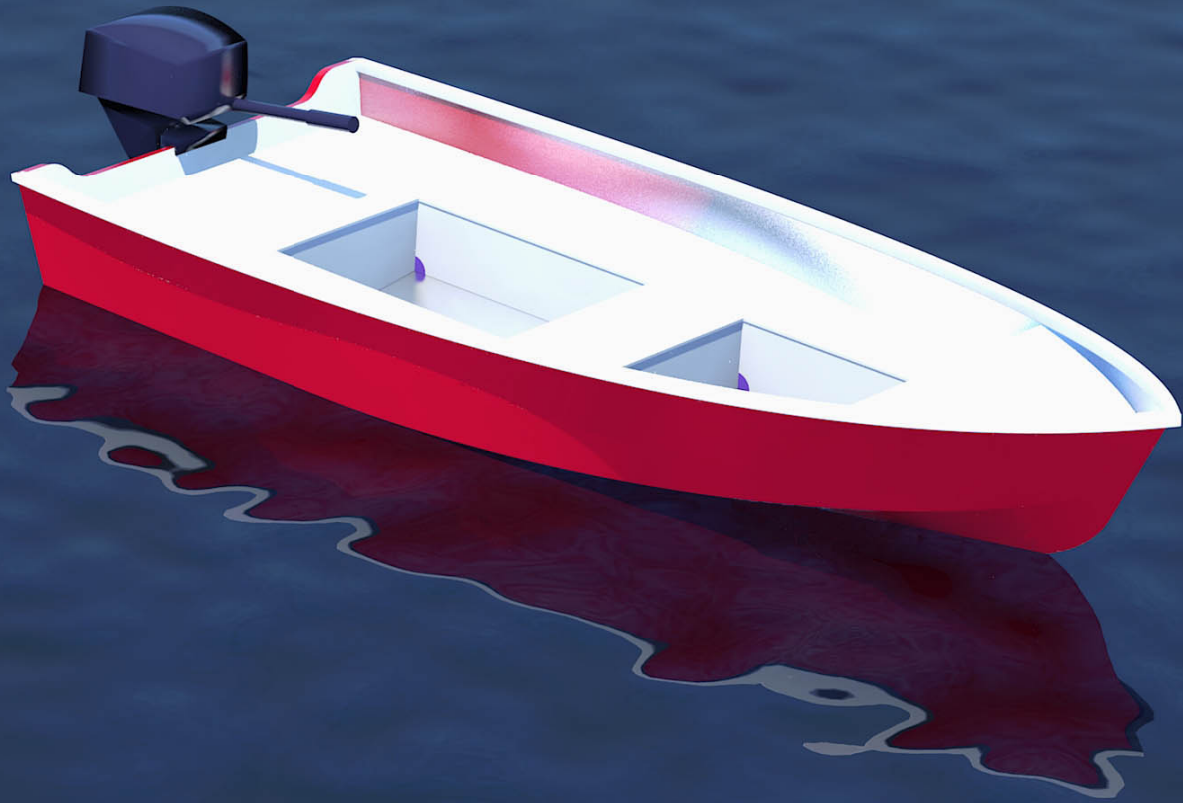


# Kastri 12 Study Plans



Drawings and Construction Manual  
for a 12' x 5' Shallow 'V' Bottom Skiff  
Suitable for Short Shaft Outboard Motors

Andrew Walters

# Kastrí 12

# Study Plans

for a 12' x 5' Shallow 'V' Bottom Skiff  
Suitable for Short Shaft Outboard Motors

by

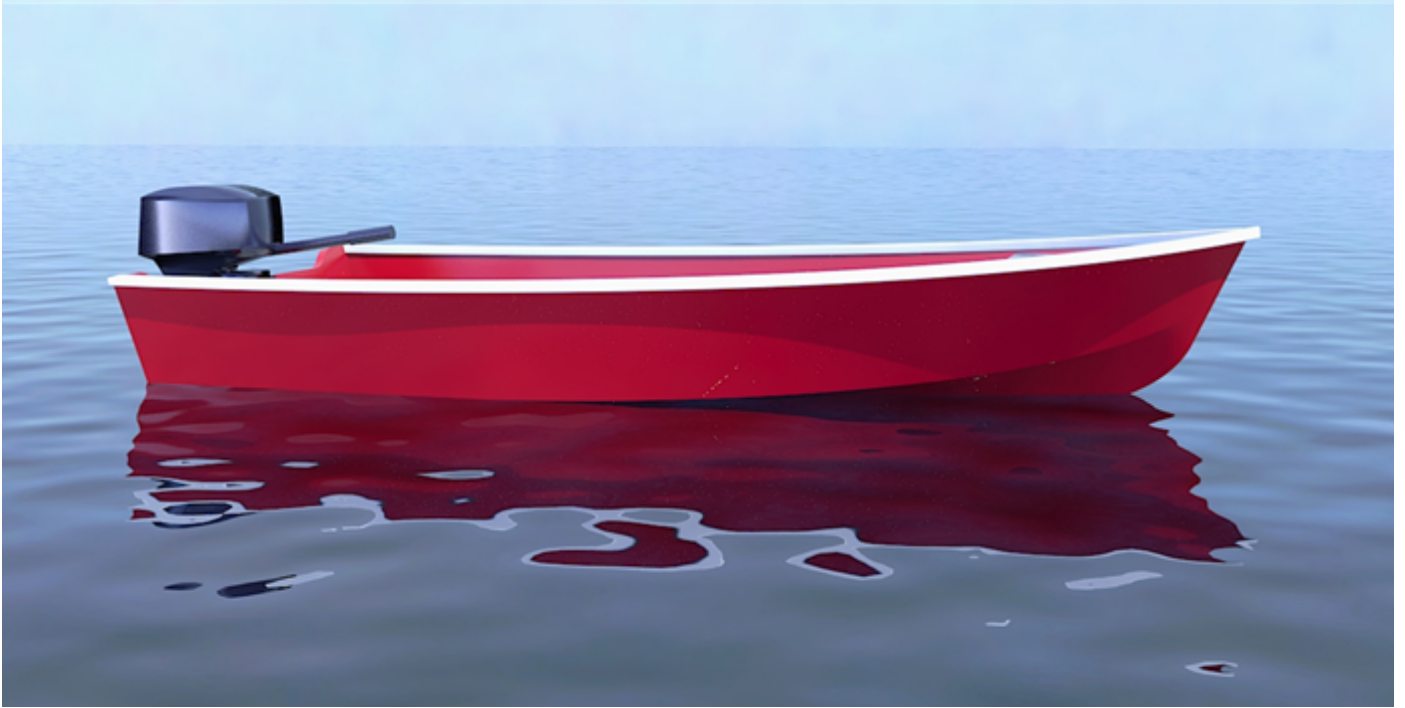
**Andrew Walters**

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# Introduction

In the spring of 2013, I started to write a book called, 'How to Design a Boat using SketchUp 3D Software'. The subject matter was my design, 'Kalostyn'. After preparing a file of over 500 screenshots, I realised that, for the purpose of showing a beginner how to design a boat in SketchUp, the content of this design was too much.

In May 2013, I re-visited the idea. Instead of a book, I'd write an article, hoping that Chuck Leinweber would publish it on his Duckworks Magazine website, and I'd keep the design very simple so that I could describe the whole design process as succinctly as possible.

So I worked up a design for a 12', shallow 'V' planing boat. The idea was to keep the design simple, but to include all of the essential 'how to's' like the creation of lines in 3D space, intersecting planes to form templates and how to form and flatten the hull panels.

I was rather pleased with the resulting design, So I decided to work it up to a set of plans. A little fine tuning was needed to one or two lines and, as usual, I ended up redrawing her to be more to my liking.

Here she is. 'Kastri 12'

Anyone with a basic knowledge of woodworking should be able to make this boat.

Whilst this manual sets out the construction sequence in detail, the builder should have a basic knowledge of, and ability in, working with wood and epoxy resins and glass fiber.

Before buying materials, or starting to build this boat please read and familiarize yourself with the drawings and construction manual. Bear in mind that the build sequence and method of construction can be varied to suit your preference.





## Recommended Reading

Two excellent books on the subjects of boat building and working with polyester and epoxy resins are:

Jim Michalak: 'Boatbuilding for Beginners (and Beyond)'

and

Harold Payson: 'Build the New Instant Boats'

The West System website also has several downloadable user guides and manuals relating to their epoxy resin systems:

<http://www.westsystem.com/ss/>

## Disclaimer

If built properly this will be a safe boat. I cannot be responsible for the build quality, for your boating experience, or for the conditions of the water where you take the boat. For these reasons (and because of the litigious times in which we live), no liability, (consequential or other) will be assumed for any losses arising from the use of these documents and drawings and no warranty is made, including that of fitness for purpose.

## Copyright

The information contained in these documents are the copyright of Andrew Walters. Purchase of these plans and assembly manual give the purchaser the right to build one boat.



## List of Materials

Marine Plywood:

1/2"x4'x8'  
1 sheet

3/8"x4'x8'  
2 1/2 sheets

1/4"x4'x8'  
3 sheets

1 1/2" square timber for the temporary  
supports  
about 20'

3/4" square timber for batten fixings  
about 50'  
Note: less will be required if all joints are  
taped and epoxy resin jointed

50 yard roll of 3" glass tape

8 yards of glass cloth to cover the hull bottom  
and overlap

2 gallons of epoxy resin

About 5 pounds of resin thickening powder

Styrofoam or empty plastic bottles for the  
flotation

Note that the hull bottom is specified in 1/4"  
plywood in order to facilitate bending the  
panels at the bow.  
For heavy use the floor thickness can be  
increased by adding another layer of plywood,  
glued in place with epoxy resin.

## Specification

Length 12' 0"

Beam 5' 0"

Bare Hull Weight 210 lbs

Power Requirement:

From Crouch Formula calculations, power /  
speed estimates are as follows:

1 Person on board  
500 lbs displacement  
10 hp - About 22 kts

2 People on board  
700 lbs displacement  
10 hp - About 19 kts  
15 hp - About 23 kts

3 People on board  
850 lbs displacement  
10 hp - About 20 kts  
15 hp - About 17 kts

4 People on board  
1,000 lbs displacement  
15 hp - About 19 kts

## Glue, Resin and Fixings

The preferred method of construction is to use epoxy resin throughout for both the gluing and the glass cloth covering.

Duckworks Boat Builders Supply sell epoxy resins at a price which makes the use of other glues and resins a false economy.  
(<http://www.duckworksbbbs.com/supplies/epoxy/marineepoxy/index.htm>)

Polyester resin can be used as an alternative for the glass cloth covering. It is not as durable or as waterproof as epoxy resin.

Polyester resin should not be used as a glue.

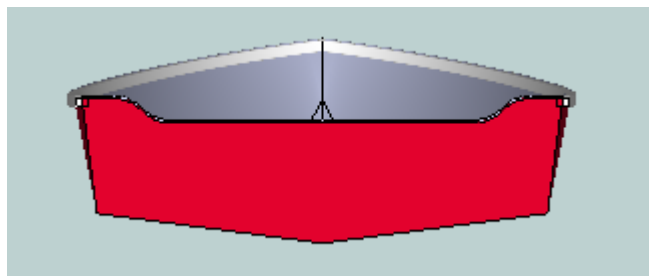
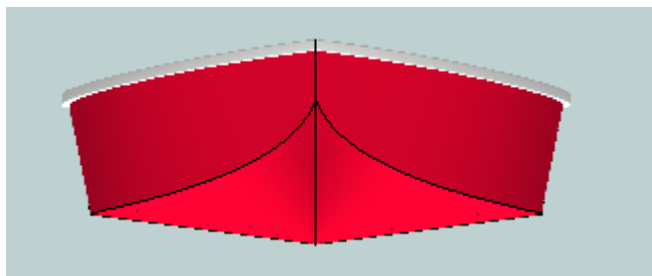
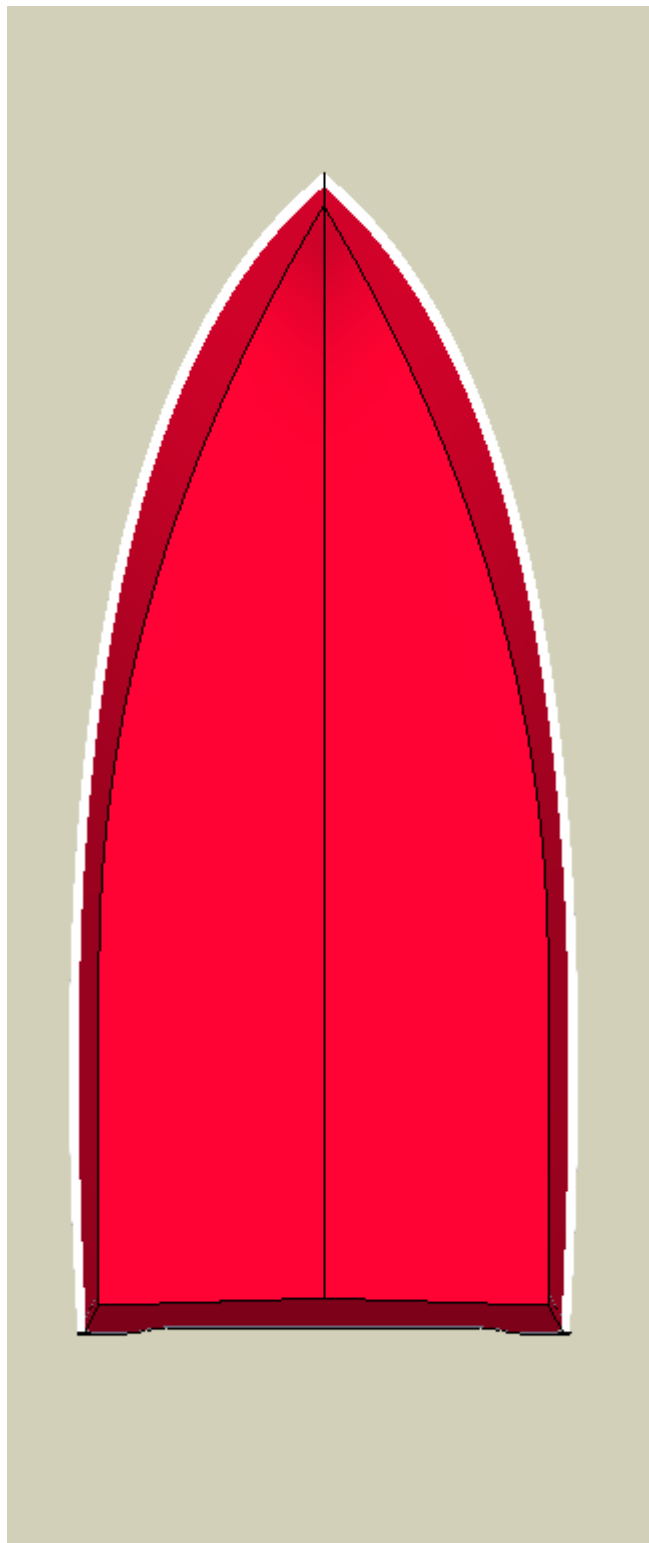
The drawings show the use of 3/4" x 3'4" battens, glued in place at all framing / panel joints. If preferred these can be omitted and replaced with fiberglass tape and epoxy resin joints.

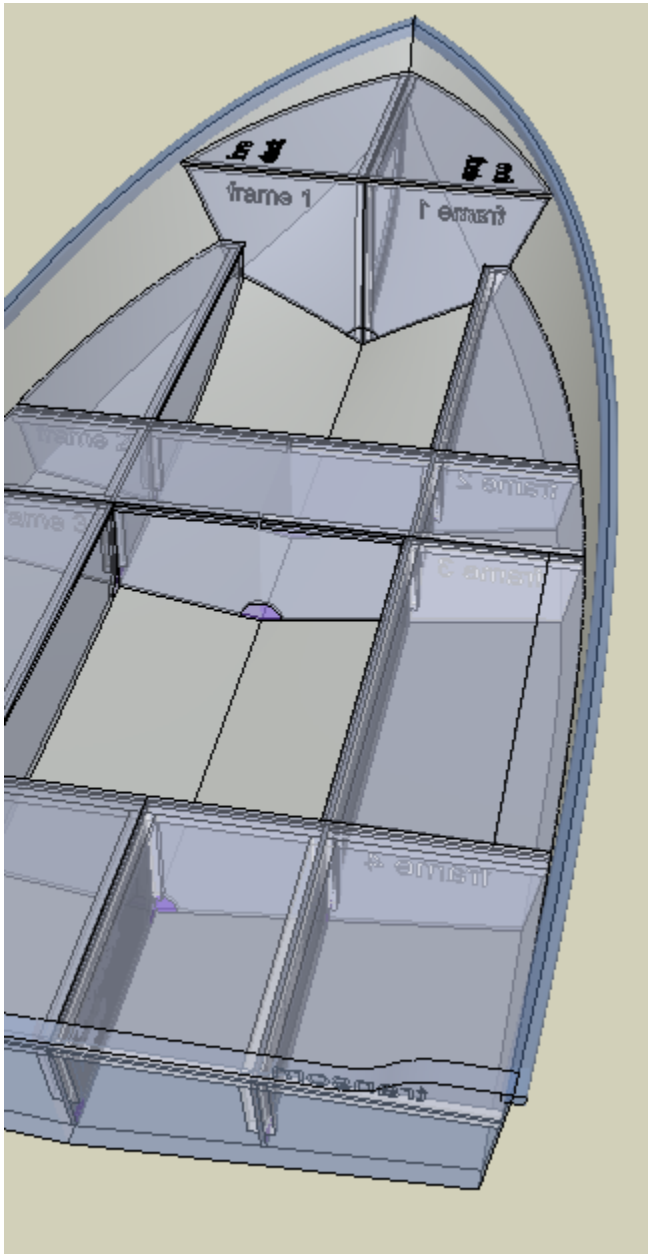
Several of the battens are located above the waterline. If the boat isn't going to be kept permanently in the water then in these places the battens could be fixed with a waterproof PVA wood glue of a quality equivalent to Titebond II Premium Wood Glue.

Any screws that you plan to leave in should be stainless steel. I often use screws to hold everything together before gluing and taping, then take them out and fill the holes at the finishing stage.

'Raptor' polymer composite nails, used with a nail gun, make for a very fast way of holding glued surfaces in place quickly and accurately.

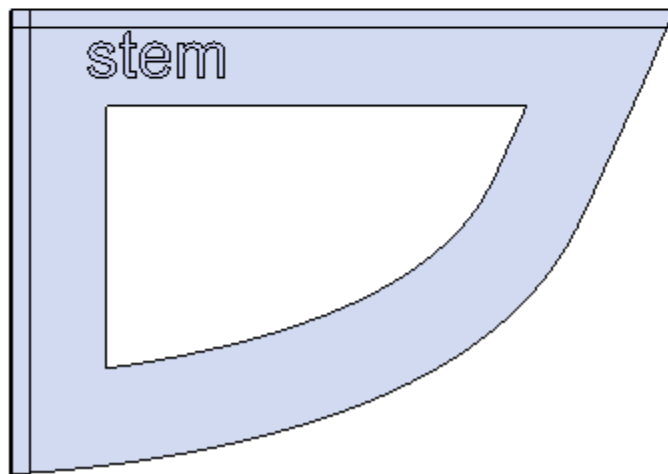
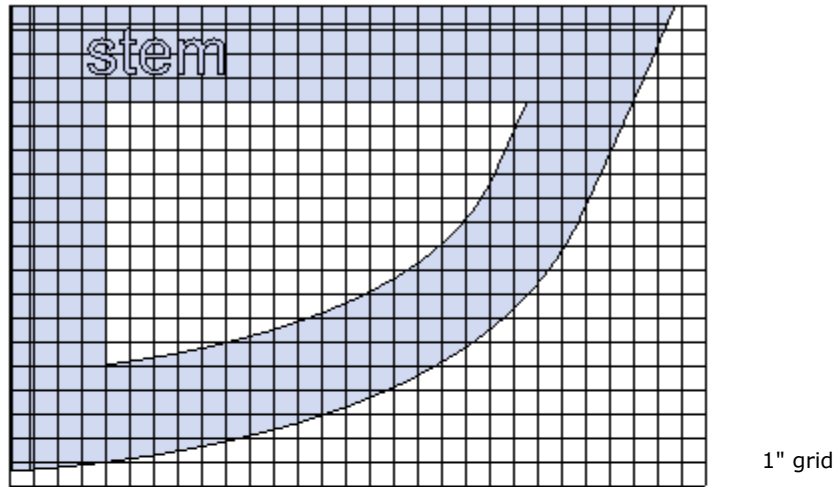
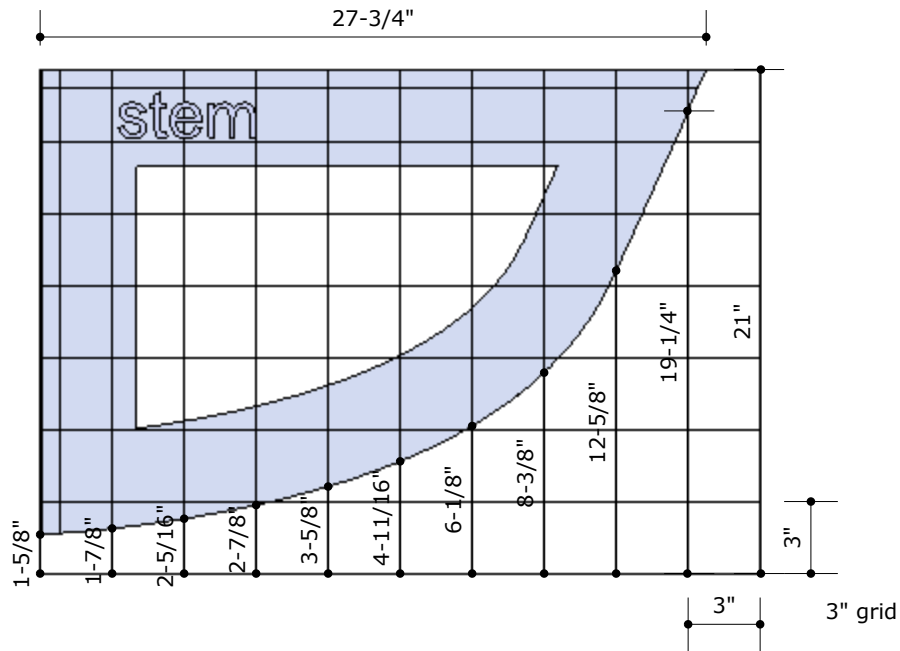
The method is to glue both faces, put in position, shoot a few nails in. They're strong enough to hold things in place whilst the glue sets and, being plastic can be sanded, chiseled or planed over without damaging cutting blades - and don't rust.

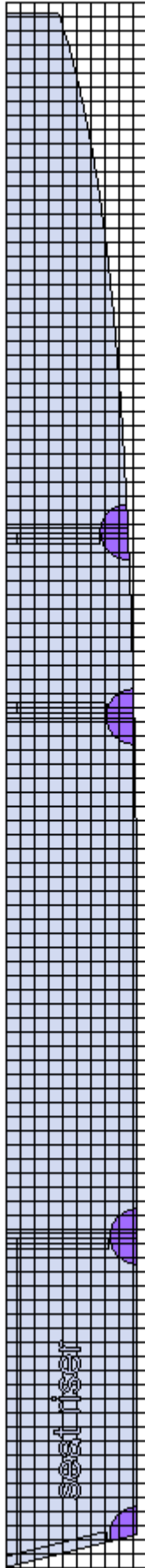




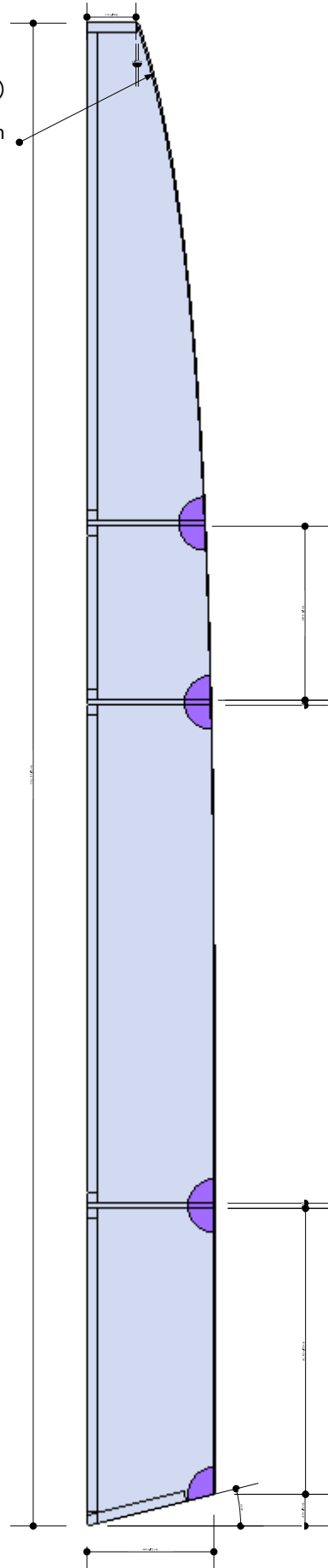
## The Drawings

| Page No. | Drawing Title              |
|----------|----------------------------|
| 10       | Plywood Cutting Sheet      |
| 11       | Stem                       |
| 12       | Seat Riser                 |
| 13       | Fore Deck & Transom Knee   |
| 14       | Front Side Seat & Mid Seat |
| 15       | Mid Side Seat              |
| 16       | Rear Seat                  |
| 17       | Frames 1, 2 & 3            |
| 18       | Frame 4 & Transom          |
| 19       | Seat Layout                |
| 20       | Bottom Panel               |
| 21       | Side Panel                 |



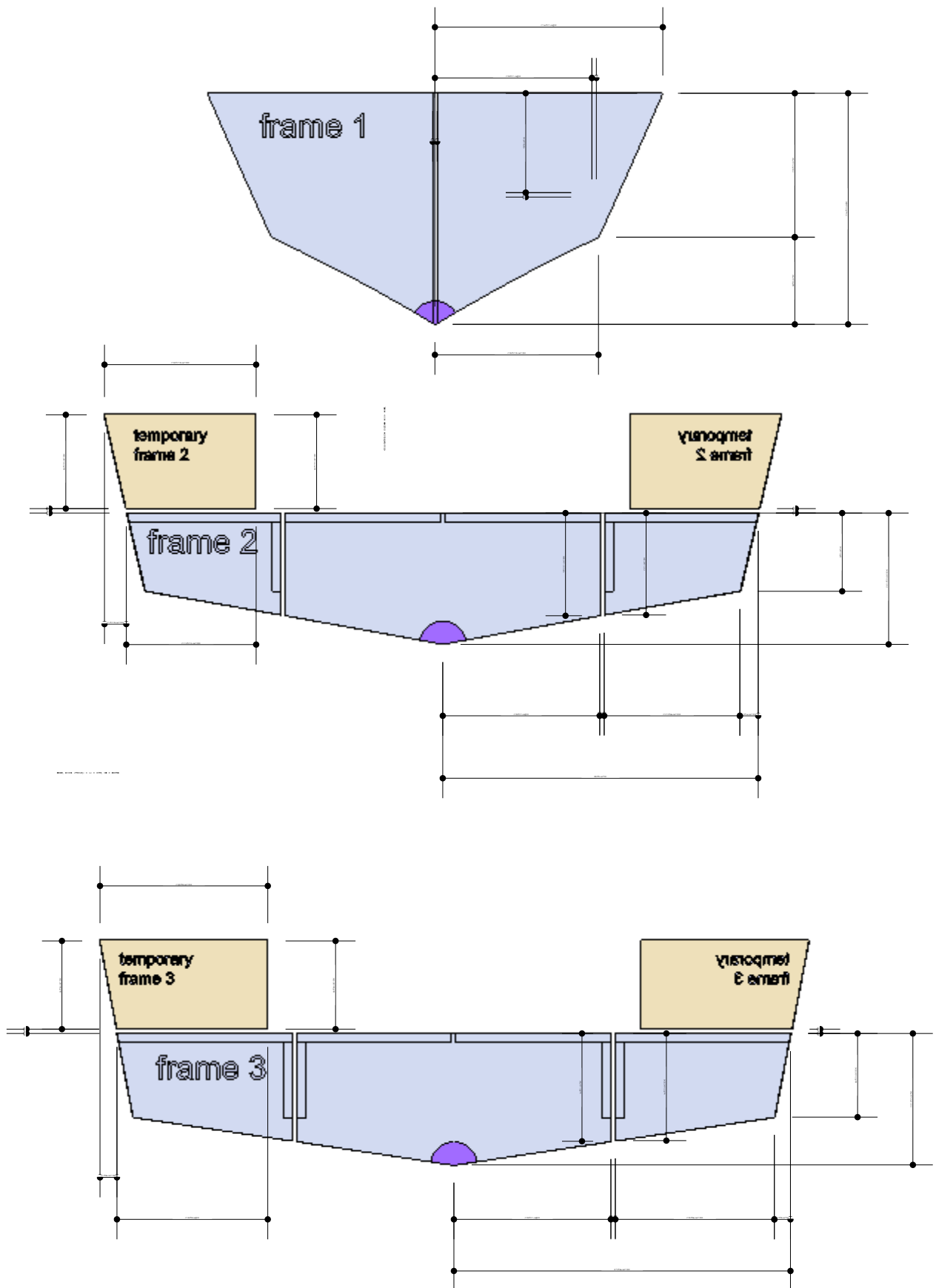


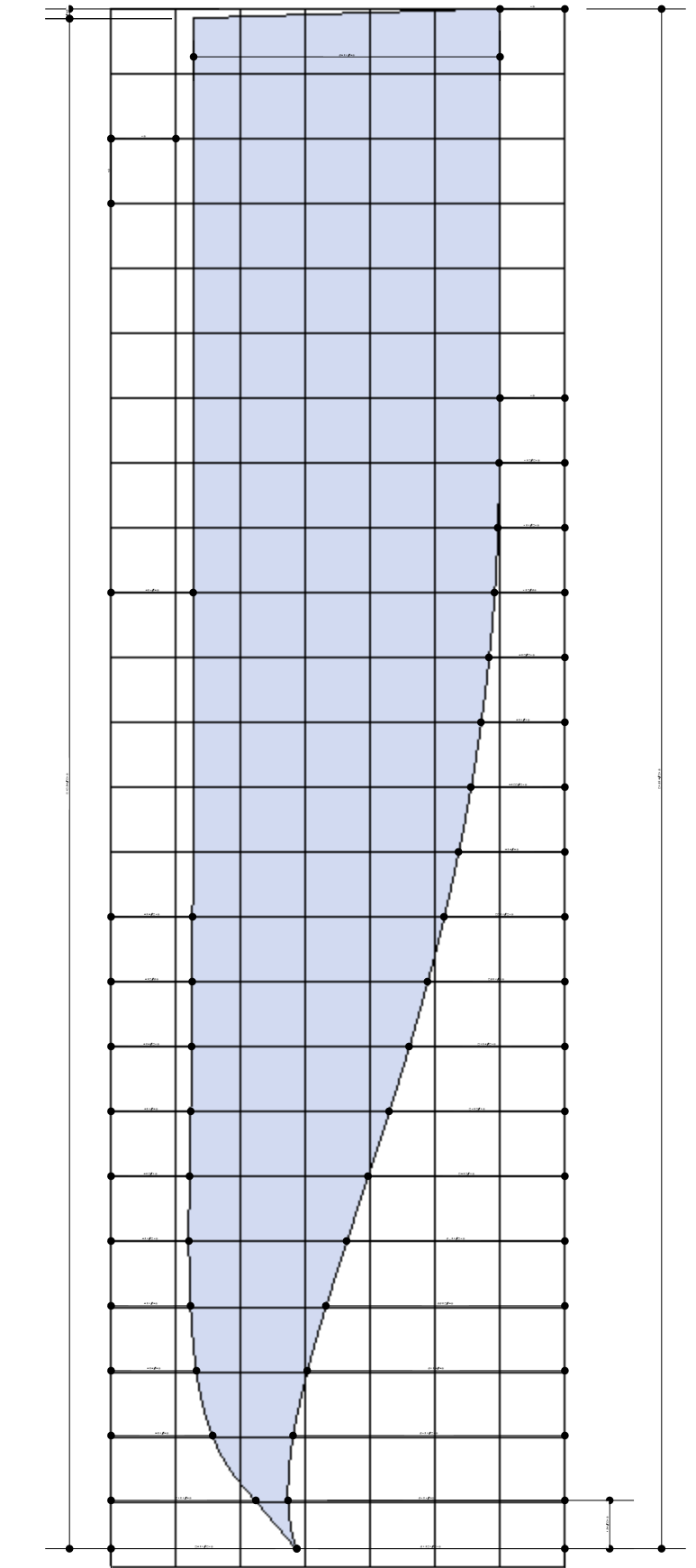
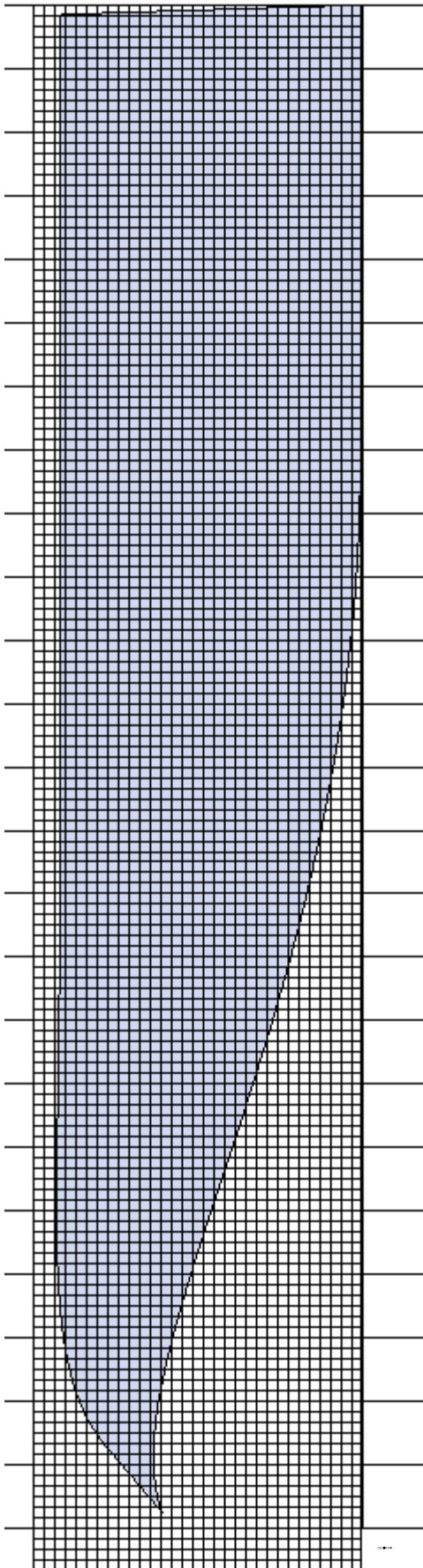
cut to the outer (higher)  
edge of the seat riser  
and make up the gap on  
the inner side with  
epoxy filler, resin and  
tape.



Scale 1" : 1'0"

## Seat Riser

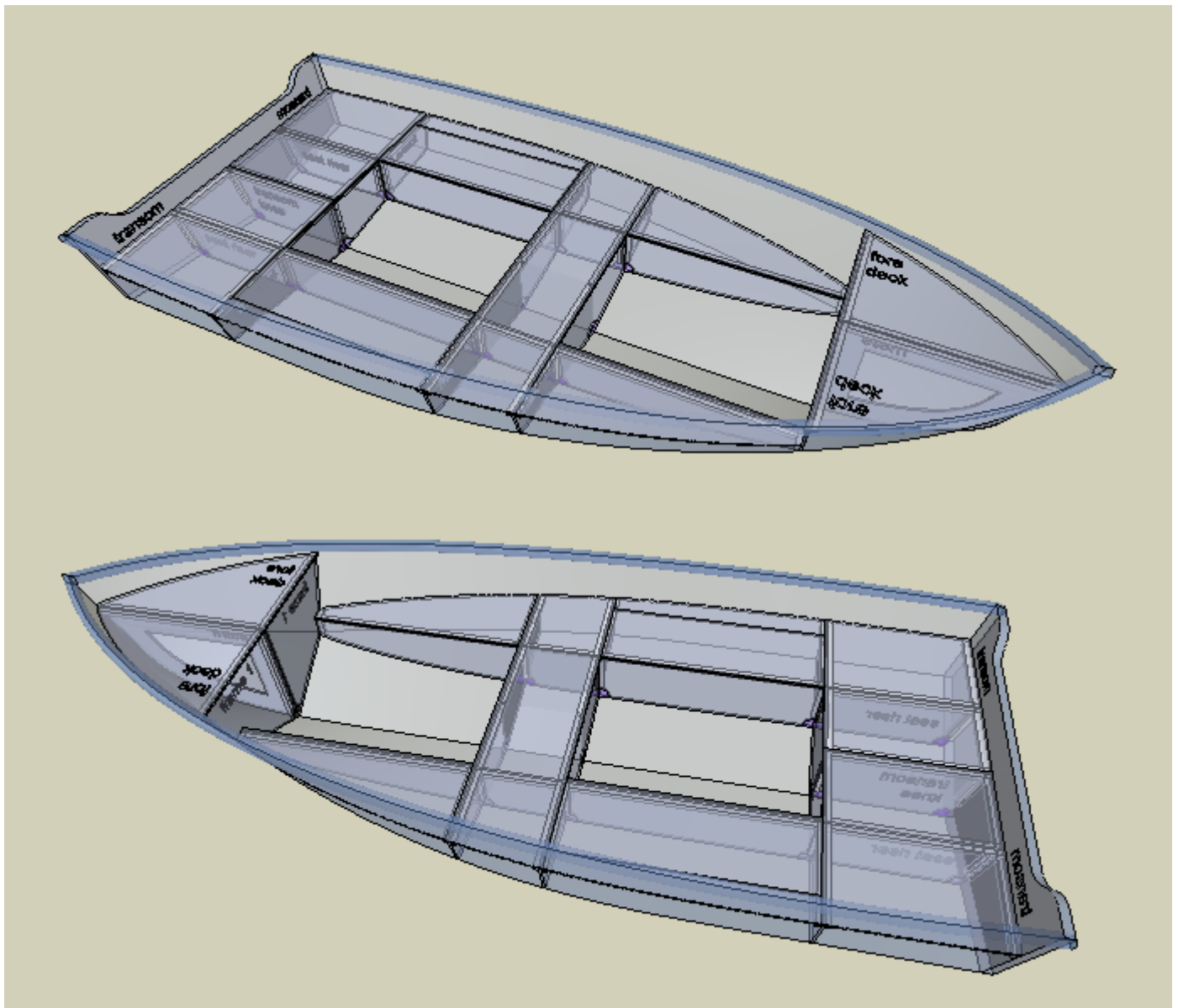




Scale 3/4" : 1'0"

**Bottom Panel**

20



## The Construction Sequence

The following pages give a step by step construction guide.

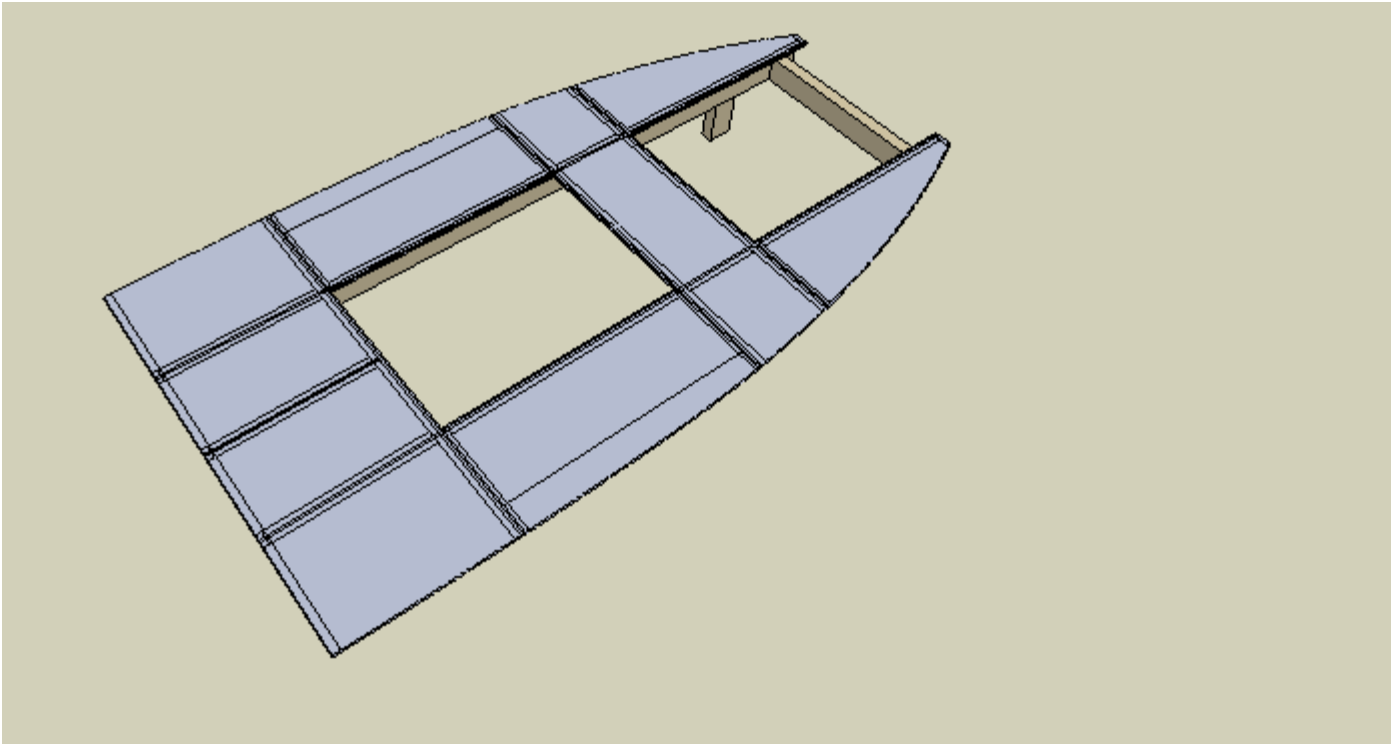
Before starting, cut out all of the parts using the drawings or full size templates.

If using the full size templates you can either temporarily glue them onto the plywood with low tack aerosol adhesive, or mark through with a toothed dressmaker's wheel.

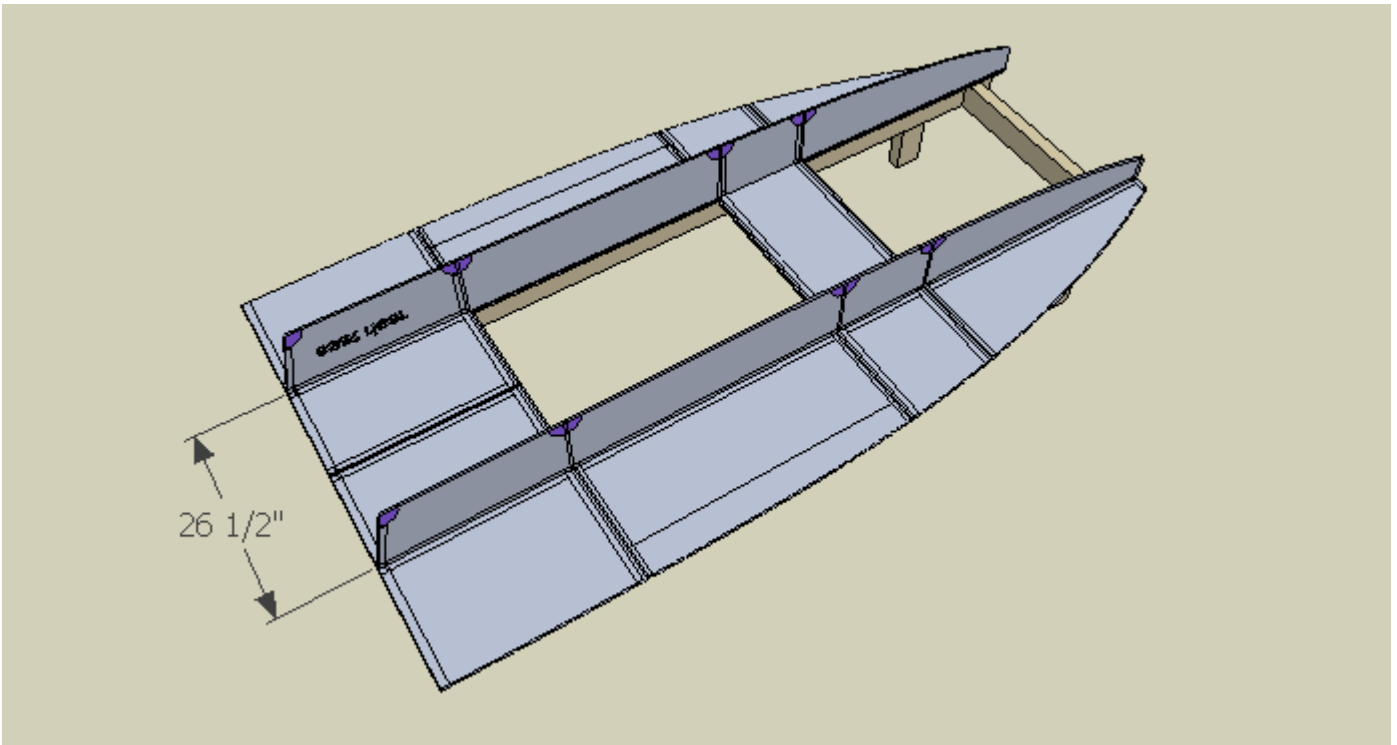
If you bought the templates in .pdf format make sure that you print them without scaling. The full size templates include dimensions to enable you to check this.

Please note that the drawings do not show a tolerance for fitting components together. Adjustments should be made accordingly when cutting out.

Also note that there are many spaces on the boat that are suitable for storage and/or flotation compartments. These can be located to suit the builder's preference.



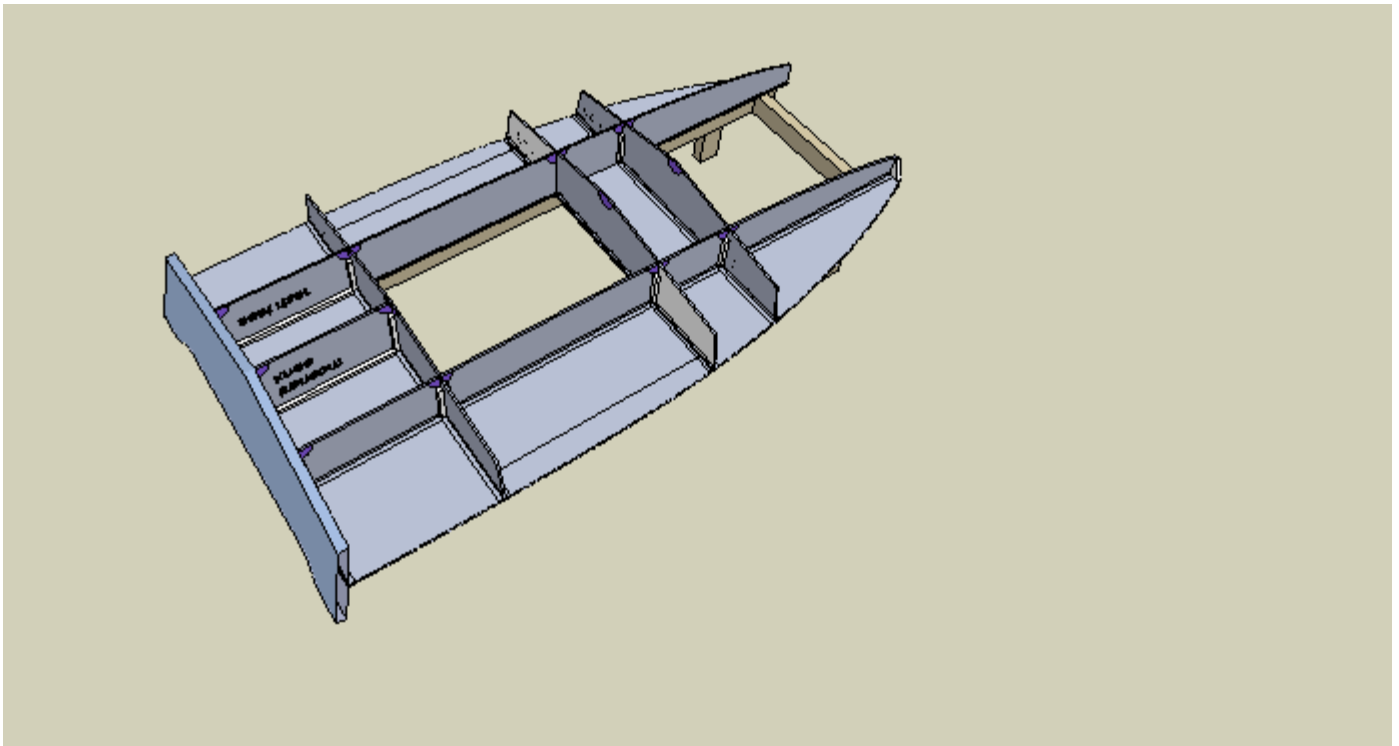
Turn the assembly over.  
 Here, I show the location of all of the frames marked on the underside face.  
 You can do this now, or later.



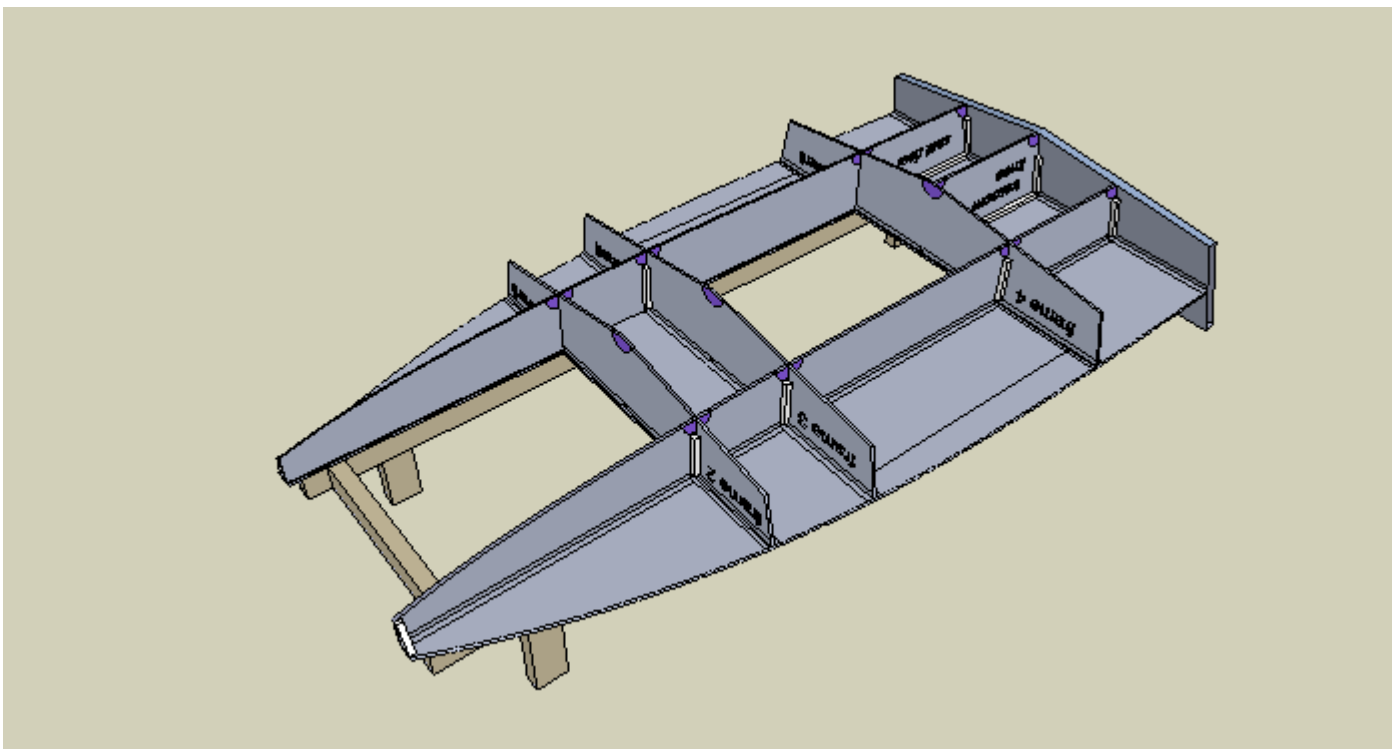
We're going to use the seats as a platform upon which to fit the frames.

The frames all need to be fixed and glued to each other.

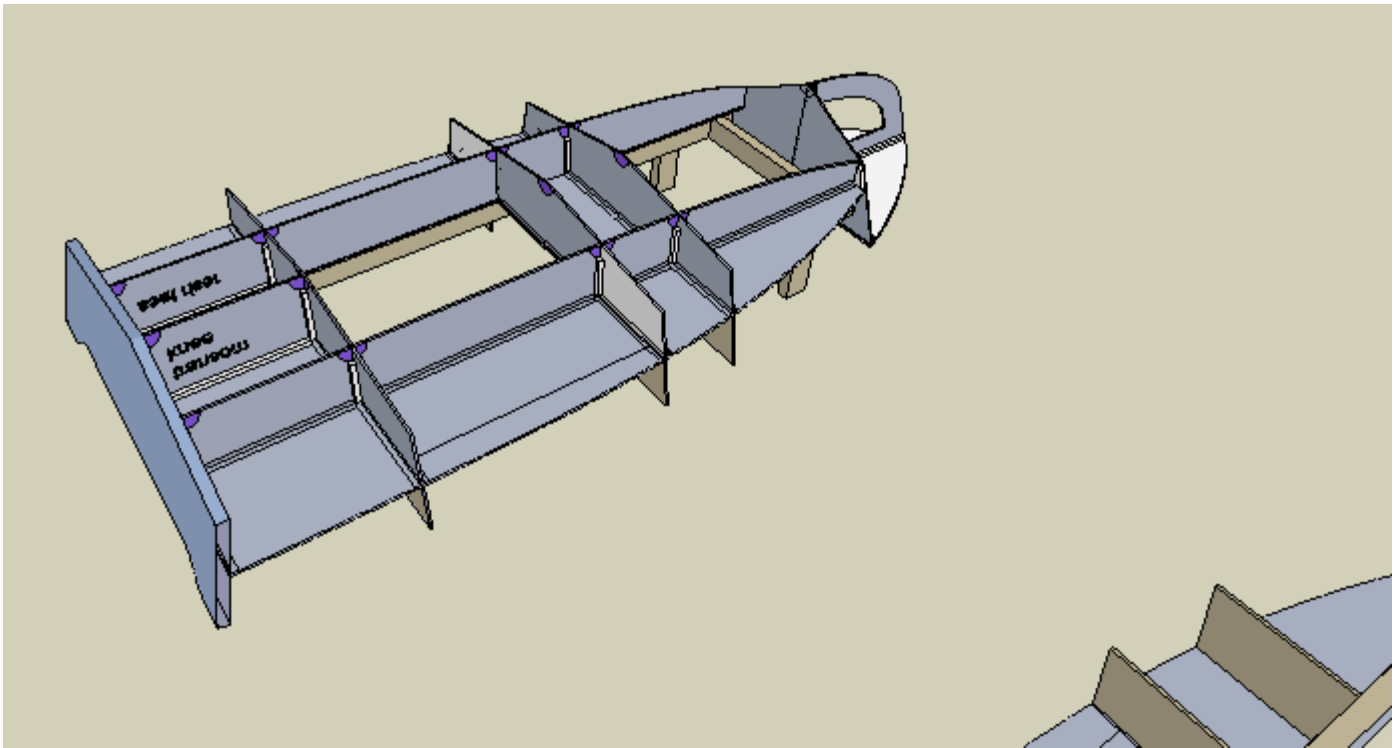
The seat platform will be removed later in order to give access to the hull panels so all fixings to it should be temporary. If you use screws, the holes can be filled later with epoxy filler.



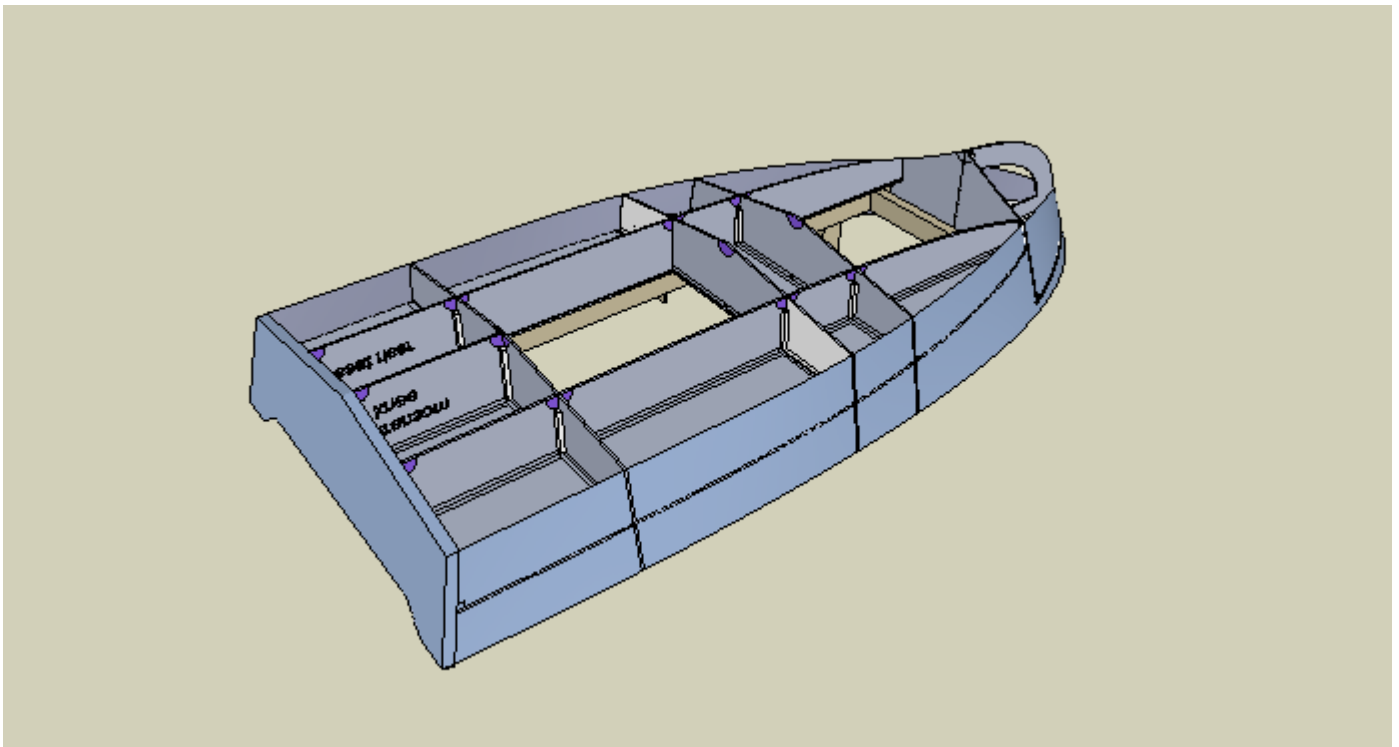
Then the transom.



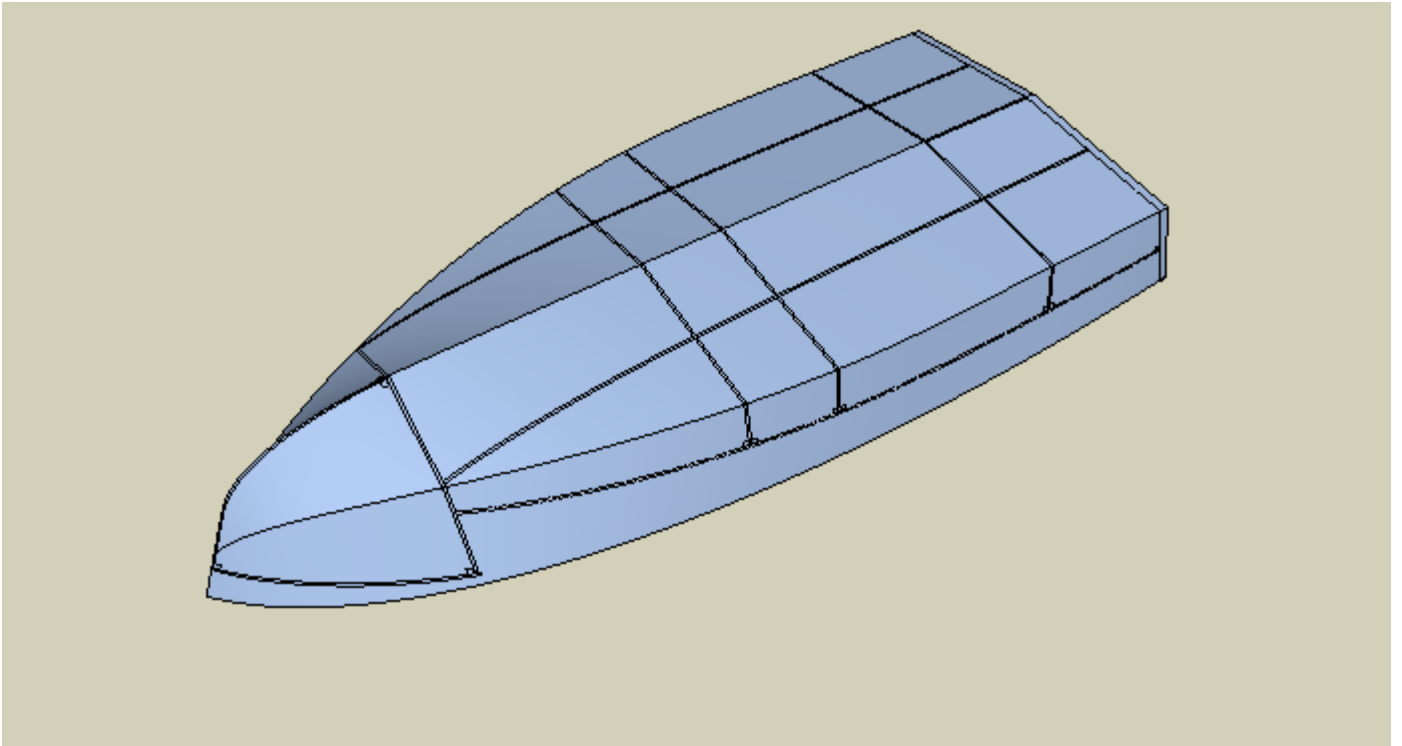
And two small support blocks at the bow end of the seat riser.



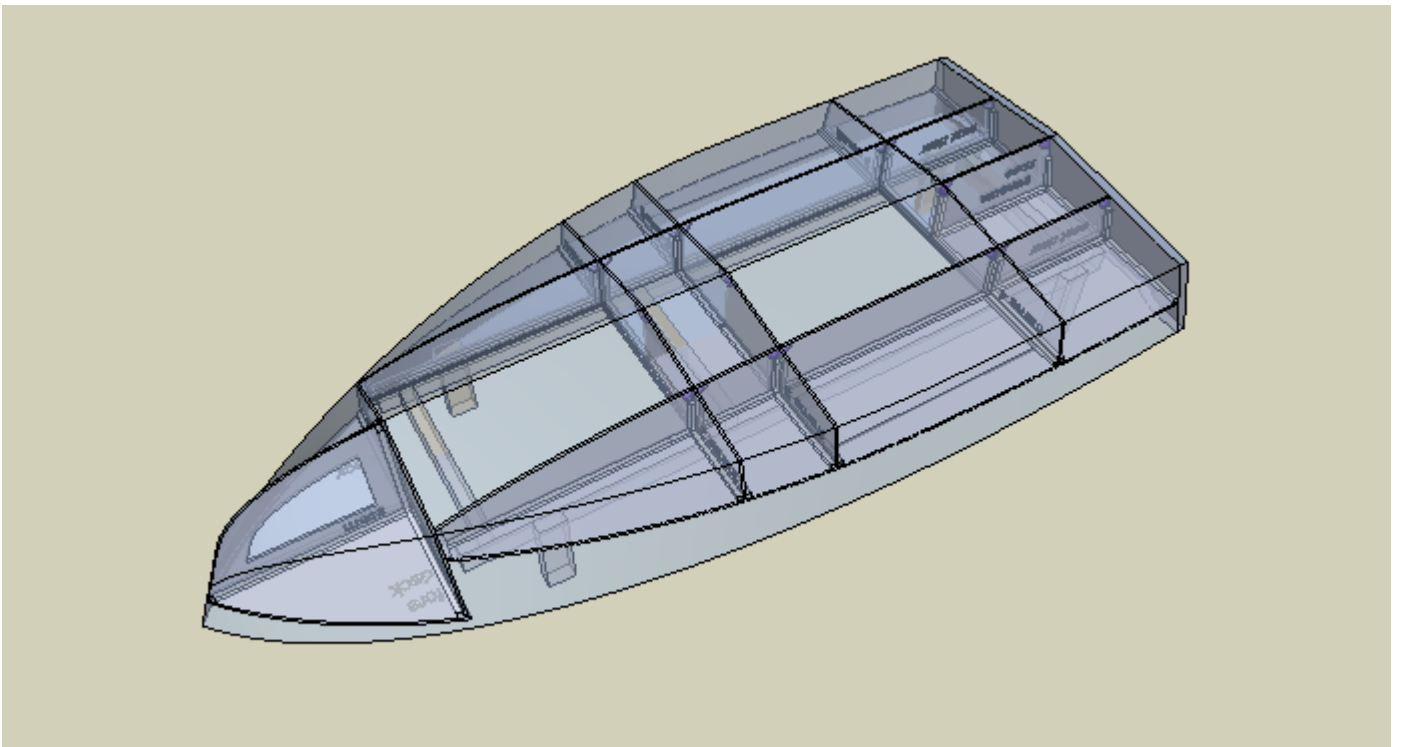
Then turn everything back over.



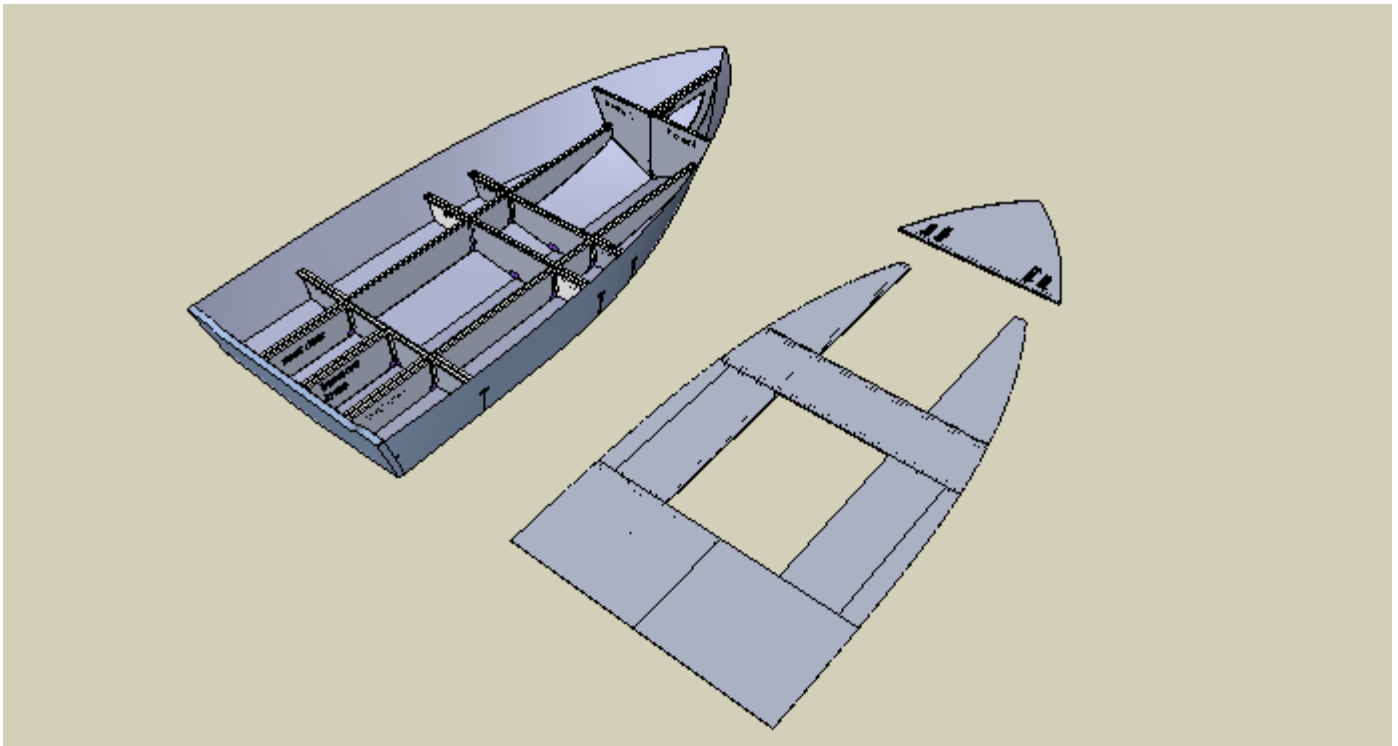
And fit the hull panels, starting at the sides.



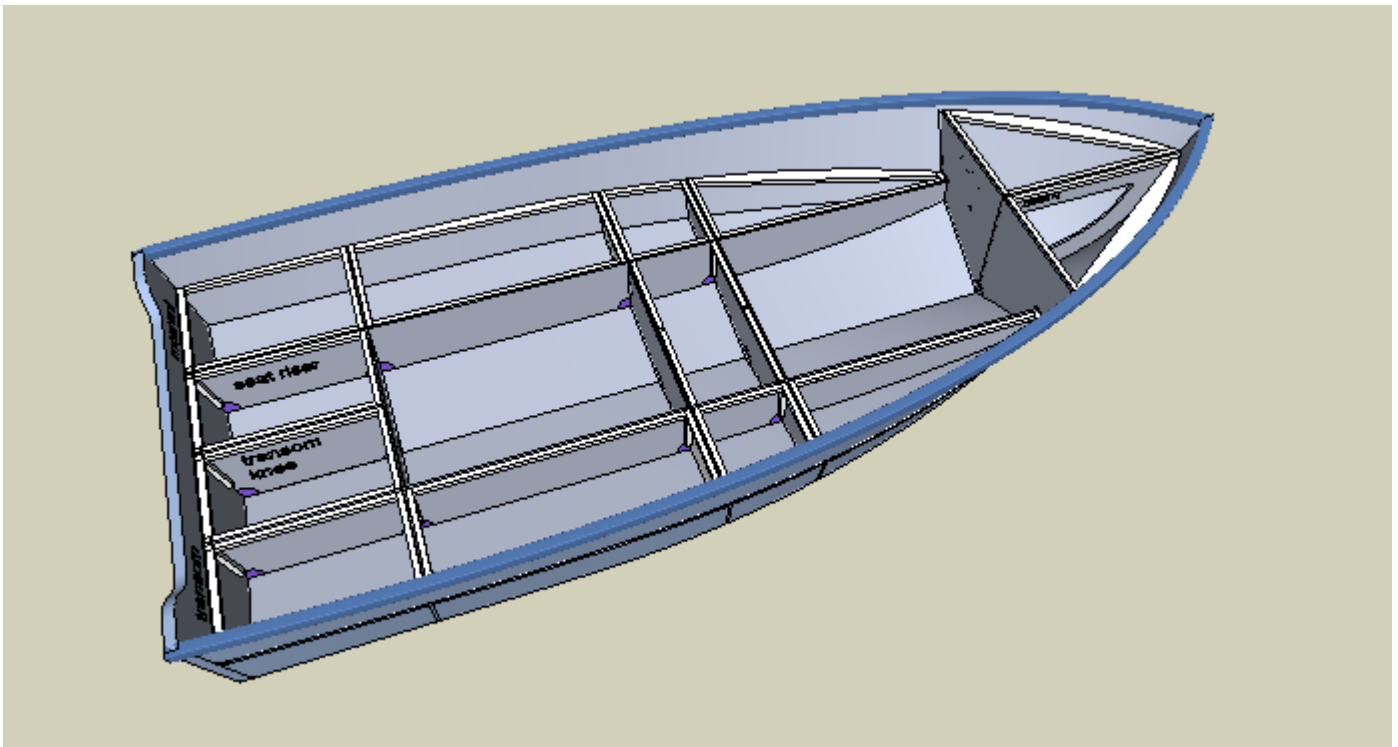
Here's another view.



And an X-ray view showing the inner panels.

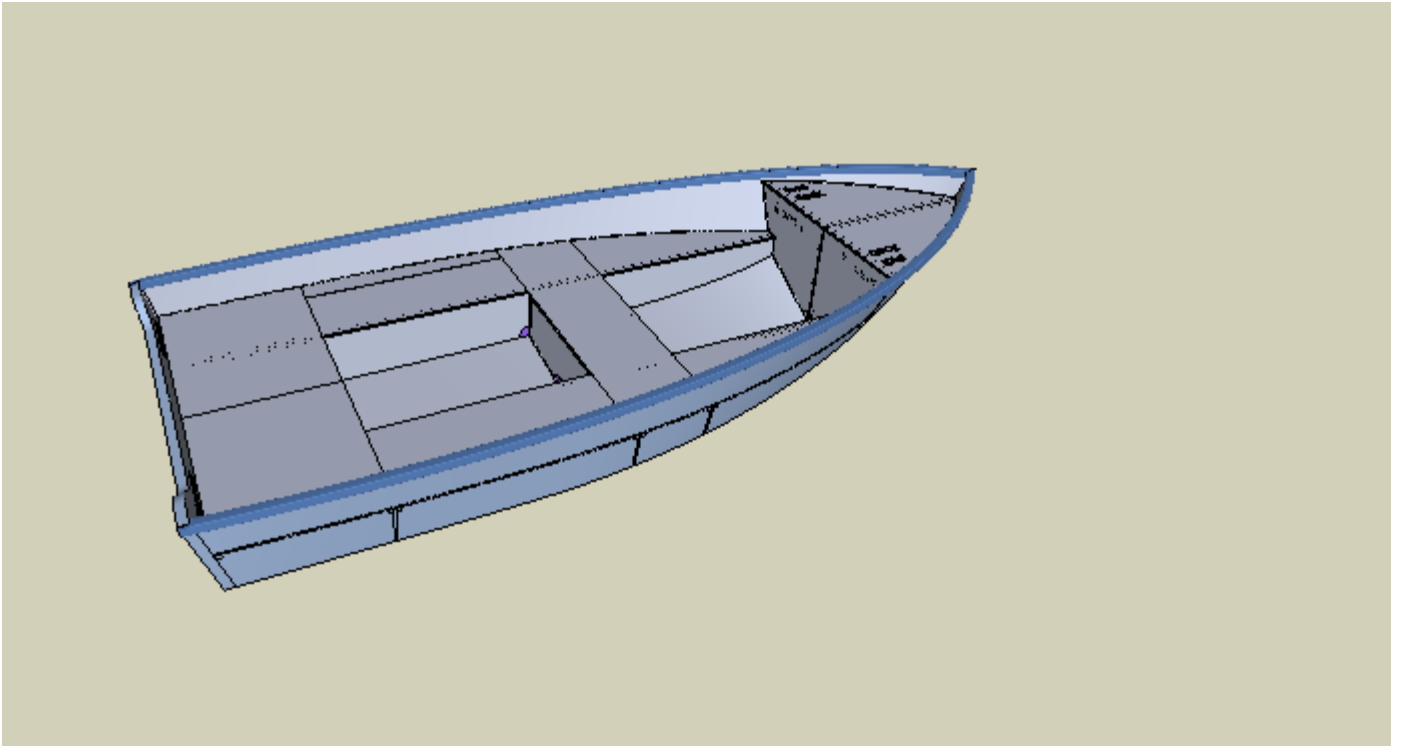


And remove the seat and foredeck.

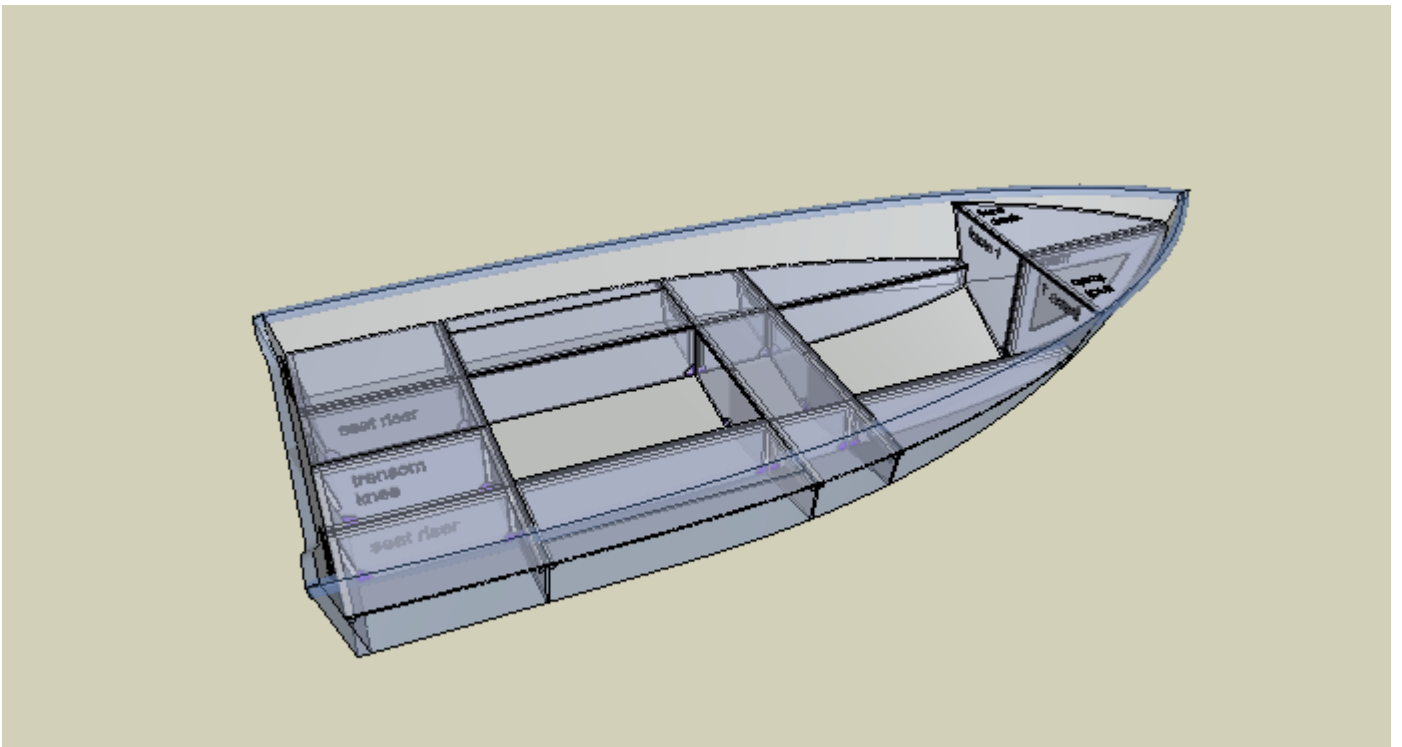


Tape and glue the hull panels to the frames and seat riser.

Add perimeter battens to the hull for fixing the seat and foredeck.



Then fix the side rails.



Another X-ray view.