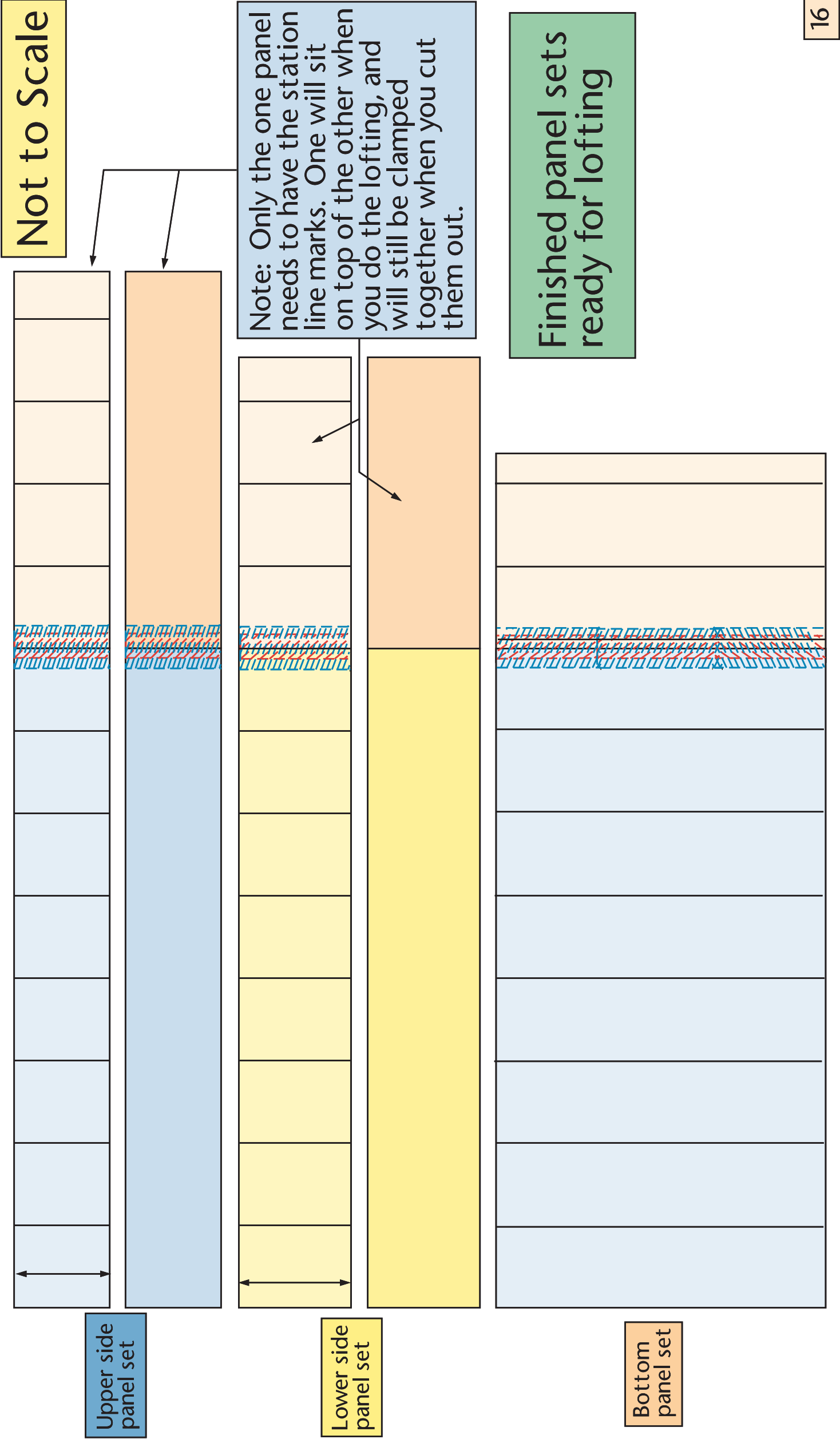


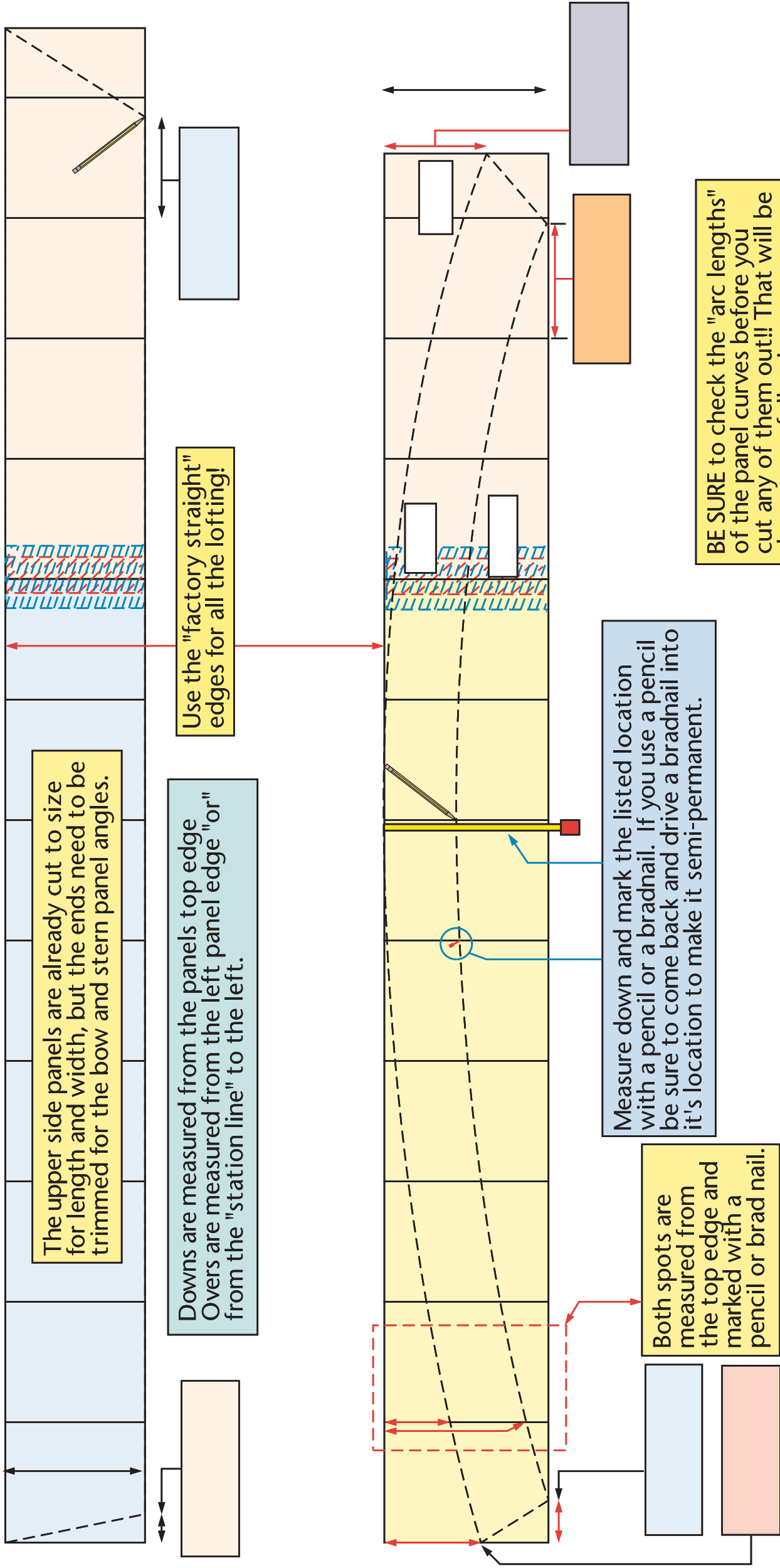
Inside face of panels

Tape Measure

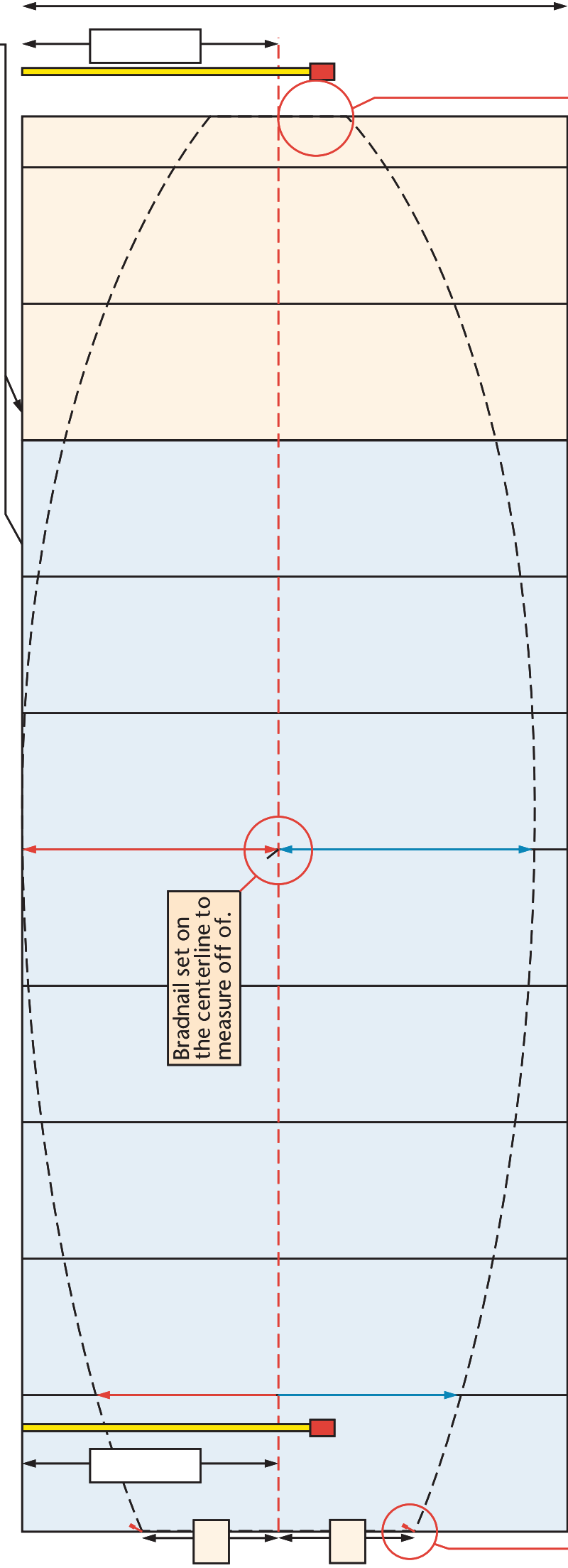
Reduced drawing to show the finished panel with all the station lines marked on the plywood

Start at the left edge!





Factory straight edges!



Mark ends of panel
above and below
the centerline @6"

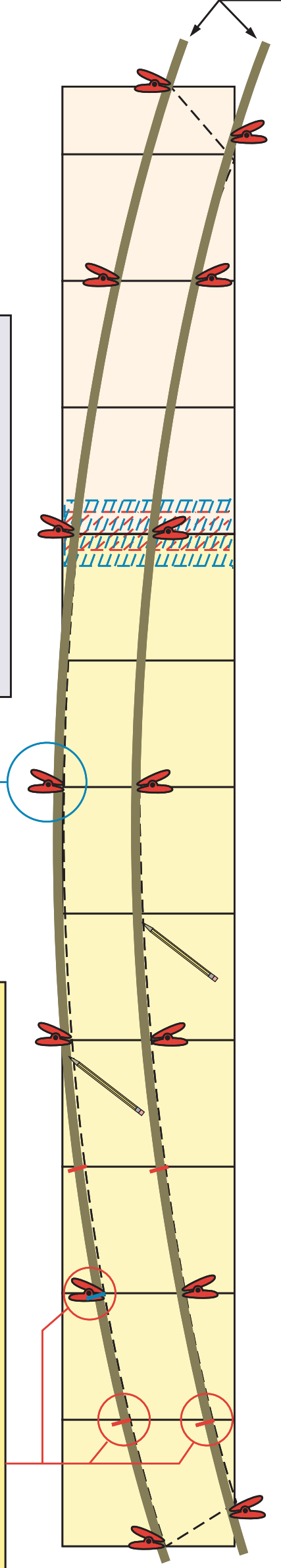
Measure the same values listed here
above and below the centerline, shown
as a red dashed line.

Mark ends of panel
above and below
the centerline @12"

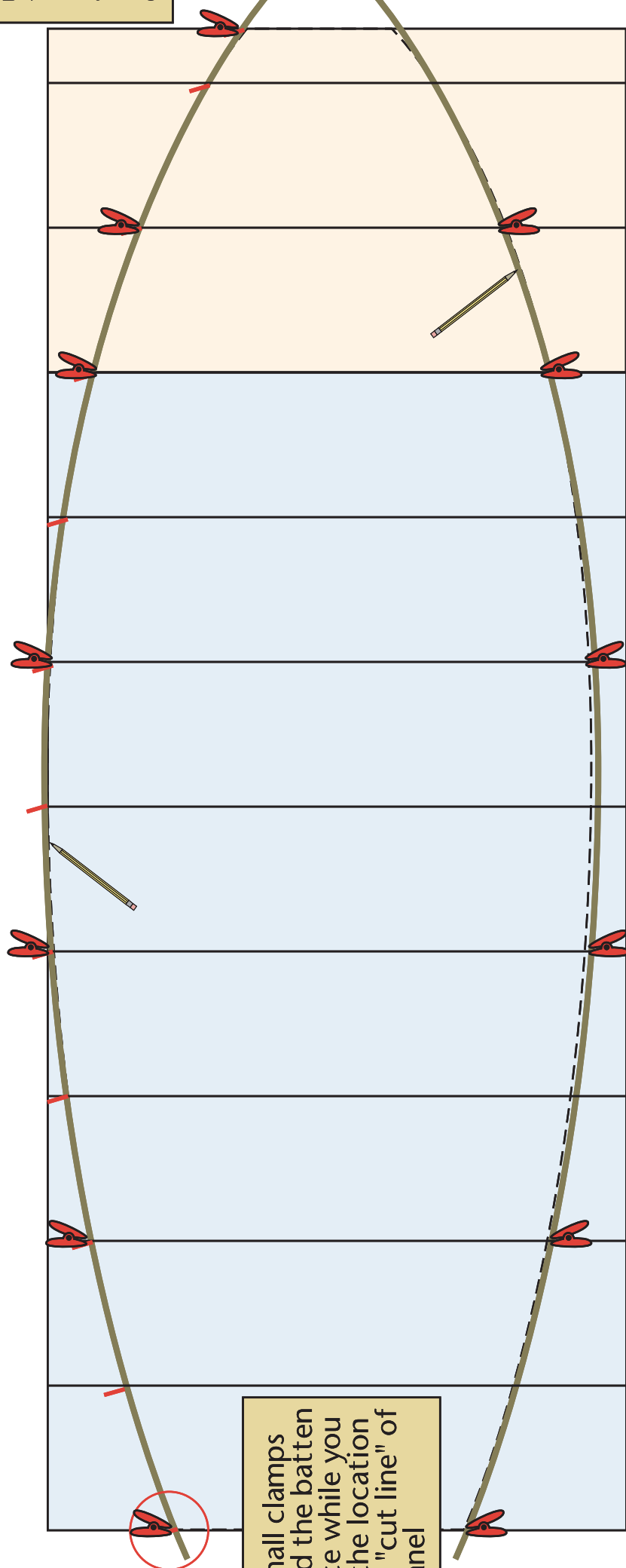
Note: The bottom panel is offset on the plywood to reduce/save as much usable scrap for use elsewhere in the hull.

Note: There is a brad nail at each of the spots where the "panel arcs" cross the "station lines". I did not draw them all in, but imagine that they are.

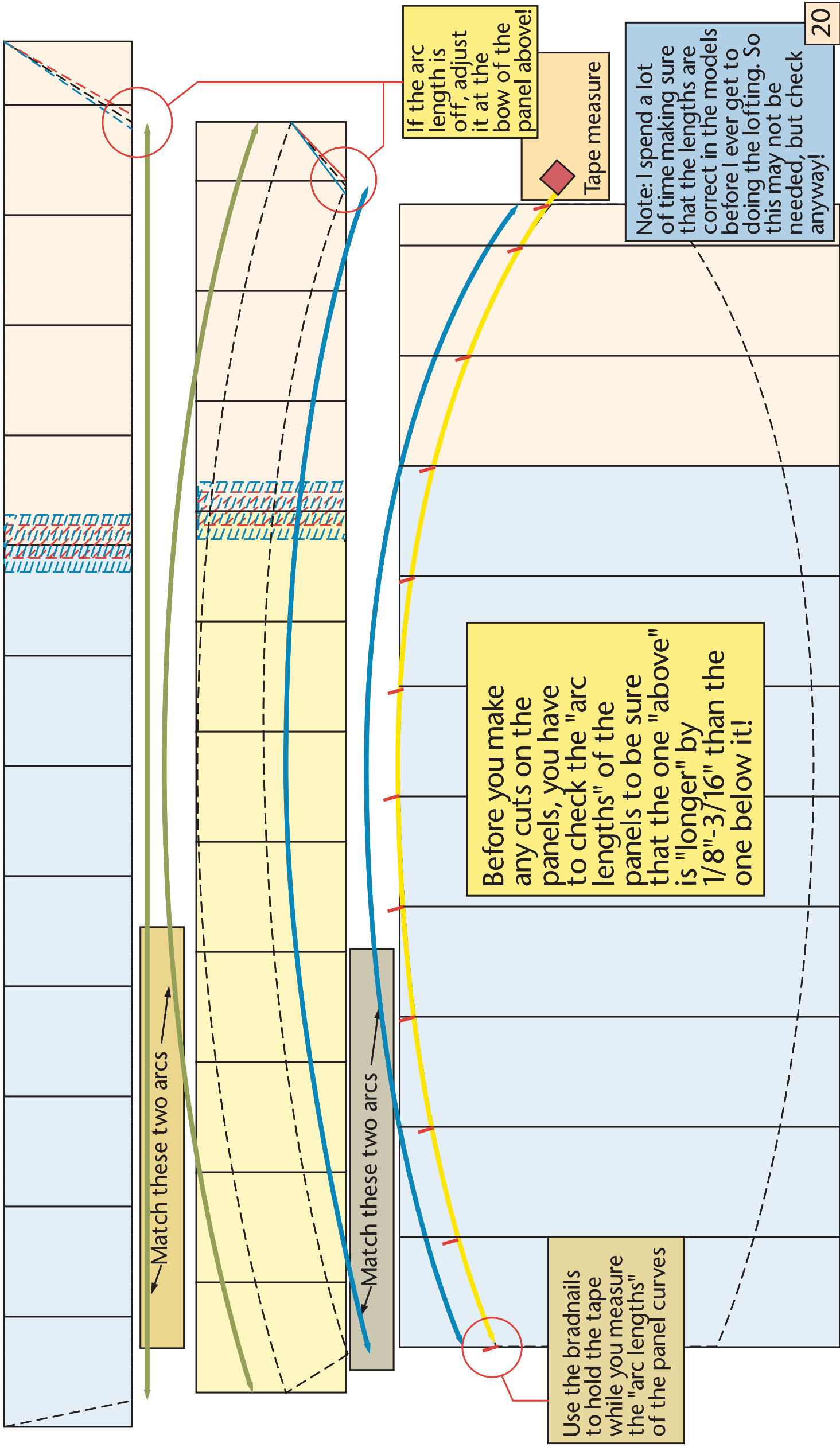
Small clamps holding the batten to the brad nails that locate the arc of the curves



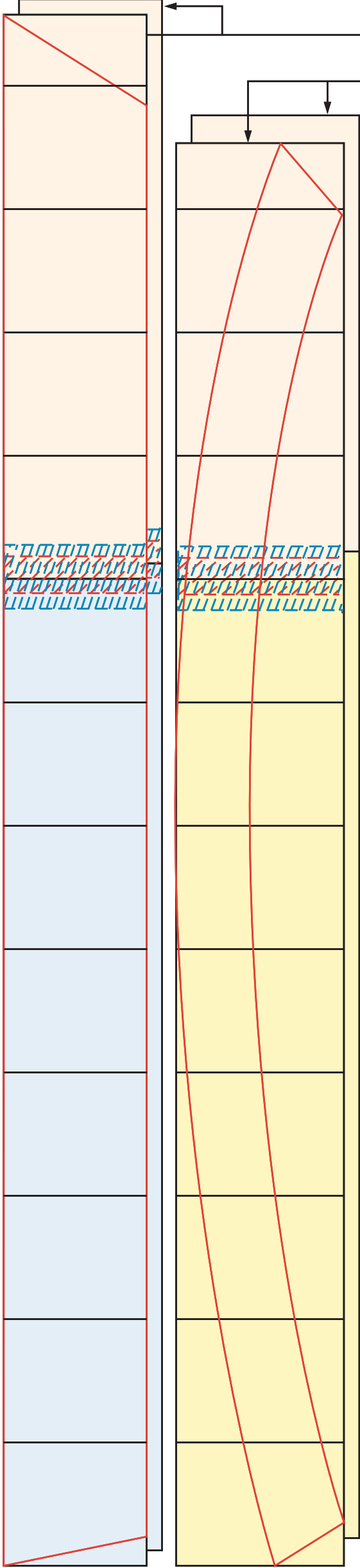
Flexible batten used to loft up the arcs of the panel curves. Use a good/straight piece of wood to do this.



Use small clamps to hold the batten in place while you mark the location of the "cut line" of the panel



Finished Panel Sets



Note: You now have two sets of panels for the top and the bottom sides.

Only a single panel for the bottom!



Use straight edge to line up the lofting marks on the top panel

The two upper side panels clamped together to cut out

Use a saw to make the "station line cut marks" at all the station lines on the top edge of the upper side panels. You will use those marks later!

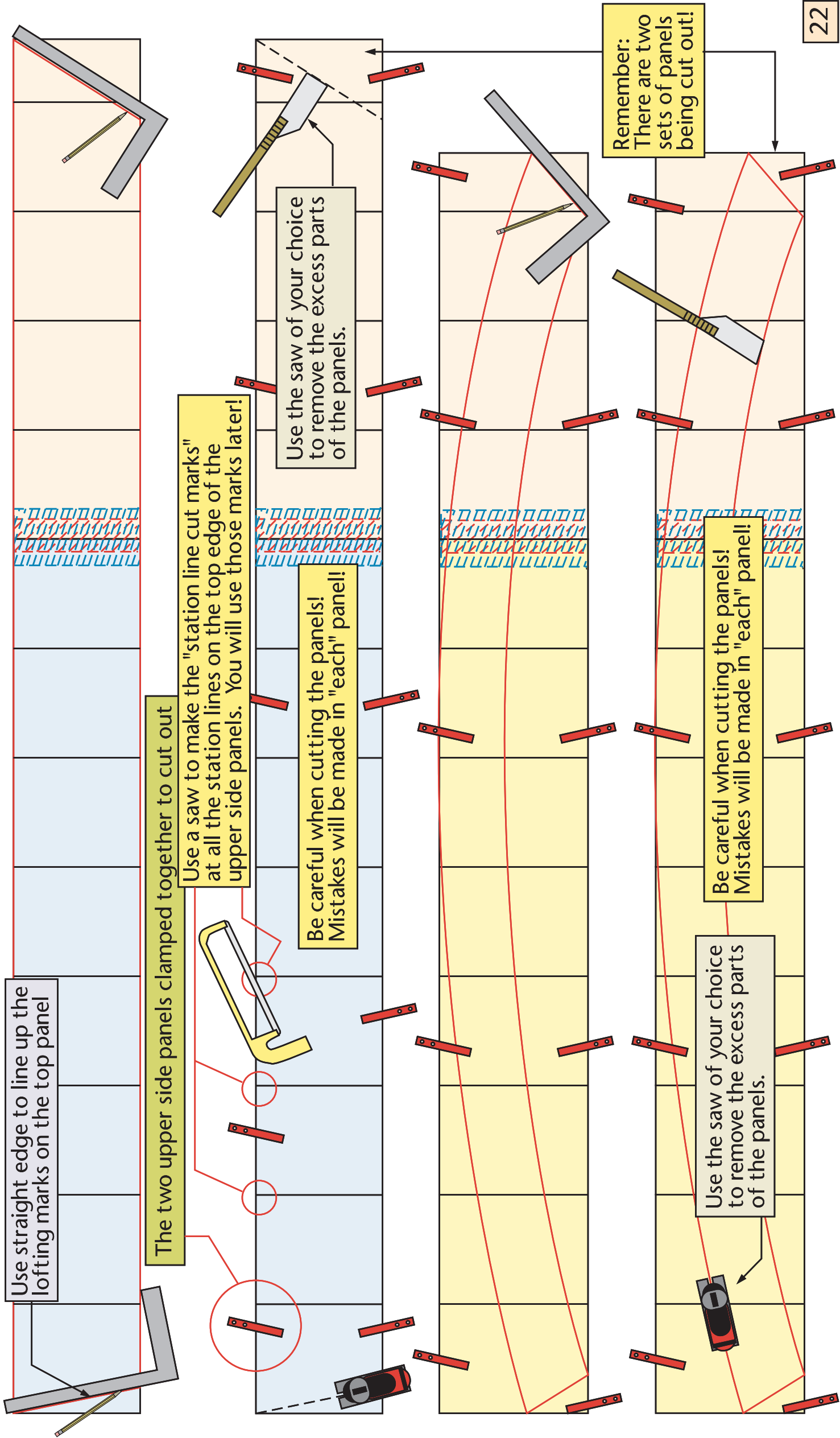
Be careful when cutting the panels! Mistakes will be made in "each" panel!

Use the saw of your choice to remove the excess parts of the panels.

Use the saw of your choice to remove the excess parts of the panels.

Be careful when cutting the panels! Mistakes will be made in "each" panel!

Remember: There are two sets of panels being cut out!



Note: The upper side panels will need to be clamped together while you are drilling the tie wire holes!

Both of the upper side panels will need to have the drill and tape lines marked!

The middle panels are not drilled at this time. They are drilled when you assemble the hull!

Keep these panels clamped together

Only the drill hole line needs to be marked on the middle panels. The tape can be located by the top and bottom panels

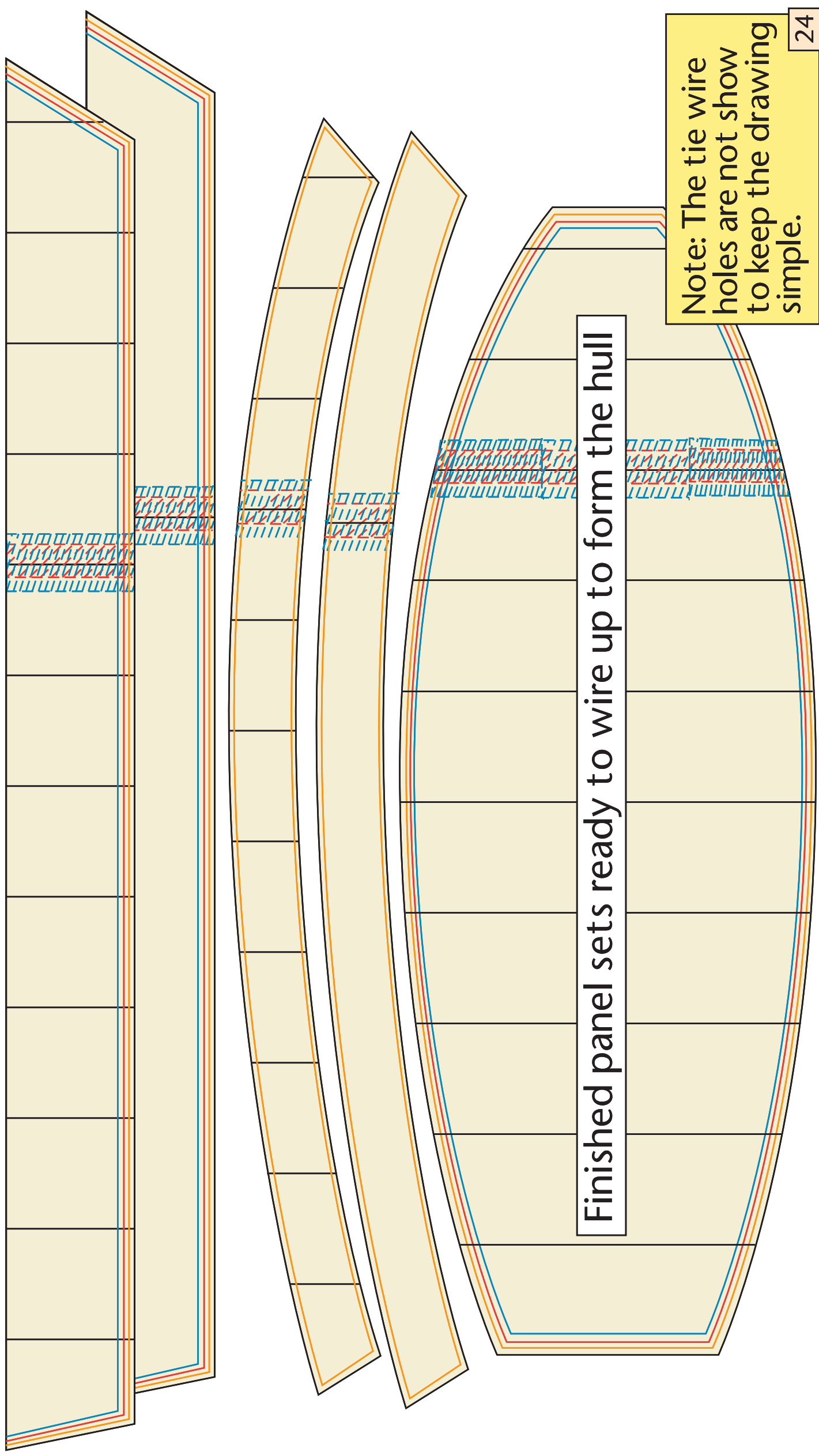
The clamps will have to be removed to mark the lower panel "set back" lines! Re-clamp the panels when you drill the tie wire holes!

Orange: Set at 1/2"
Red: Set at 1"
Blue: Set at 1 1/2"

Lines used to mark the tie wire drill holes, 2" glass tape and the 3" glass tape edge locations

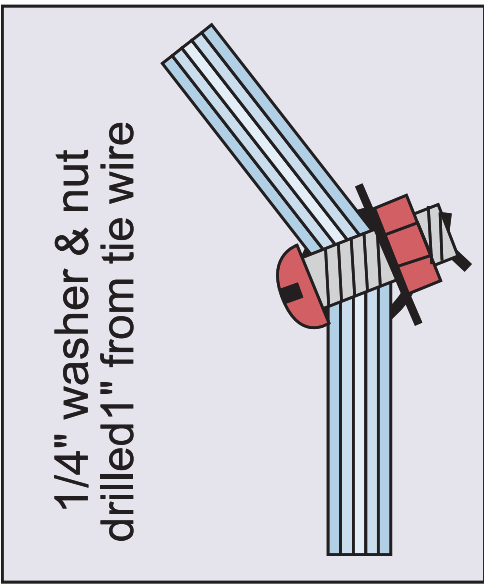
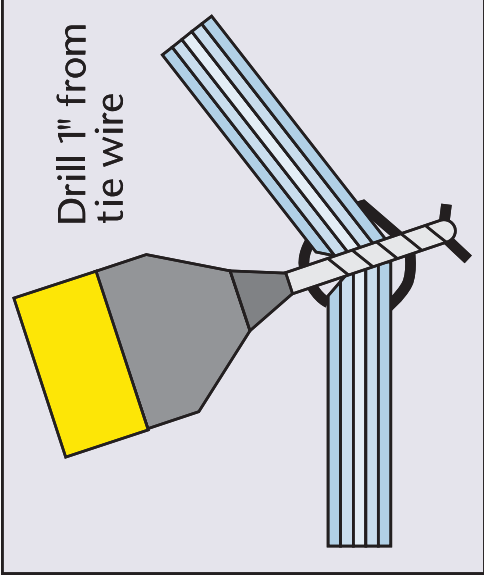
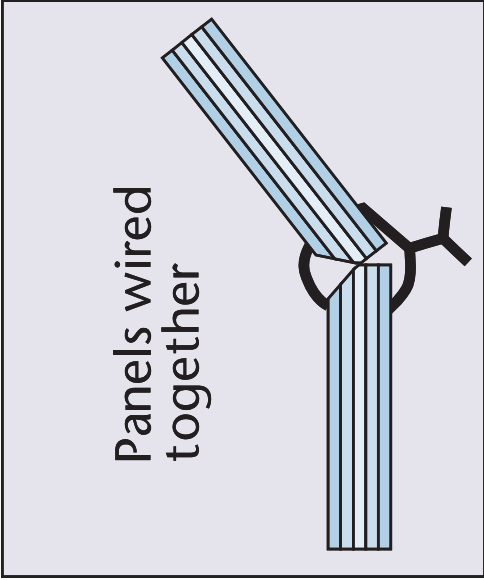
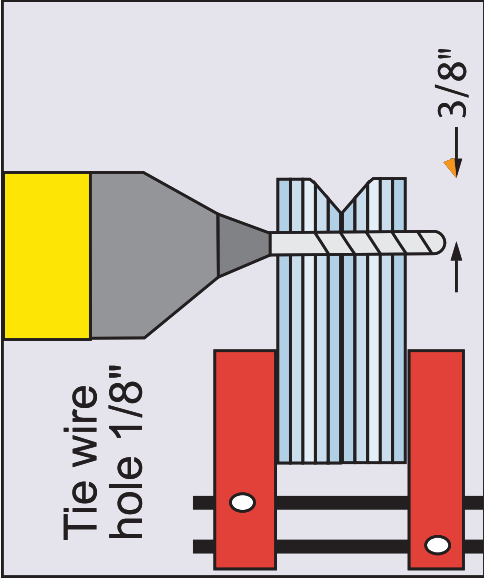
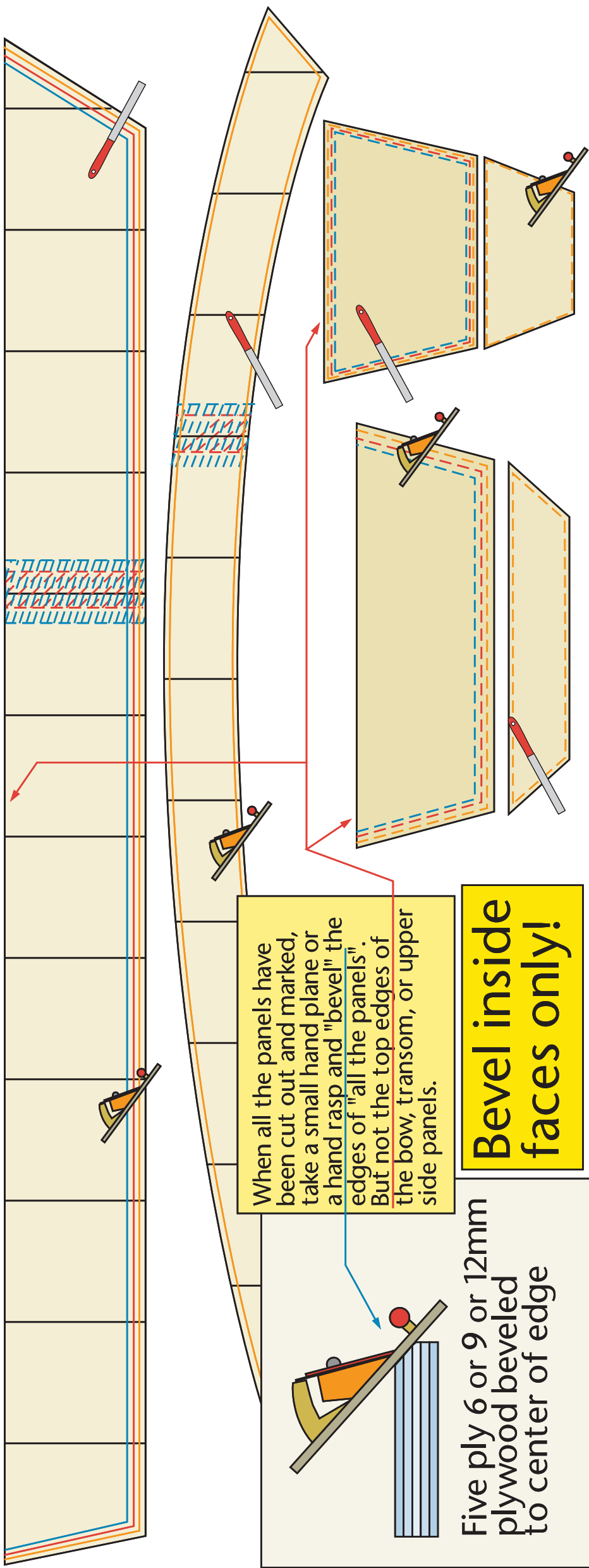
Drill holes on the tie wire set back line at the "station lines". Drill size is 1/8" or the size of your tie wire!

The bow and transom panels will be marked up too, but later!



Finished panel sets ready to wire up to form the hull

Note: The tie wire holes are not shown to keep the drawing simple.

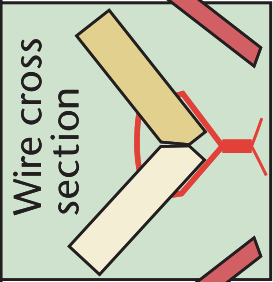


Use the station lines on the bottom panel as the "guide" to drilling the lower side panel

Tie wires inserted into the holes and twisted up on the outside edges

Drill holes in the lower side panel to match the ones "already drilled" in the bottom panel

Line up the ends to start wiring up the lower side panels.

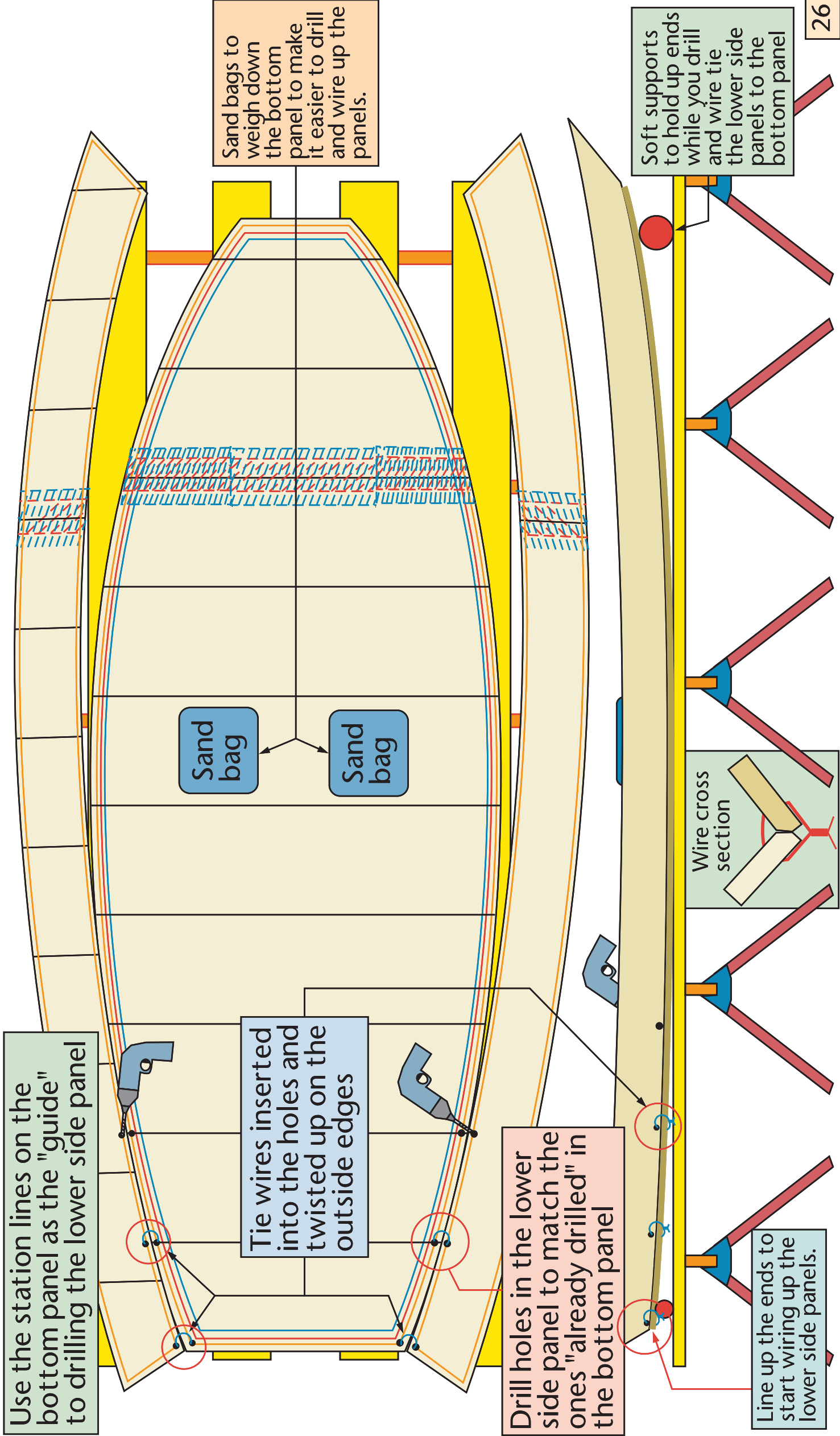


Sand bags to weigh down the bottom panel to make it easier to drill and wire up the panels.

Sand bag

Sand bag

Soft supports to hold up ends while you drill and wire tie the lower side panels to the bottom panel



Use the station lines on the upper panel as the "guide" to drilling the lower side panel

Measure the two bow and transom panels when you have all the sides wired up.

The lower side panel drill holes and the tie wires are not all shown to keep the drawing simple.

One inch behind the tire wire hole, drill a 1/4" hole for a 1/4" large head screw. The screw and backing washer and nut will hold the panels in alignment until epoxied

See the next page for details on tie wires, and screws, washers, and nuts.

Cords at the bow and stern to hold the ends while you wire up the upper side panels.

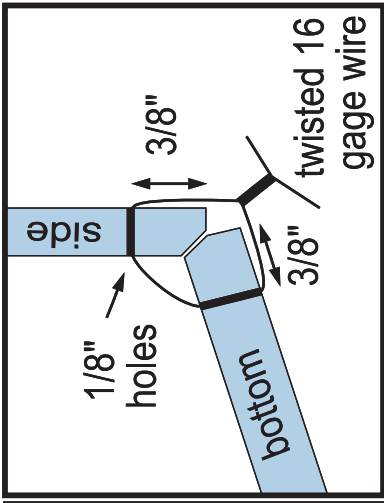
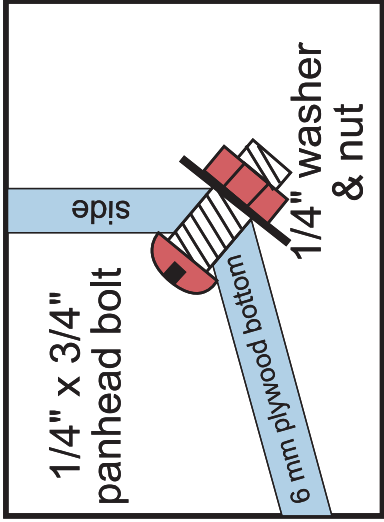
Be sure the ends match up now! Adjust the ends before you add the bow/transom panels!

Line up the ends to start wiring up the upper side panels.

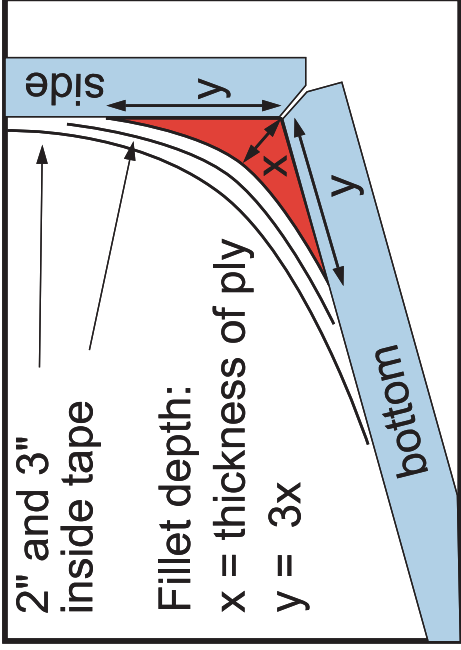
Note: Wire up the full length of the panels before you drill any holes for the screws and nuts!

Lift, drill, add tie wire and go on to the next side

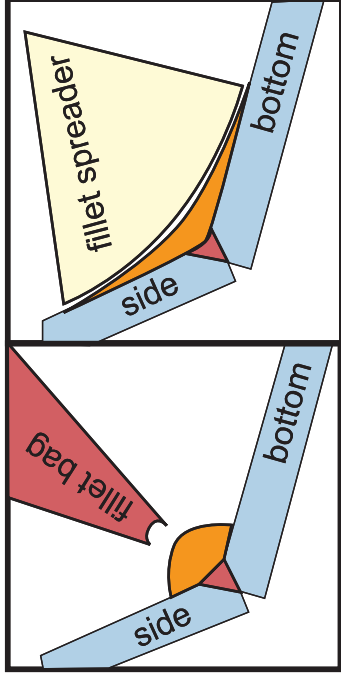
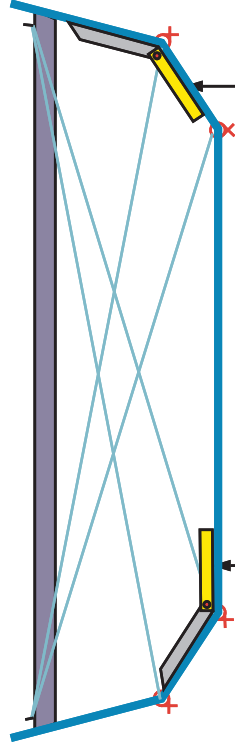
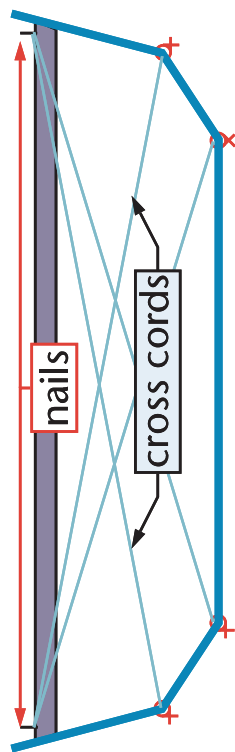
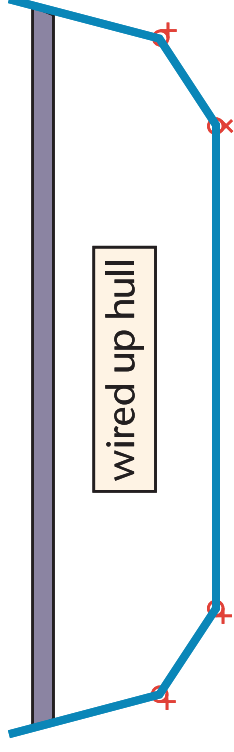
Board to hold up end of side panel



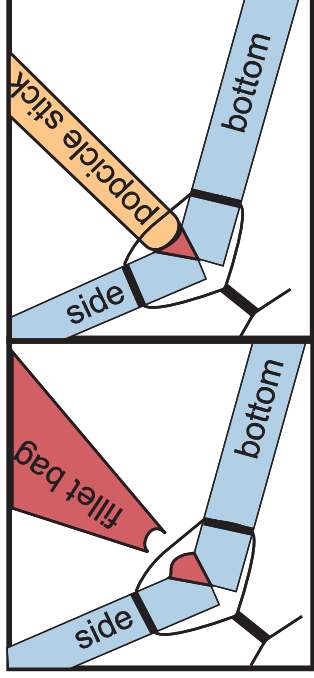
Wiring and bolting the panel sections together



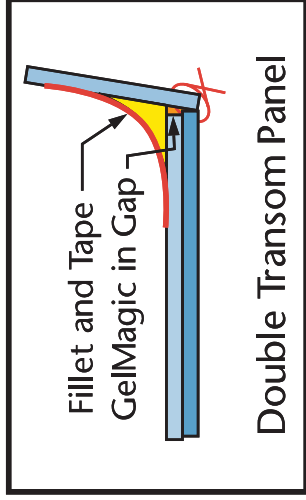
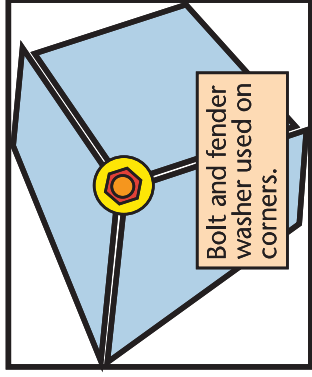
Squaring up the side to bottom panels at the beam of the hull



Applying and Spreading the Fillet

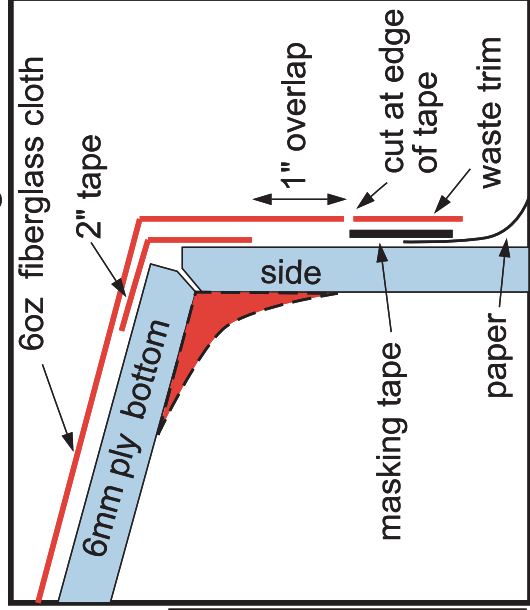


Jump Stitch



Cross section of taped seam

Bottom outside edge details



Compare the angles on both sides and tighten or loosen one or both "green" cords until the angles are the same. Recheck the level and the square of the rest of the hull after you do this. Recheck again if those need adjusting too; until you are happy and the hull is level and square!

Wired up hull waiting for the bow and transom panels, which you will measure up and cut out now.

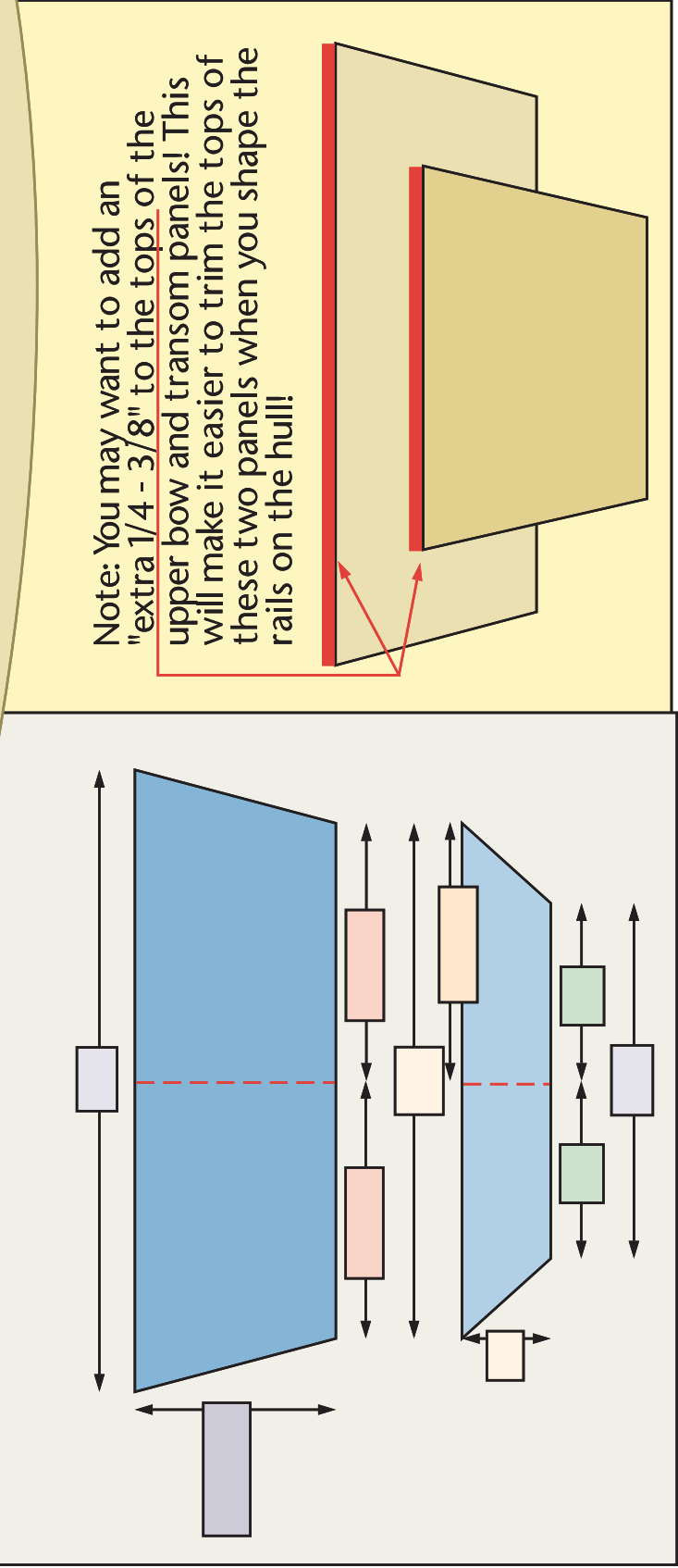
Not to Scale

Check!

Stern Panels

Bow Panels

Note: Measure the "actual edge lengths" on the hull before you cut out the bow and transom panels. Especially check the lengths of the ends of the side panels!



Note: Measure out the top length of the upper transom panel to find the first "up/down" cut. Locate the lower corner of the panel and mark. Cut and remove panel.

Measure down and make the first cut

Measure down and make the second cut

Measure down and make the third cut

Measure down and make the fourth cut

Leftover sheet of plywood from making the bottom panel.

Note: Use the factory "straight edge" to start all the measurements!

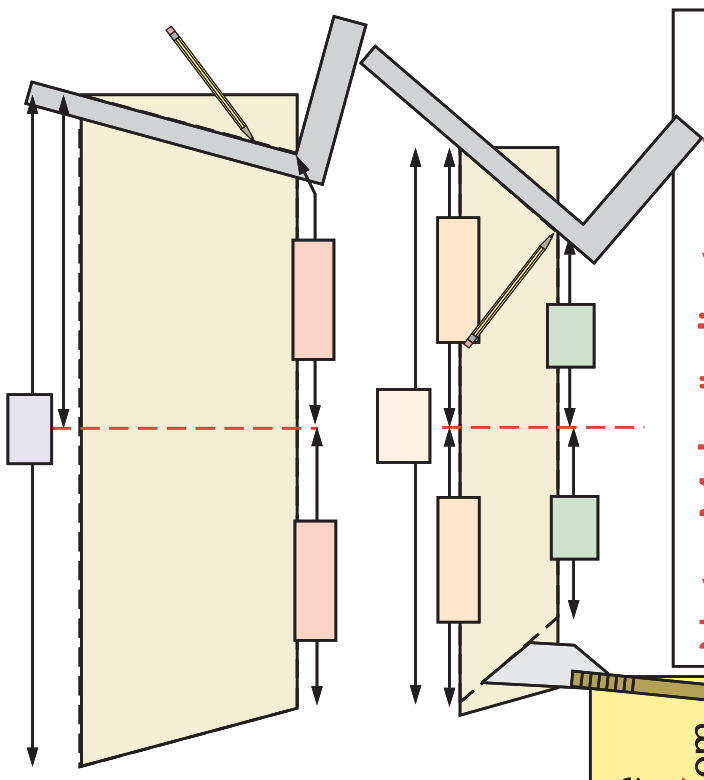
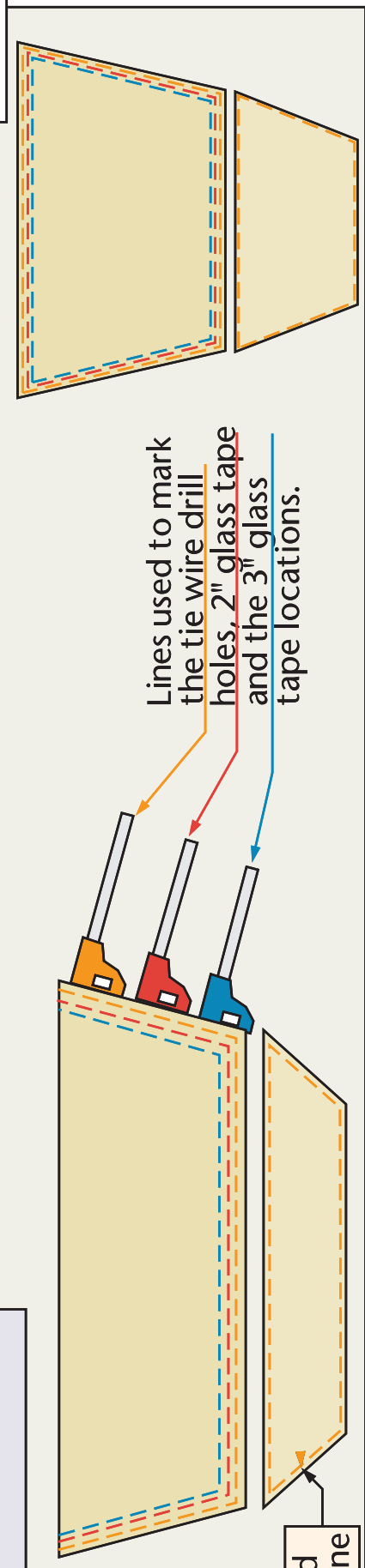
Note: Use your math skills to figure out and layout the bow and transom panels. It helps to use large sheets of cardboard to layout on first to see if that mockup fits!

If you are going to add the extra 1/4" to the tops of the "upper" bow and transom panels, you need to do it now. Just add 1/4" to the "height" of the upper panels when you cut them out.

Note: Make "adjustments" to the dimensions of the panels Now. Make cardboard mockups to be sure that the measurements you are using are the correct ones!

Lines used to mark the tie wire drill holes, 2" glass tape and the 3" glass tape locations.

Only need tie wire line



Note: With the hull "leveled" all round you now need to make sure the hull is "square" by tightening or loosening the "blue lines". You want to have the same "length" on both measurements.

Level and square up the hull page

Blue cords used to "square up" the bow and transom faces to have a hull that is in alignment!

Note: The tie wire holes and screw heads are not all shown to keep the drawing simple.

Red cords to level hull
Blue cords to square up

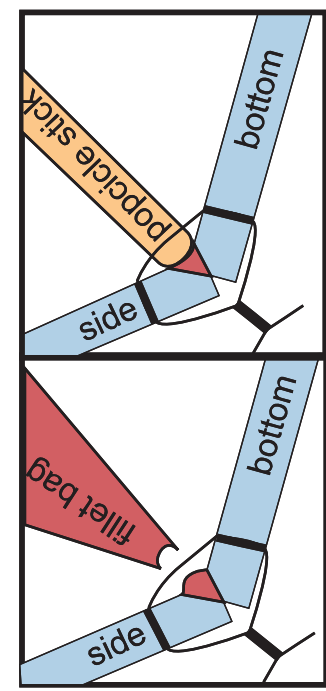
Use as many levels as you have to be sure the hull is level. Make sure to "not" over tighten the cords and compress the hull!

Board to hold level on hull

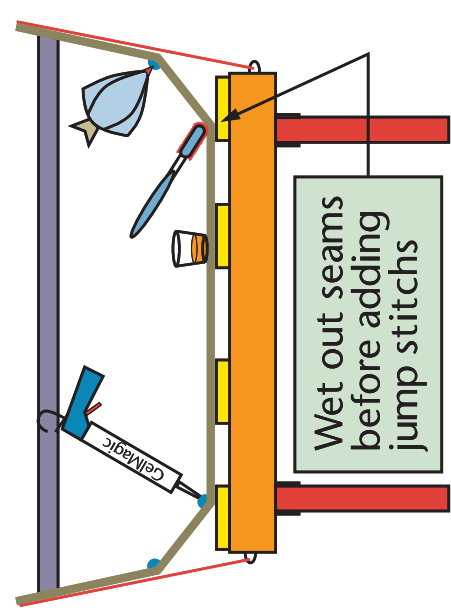
Cords used to hold hull level

Keep the beam squaring cords in place till seams are finished!

Staples driven into the ends of the 2x4's



Jump Stitch



Wet out seams
before adding
jump stitches

You can use System Threes GelMagic or your own bagged fillet material to make the "jump stitches" to first hold all the hull panels together.

Note: Be sure to force the "jump stitch" material into the gap. Use a tool to help if needed. It helps to push the material ahead of the tip if using a bag or tube!

Note: Before you do the jump stitches, wet out the seams with epoxy to seal off the exposed end grain! Tooth brush works great!

Note: Not all of the tie wires or screw heads are shown! But imagine that they are.

Note: You only need to apply the GelMagic or fillet material between the screw heads and the tie wires. Try not to get the epoxy on the heads or wires as it makes it very hard to remove them!

After the fillets have cured and been smoothed up with sand paper, it's time to lay down the 2" glass tape on all the interior seams.

When the 2" glass tape has "mostly cured" you can add the 3" glass tape. Follow the lines you made to locate the edges of all the tape so it will look even with all the curves of the hull.

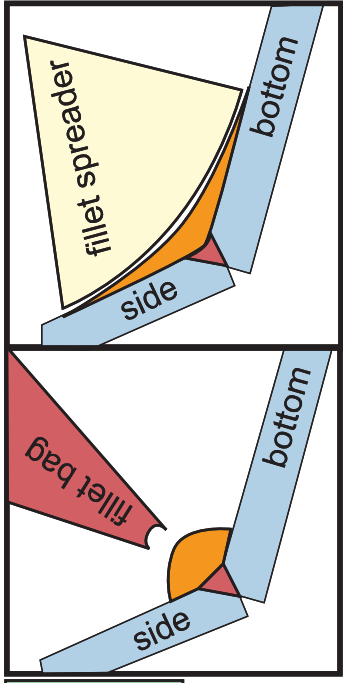
Fillets and Tape application page

With the "jump stitches" cured you can remove the bolts/nuts and the tie wires. Leave the hull squared up and tied down!

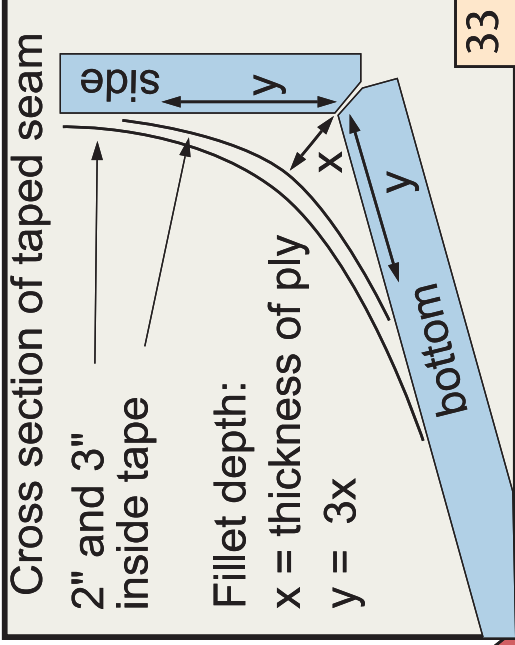
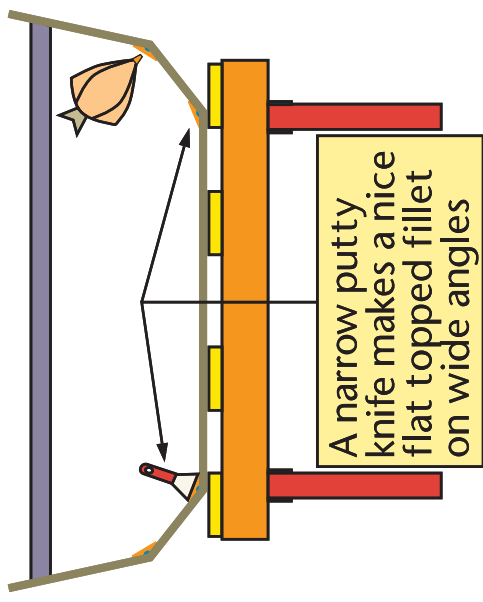
The exterior seams will be worked on later in the construction of the hull

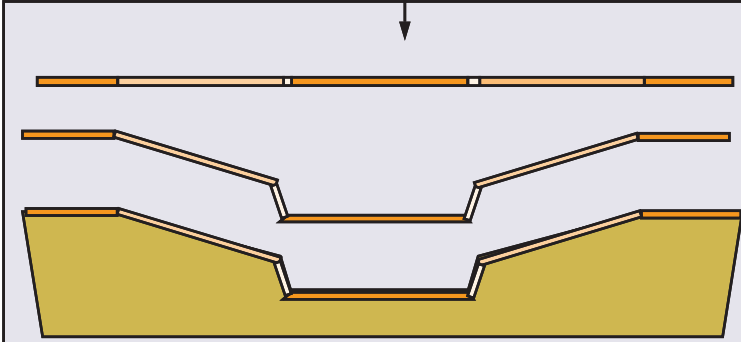
Add the fillet material and shape the "surface" with a concave curve as shown in the drawings.

I show how to do the fillets and taping the seams in several of my Red Barn YouTube videos. So it helps to watch them to answer any questions you may have that are not apparent in the drawings.



Applying and Spreading the Fillet





All the spacer blocks are solid pieces of wood at the transom

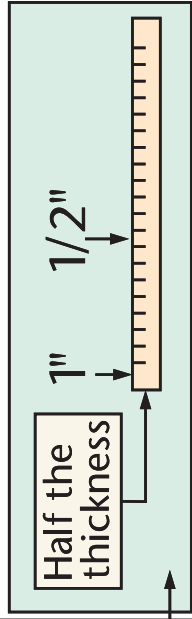
Alternate layout if you cut down the transom to use a short shaft Outboard

Note: The following pages on installing the rails were taken from the John Duk boat plans, so there was no need to redraw the pages for this hull!

Page from the John Duk

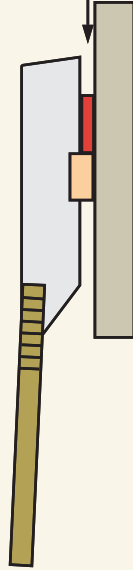
Adding the Spacer Blocks

Note: If you go with a longer spacer block in the 10" to 12" range you will need to cut some "reliefs" in the spacer blocks to get them to bend to the curve of the hull!



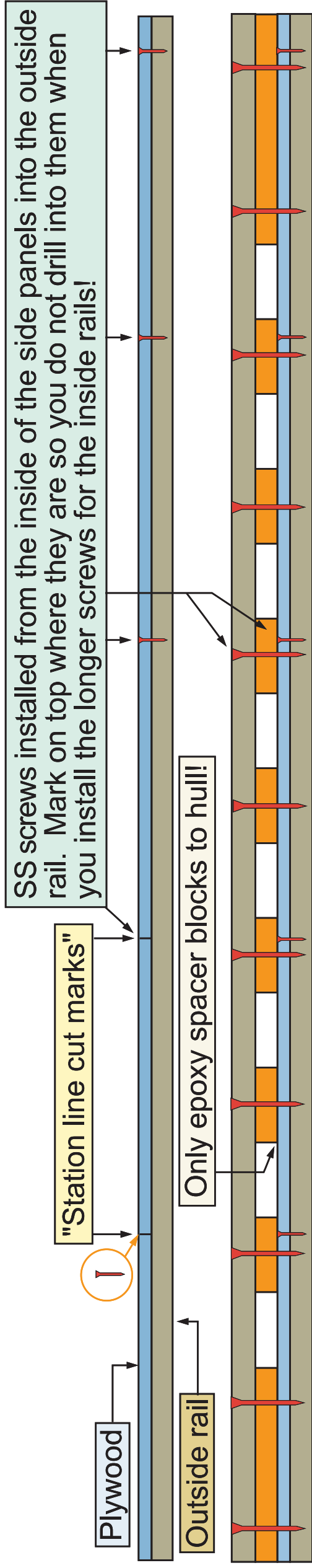
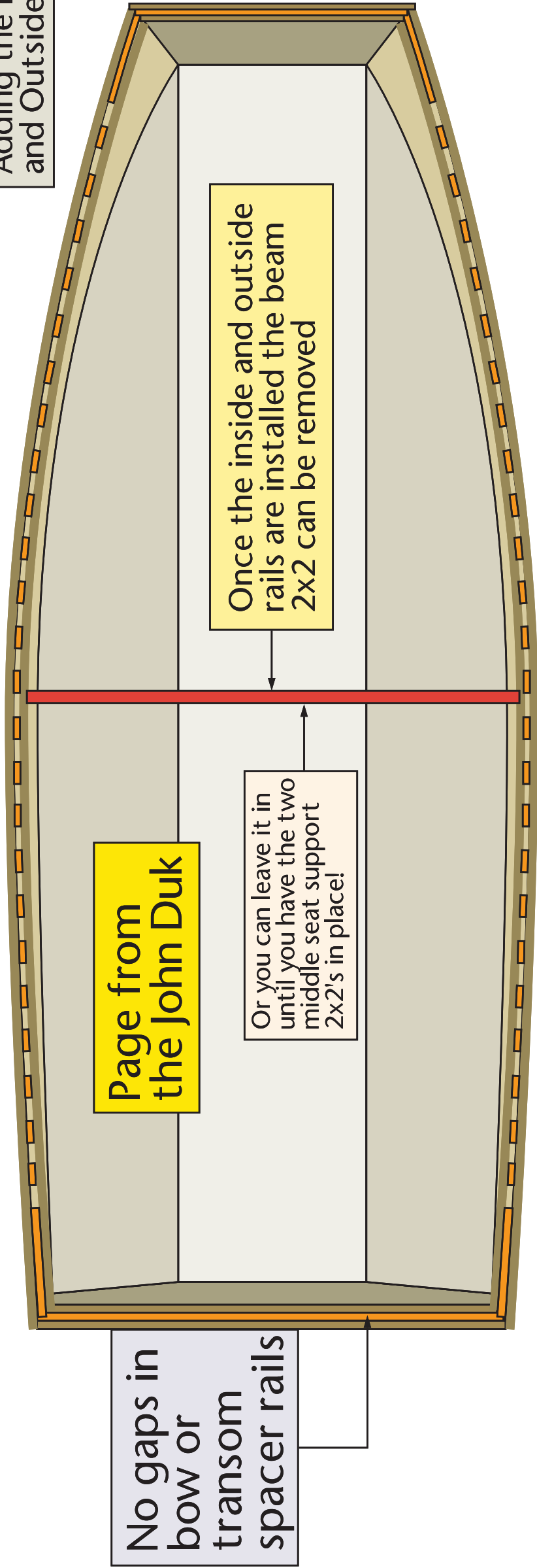
Try for 12" but it can be more!

Use a piece of scrap wood the thickness of the sipe cuts to use as a gage for making the cuts.

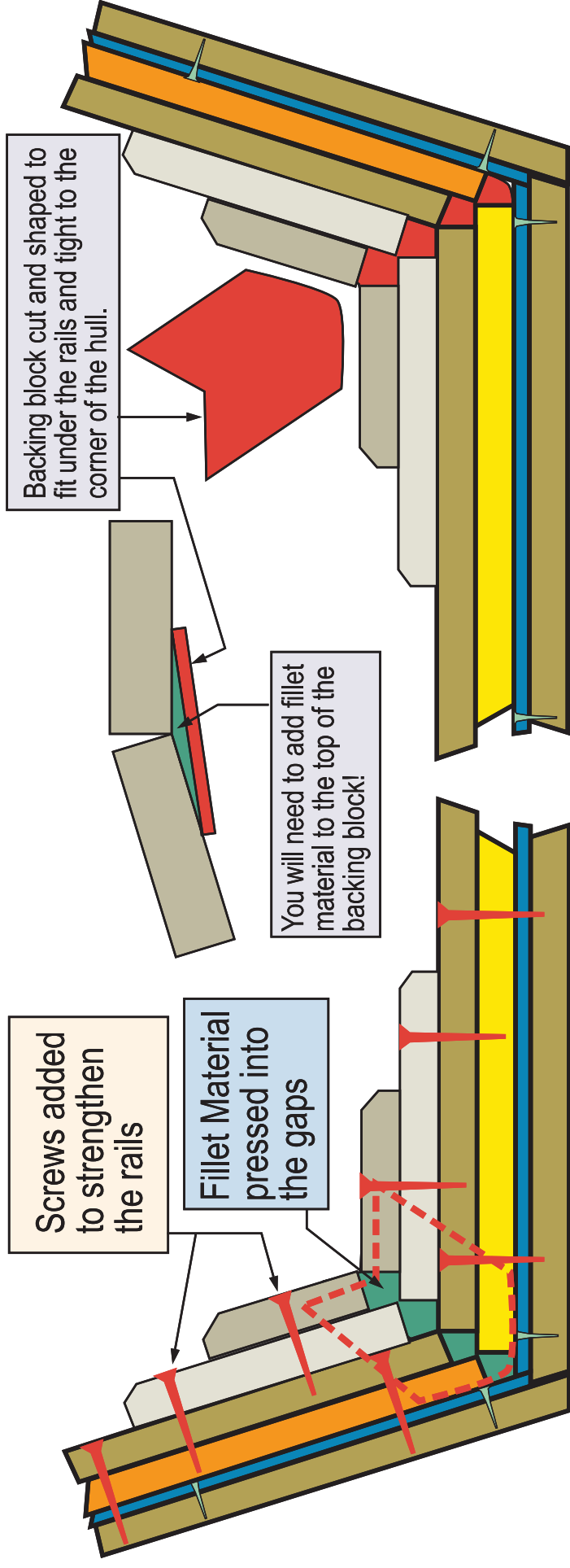
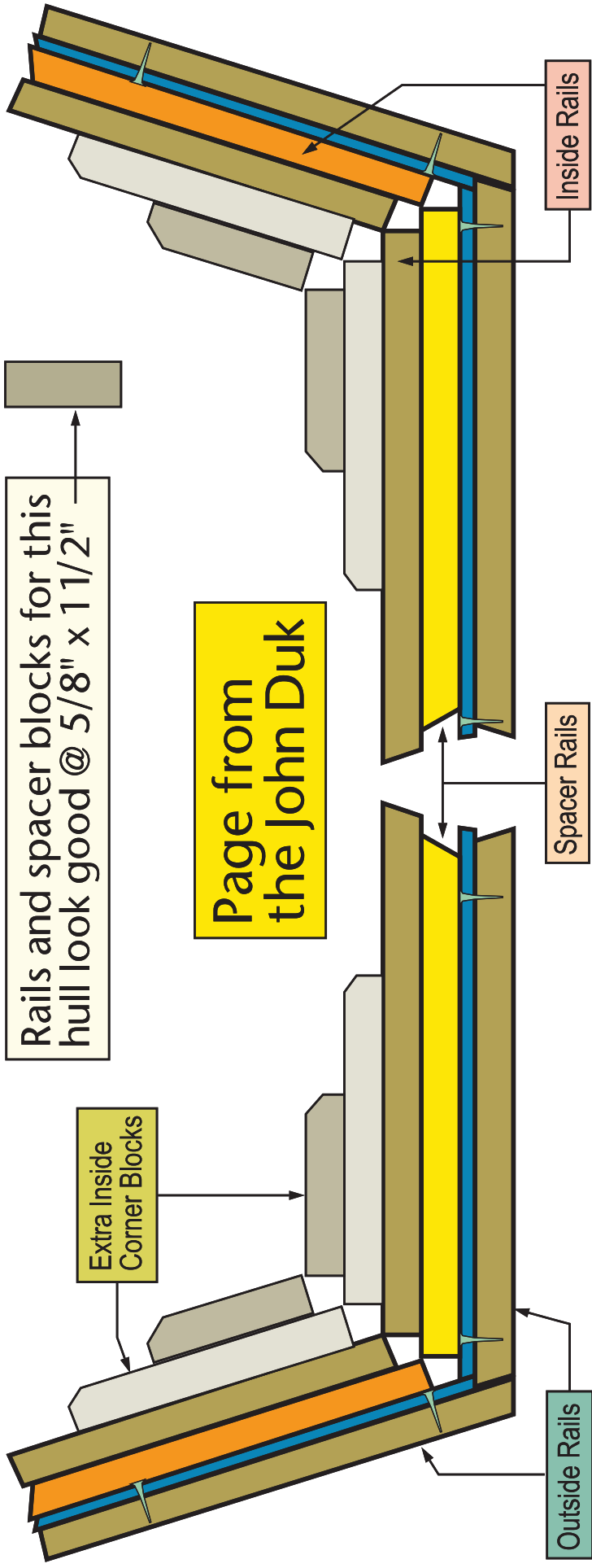


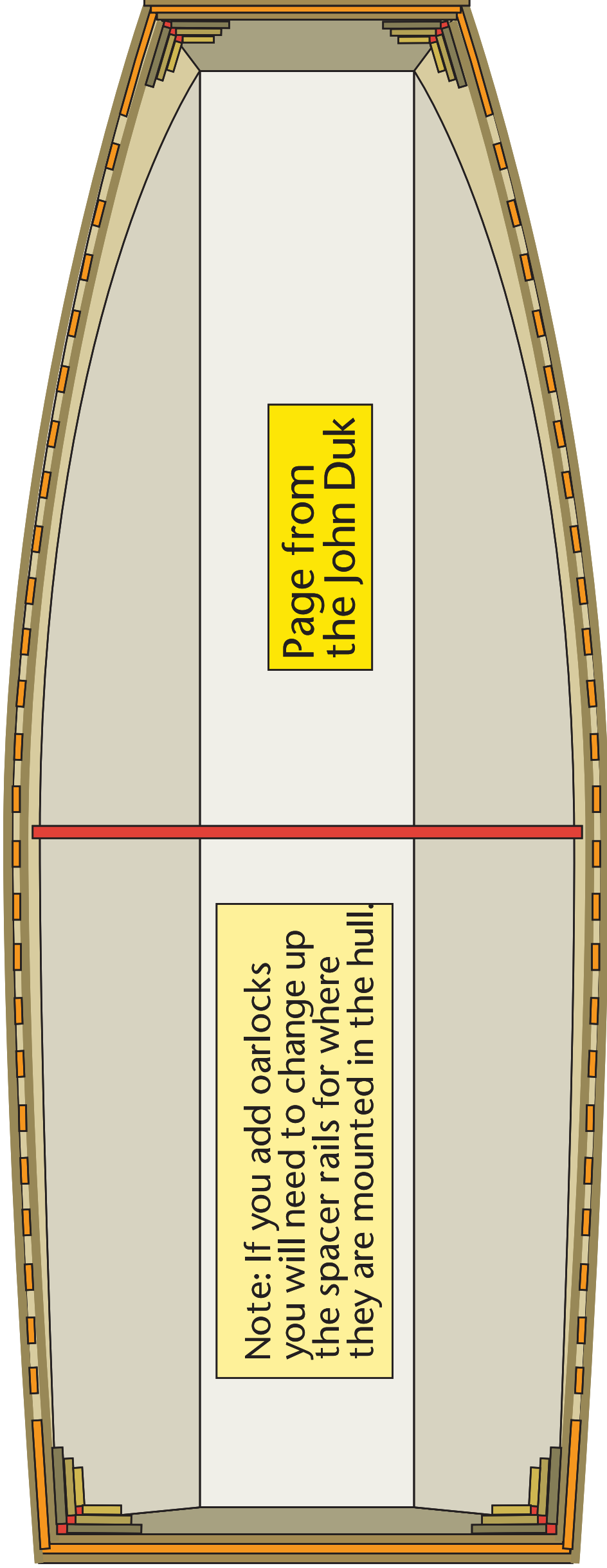
A spacer block size and gap at 3" for each part works well. That spacing lets the blocks conform to the hull without distorting the side panels. When you get to the bow, try for at least 12" for the length of the last block. It can be longer if needs be; just make sure that you "sipe" the inside face as shown in the side drawing so the block will "bend to the hull" and not force the hull panels to bend to it!

Adding the Inside and Outside Rails



Spacer blocks with the inside and outside rails added to show how they look with the plywood.

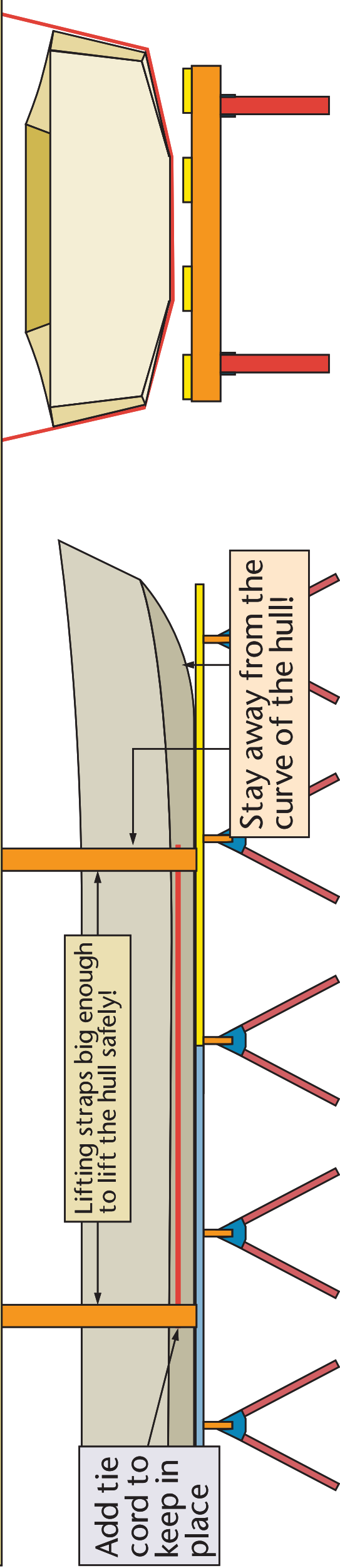




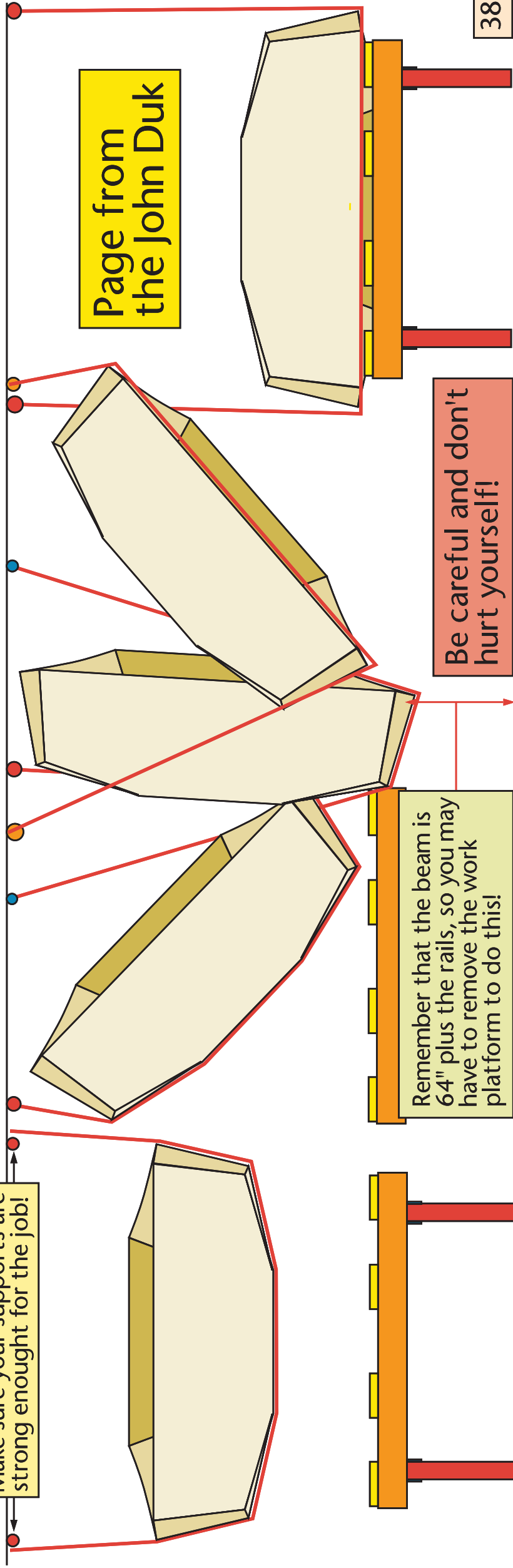
The completed hull can now be fitted with the interior that you want to install. Just be sure to not put too much weight in any one end or side. Remember that the weight of the Outboard Motor will be hanging on the transom when you start outfitting your hull. The following pages will show some ideas that can be used in the hull. But, it's still a 14 foot hull and there are limits to what you can add!

At this time you may want to flip the hull over with the bottom up, so you can finish the seams and glass work.. It will be easier to do this before the weight of all the interior parts are installed. Once the bottom seams have been filled, faired, glassed, and the bottom glass cloth have been added and the hull has it's bottom paint, you can flip the hull once more onto the work platform or a boat trailer to finish the interior.

Note: Before you finish off the interior of the hull you might need to flip the hull and finish all the bottom work!

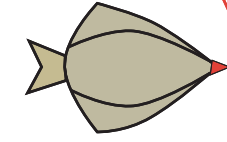


Make sure your supports are strong enough for the job!

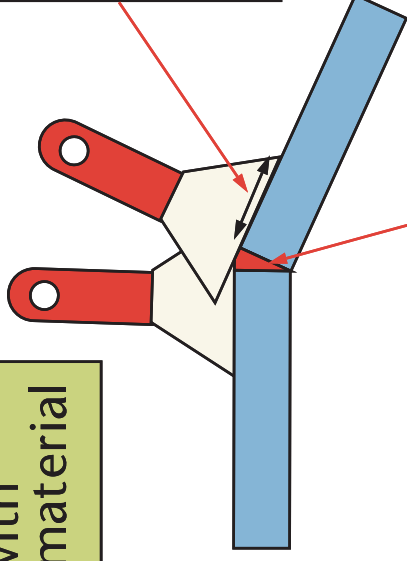


Start with this first! Then the fillet material!

Thoroughly wet out the plywood edges at the seams with epoxy!



Fill all gaps with epoxy fillet material



Use a wide putty knife to smooth the fillet material into the groves. Make sure to keep most of the blade on the plywood to "fill the center" of the gap!

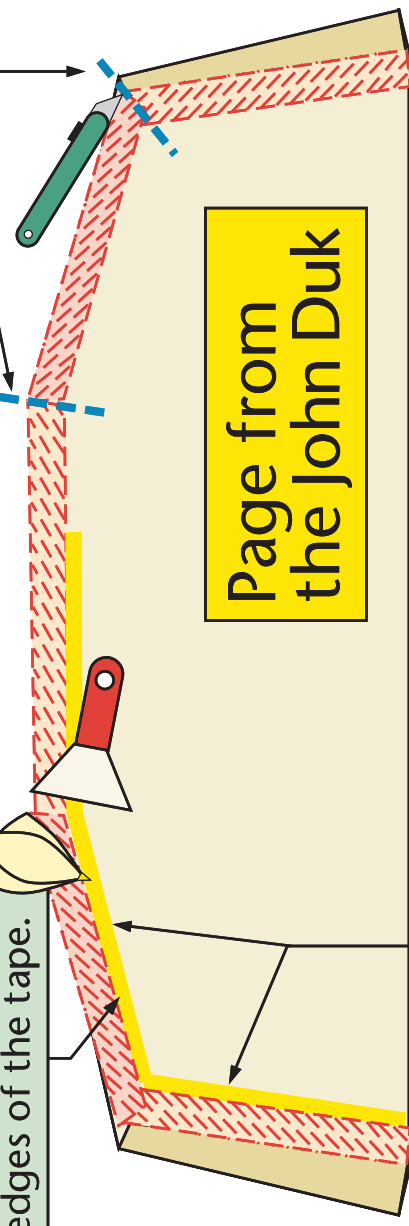
After this, then this

3" glass tape centered on all outside seams

Chine seam tape end cut to match

Yellow pigmented to fairing compound to fill and smooth the edges of the tape.

Trim tape ends to match the corner angles!



Single tape from transom to bow

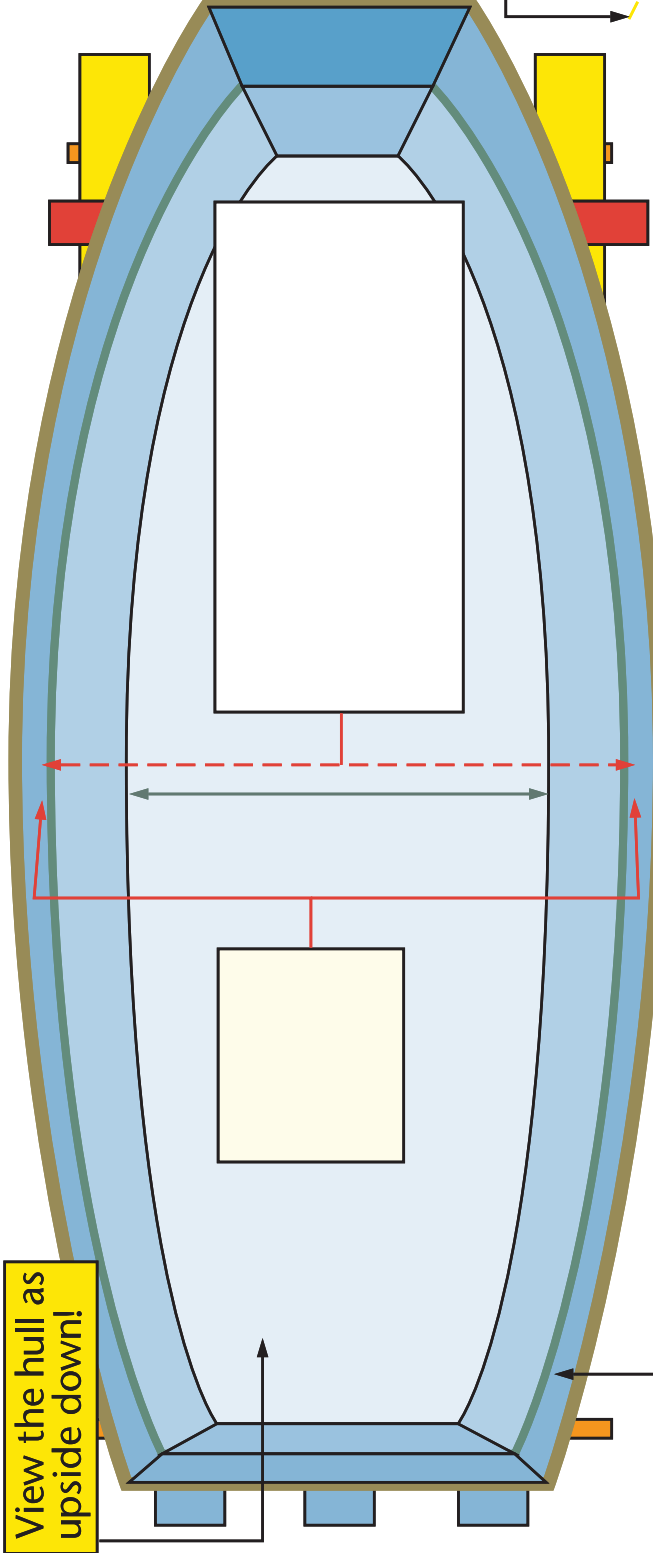
Or 2" tape if you used that on the inside of the hull

Outside seam details

Note: You may need to add a 2x4 to support the hull!

Use fairing compound to smooth and hide the edges of the glass tape

View the hull as upside down!

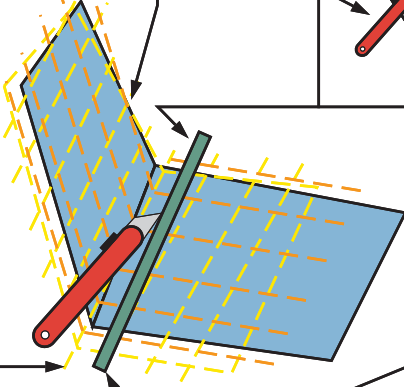


Masking tape used as a guide to trim the fiberglass cloth to after wetting out

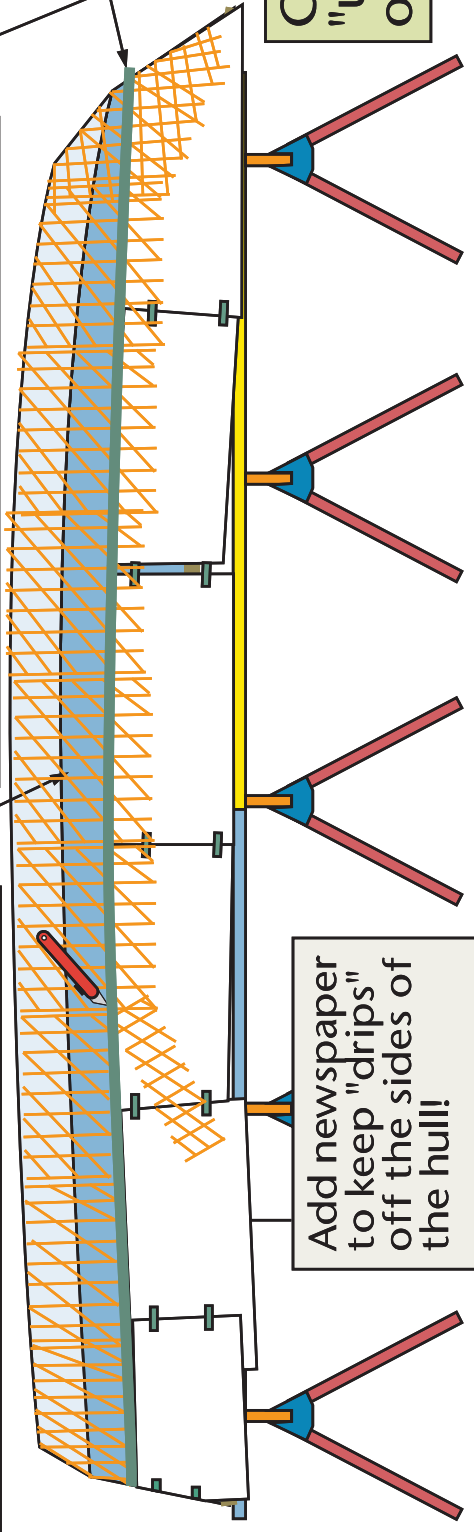
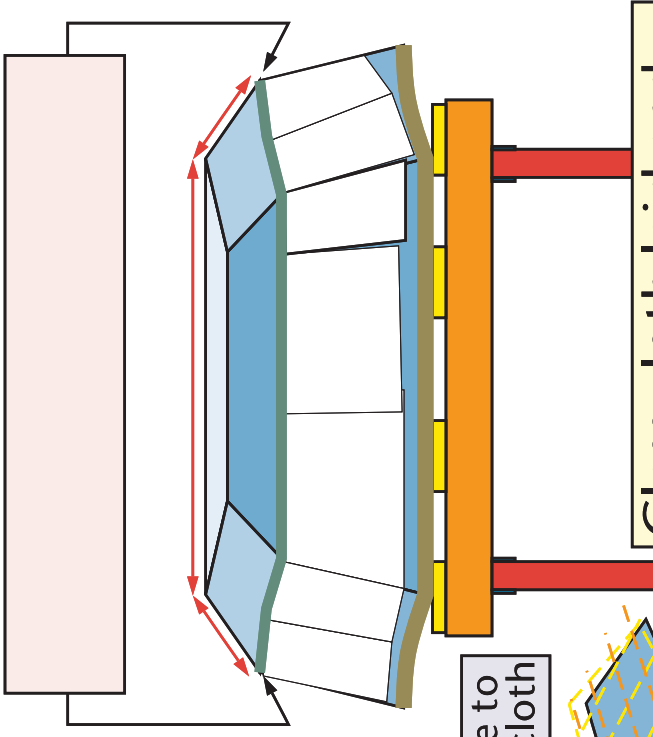
Note: 60" glass cloth will cover the bottom of the hull, but not up the sides! You may want to go with two widths of 38" cloth!

Let the excess cloth from the keel seam overlap the hull sides if you use two widths of 38" cloth

Sharp knife to cut glass cloth



Glass cloth laid and hand smoothed over the hull and then wet out with epoxy



Cut to the "upper" side of the tape

Add newspaper to keep "drips" off the sides of the hull!

Outside seam details for the glass tape and fairing compound layers

Use knife to cut along upper edge of masking tape

Outside Seams

3" fiberglass tape

Use a 2-3" putty knife to fair in the edges. 3/4" wide fairing bevels are good enough for the 3" tape and 4oz cloth

A

3" fiberglass tape to add strength to the joint and to smooth the edge

Edges sanded but not faired

Gelmagic or fairing compound to fill and round the gap for the fiberglass tape

Two layers of backing blocks to hold the wood screws to attach the hatch

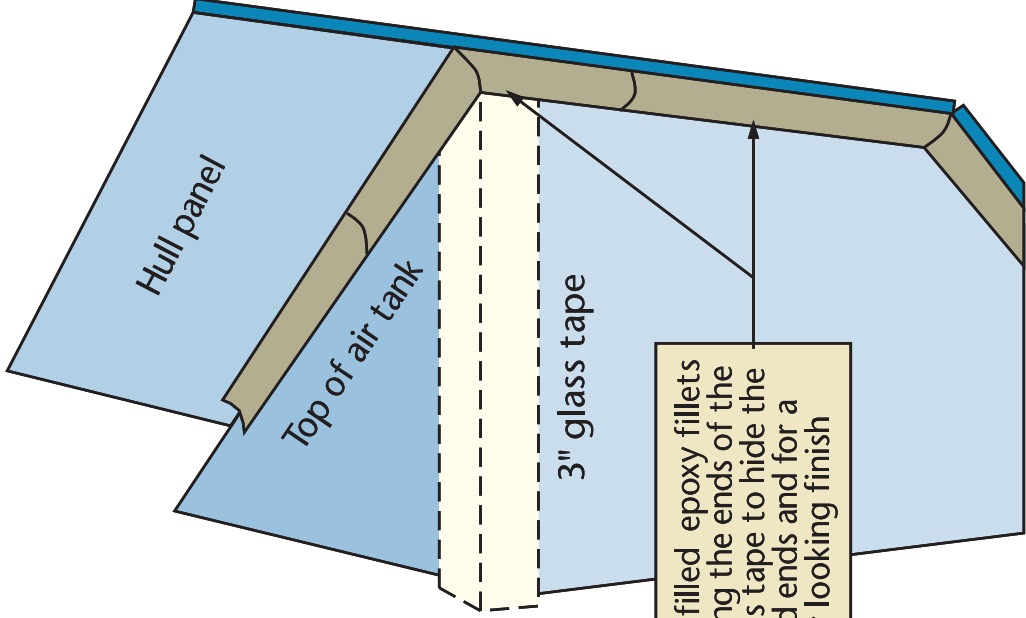
Threaded quarter turn or pop out hatch

Inside Seams

Construction details if you install interior compartments for storage or for extra flotation safety.

B

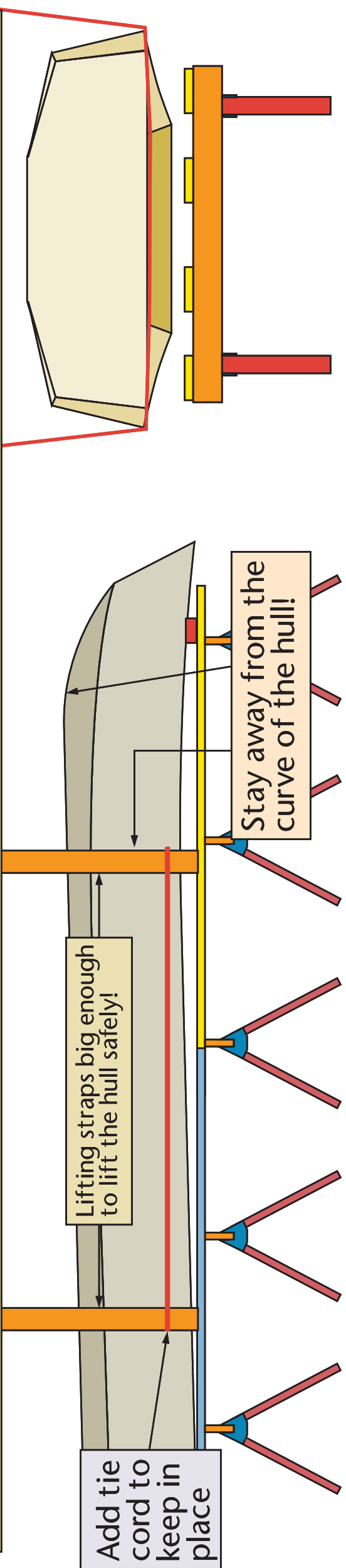
Air tank edging details



Wood filled epoxy fillets covering the ends of the 3" glass tape to hide the ragged ends and for a better looking finish

C

Note: Before you finish off the interior of the hull you will need to flip the hull after all the bottom glass work!

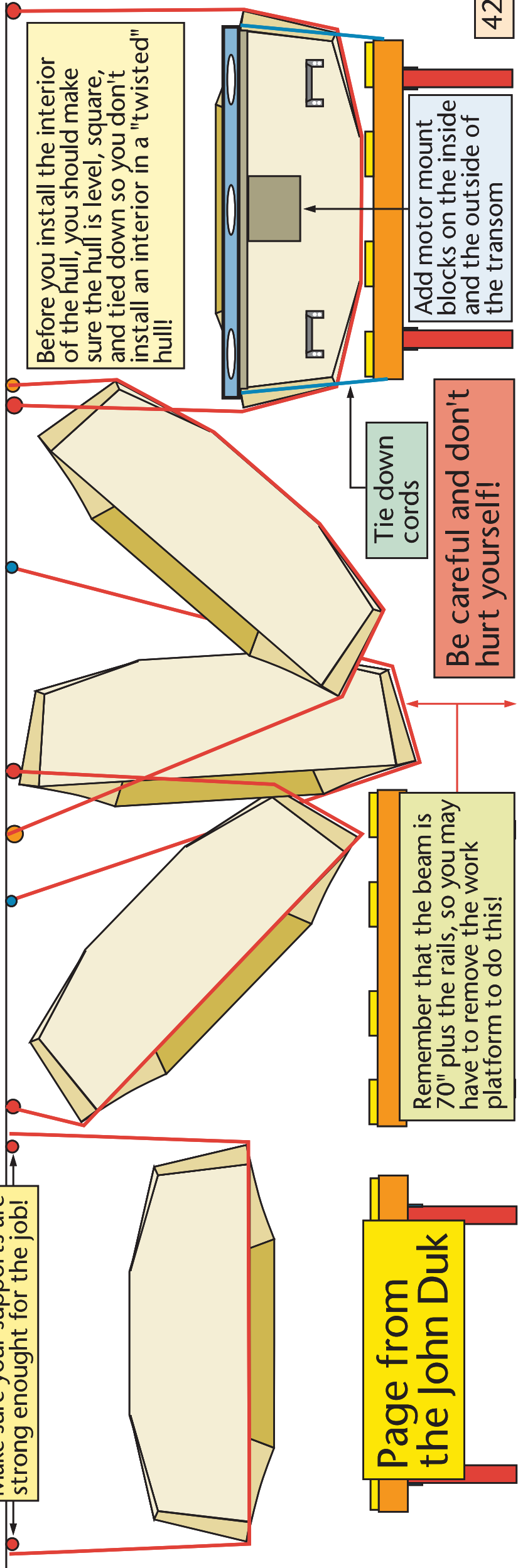


Lifting straps big enough to lift the hull safely!

Add tie cord to keep in place

Stay away from the curve of the hull!

Make sure your supports are strong enough for the job!



Before you install the interior of the hull, you should make sure the hull is level, square, and tied down so you don't install an interior in a "twisted" hull!

Tie down cords

Remember that the beam is 70" plus the rails, so you may have to remove the work platform to do this!

Be careful and don't hurt yourself!

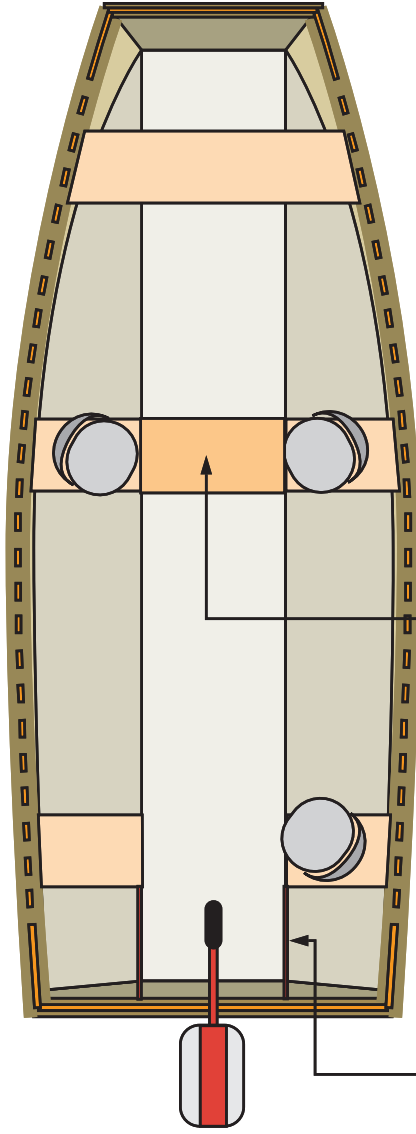
Add motor mount blocks on the inside and the outside of the transom

Page from the John Duk

Page from
the John Duk

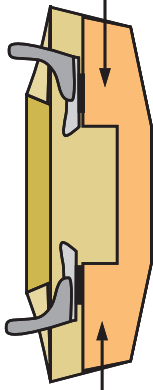
Interior
Ideas

See Page
#53 for
more info

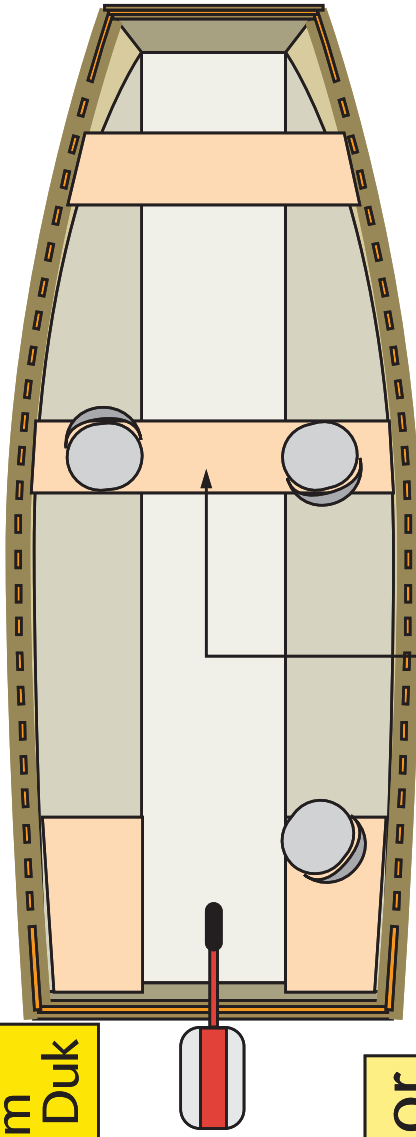
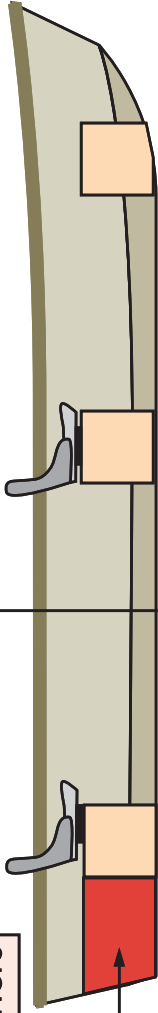


Stiffeners

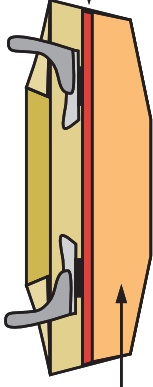
Raised center
section to
stiffen hull!



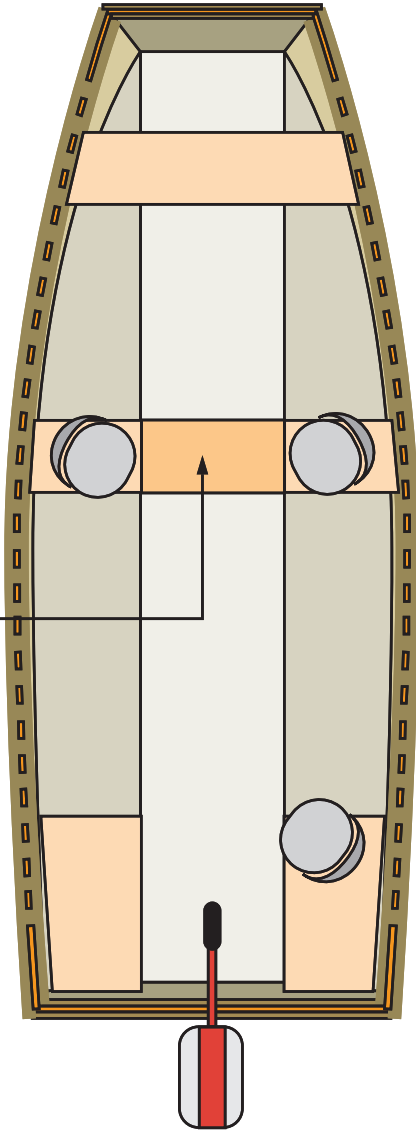
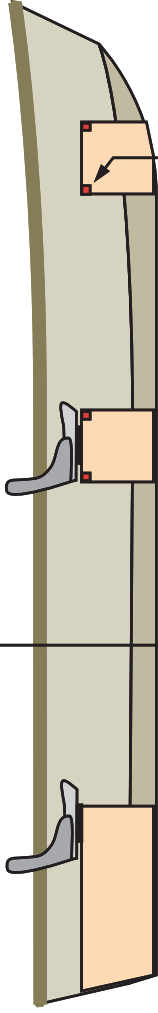
Dropped step
through section



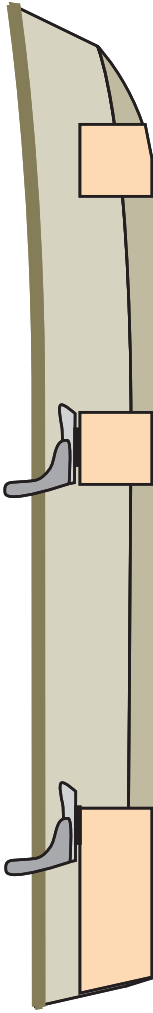
Continuous
seat panels
from side
to side



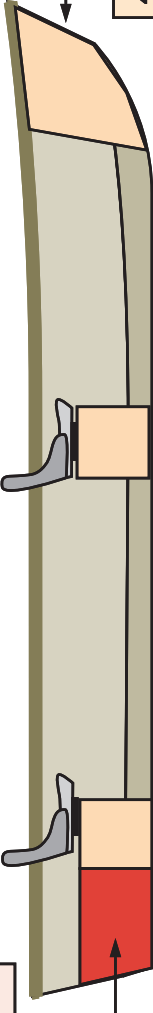
Stiffer hull sides
with solid 2x2's



Stiffeners



Easiest hull to build



Size the hatches to one's that will fit and be easy to get into. Remember that there is a 2x2 under the seat top!

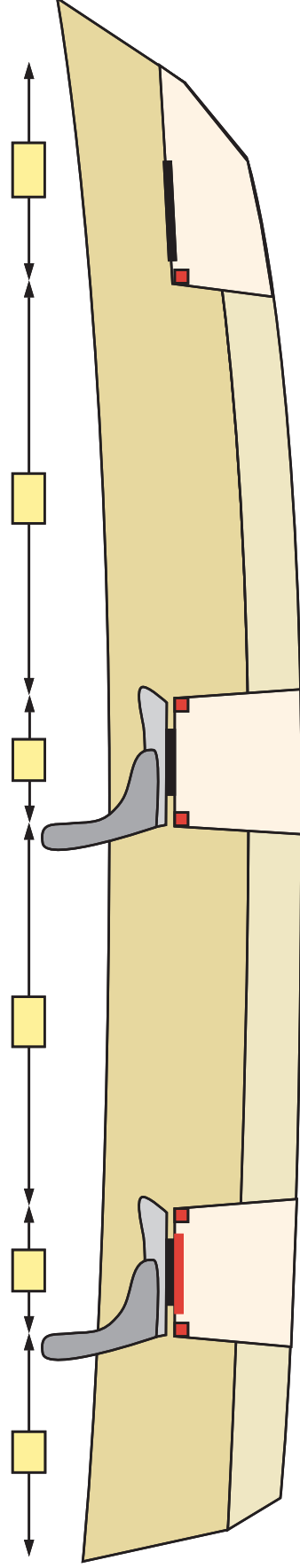
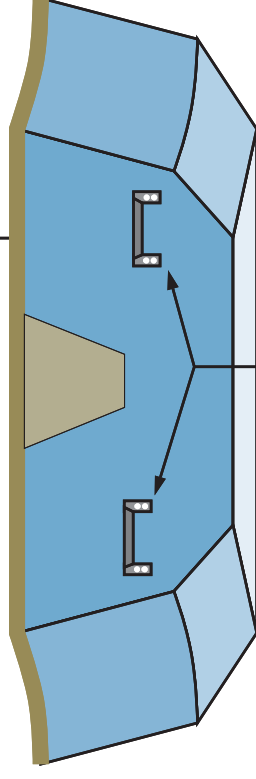
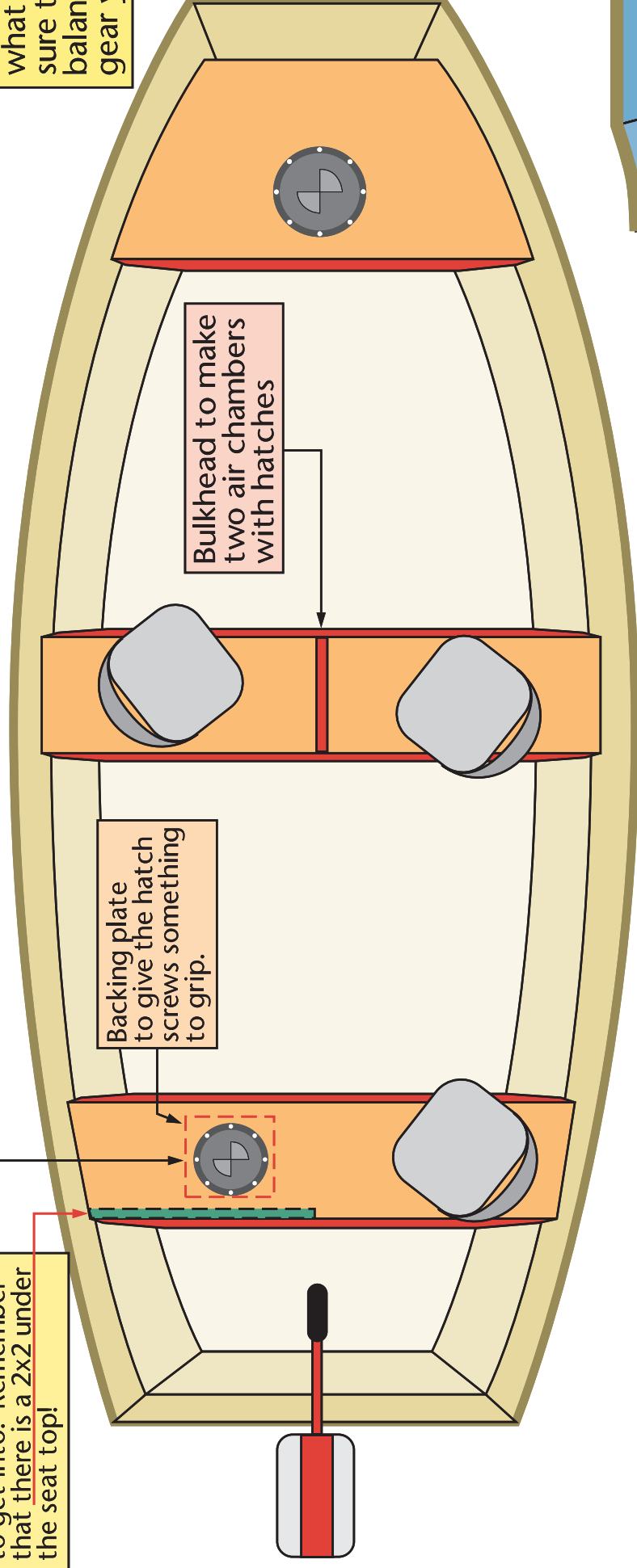
Backing plate to give the hatch screws something to grip.

Bulkhead to make two air chambers with hatches

Good layout for a hull with an OB motor. You may vary the interior to what you want for your hull; just make sure that the weight of the hull is balanced with the OB and any other gear you add, plus people.

Motor mount protecting plate sized to fit the OB that you will use. Size a plate for the inside too.

Step handles to help get back into the boat if you should fall out. I have them on my pram boats and have used them!



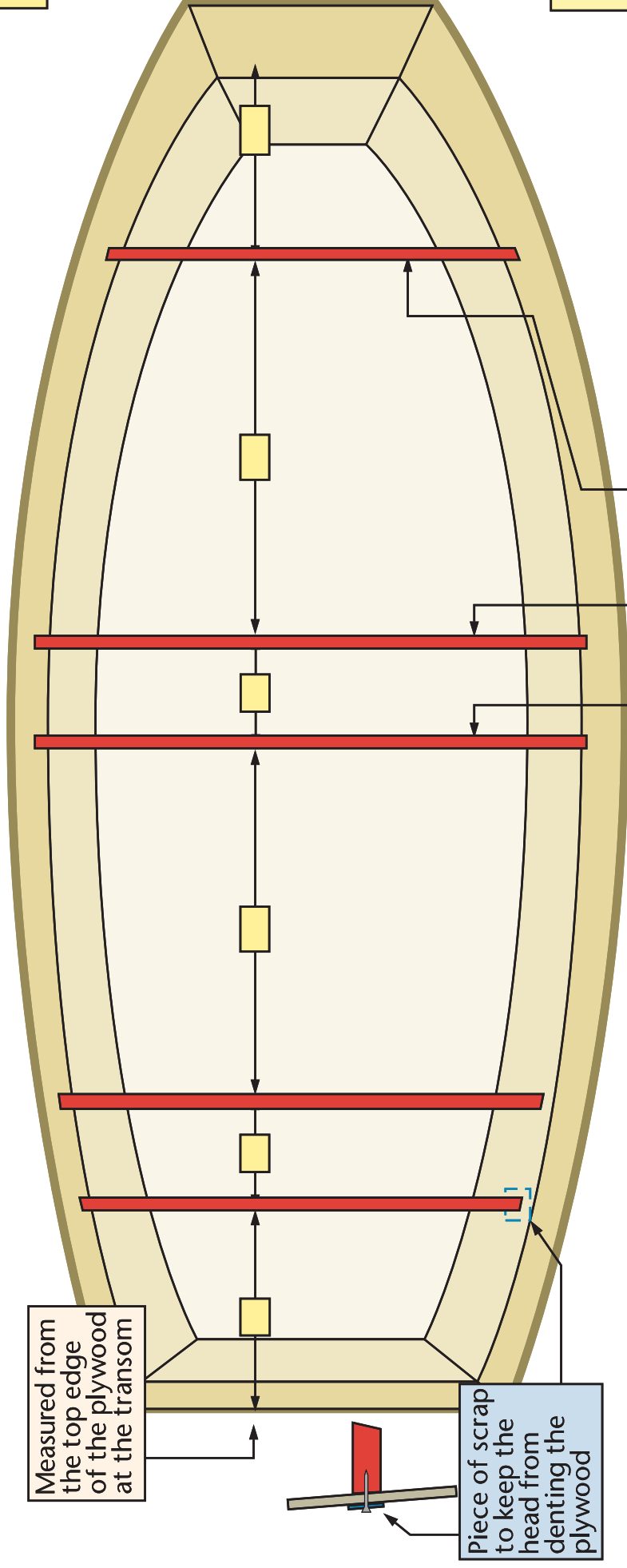
I will use this layout as the example for fitting the interior panels in the hull!

The other styles and "your" interior will use the same fabrication methods

Note: See page #51 for the layout and measurements if you want to row this hull and need to add oarlock brackets.



The 2x2's will be used to locate the seat tops and will be used as stops for the seat side and top panels that will be installed next. Some of the 2x2 material will be removed later depending on which hull interior you select!



Measured from the top edge of the plywood at the transom

Piece of scrap to keep the head from denting the plywood

2x2's leveled in the hull at the locations given fit/cut the ends to conform to the angles of the side panels at their locations, and epoxy in place!

Maybe have the deck all the way to the top?

Install step handles for personal safety!

Backing blocks

You may need to add a screw to keep the 2x2 in place while the epoxy cures.

The height of the bow deck will be your choice!

Make sure the hull is still level!

Placing and leveling the 2x2's in the hull

Extra 2x2's used to check for a consistent height between seats

Use the distances from the transom for the 2x2's on the previous page!

Use the station line cut marks to line up the "cross hull supports" to the measurements listed on the previous page!

Epoxy to sides when 2x2's are level in hull

Vertical supports to hold seat 2x2's to the correct height

You get to set the height of the bow compartment 2x2

Wood clamped to the side rails

Boat tie down U-bolt with backing block and washers both sides

Make sure the hull is still level!

Placing and leveling the 2x2's in the hull

Alternate Method

Extra 2x2's used to check for a consistent height between seats

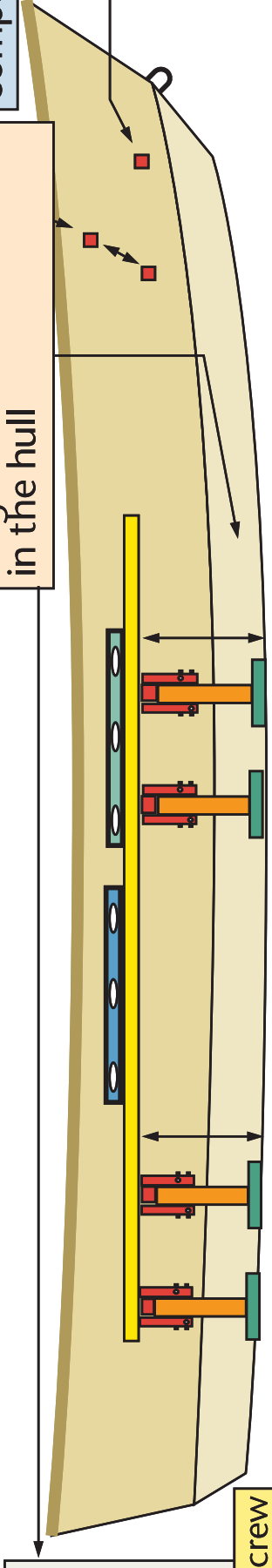
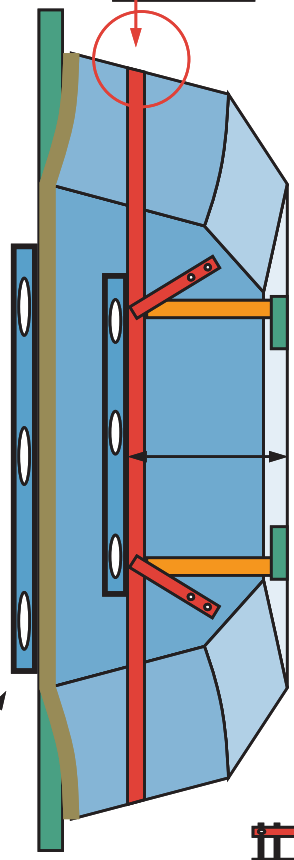
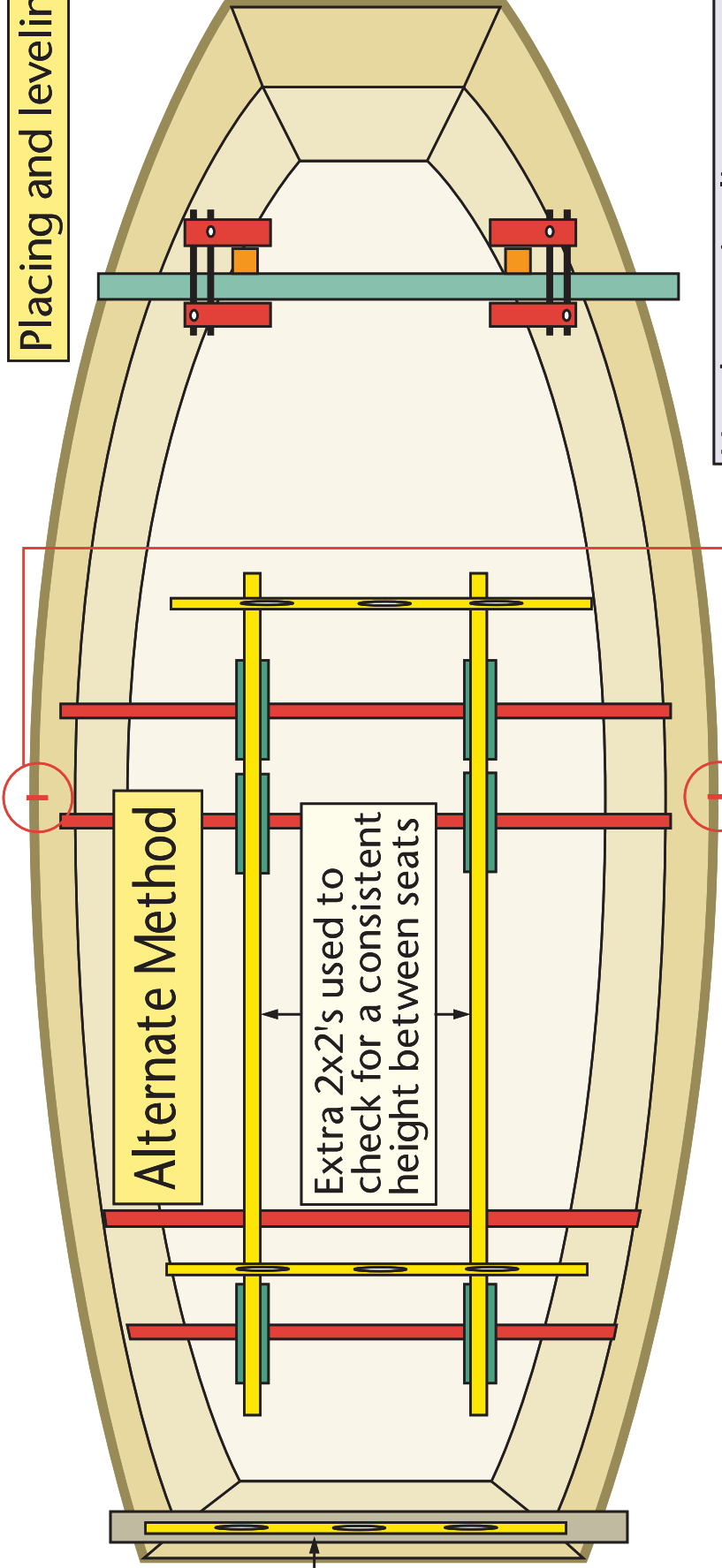
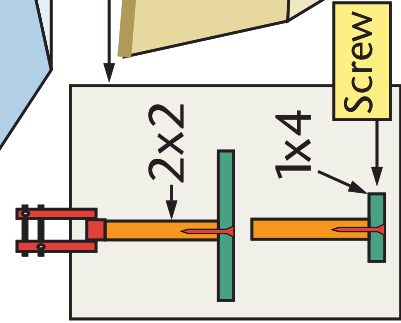
Use the station line cut marks to line up the "cross hull supports" to the measurements listed on the previous page!

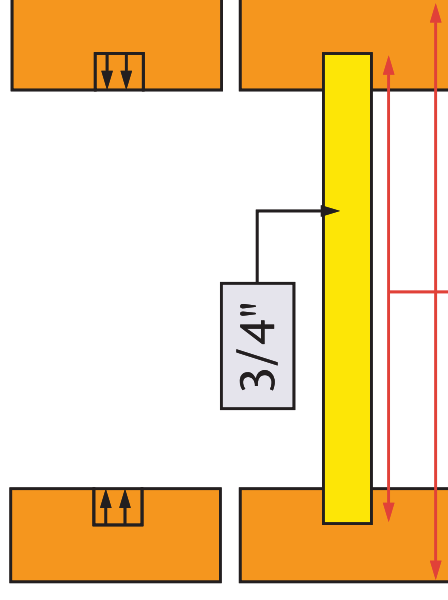
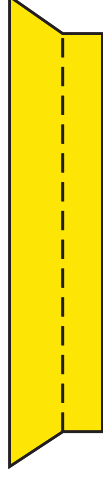
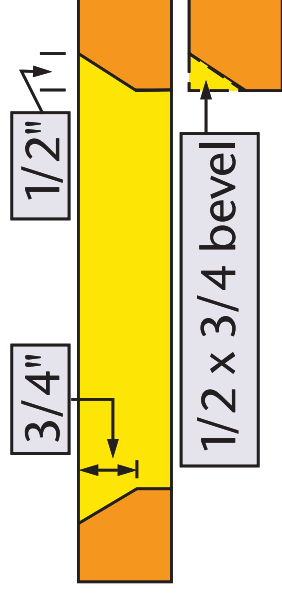
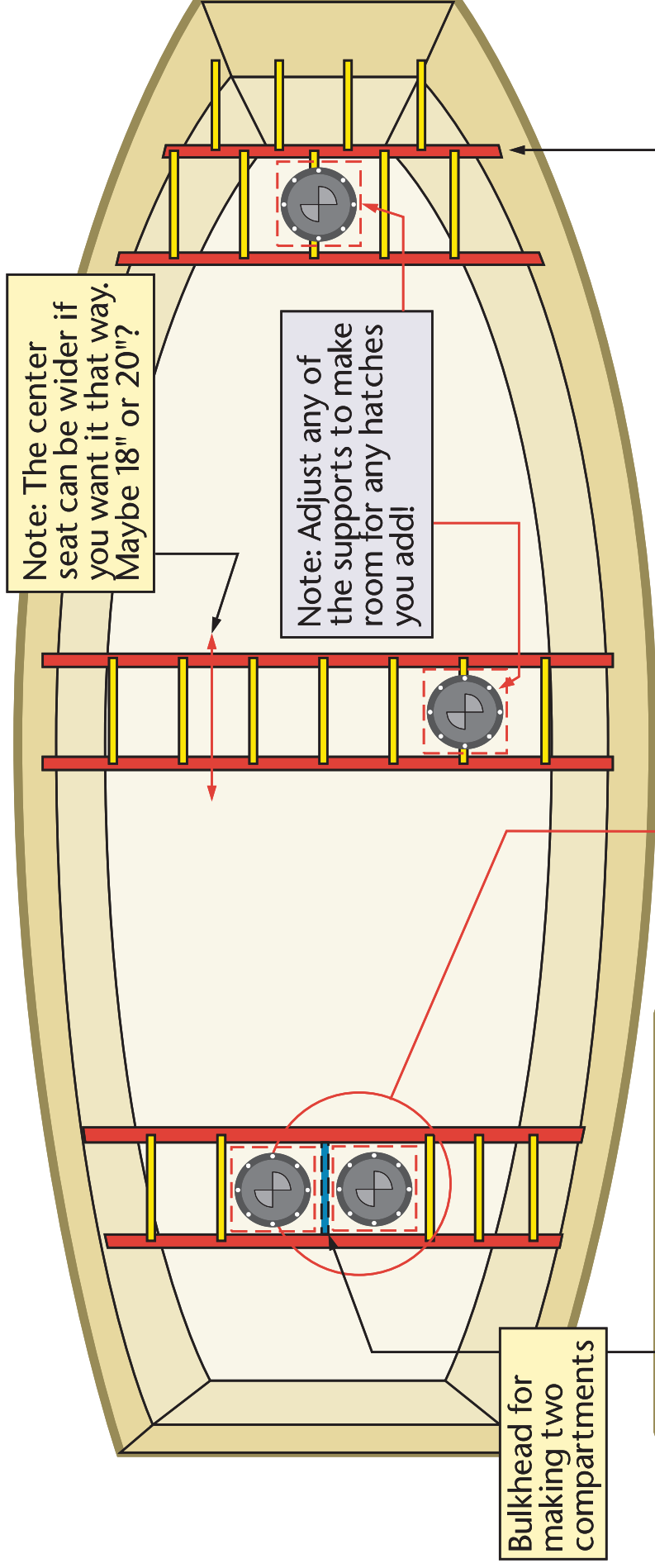
Epoxy to sides when 2x2's are level in hull

You get to set the height of the bow compartment 2x2

Support blocks to set height of the seat 2x2's in the hull

Note: You may want to add another 2x2 here to help support the deck.



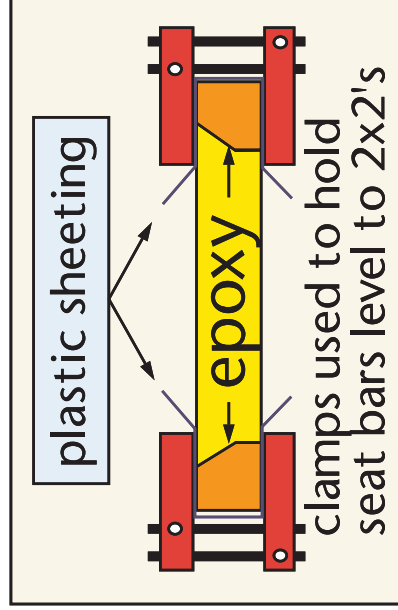
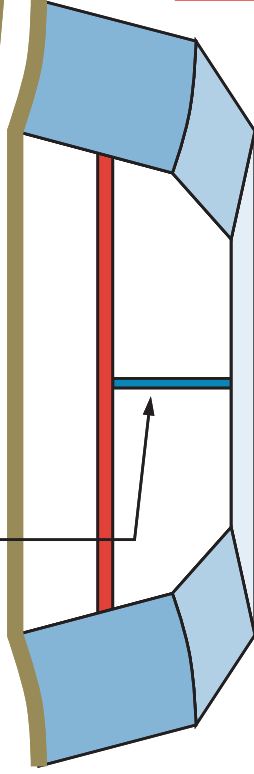


Adjust length to fit your hull! Don't worry if your seats are wider or narrower than mine.

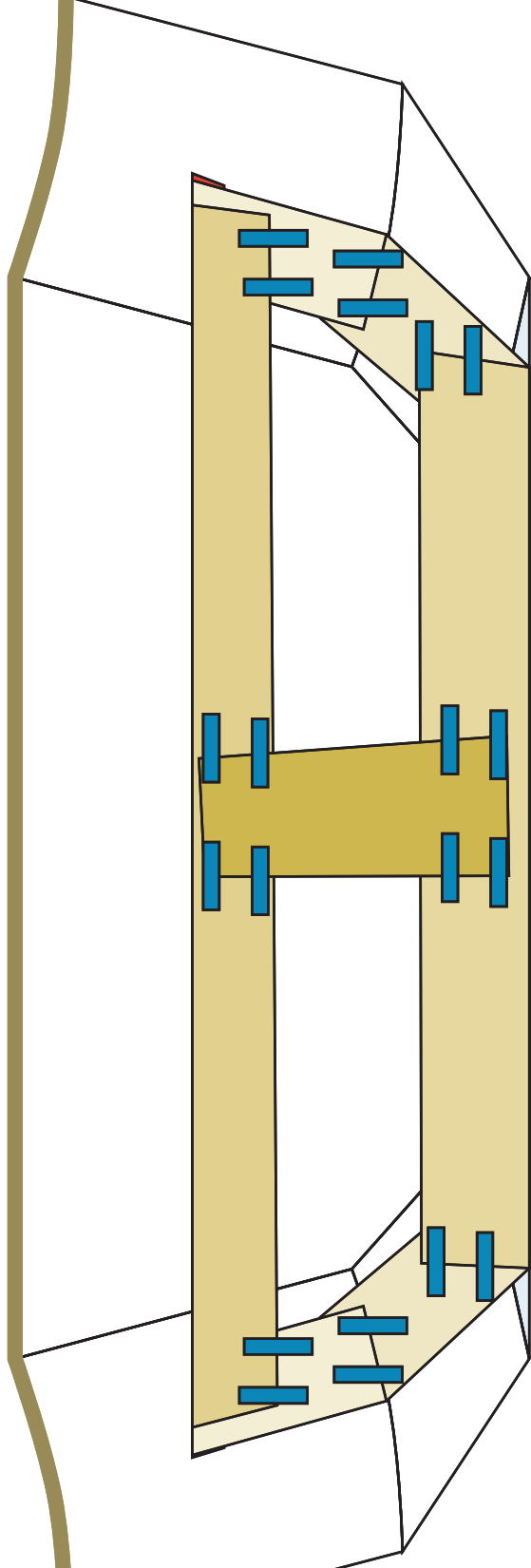


If you install a "cooler" in your hull, you may want to change the spacing between the seat support braces to fit the hatch between them

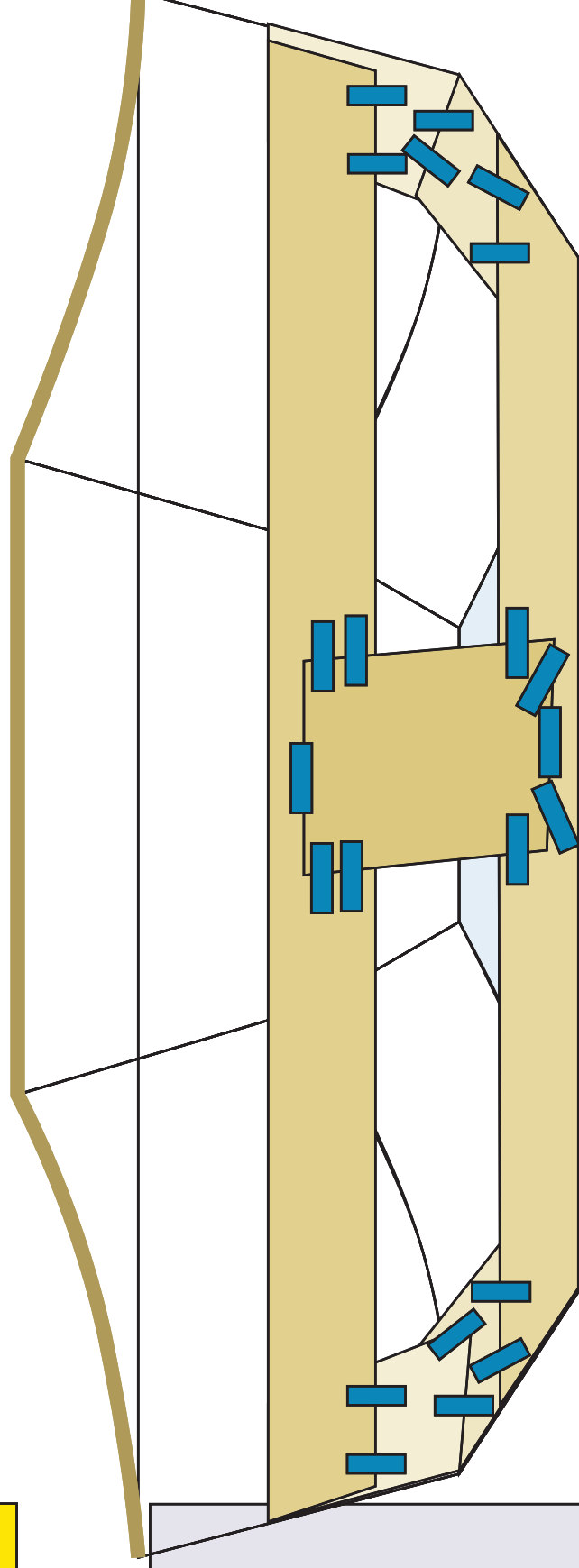
Make seat support bars from scrap 2x2 cut in half



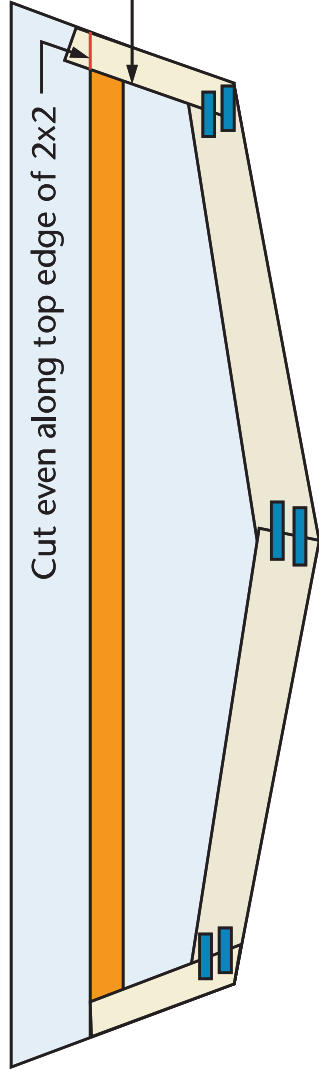
Using cardboard strips to make an outline of the hull where the seat support panels will go. This gives you an accurate shape to transfer to larger sheets of cardboard to cut out the full sized mockup. Then the "fitted" mockup can then be transferred to plywood to make the panel to epoxy into the hull.



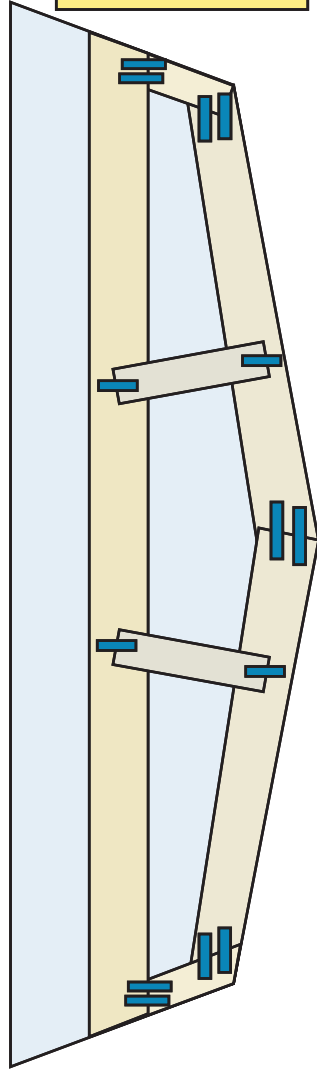
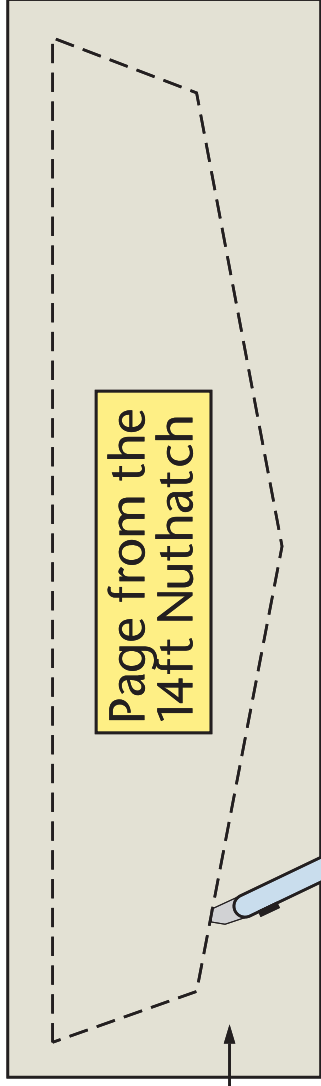
The next page shows a better idea of how this works. The drawing was taken from the 14ft NuHatch Pram, but the process is the same for all my boat designs. This works for all hull panels whether it is a vertical seat support panel or one of the seat tops itself. Give it a try before you cut out any of the plywood parts for this hull!



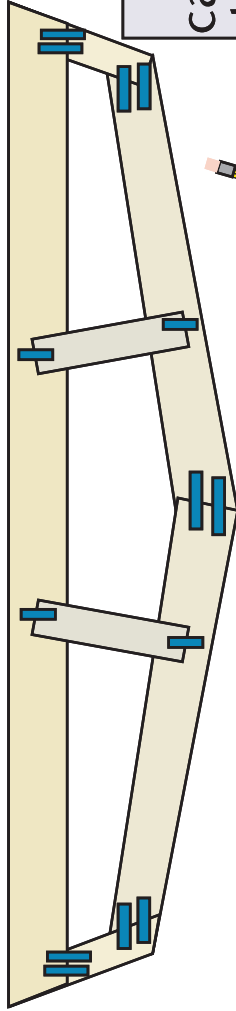
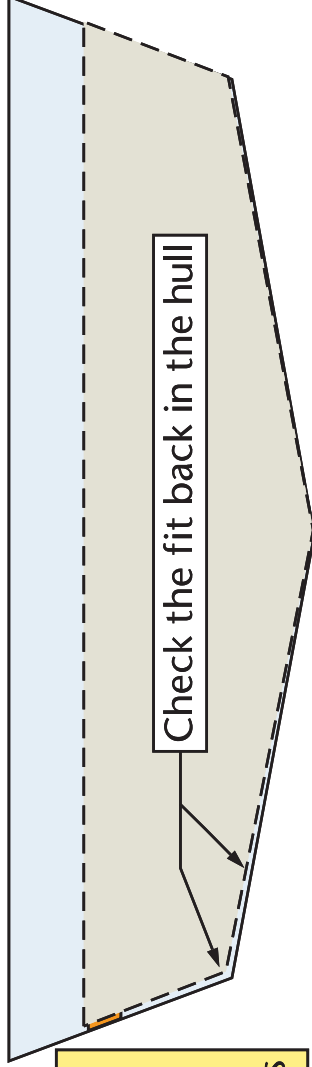
An easier way to fit the interior panels!



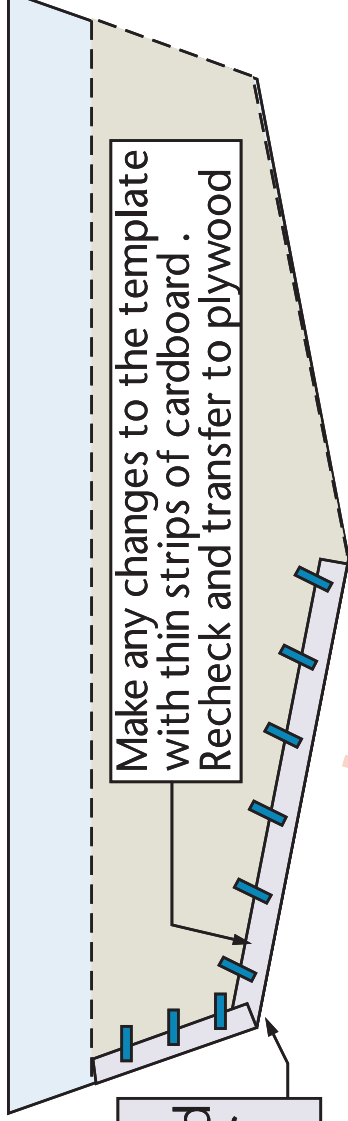
Cardboard strips sheet



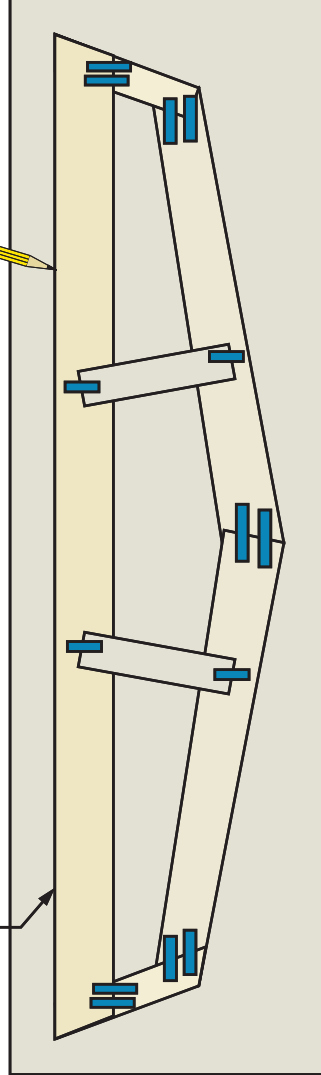
This is an alternative to using a spiling stick to find the dimensions to the interior panels



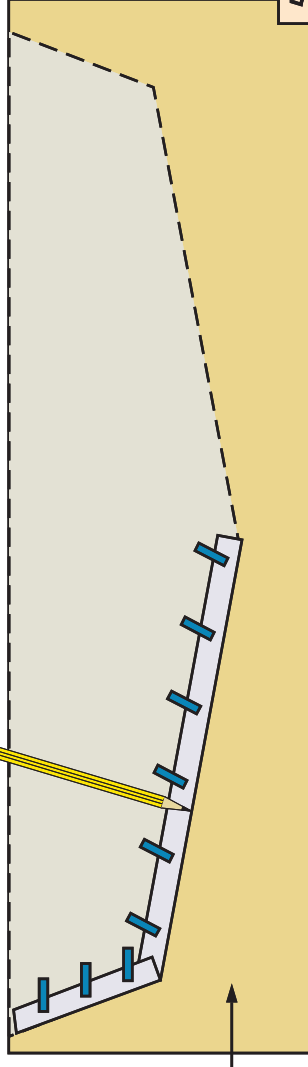
Light weight cardboard taped to template for a better fit



Use a pencil to outline the template you have taped together from the interior dimensions of your hull. Remember, all hulls will be different!

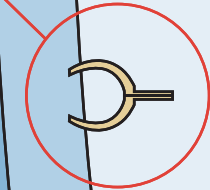


Plywood sheets



Placement of oarlock sockets if you install them.

Note: Location of the major parts of this hull, but your hull may be different and that's ok. Just be sure that the hull is balanced with an equal weight distribution.

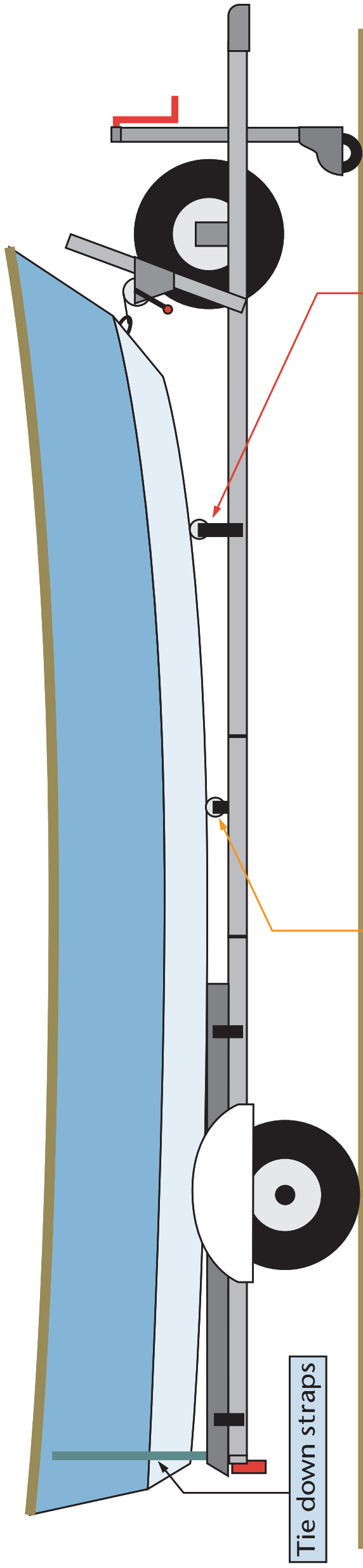


72" to aft edge

Want to row instead? Then use these alternate measurements for placing the seats, and rail spacer blocks.

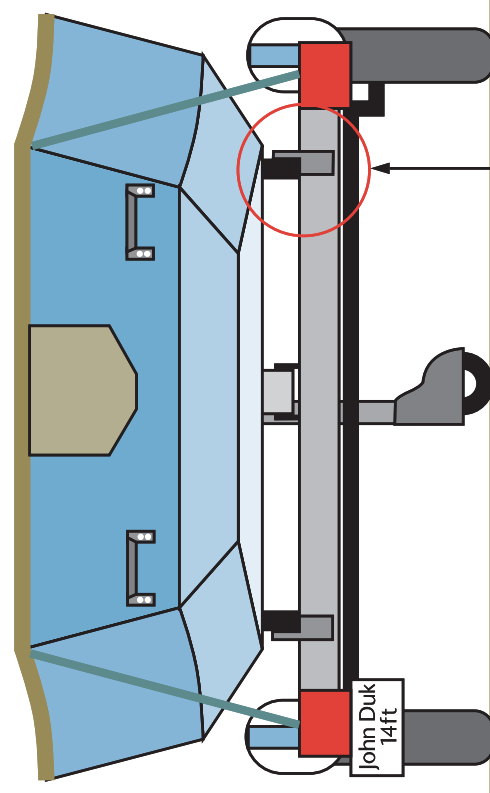
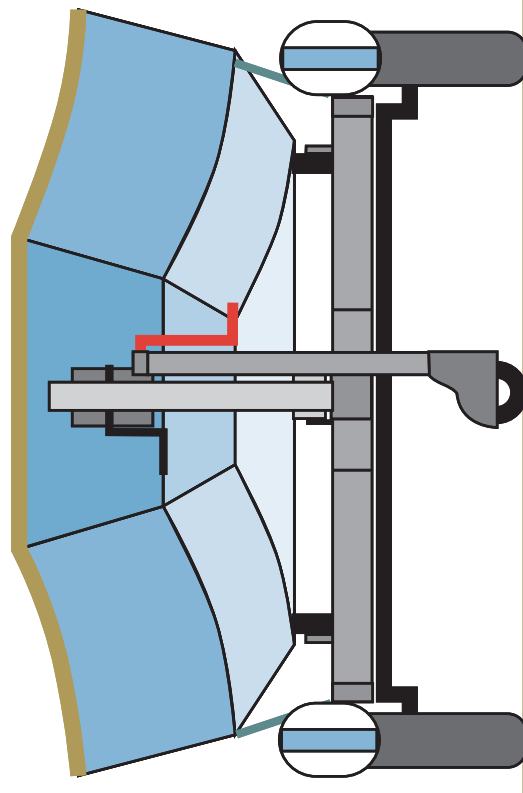
Note: The hatches can be anywhere you want them, but be sure to locate them in advance so the 1x2 seat supports are placed correctly and there is room for the backing plates and the 2x2 seat supports

Backing plates for the hatches. Can be 1/4" to give two layers for the hatch screws to grip.



Tie down straps

Try to mount the forward roller or rollers under either the aft edge of the bow compartment, or under the forward bulkhead of the middle seat for support of the bow end of the hull!



Try to set the support bunks under the seams at the edges of the bottom panel

Note: I've drawn so many hulls now that I forget which parts are needed to build one of my hulls. I just start out with the lofting page and go from there, but builders need a bit of information to keep them on the straight and narrow road to completion of the hull. For this hull I would download a copy of the John Duk study plans (which are a free download) from Duckworks BBS and look at all the drawings that I have put together to build it. Or you can download any of my other hull study plans to see other ways that I have drawn some part of the hull that you are in question about. Everyone has their own idea of what their perfect hull should be, and I welcome that innovation. Somewhere in one of my free study plans is the answer to your question. Seek and Ye shall find.

Warren Messer
Red Barn Boats