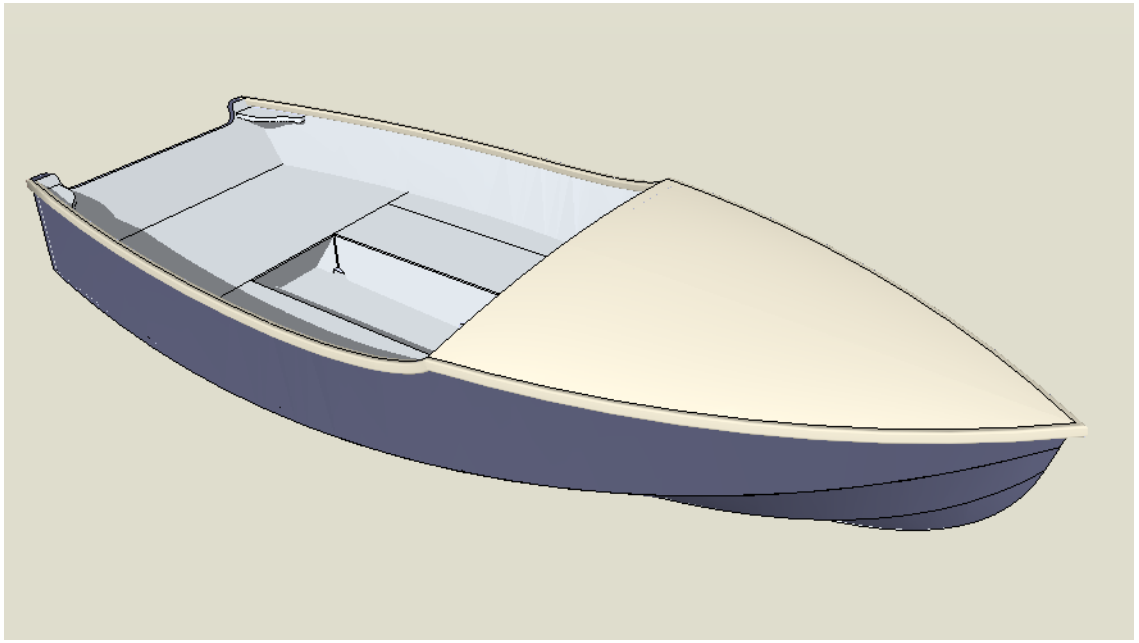
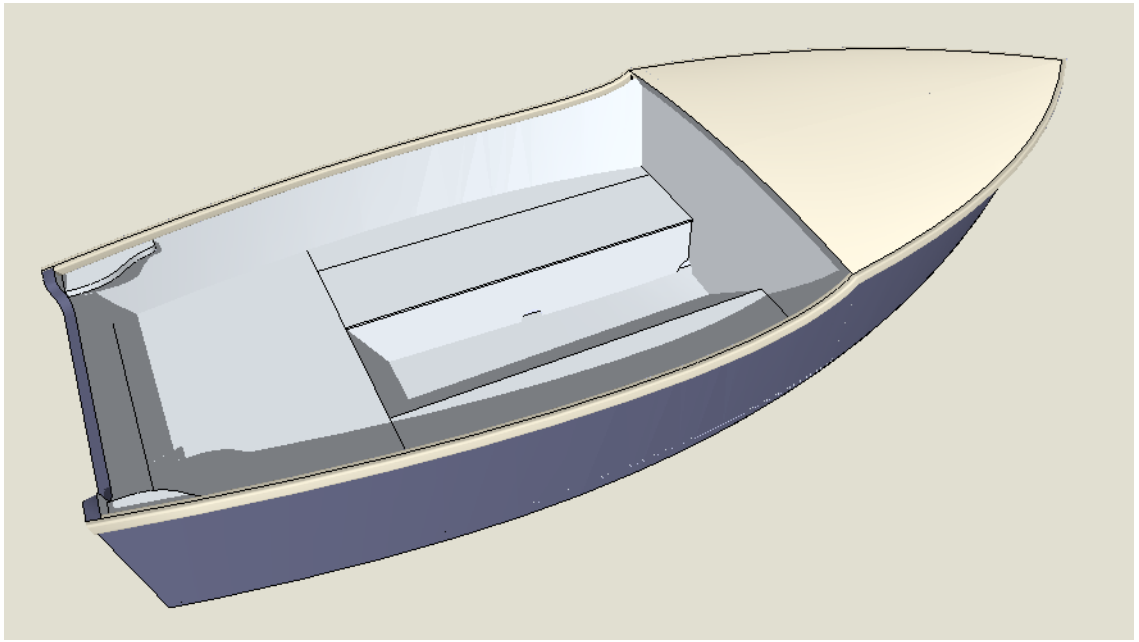
Kalostyn

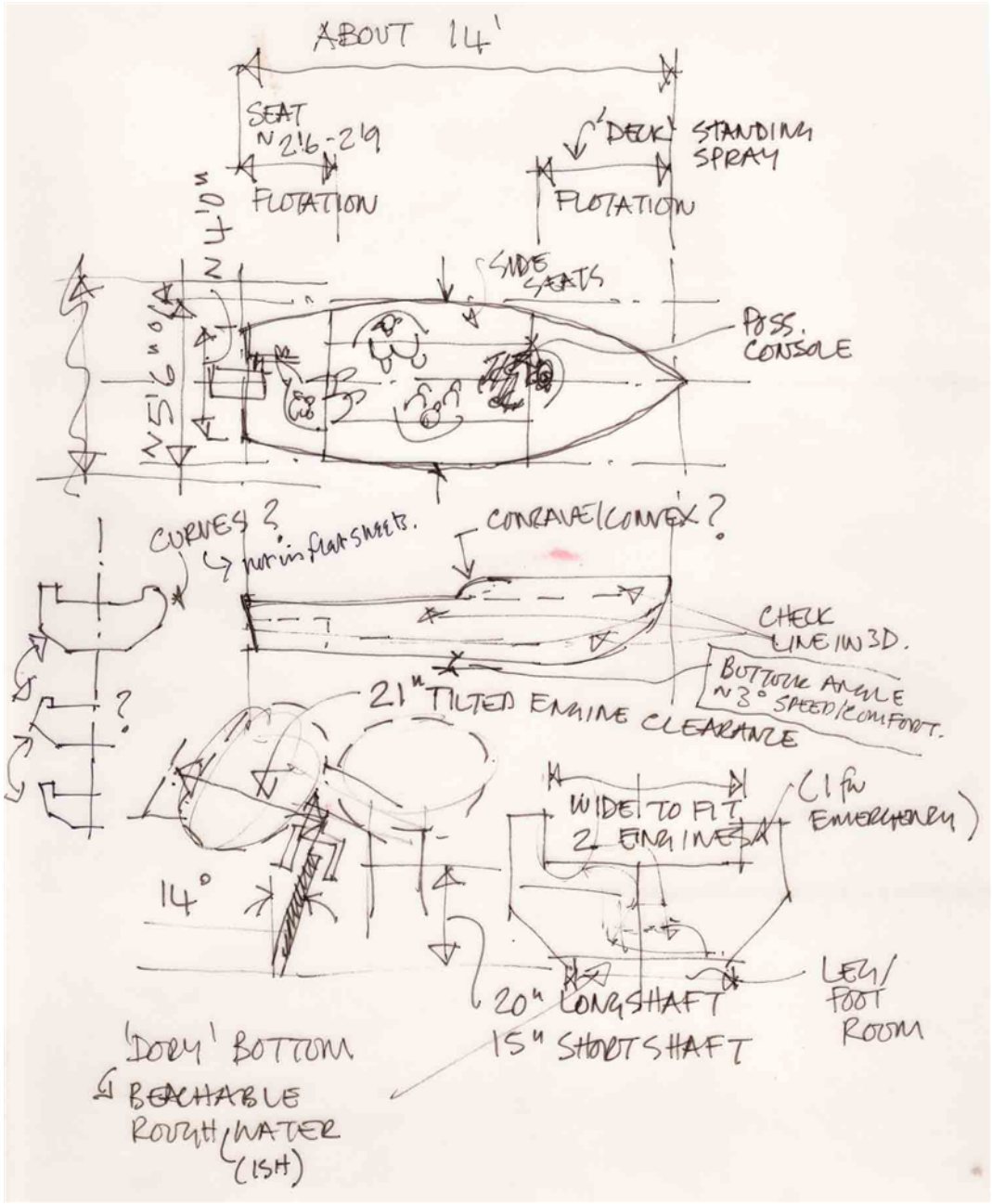
Study Plans

Drawings and Construction Manual





Contents



Introduction

Kalostyn was designed as the subject matter of a book that I had planned to write called, 'How to design a boat using SketchUp 3D software'. I created a design that had lots of curves in order to demonstrate how to put these curved forms into a 3D model, and then create and export the the framing and flattened hull panels.

I have yet to write that book!

The design intent was for a hull that would perform reasonably well on low horsepower. I had about 15hp in mind. The transom is designed to take a long shaft motor.

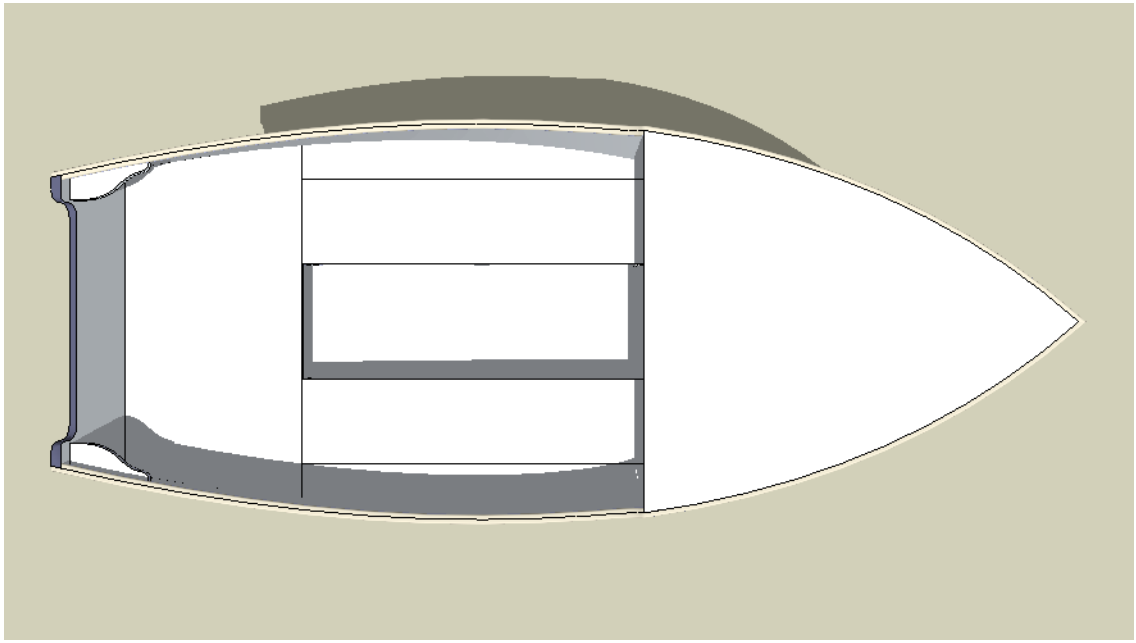
The concept sketch is shown opposite.

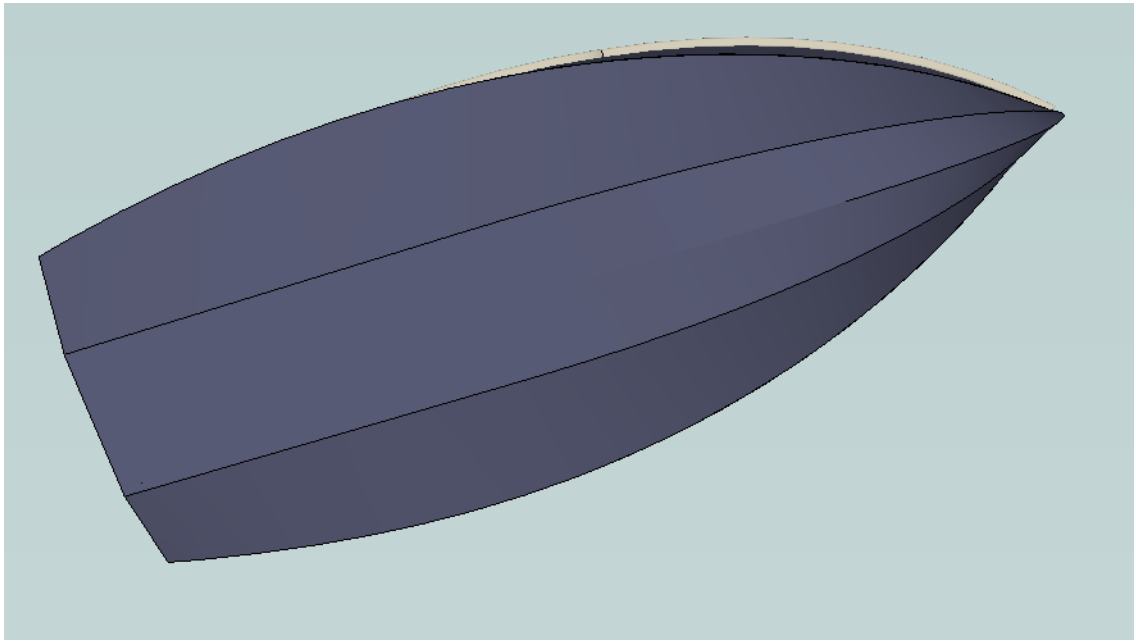
Anyone with a basic knowledge of woodworking should be able to make this boat.

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.

Andrew Walters
June 2013
andrew.walters.design@gmail.com
http://andrewwaltersdesign.com/





Introduction

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.

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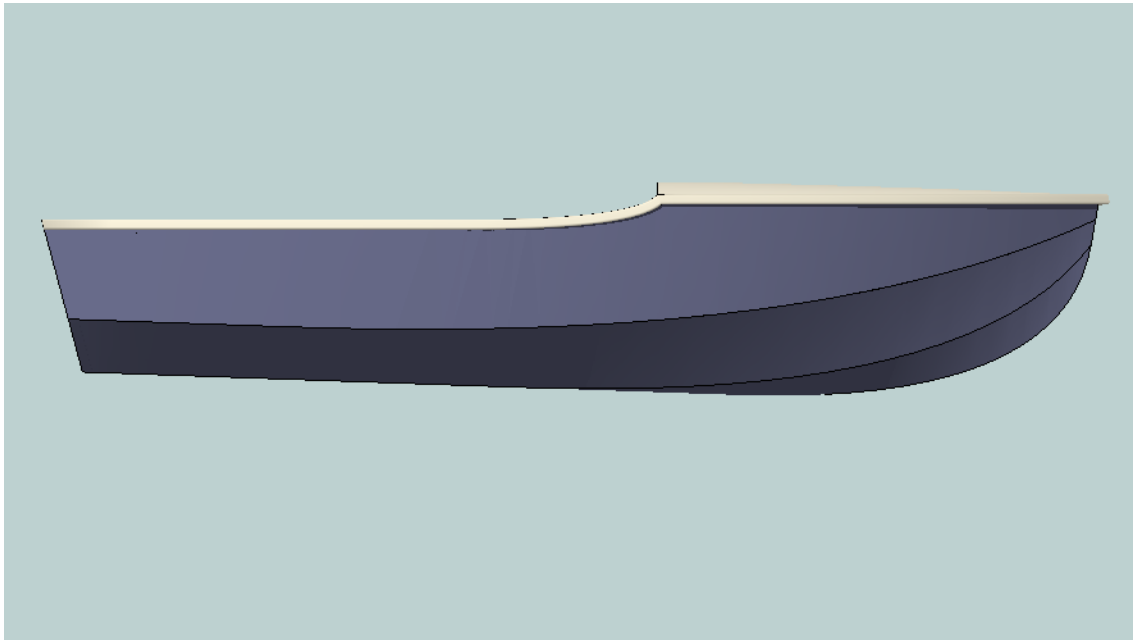
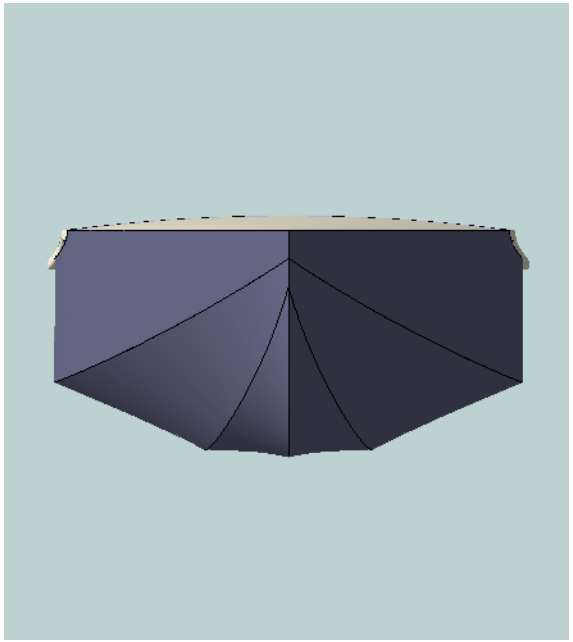
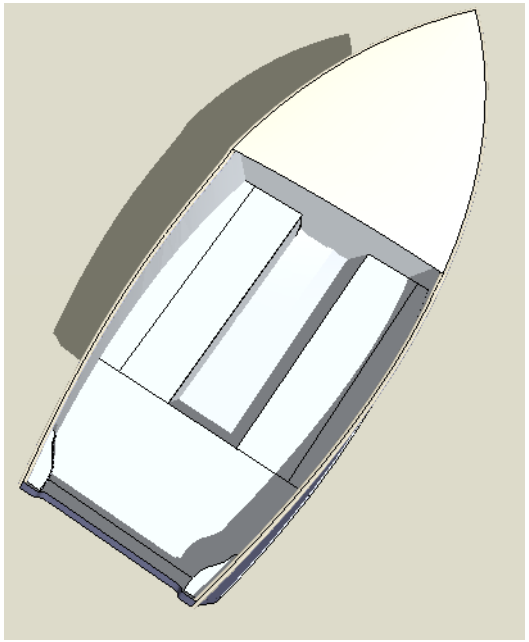


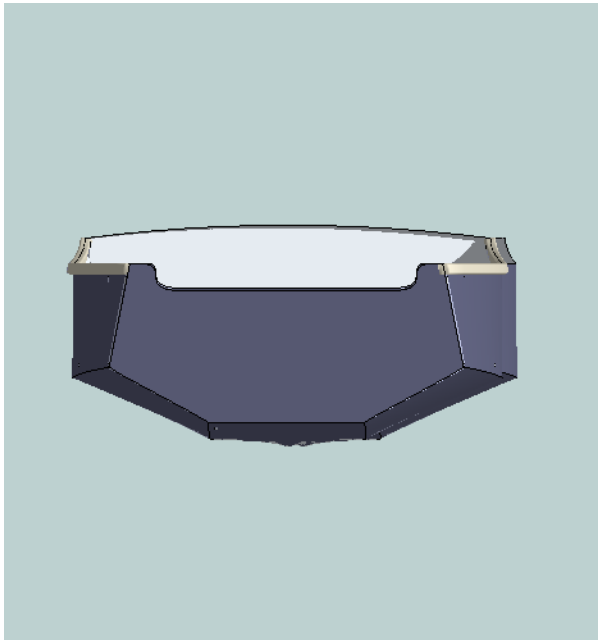
Specification

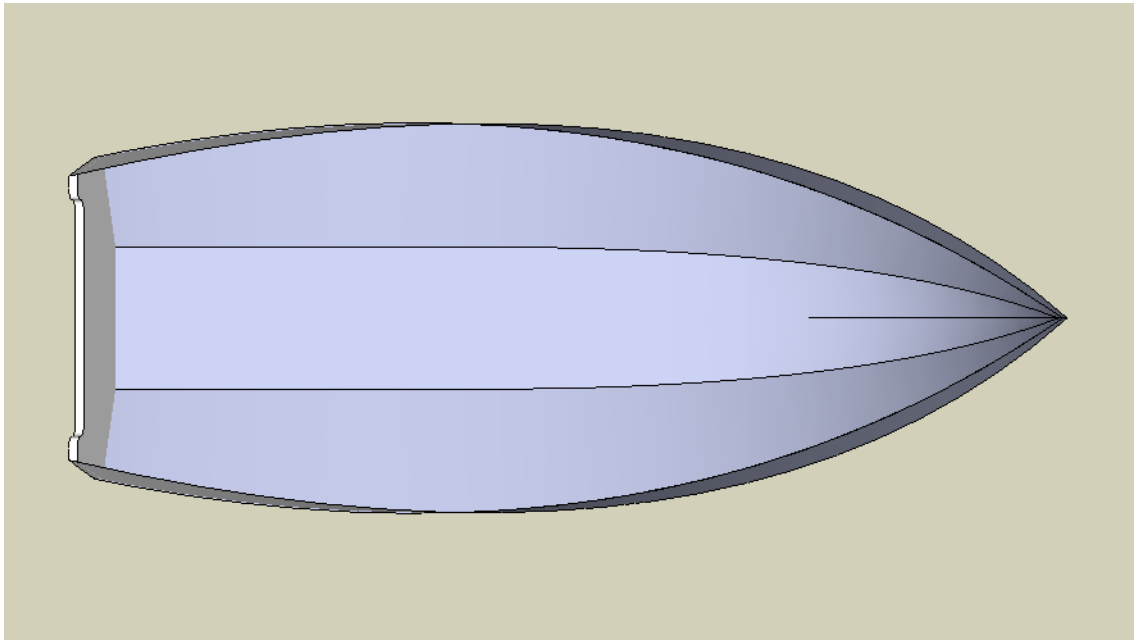
Length	14' 0"
Beam	5' 6"
Bare Hull Weight	310 lbs

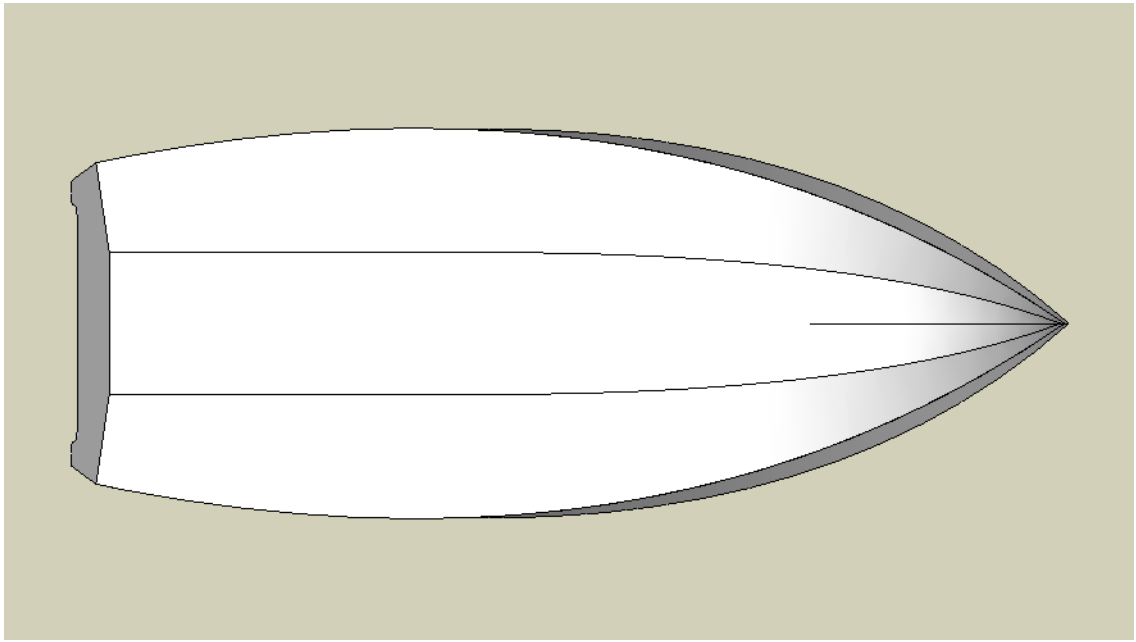
Power Requirement - about 15 hp at 940 lb displacement which is the approximate weight when loaded with 3 people, engine and ancilliaries.











List of Materials

Marine Plywood:

1/2"x4'x8'
1 sheet

3/8"x4'x8'
4 sheets

1/4"x4'x8'
6 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

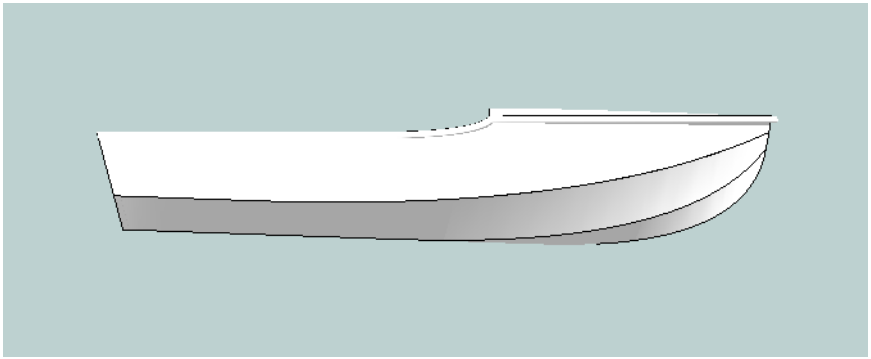
50 yard roll of 3" glass tape

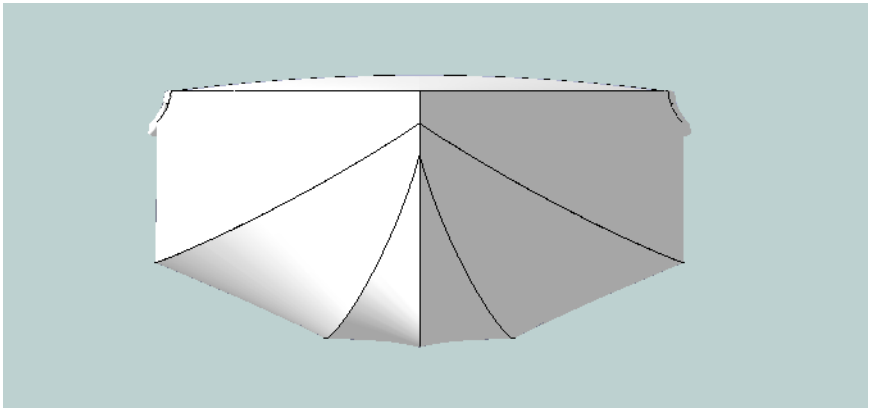
12 yards of glass cloth to cover the hull

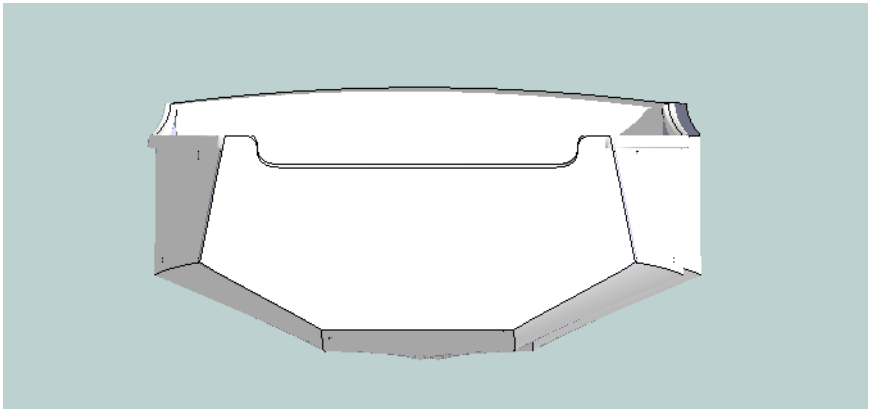
2 gallons of epoxy resin

About 5 pounds of resin thickening powder

Styrofoam or empty plastic bottles for the flotation







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.duckworksbbs.com/supplies/epoxy/marinepoxy/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.

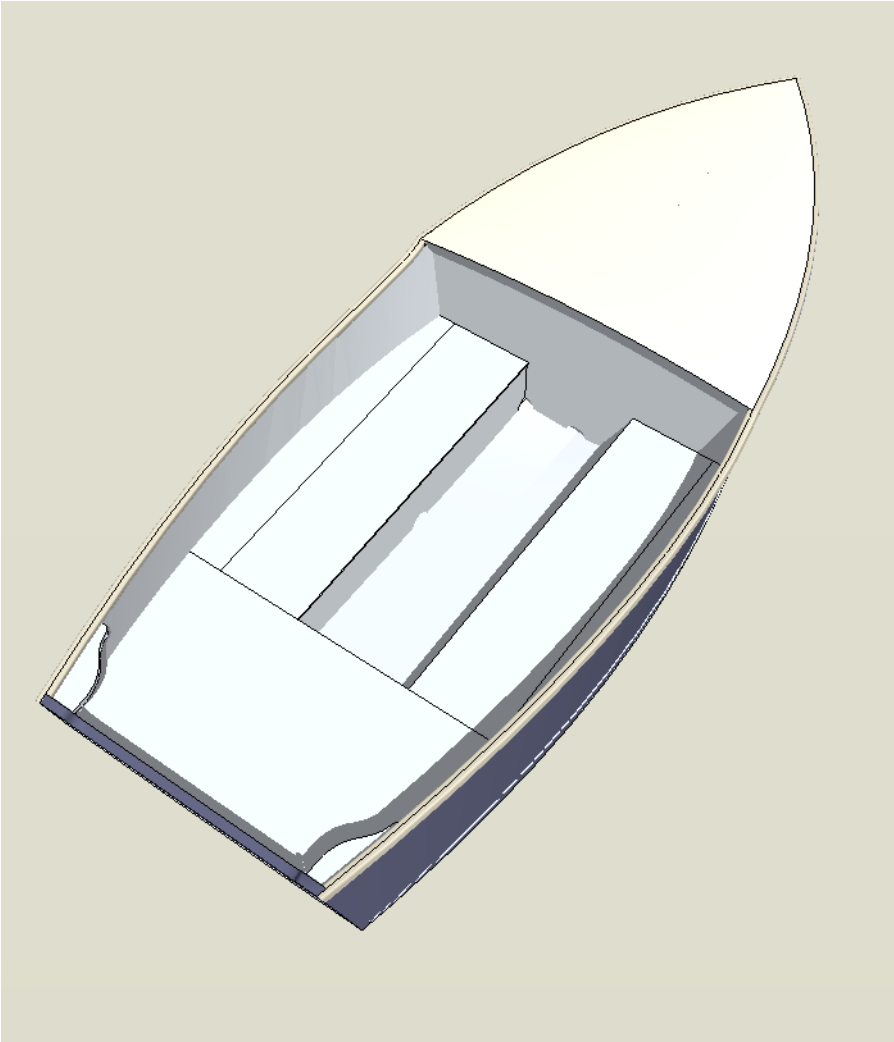
The drawings show the use of 3/4" x 3'4" battens, glued in place at all framing / panel joints. If preferred these can be omitted and replaced with fiberglass tape and epoxy resin joints.

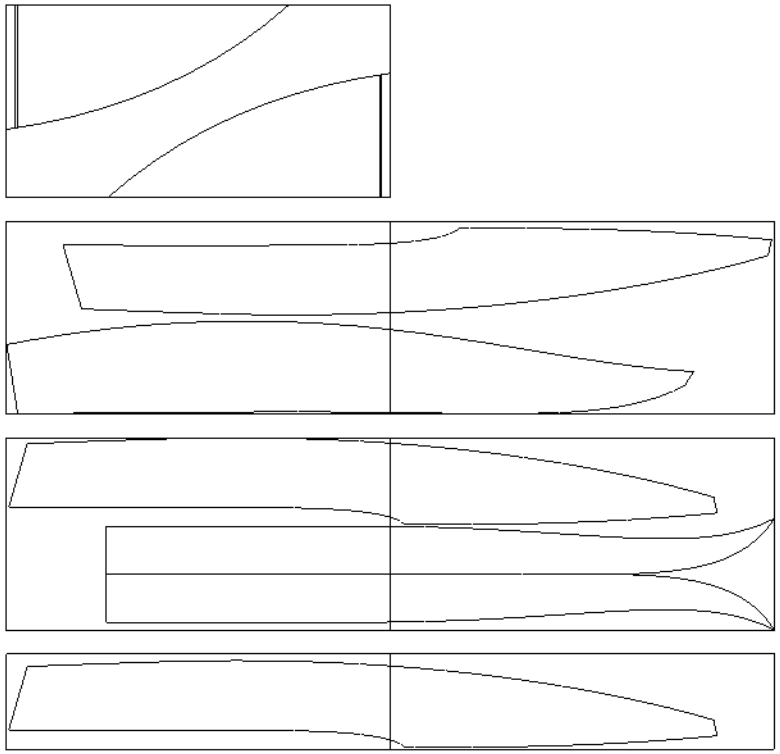
Several of the battens are located above the waterline. If the boat isn't going to be kept permanently in the water then in these places the battens could be fixed with a waterproof PVA wood glue of a quality equivalent to Titebond II Premium Wood Glue.

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.

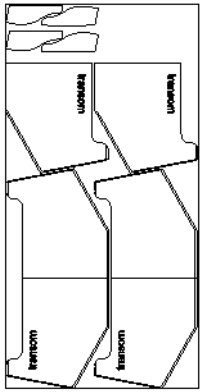
'Raptor' polymer composite nails (used with a nail gun, refer to the section on tools overleaf) make for a very fast way of holding glued surfaces in place quickly and accurately. The method is to glue both faces, put in position, shoot a few nails in. They're strong enough to hold things in place whilst the glue sets and, being plastic can be sanded, chiseled or planed over without damaging cutting blades - and don't rust.

The Drawings





1/4" Plywood



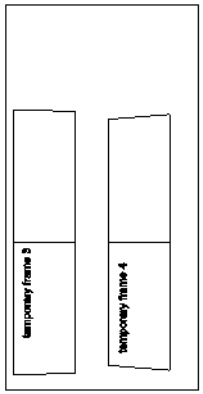
The transom is 1 1/2" thick, built up from 3 layers of 1/2" plywood.

The transom knees are 1" thick, built up from 2 layers of 1/2" plywood.

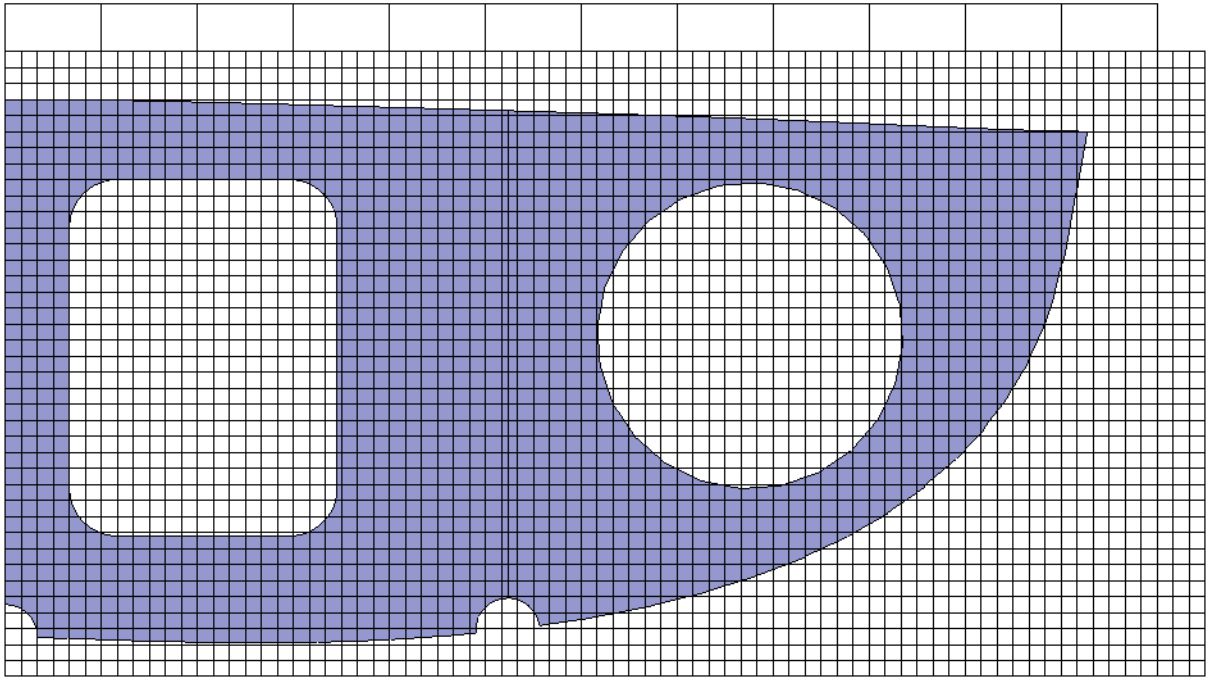
Glue together with epoxy resin.

1/2" Plywood

3/8" Plywood



Temporary Frames



1" grid overlay

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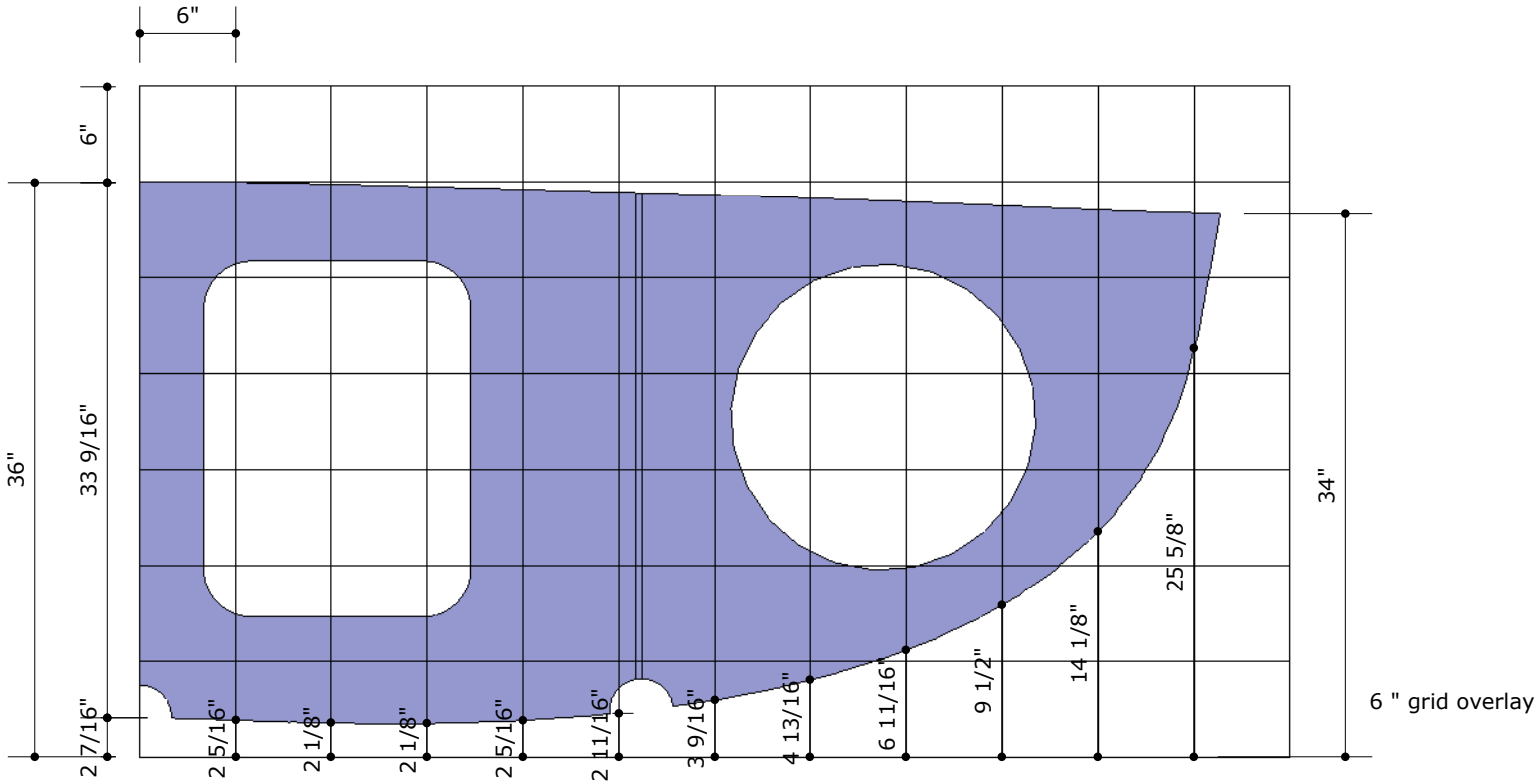

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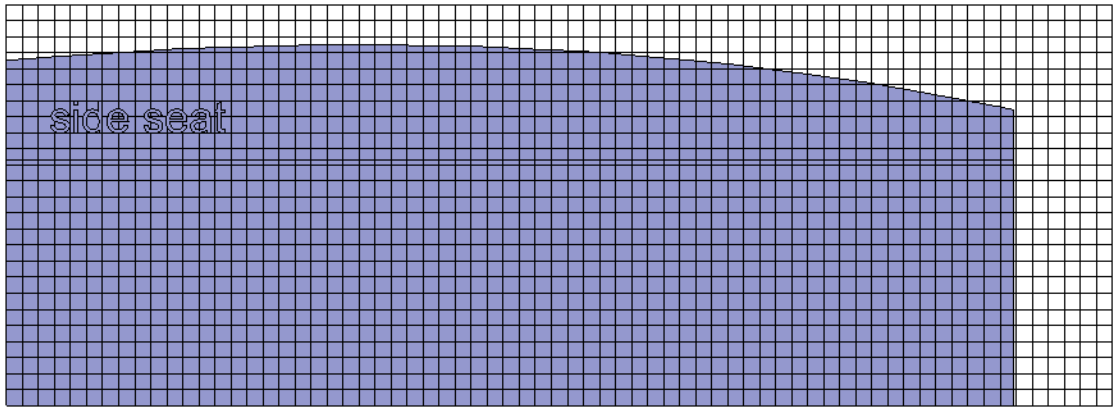

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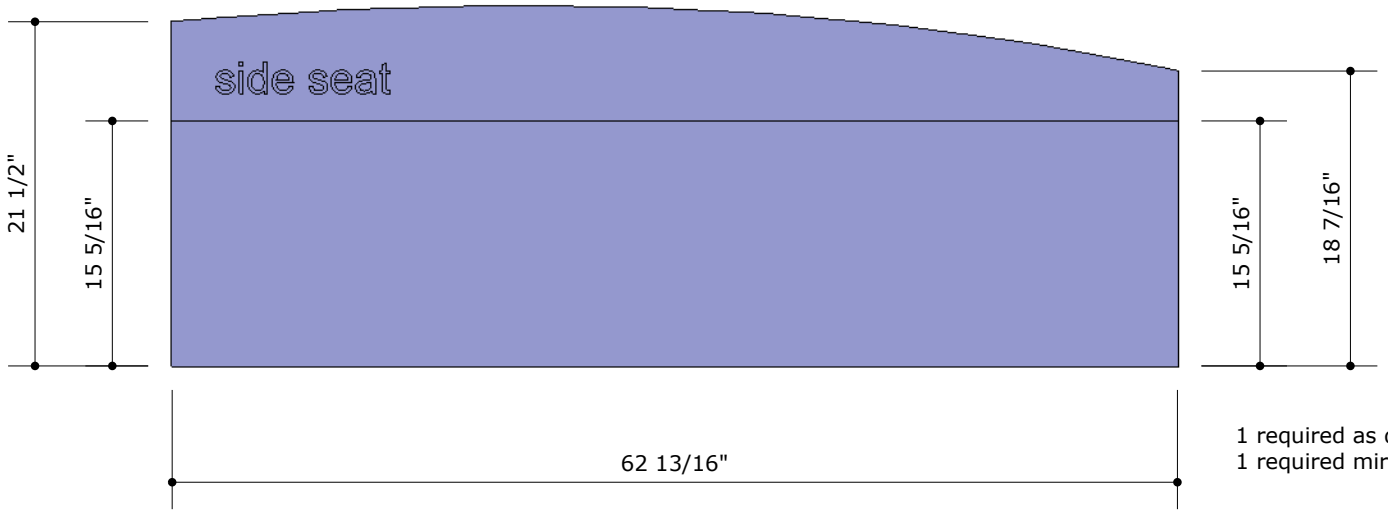

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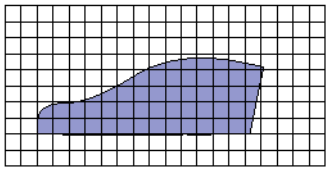
1 required mirrored



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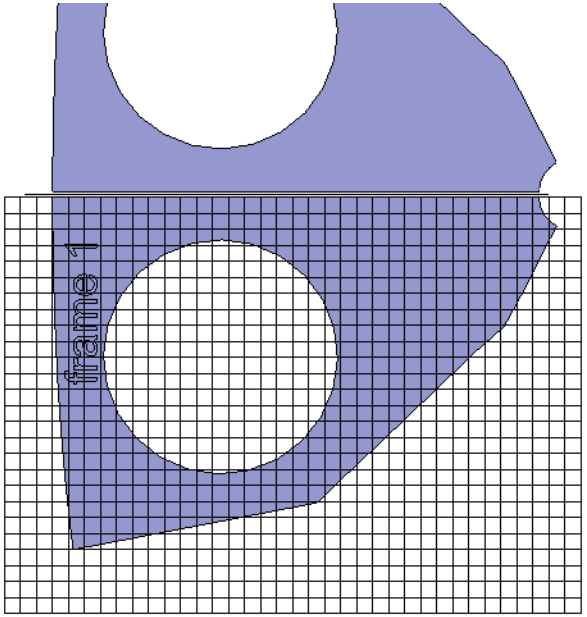
1 required as drawn
1 required mirrored

Symmetrical about this line



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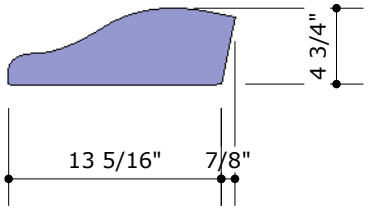

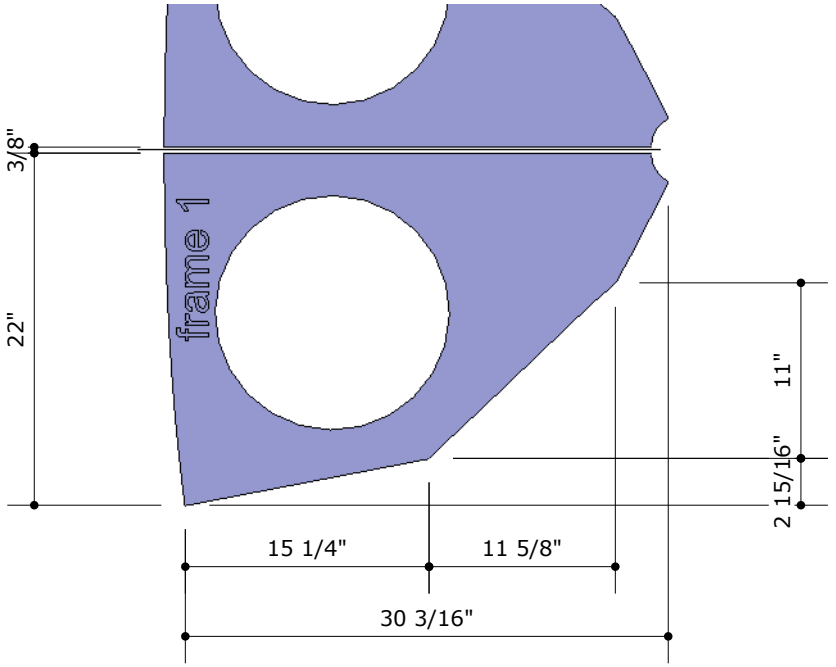

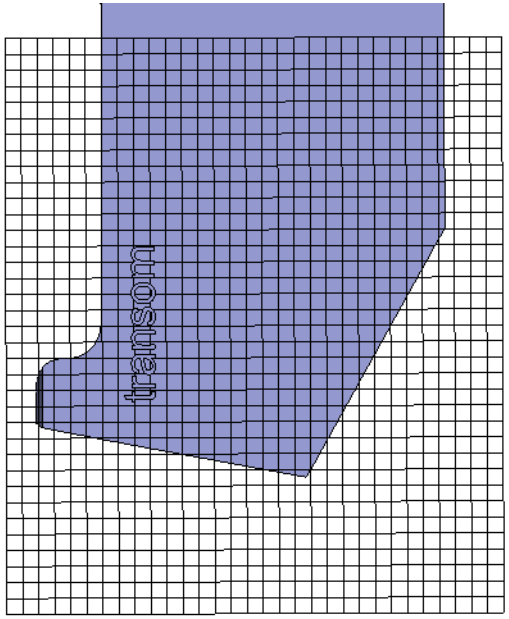

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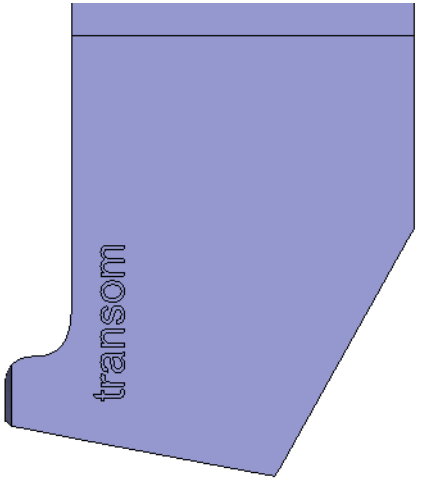

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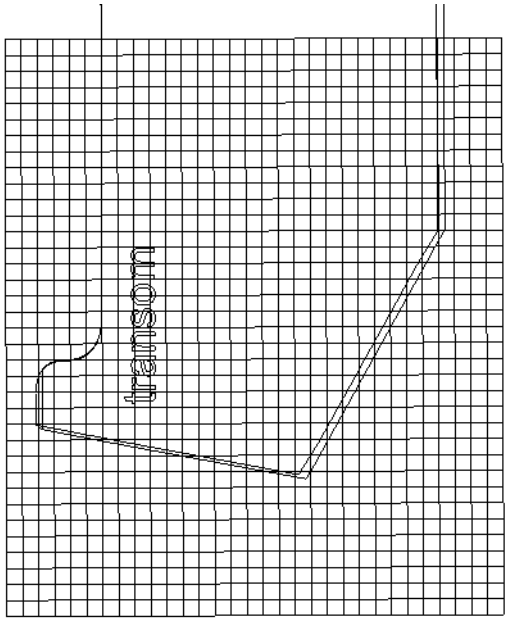

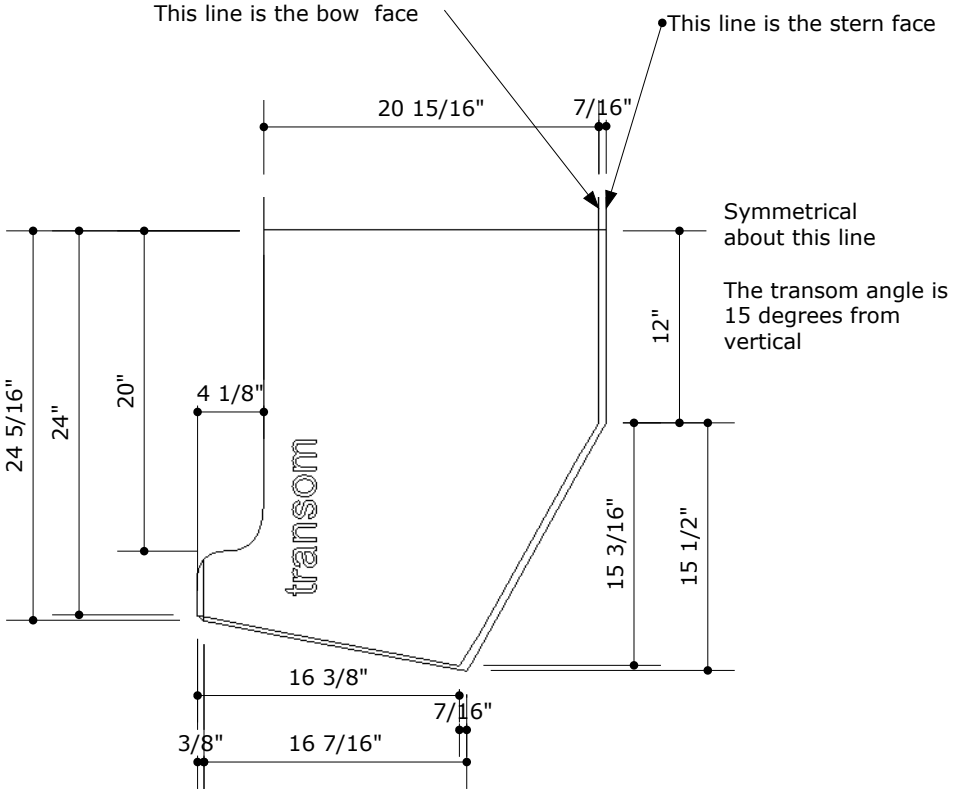

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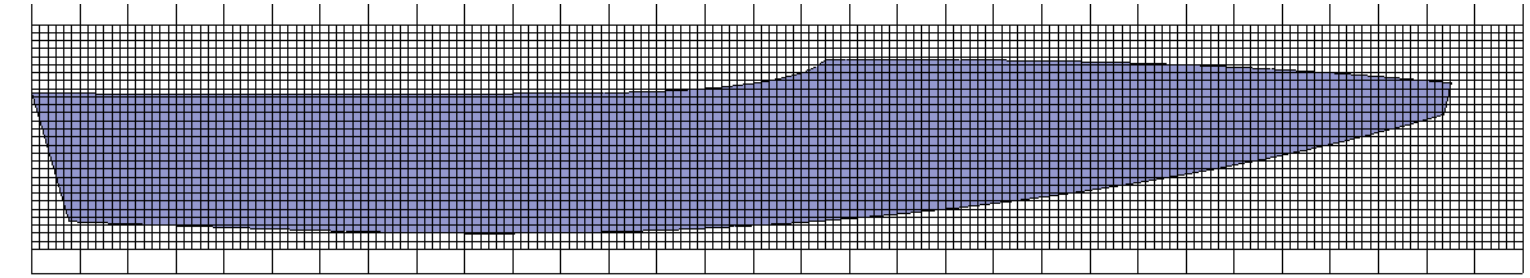
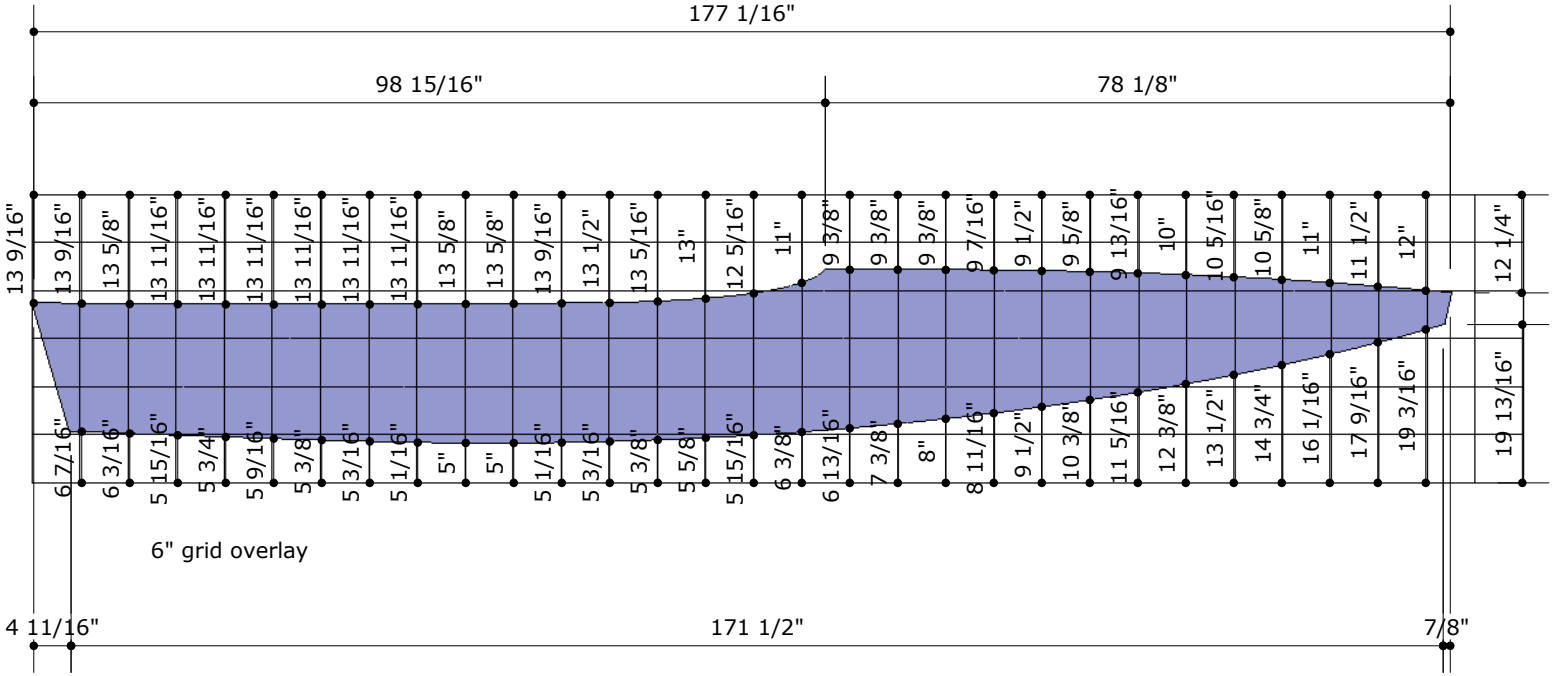
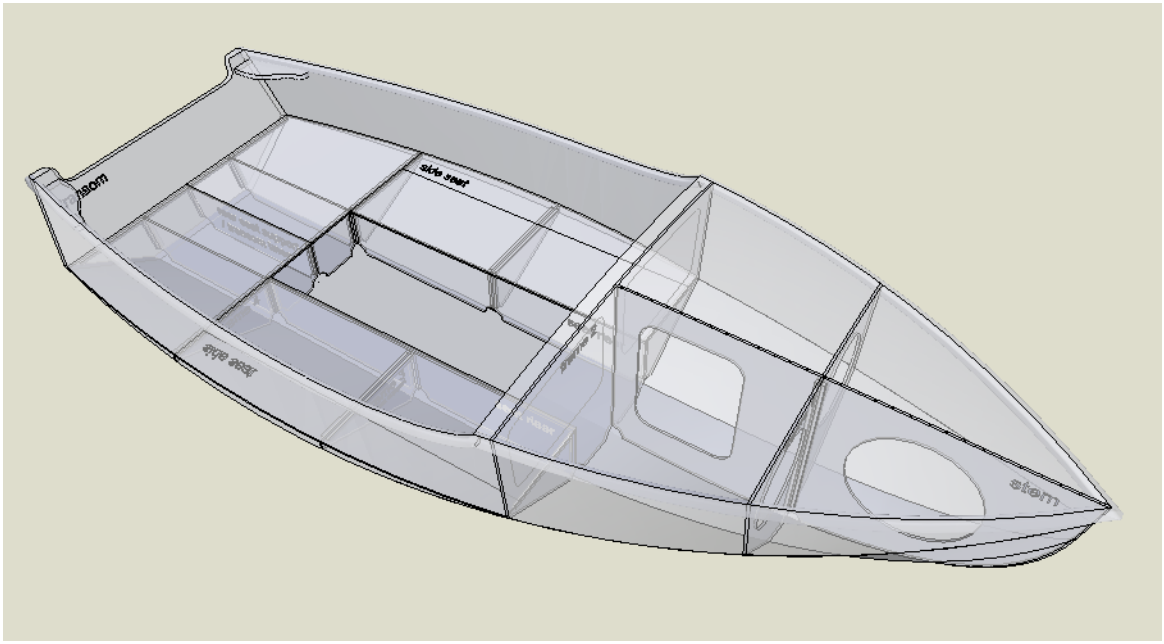
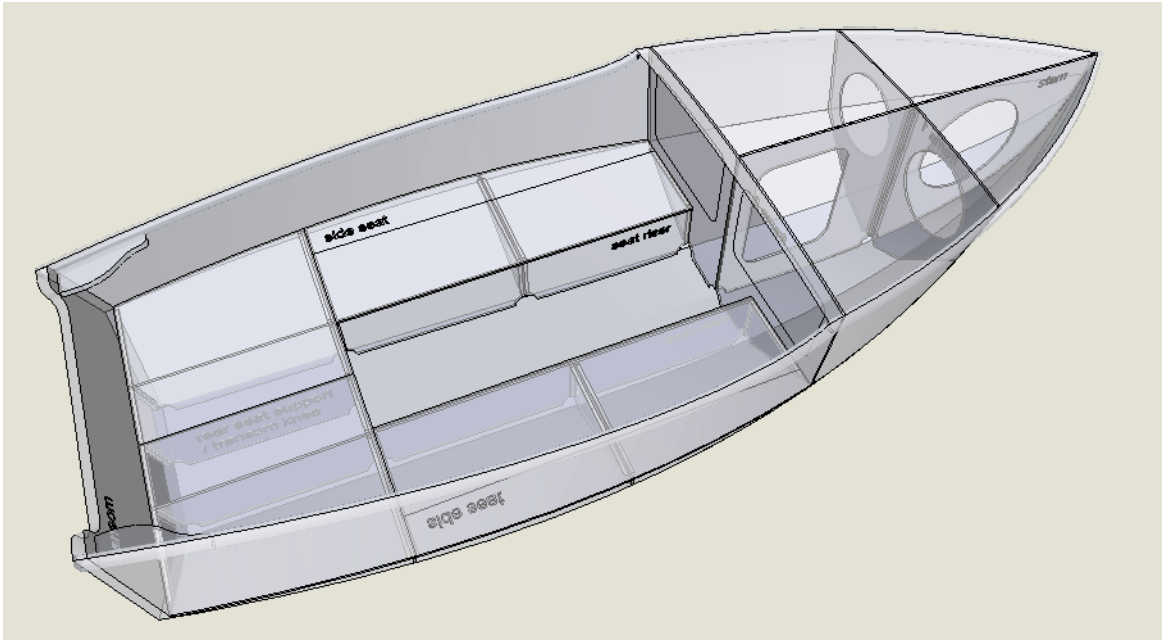




This is the port side panel, viewed from the inside.
Starboard panel required, mirrored.





The Construction Sequence

The following pages give a step by step construction guide.

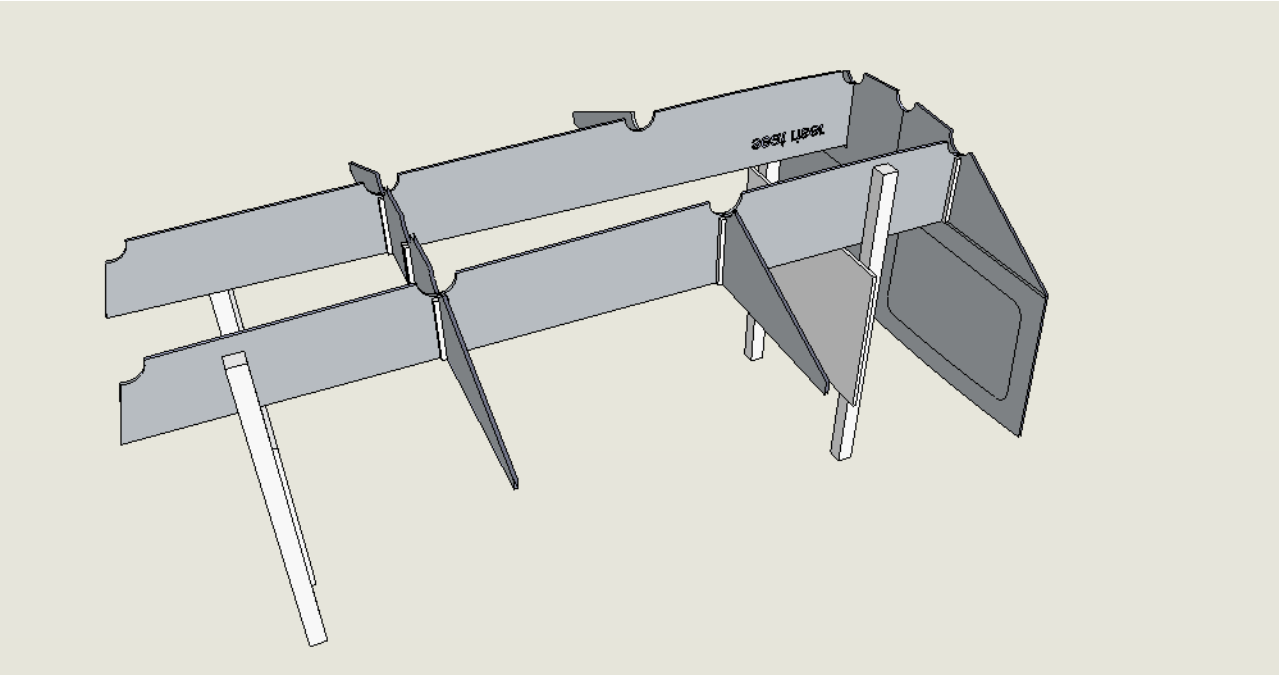
Before starting, cut out all of the parts using the drawings or full size templates.

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.

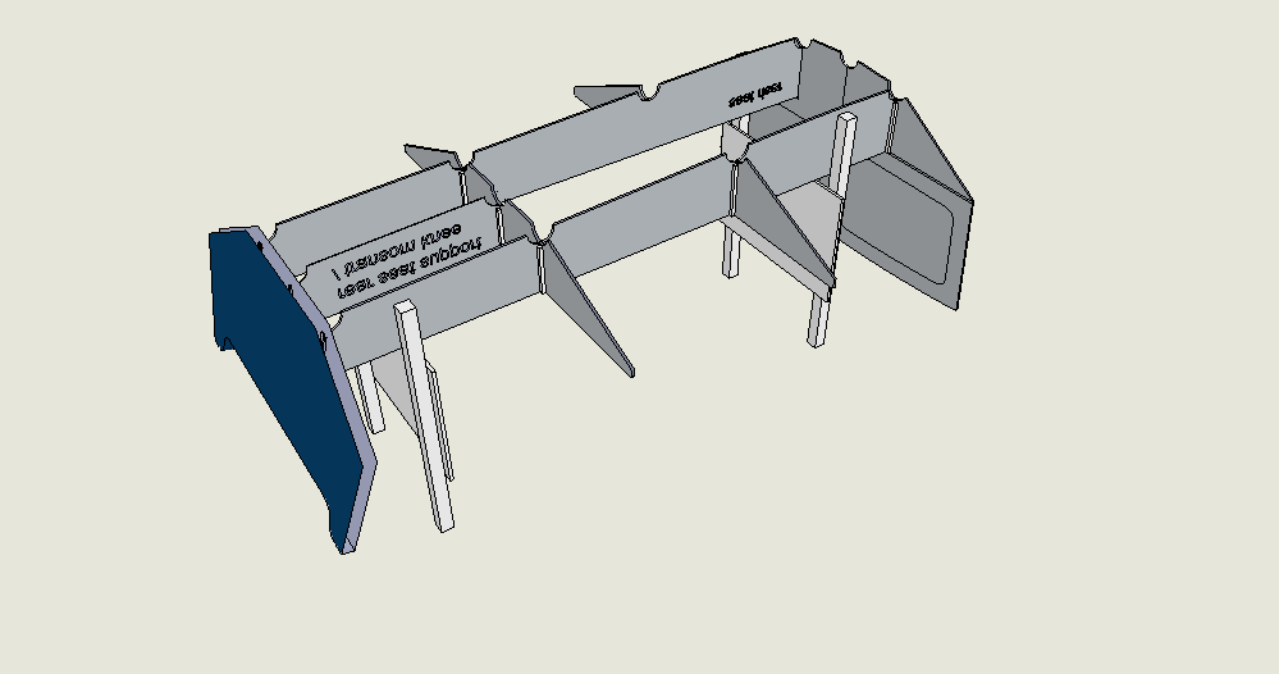
If you bought the templates in .pdf format make sure that you print them without scaling. The full size templates include dimensions to enable you to check this.

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

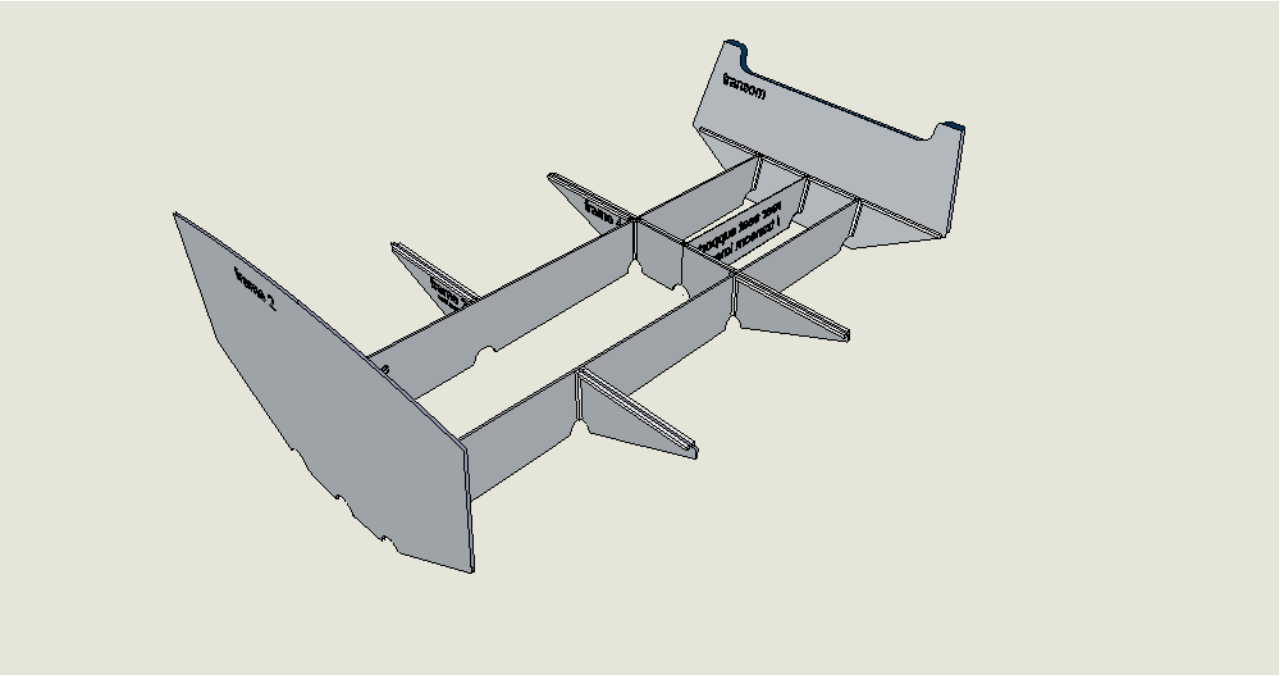
Also note that there are many spaces on the boat that are suitable for storage and/or flotation compartments. These can be located to suit the builder's preference.



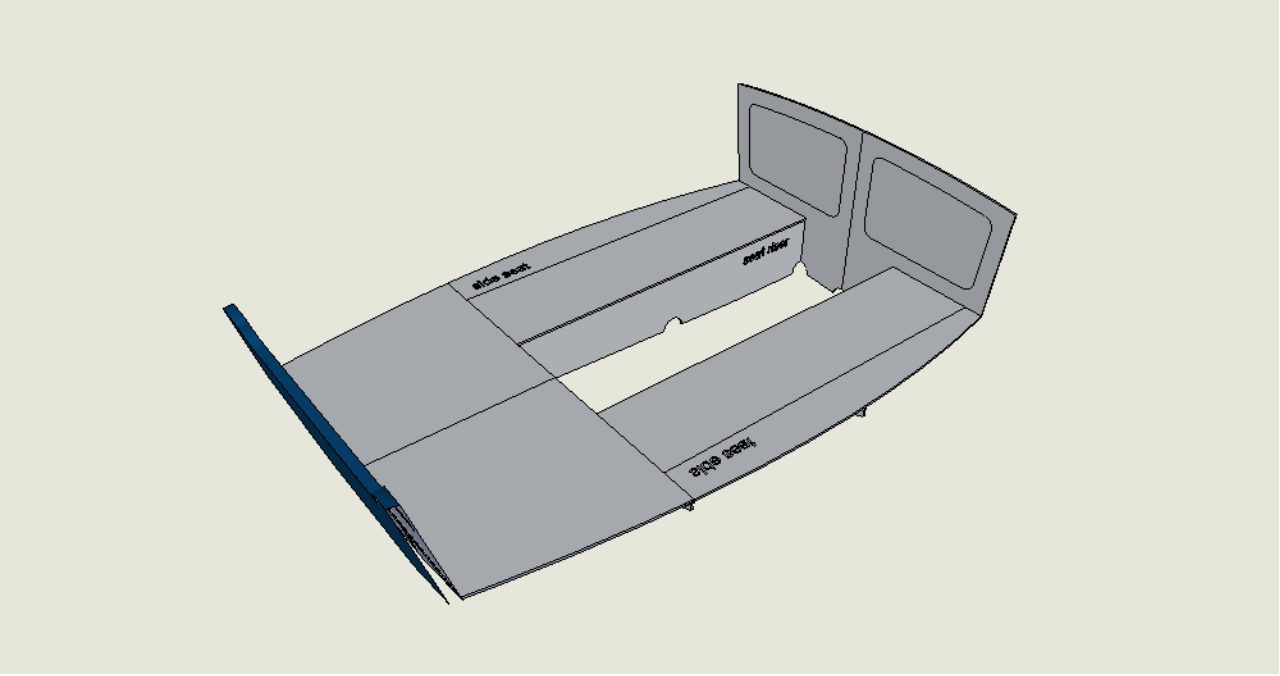
Add frame 2.



Then the transom and rear seat support / transom knee.

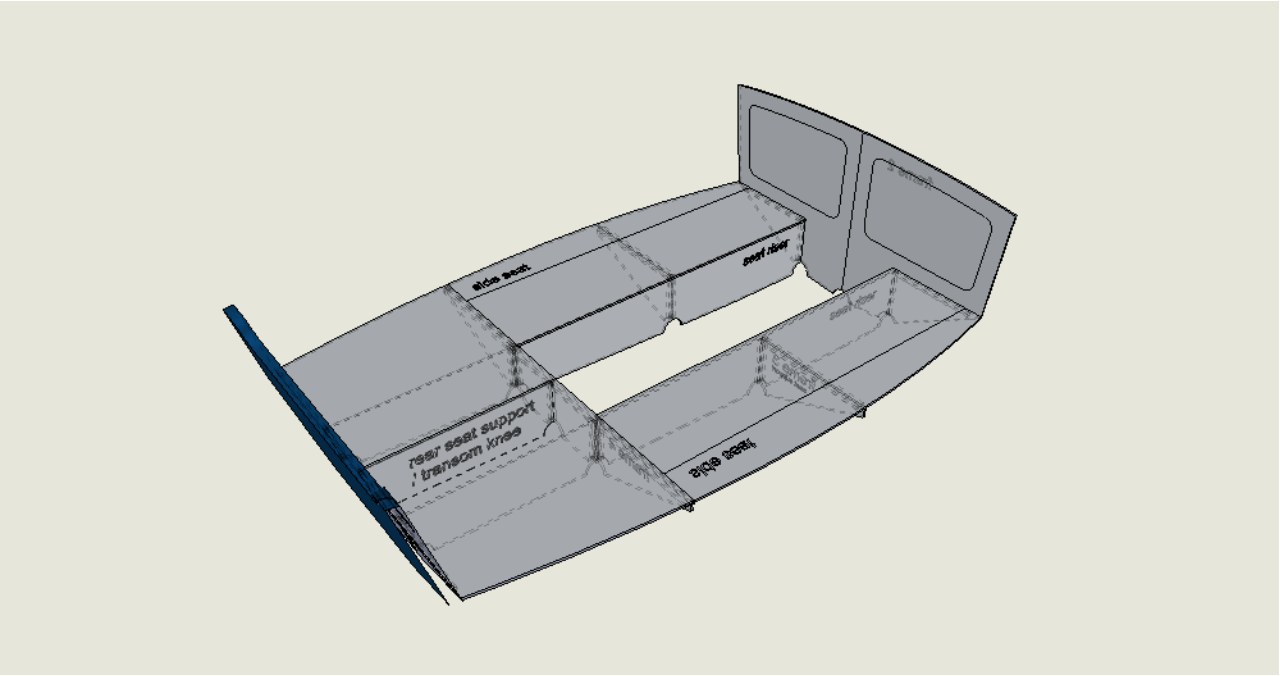


This is another view.

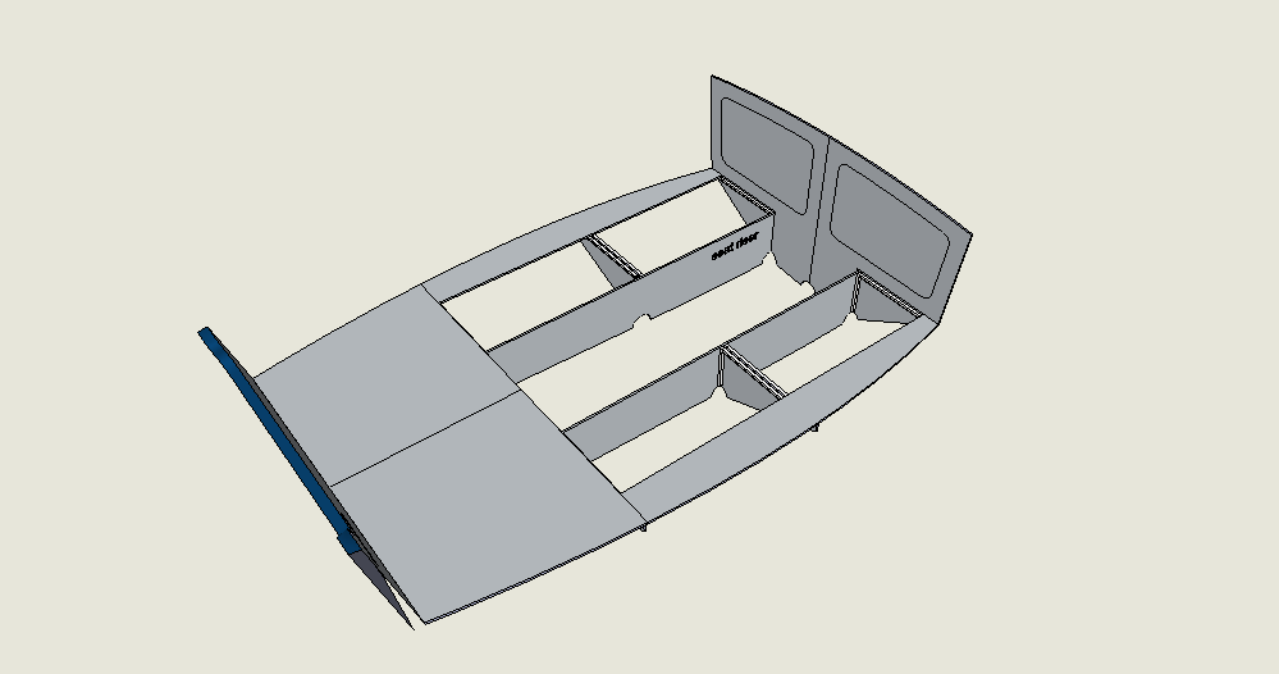


Temporarily screw the seats in position.

They will be removed later to gain access for taping and jointing the hull panels.

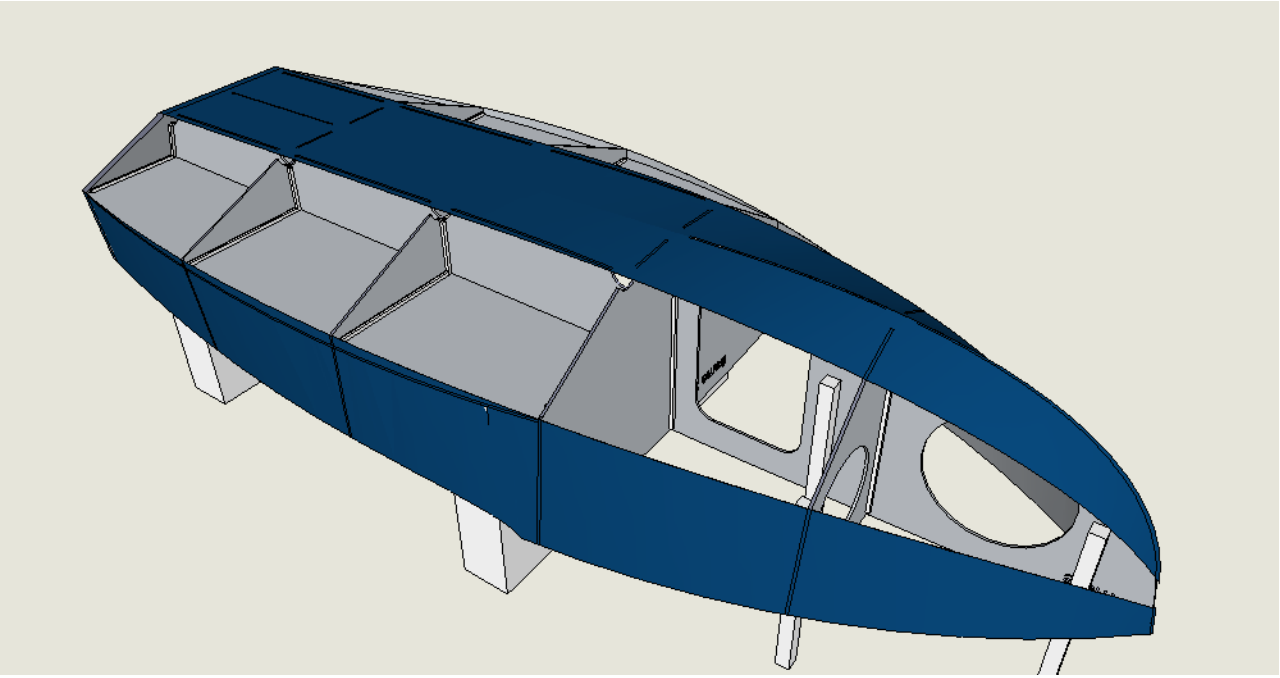


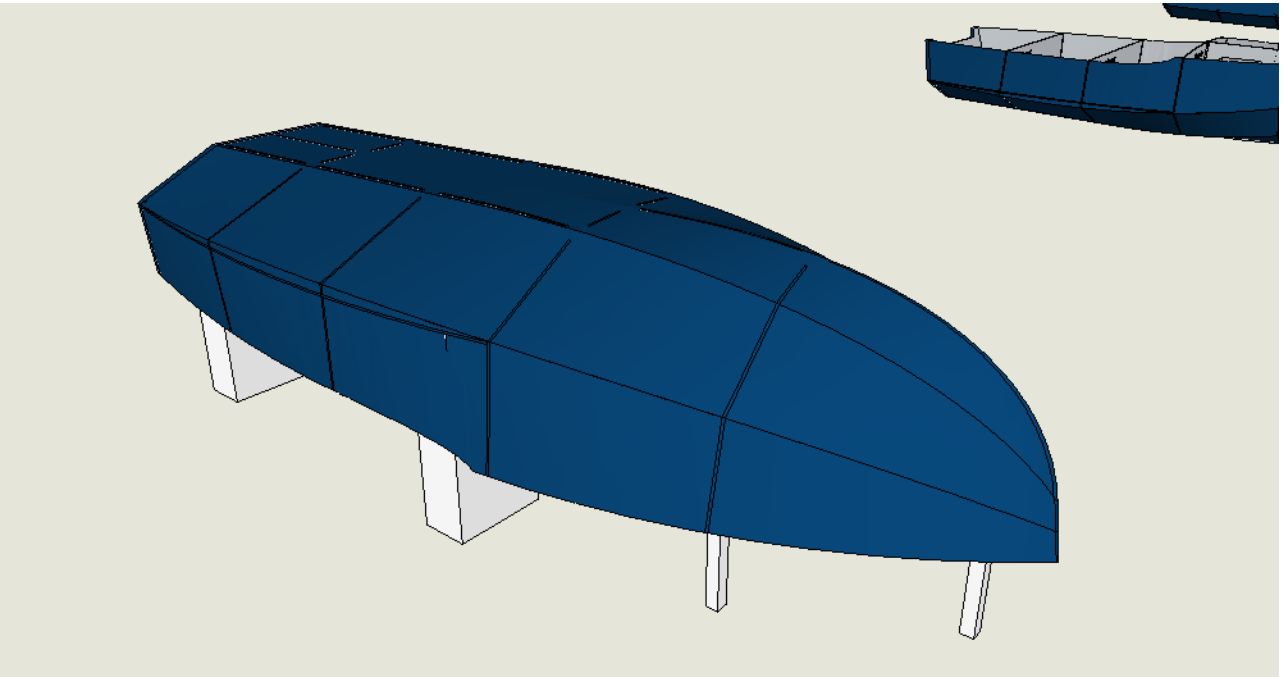
This is another view showing the framework beneath the seats.



Give some thought to storage / access and flotation compartments.

Bear in mind that frame 2 is a structural element so openings should be limited to those suggested on the drawings.



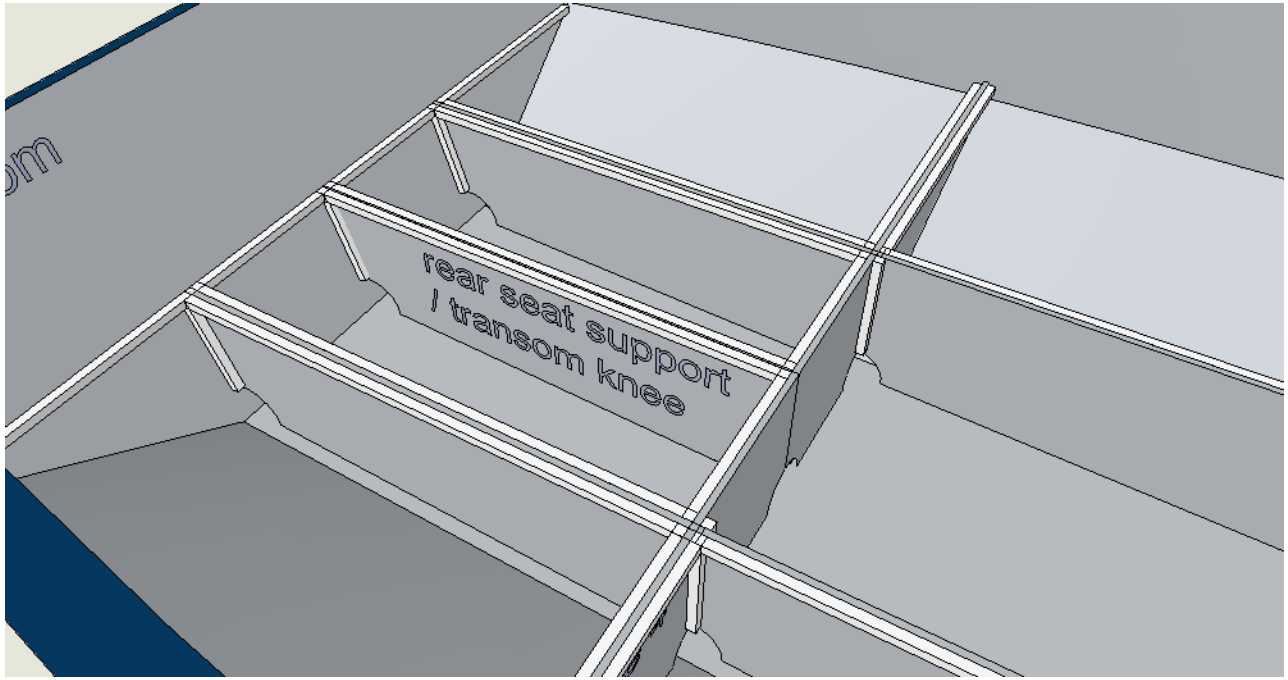


I specified 1/4" plywood for the bottom panel to facilitate curving the panel for fixing to the stem.

The flat portion can be strengthened by adding another sheet of plywood.

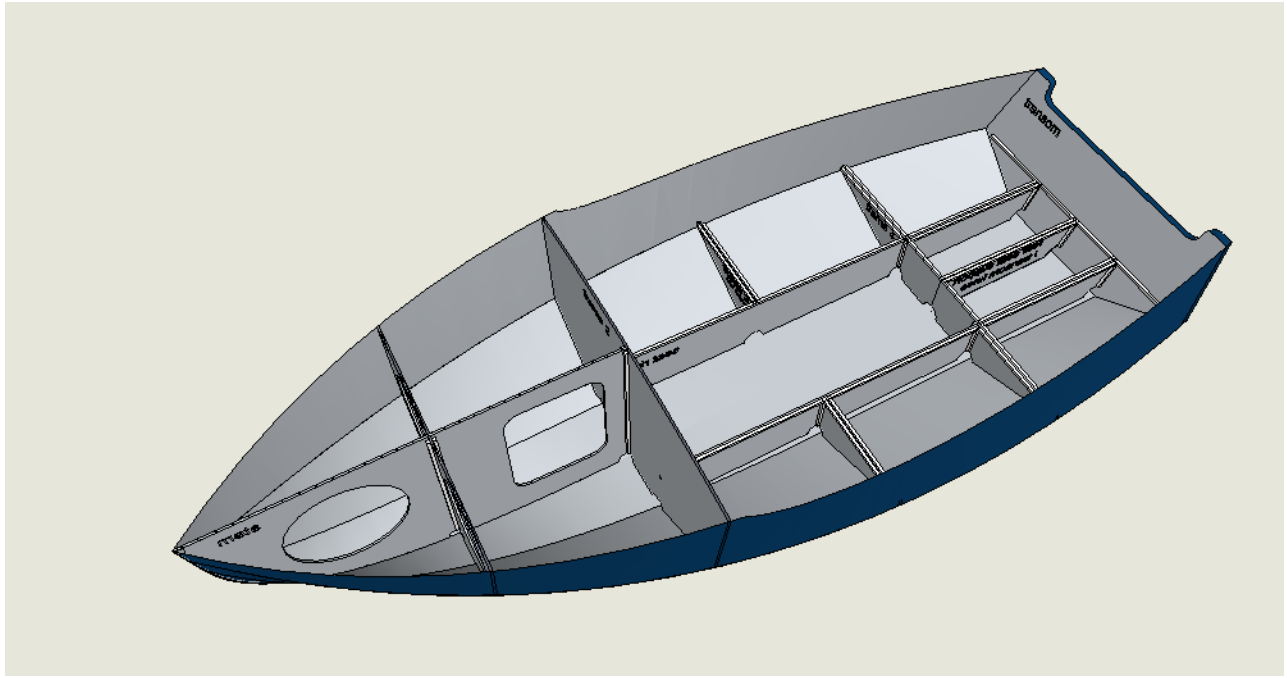
This can be fixed on either the inside or on the outside with a feathered front edge.

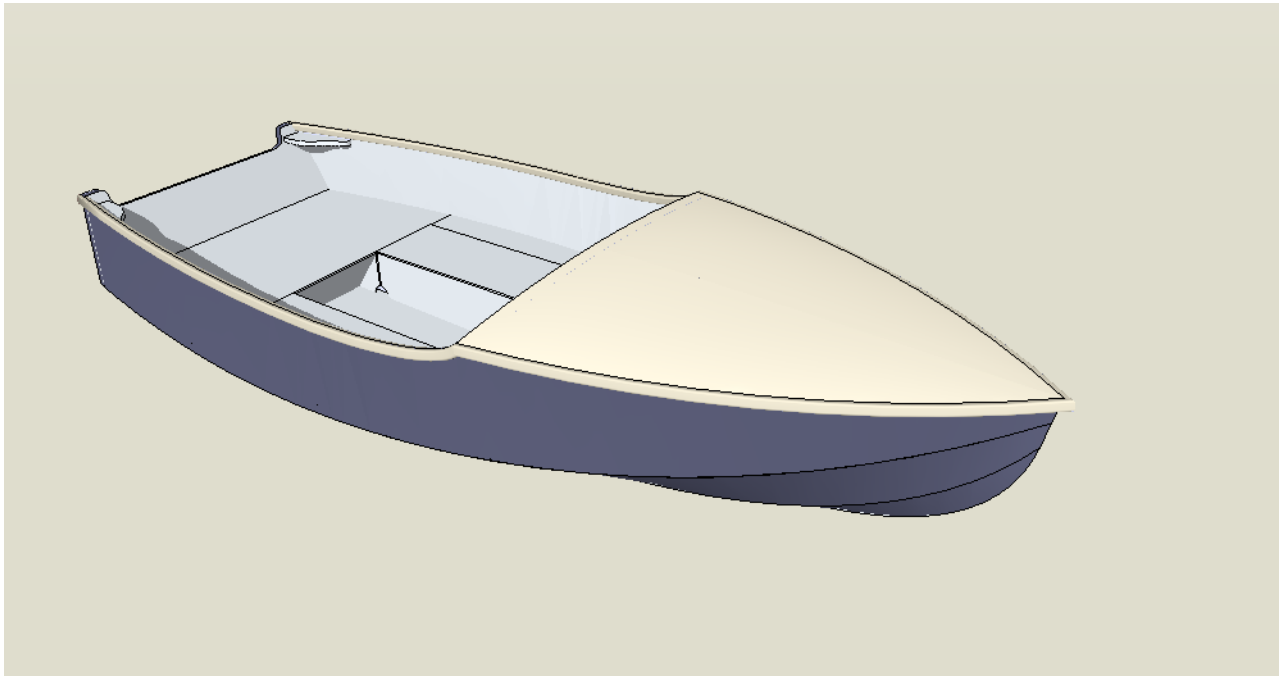
Glue it with epoxy resin.



Add battens for fixing the seats.

Another view.





Complete!