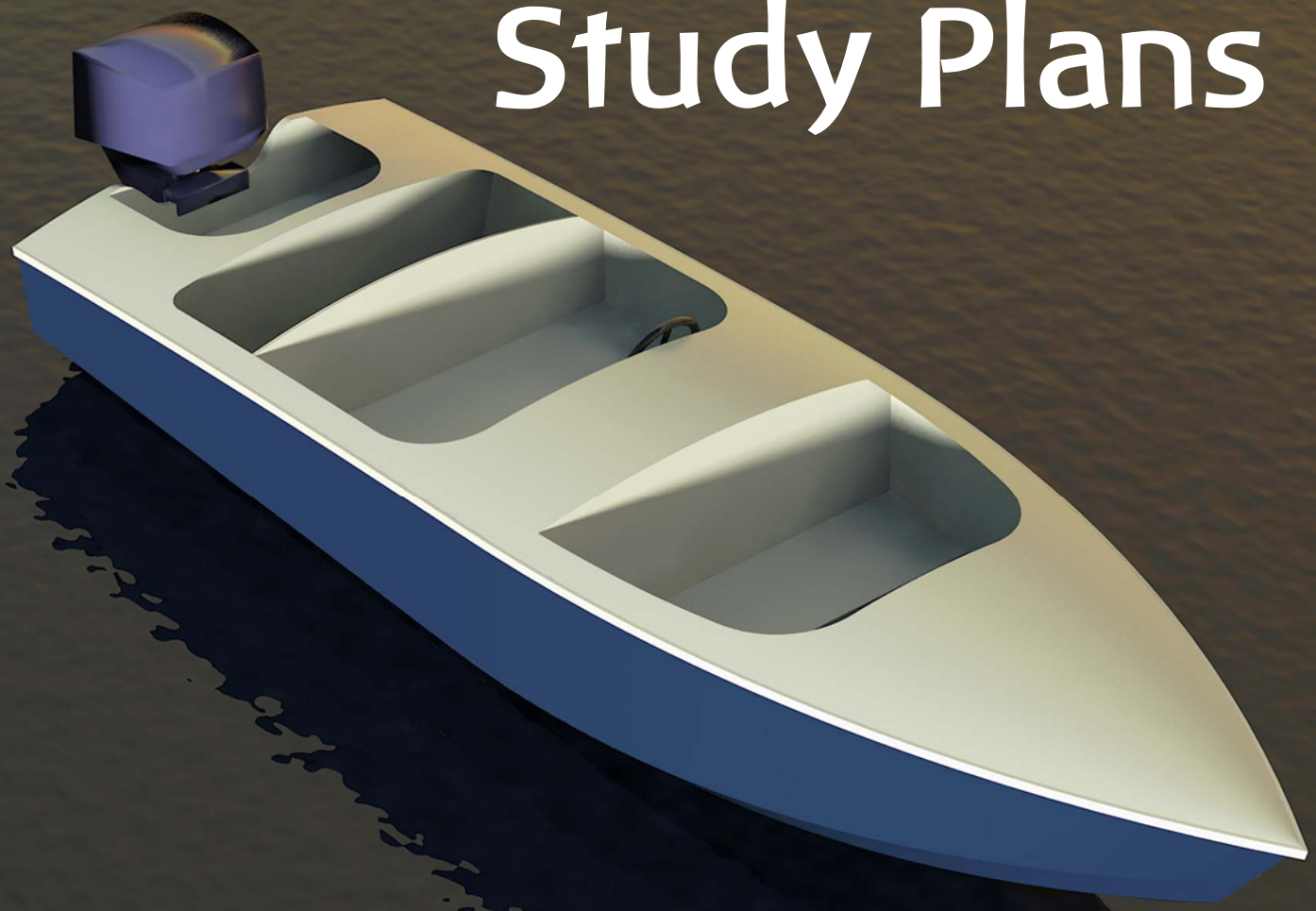
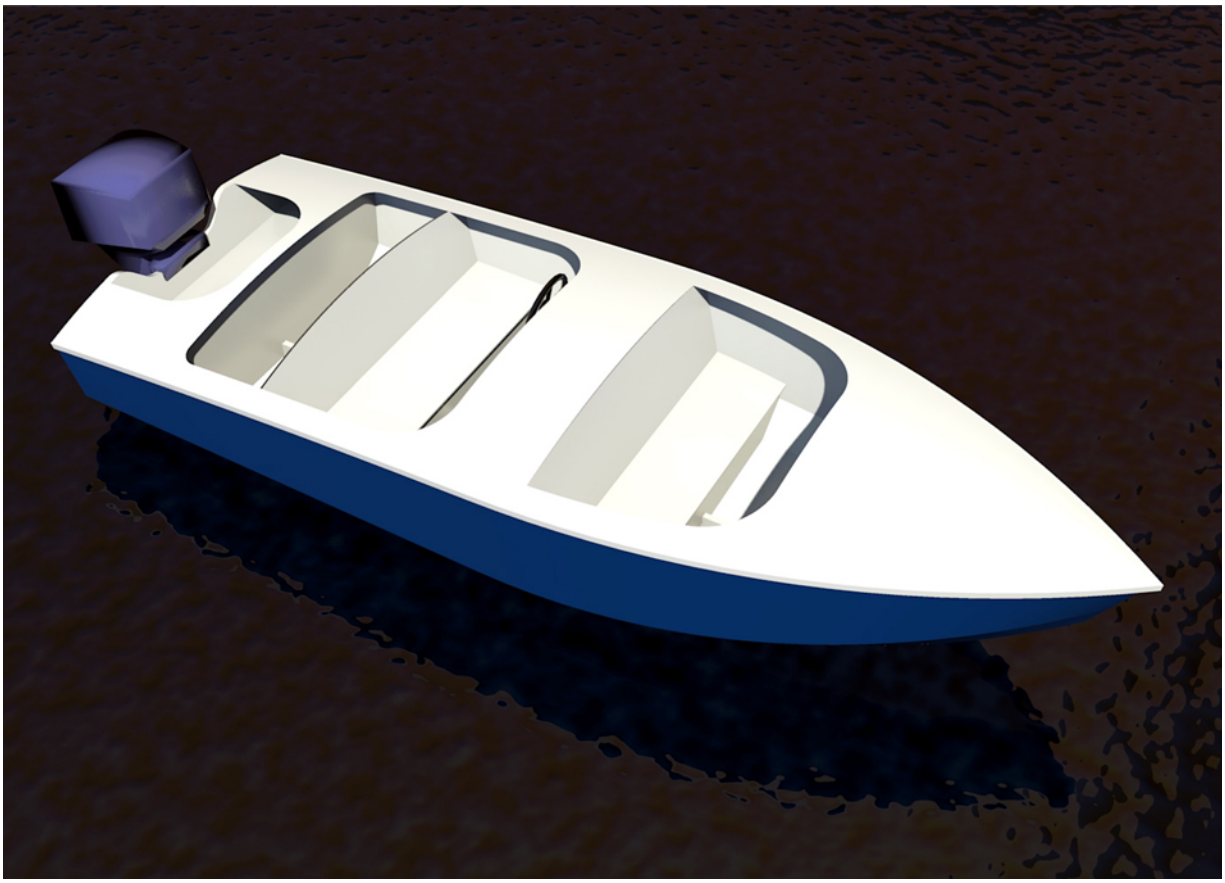
Mia 15
Study Plans



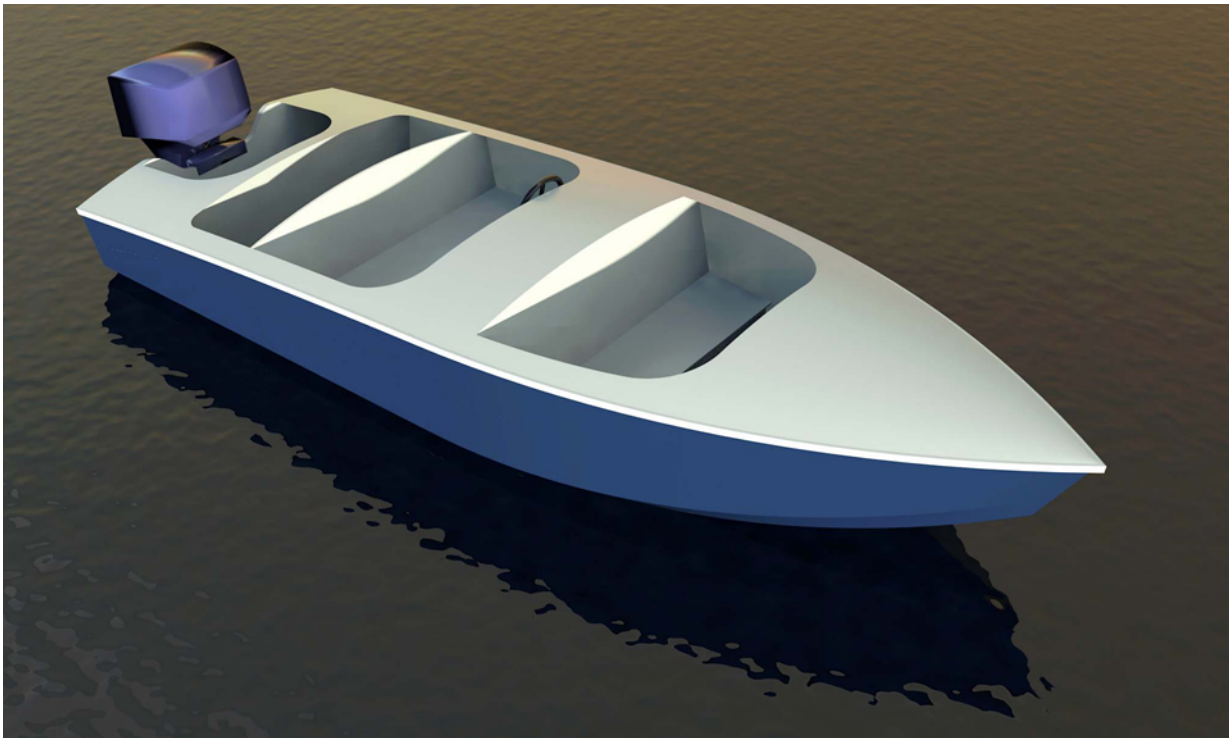
Drawings and Construction Manual
for a 15’ 1" x 5’ 4" Runabout

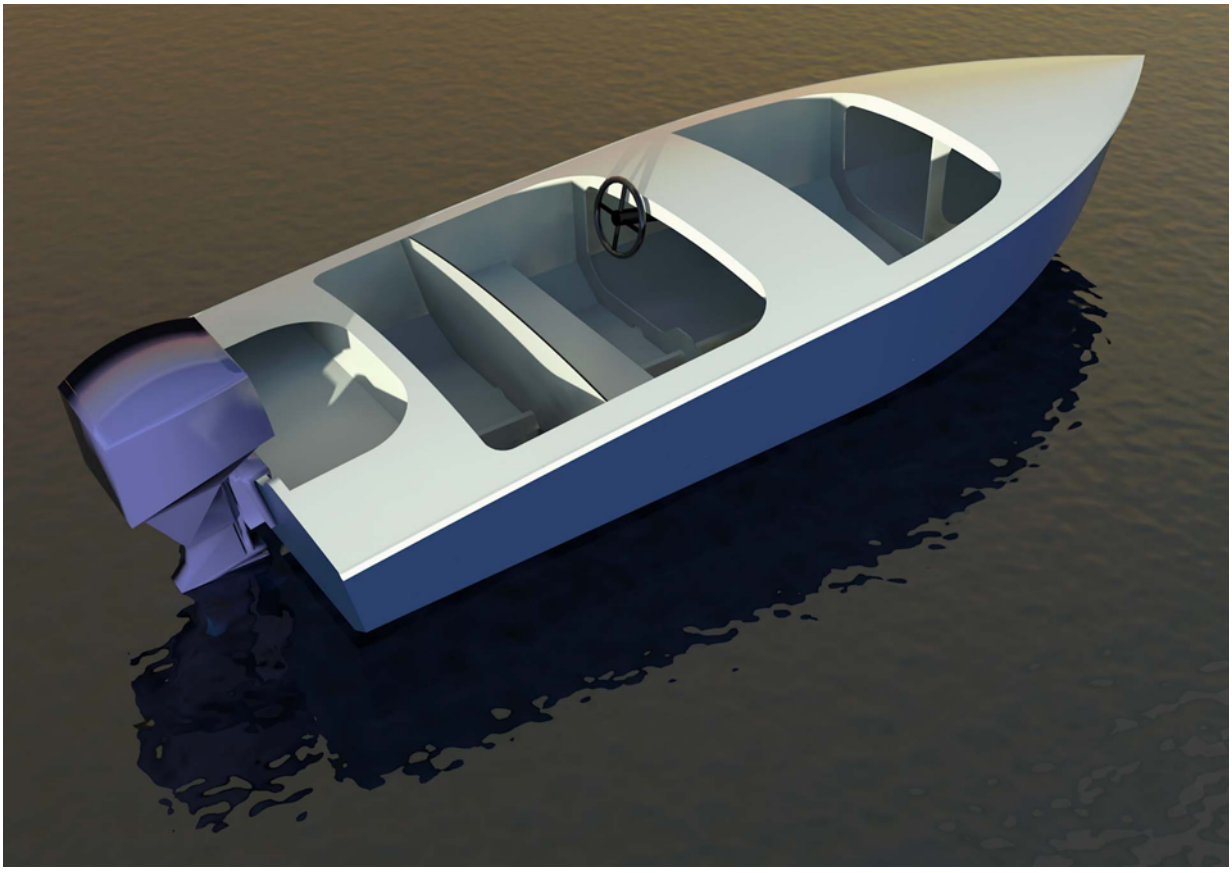
Suitable for Short Shaft Outboard Motors

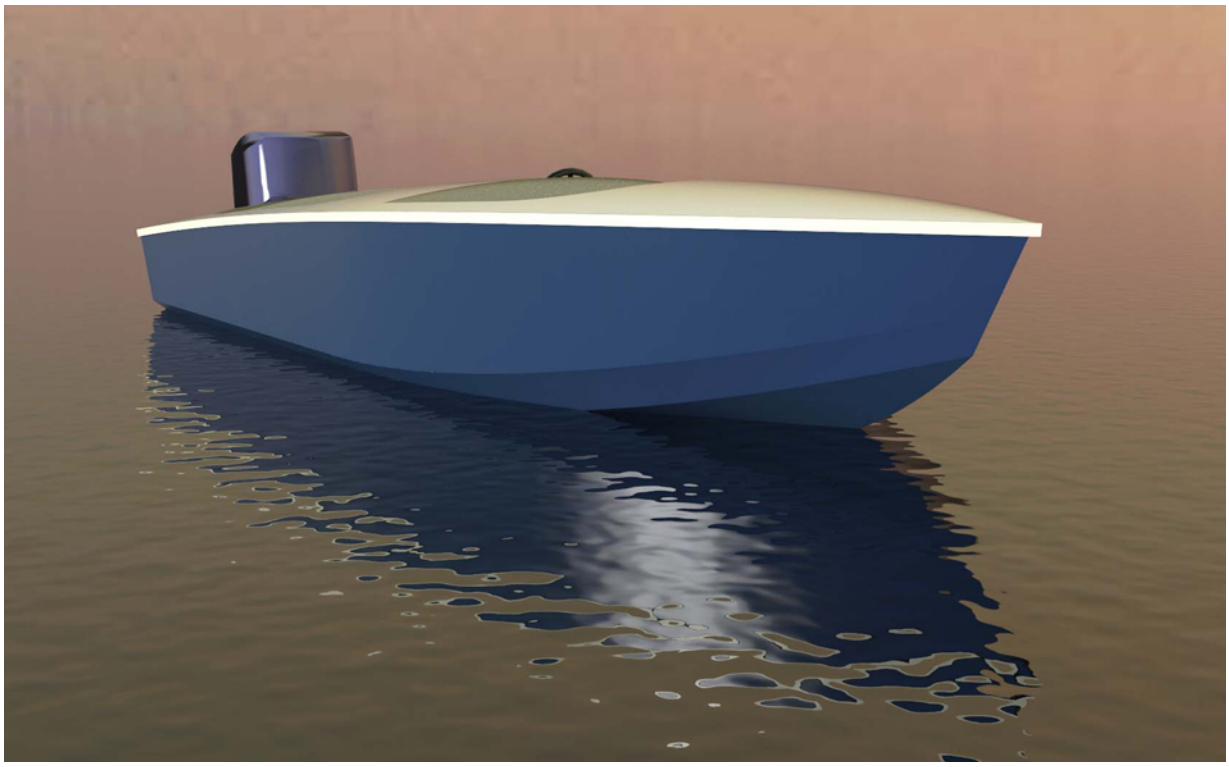
Andrew Walters

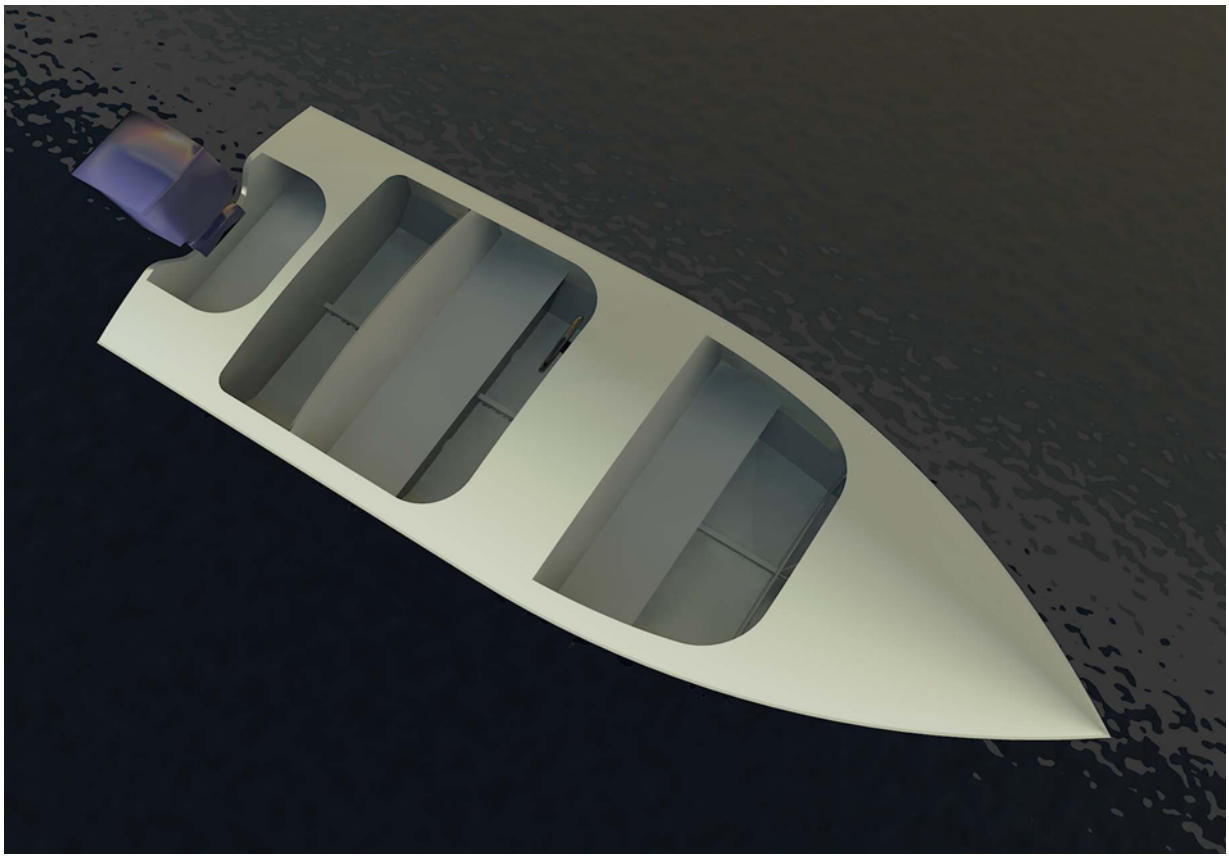


Contents









Introduction

Mia was the second design that I published, a 12' runabout, inspired in part by William Jackson's 1955 design for the 'Ace' which was produced by the Sande Boat Works between 1956 and 1962 (www.sandeace.com), and in part by the 1950's designs of Hal Kelly.

Mia has been a popular design and this has prompted me to produce this extended 15' version - Mia 15.

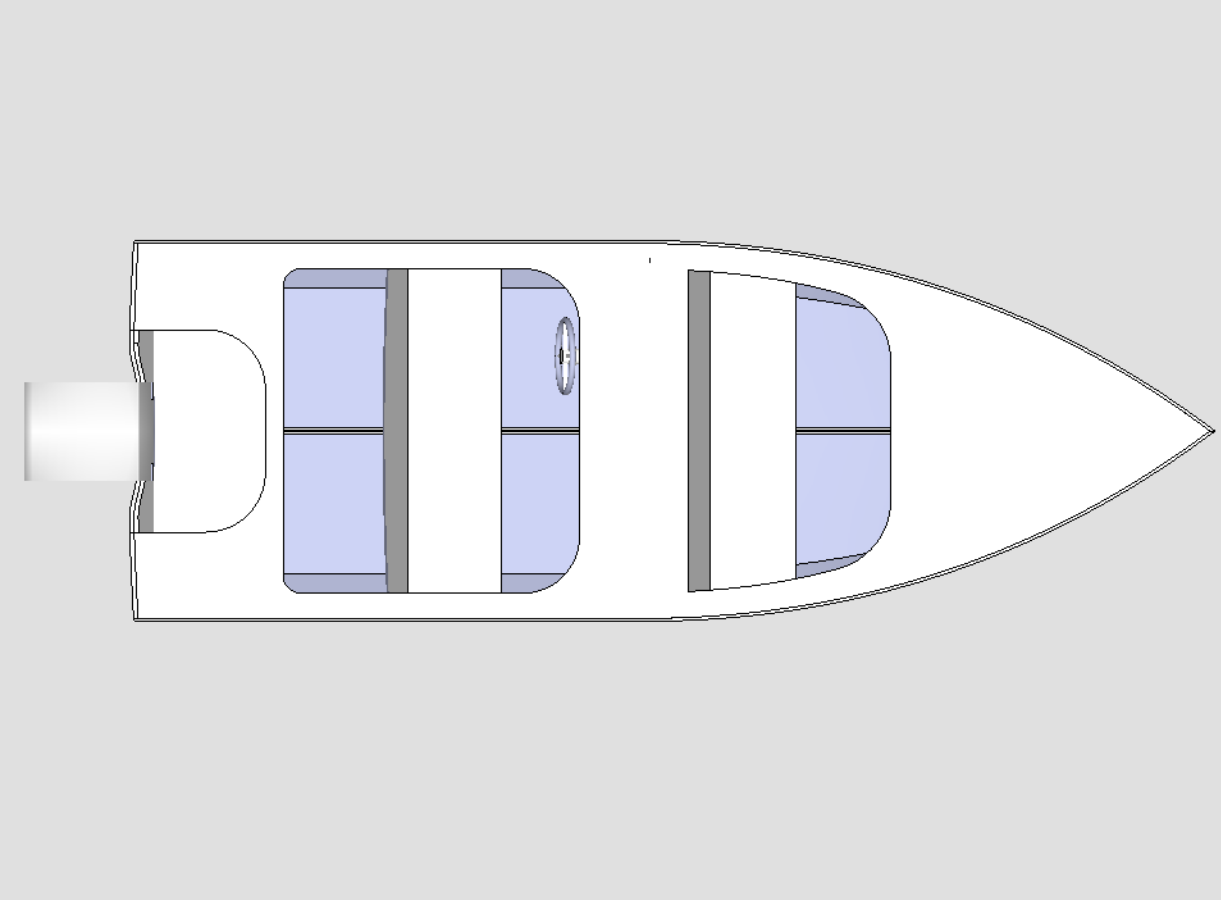
The forward section is essentially the same as Mia, the space between the cockpits has been increased, there's more space behind the rear seats and this design incorporates a motor well.

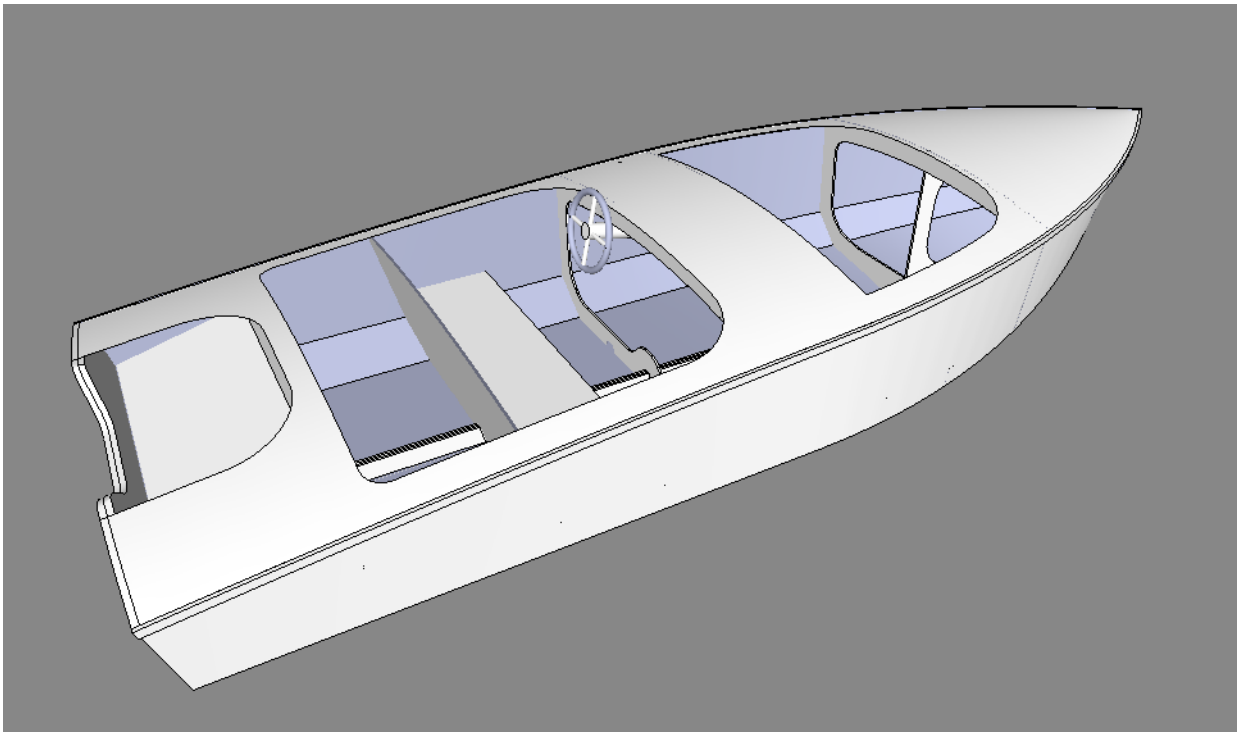
The boat is designed for short shaft outboard engines in the 10 to 30 hp range.

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.





Introduction

Recommended Reading

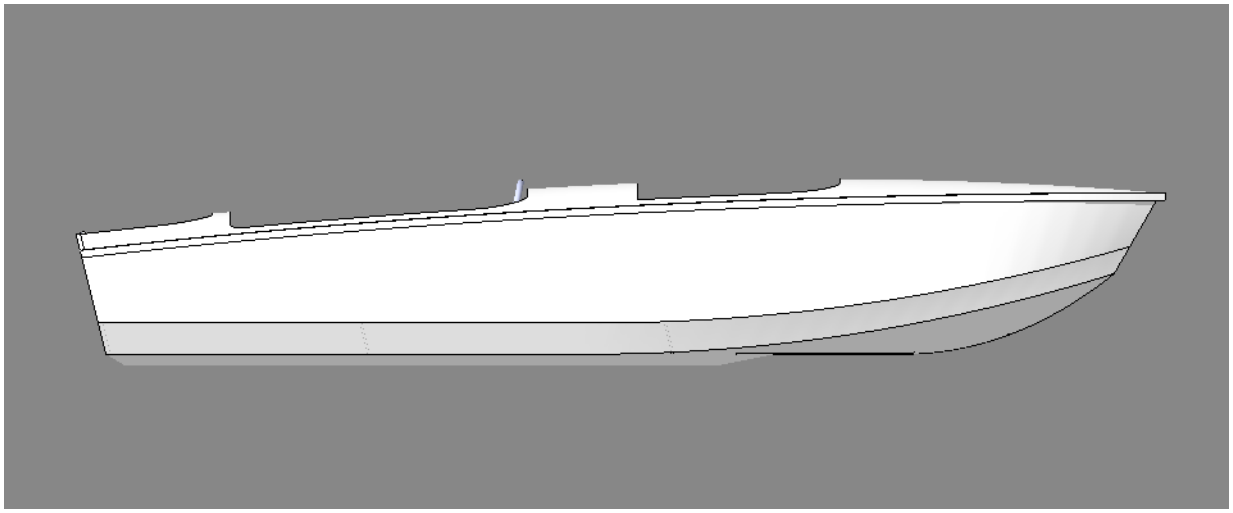
Two excellent books on the subjects of boat building and working with polyester and epoxy resins are:
Jim Michalak: 'Boatbuilding for Beginners (and Beyond)'
and
Harold Payson: 'Build the New Instant Boats'

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.

Copyright



List of Materials

Marine Plywood:

1/4" x 4' x 8'
8 sheets

3/8" x 4' x 8'
6 sheets

3/4" x 1 1/2" timber for gunwales & inwales
about 70'

3/4" x 3/4" timber for support battens
about 50'

2" x 2" timber for bottom stiffener
about 10'

3" glass tape
about 50'

About 10 yards of glass cloth to cover the hull bottom and overlap

About 2 gallon of epoxy resin

About 4 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	15' 1"
Beam	5' 4"
Bare Hull Weight (approx)	270 lbs

Power Requirement:

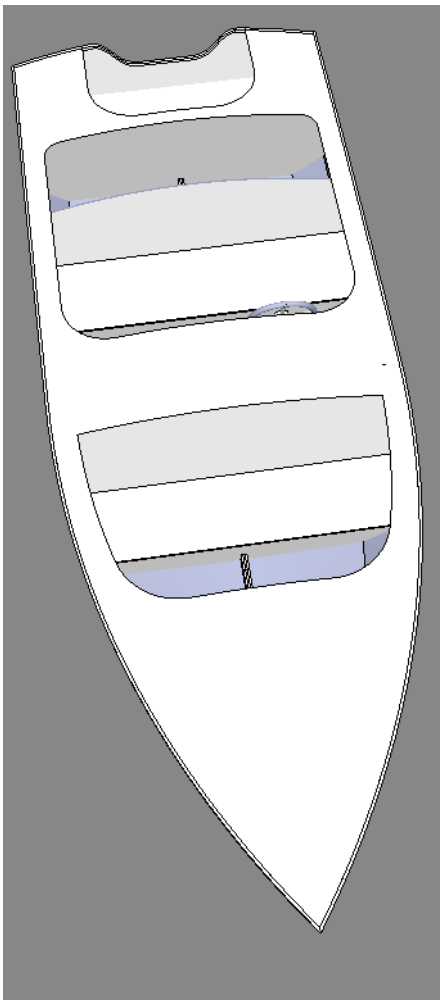
10 to 30 hp
short shaft outboard

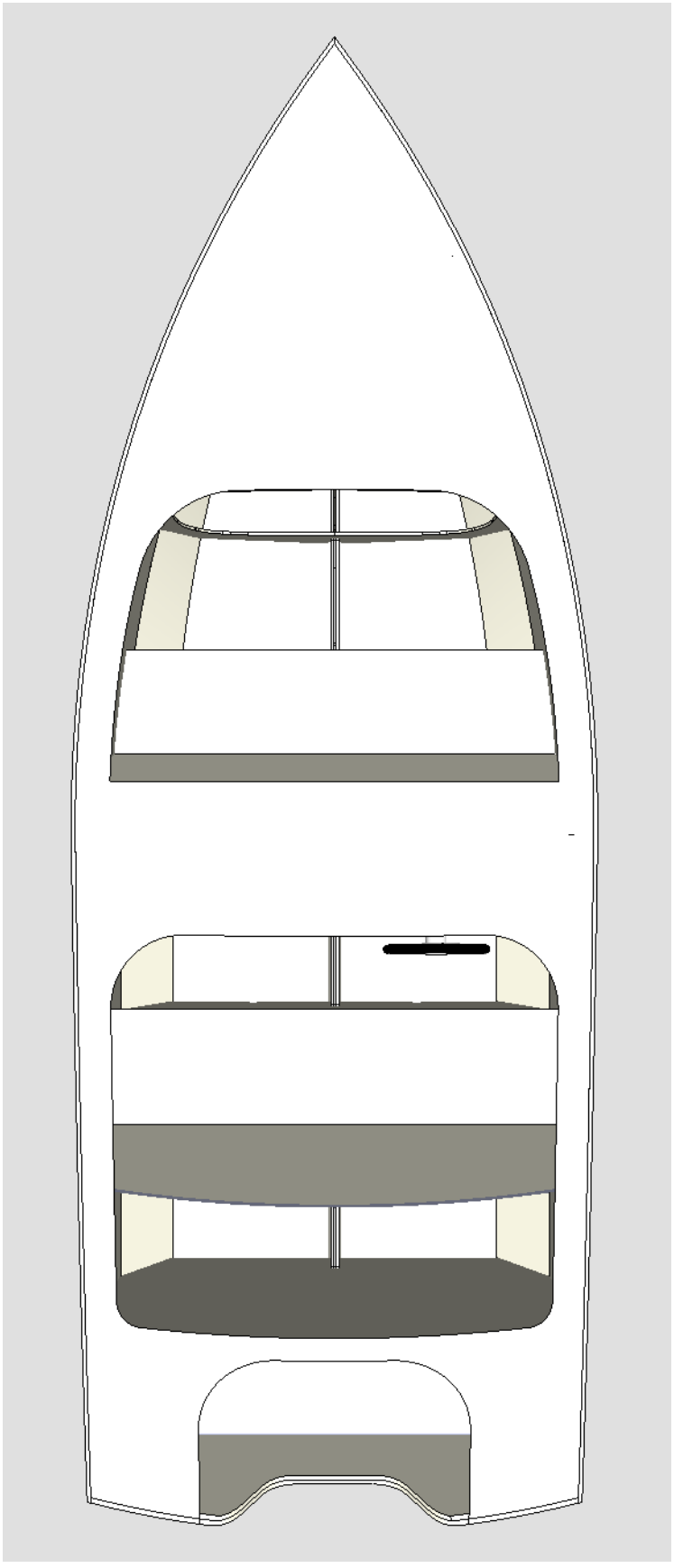
Expect:

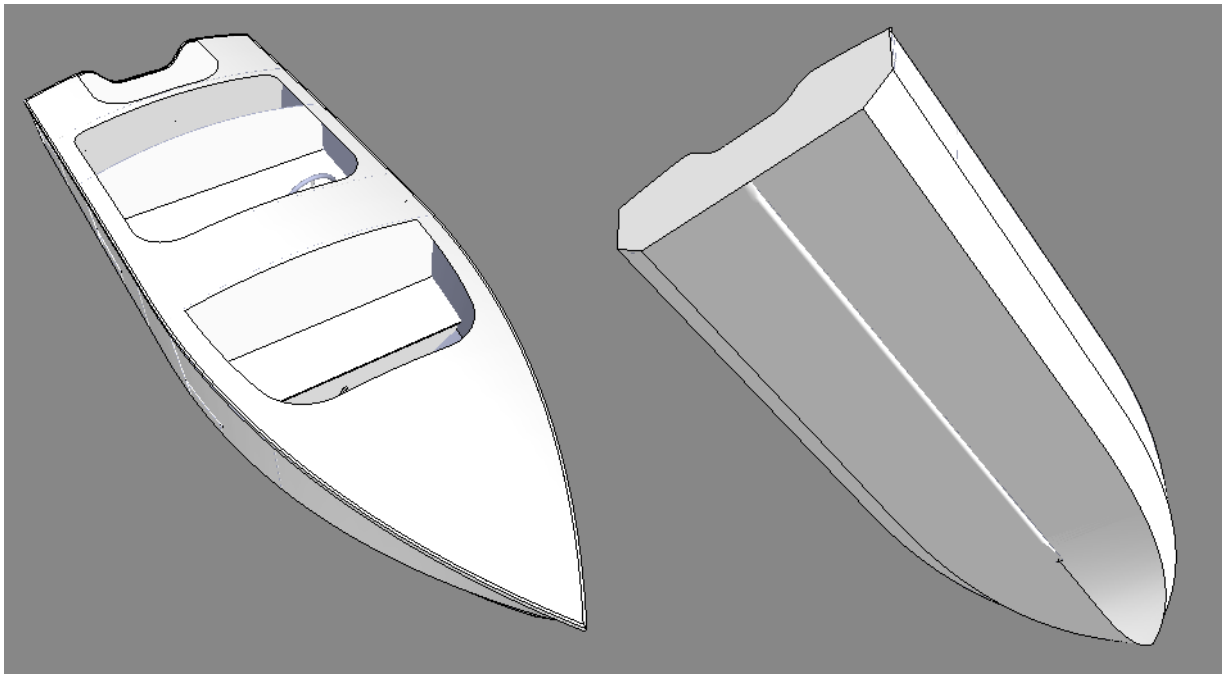
10hp to plane with 1 p.o.b.

15hp to plane with 2 p.o.b.

30hp to plane with 4 p.o.b.







Glue, Resin and Fixings

The preferred method of construction is to use epoxy resin throughout for both the glueing 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/index.htm)

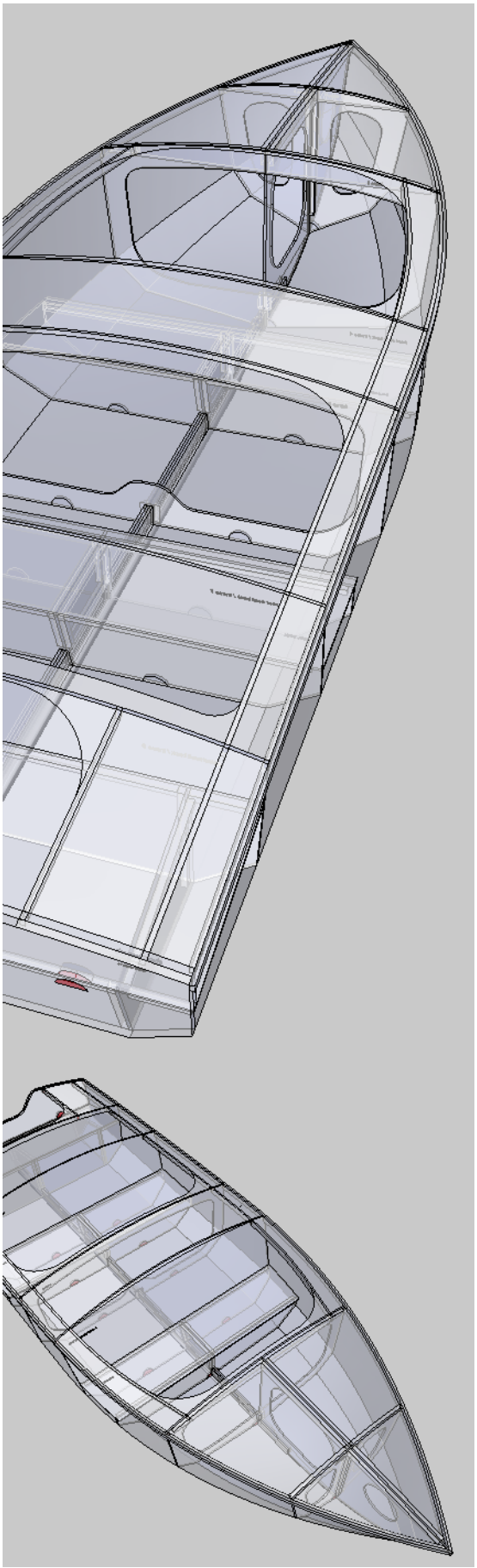
Polyester resin can be used as an alternative for the glass cloth covering. It is not as durable or as waterproof as epoxy resin.

Polyester resin should not be used as a glue.

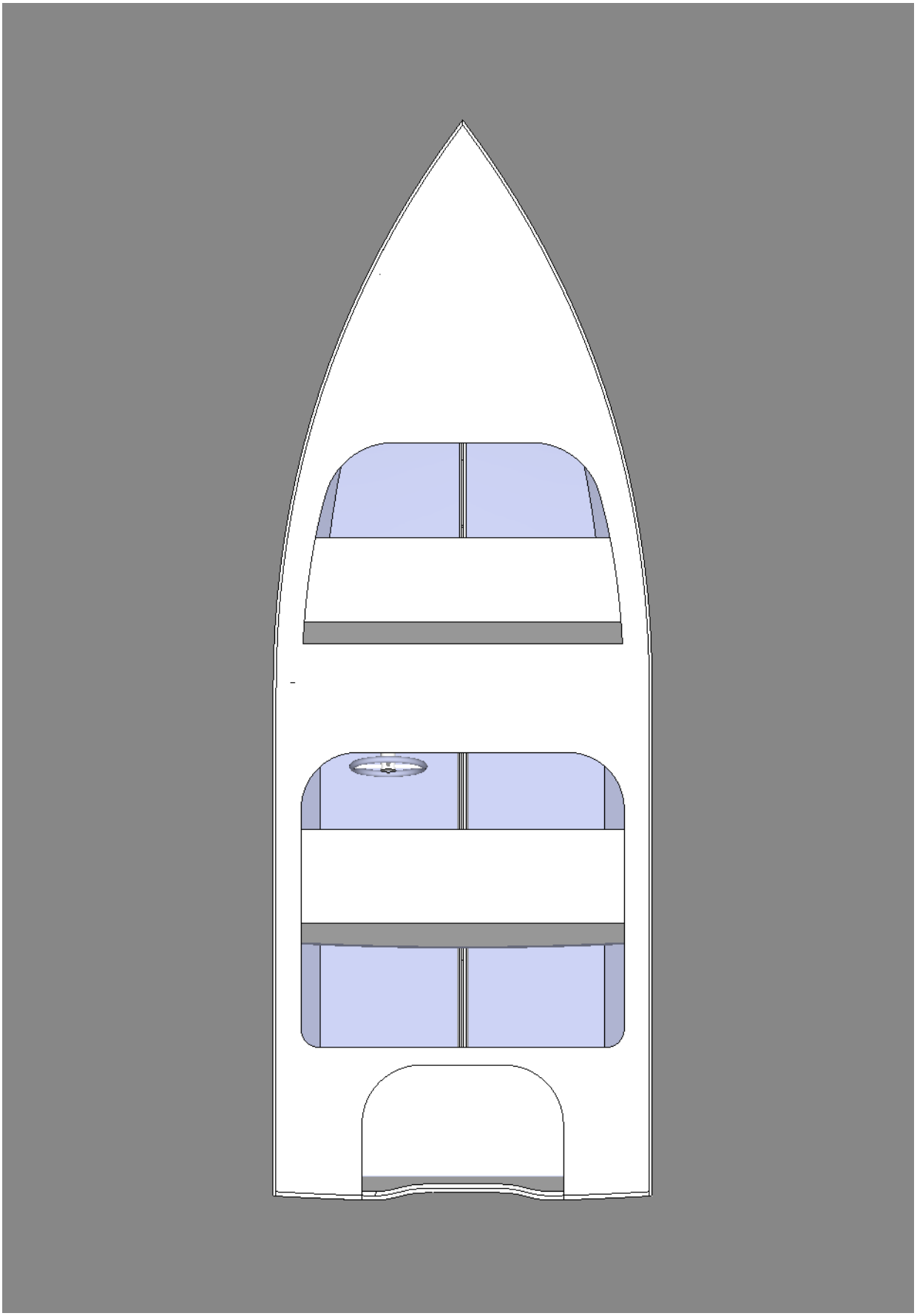
If the boat isn't going to be kept permanently in the water, glue fixing above the waterline, in places such as the gunwales, inwales and seat supports, could be with a waterproof PVA wood glue of a quality equivalent to Titebond II Premium Wood Glue.

Any screws that you plan to leave in should be stainless steel. I often use screws to hold everything together whilst 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, chiselled or planed over without damaging cutting blades - and don't rust.

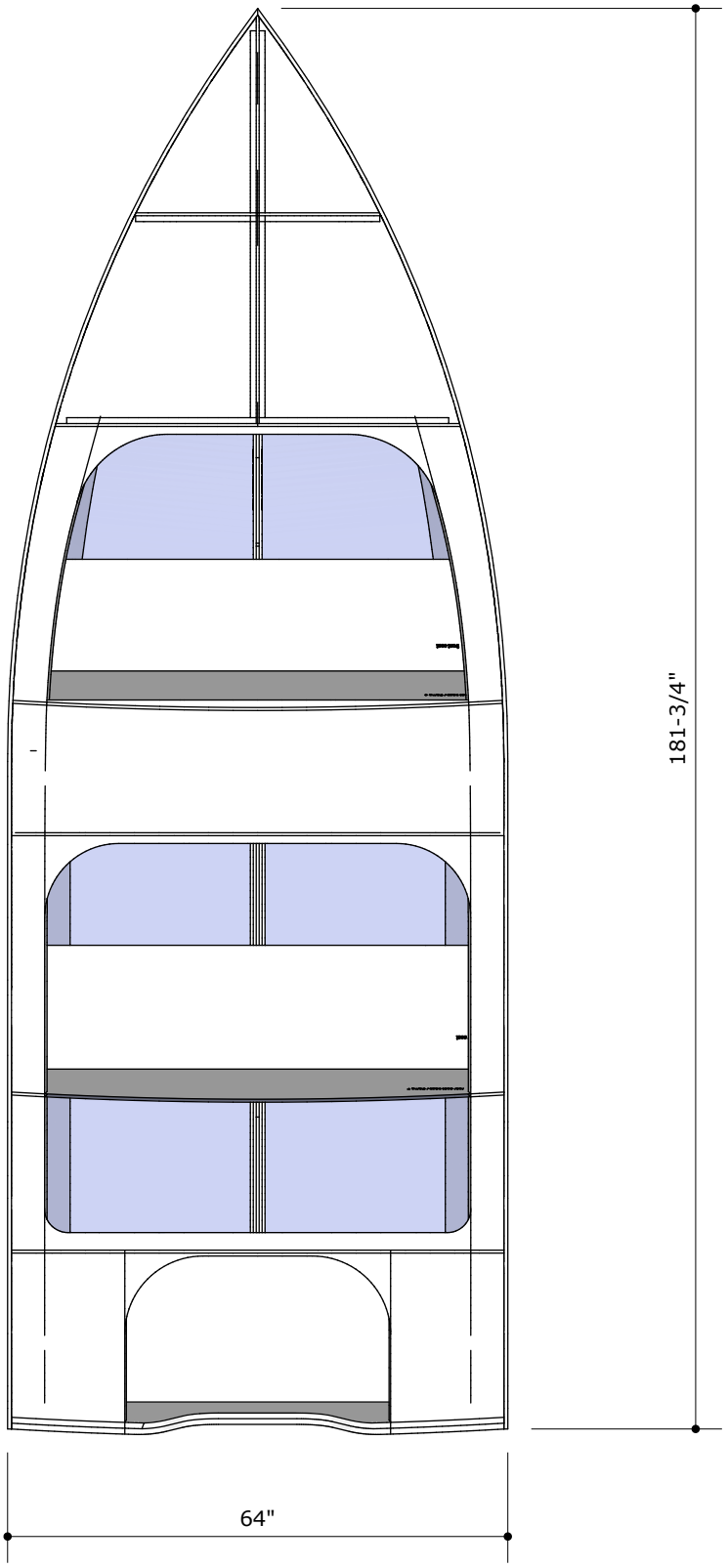


The Drawings



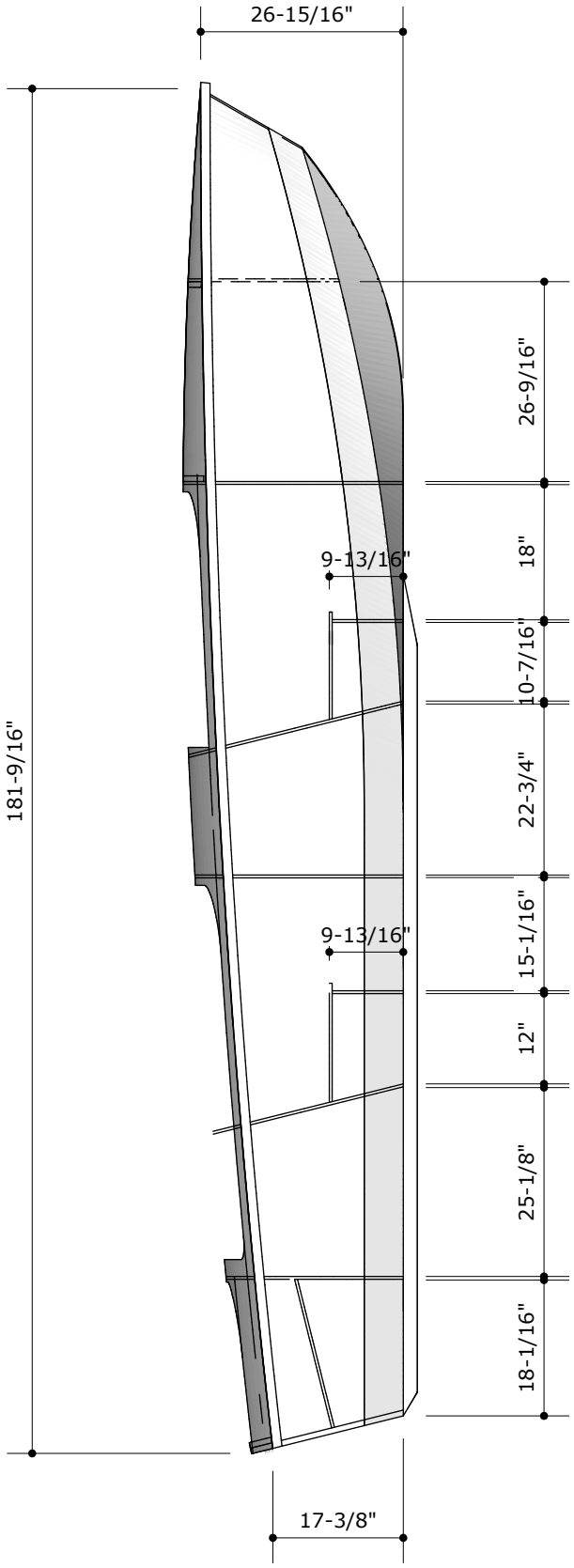
Plan View

Scale 1/2" : 1'0"



Arrangement Plan View

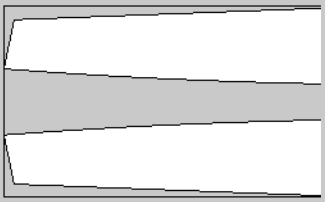
Scale 1/2" : 1'0"



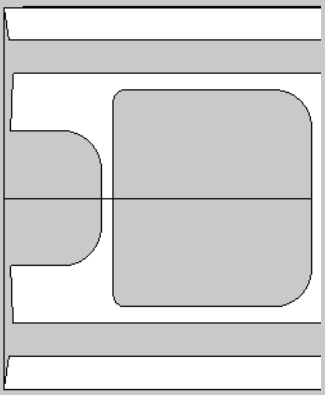
Arrangement Section

Scale 1/2" : 1'0"

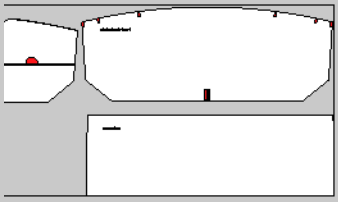
1/4" Plywood
2 sheets



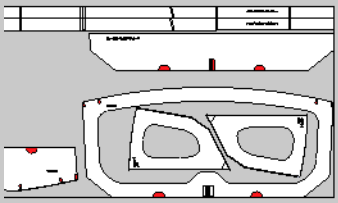
1/4" Plywood
2 sheets



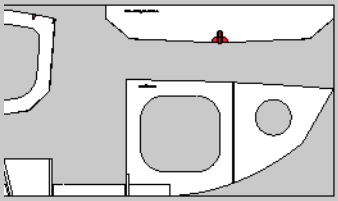
1/4" Plywood
4 sheets



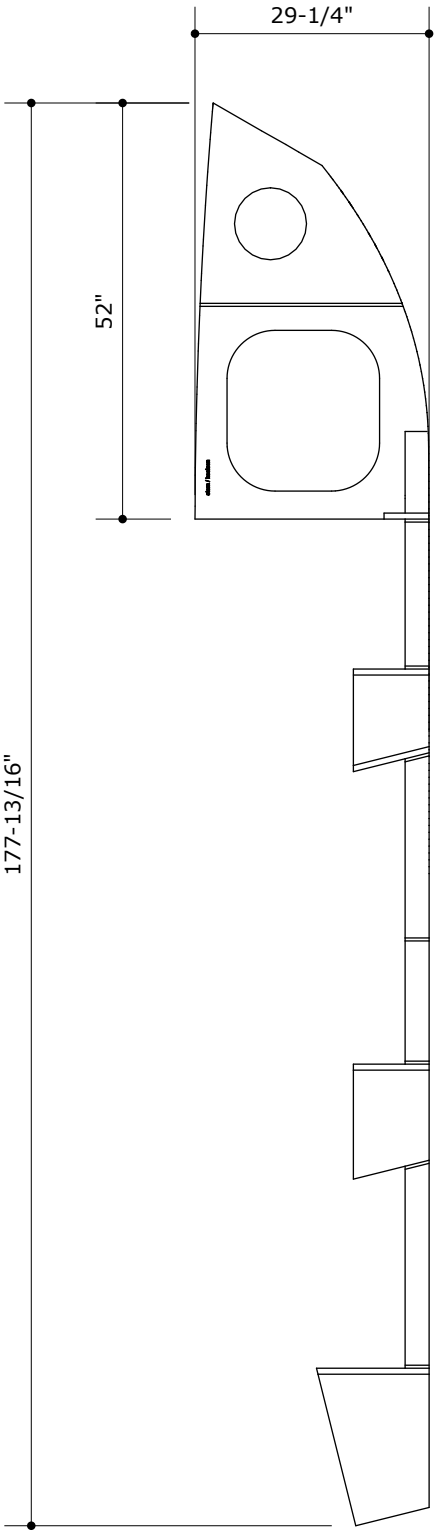
3/8" Plywood
2 sheets



3/8" Plywood
2 sheets



3/8" Plywood
2 sheets

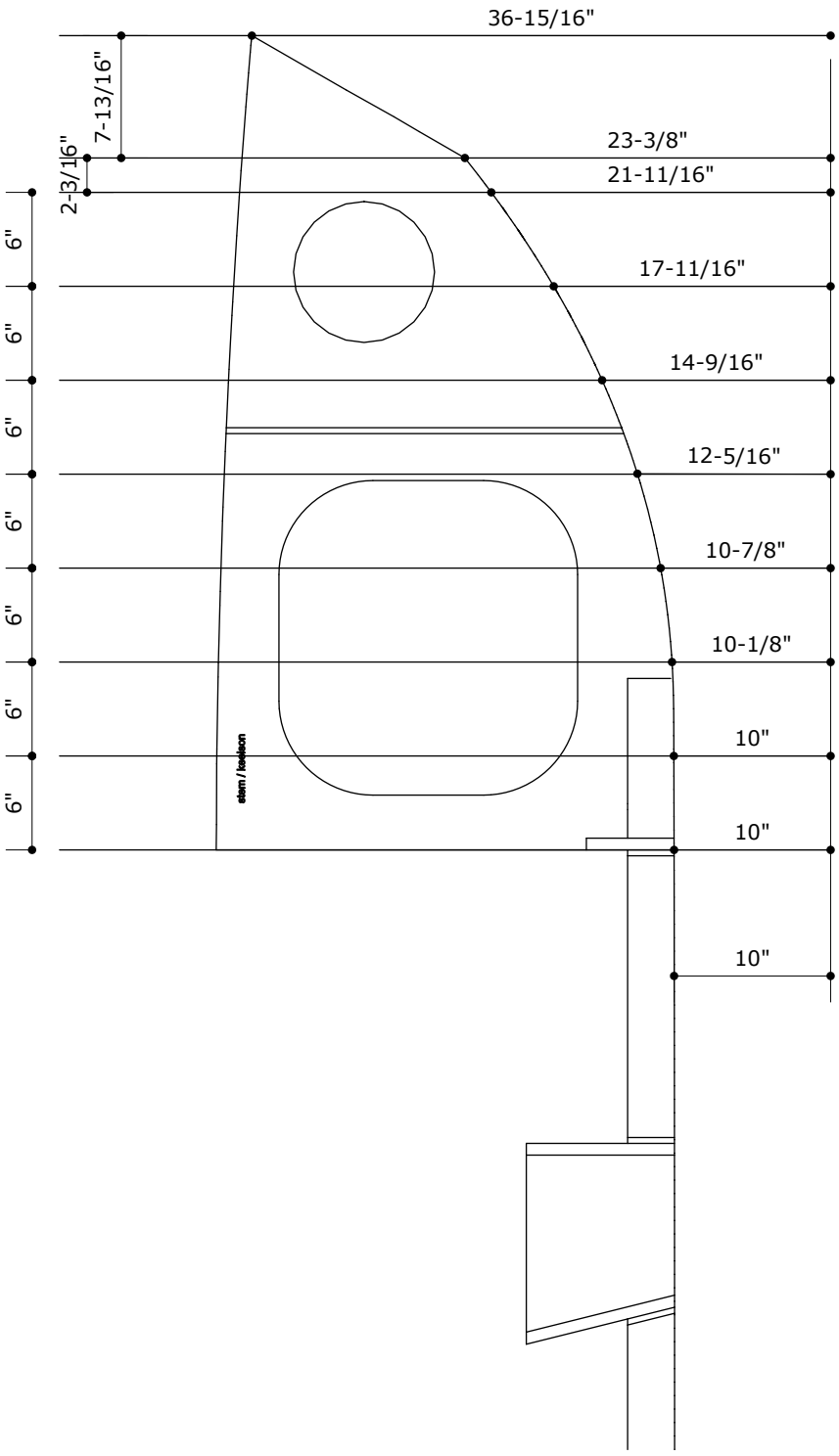


Refer to the following drawings for dimensions.

This item can be made from several sections and held together with the side supports.

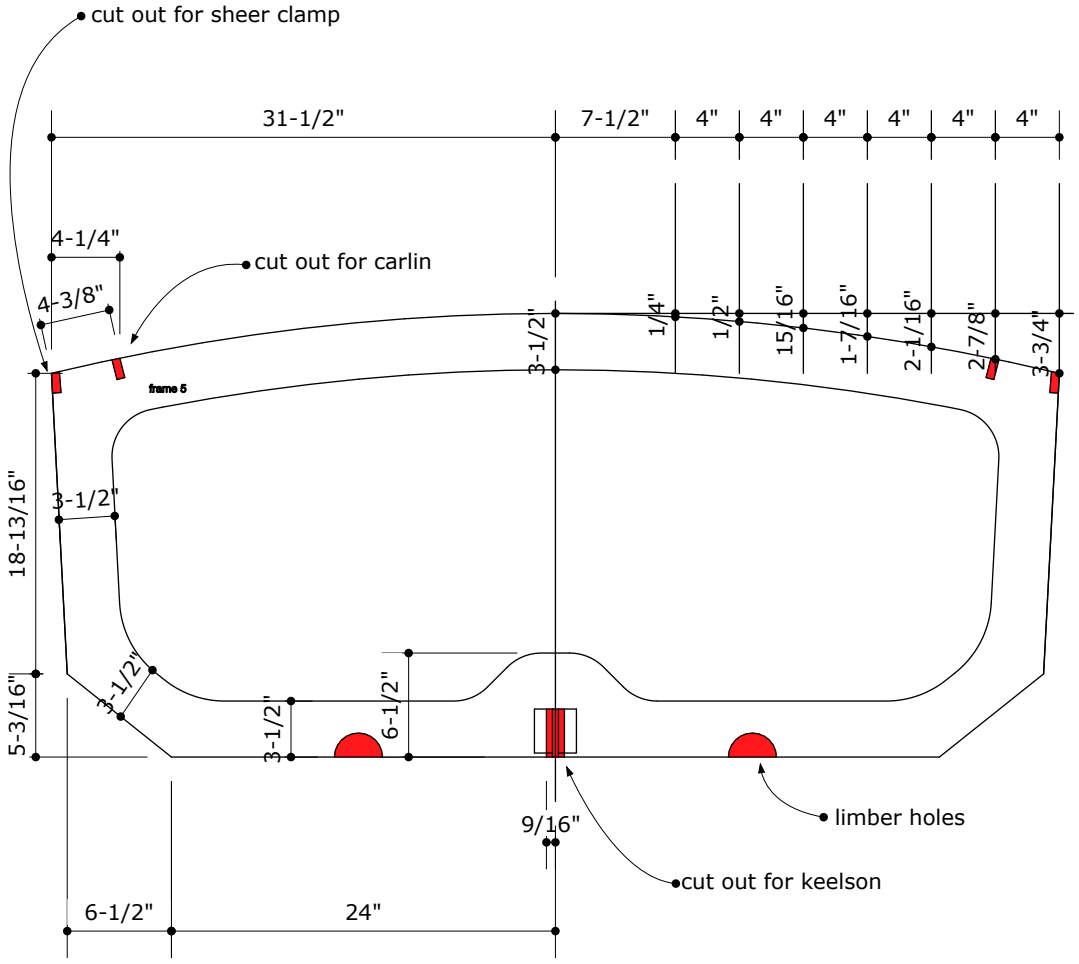
Stem / Keelson Arrangement

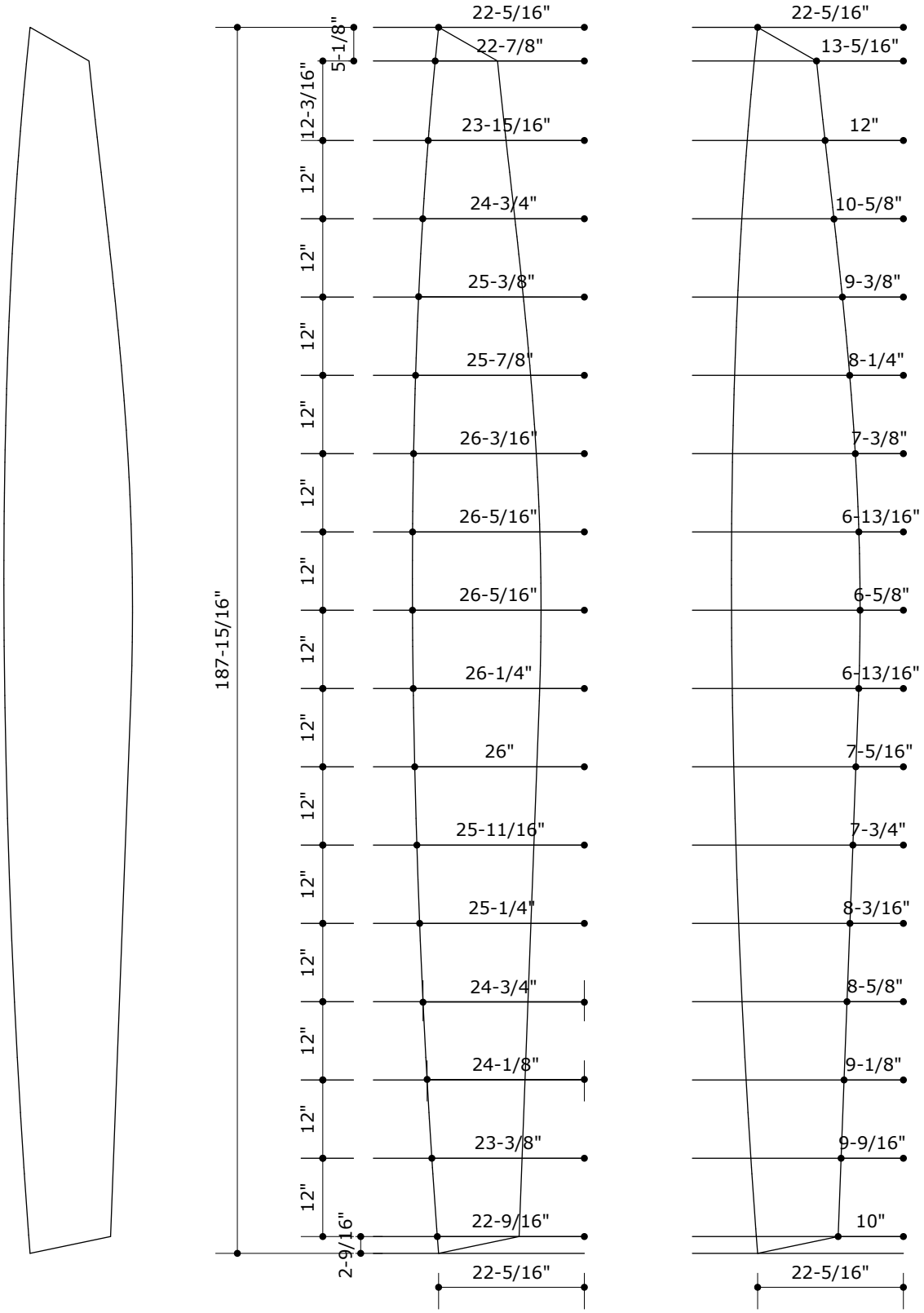
Scale 1/2" : 1'0"



Stem / Keelson Bow Section
Lower Curve

Scale 1" : 1'0"

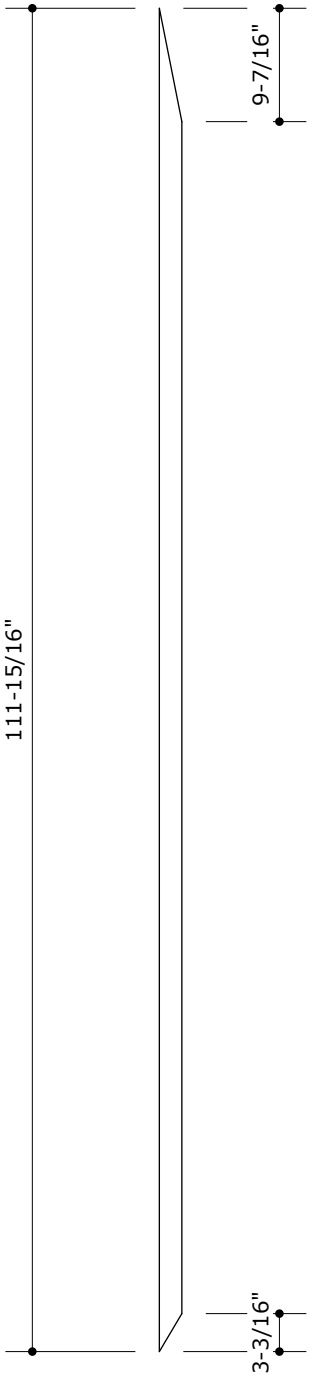

cut out for sheer clamp
31-1/2"
7-1/2"
4"
4"
4"
4"
4"
4"
4-1/4"
4-3/8"
cut out for carlin
3-1/2"
1/4"
1/2"
15/16"
1-7/16"
2-1/16"
2-7/8"
3-3/4"
frame 5
18-13/16"
3-1/2"
5-3/16"
3-1/2"
3-1/2"
6-1/2"
9/16"
limber holes
cut out for keelson
6-1/2"
24"

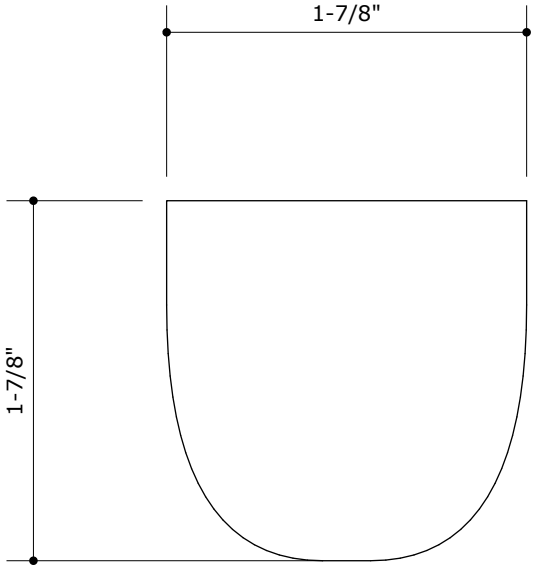


This is the starboard panel, viewed from the outside of the hull

Side Panel

Scale 1/2" : 1'0" | 38

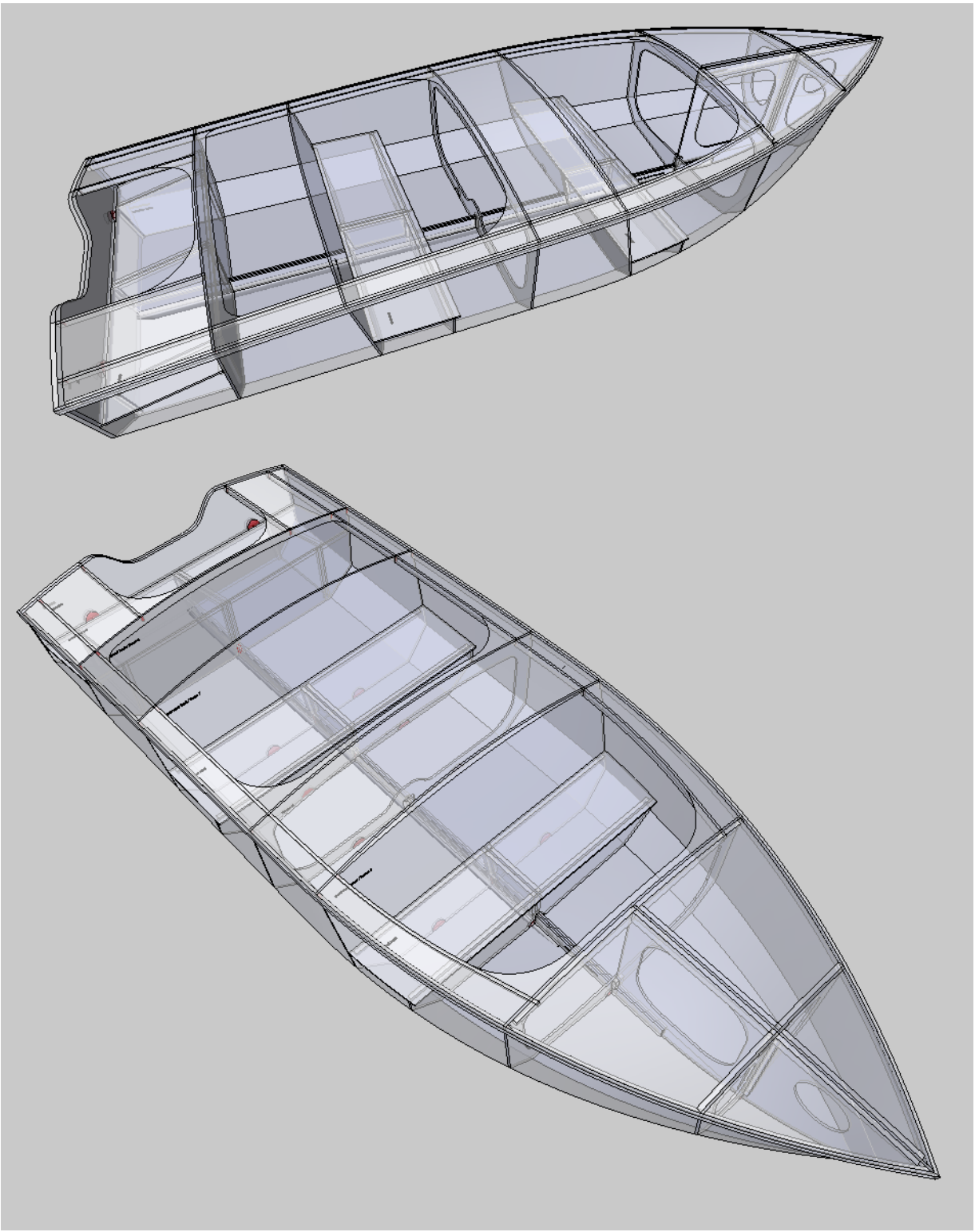




Full Size Section

Bottom Stiffener / Skid

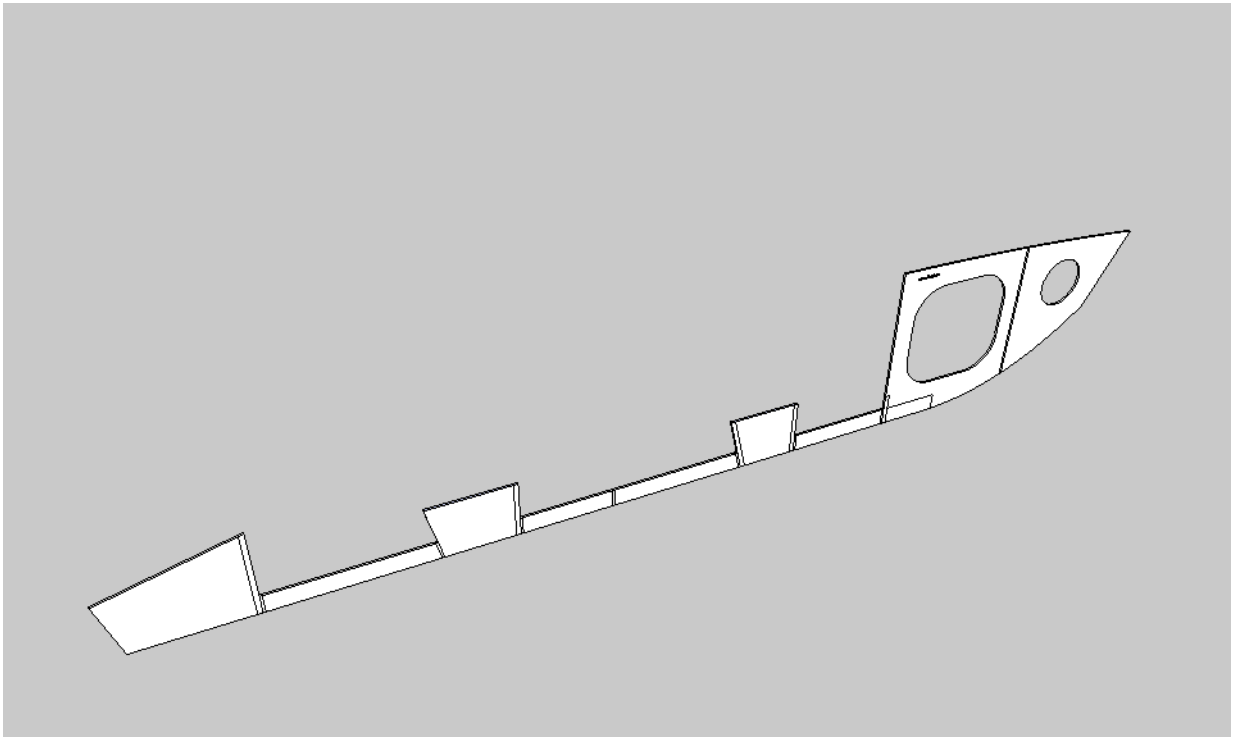
Scale 3/4" : 1'0"



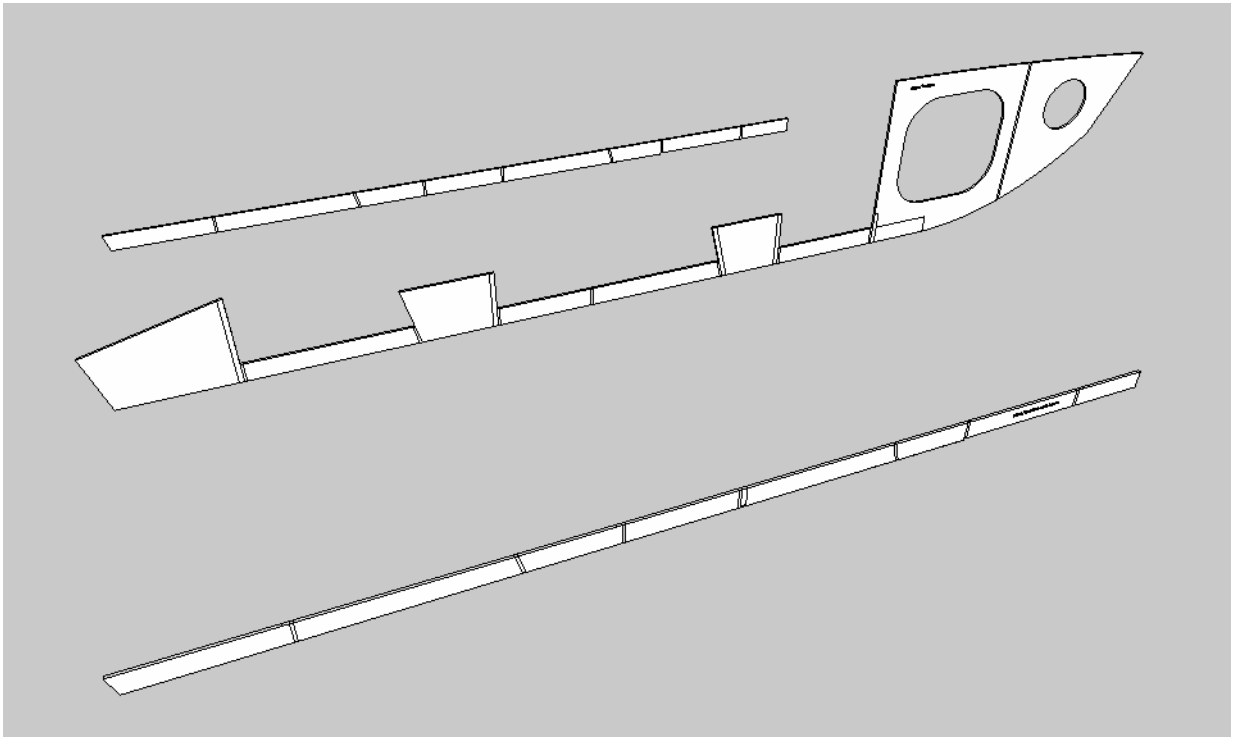
The Construction Sequence

The following pages give a step by step construction guide.

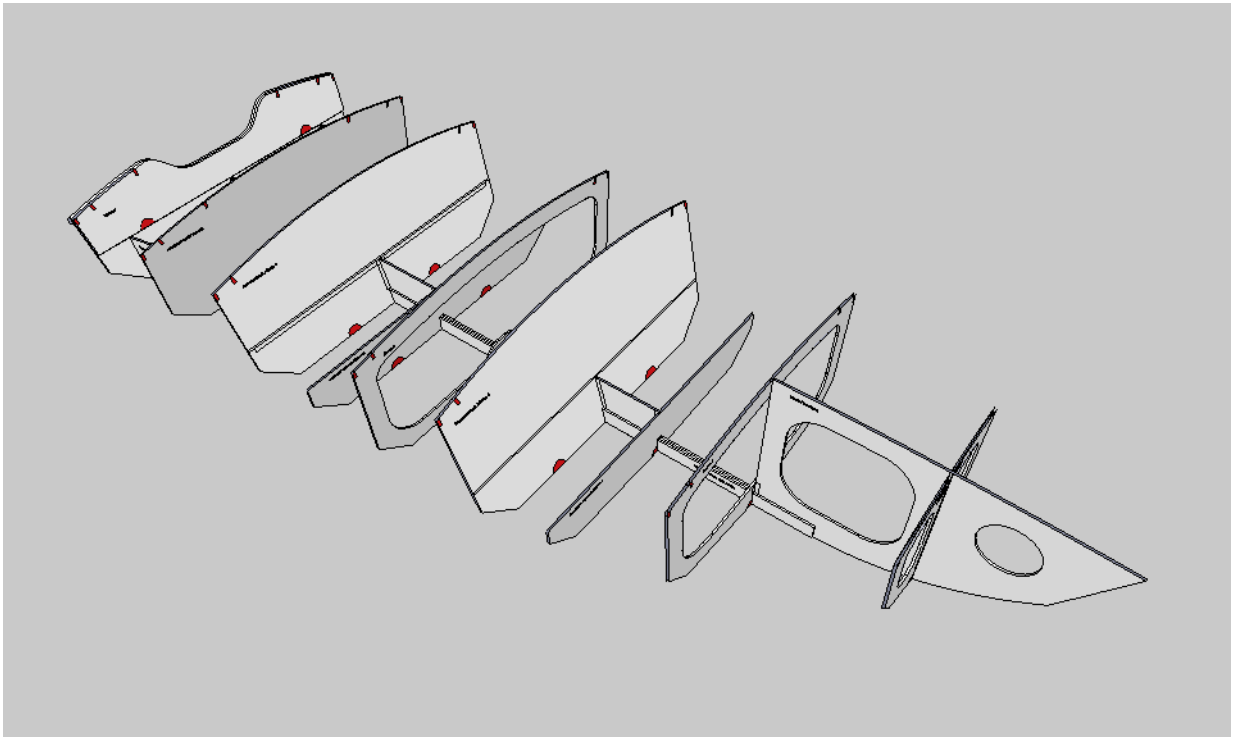
Please note that the drawings do not show a tolerance for fitting components together. Adjustments should be made accordingly when cutting out.



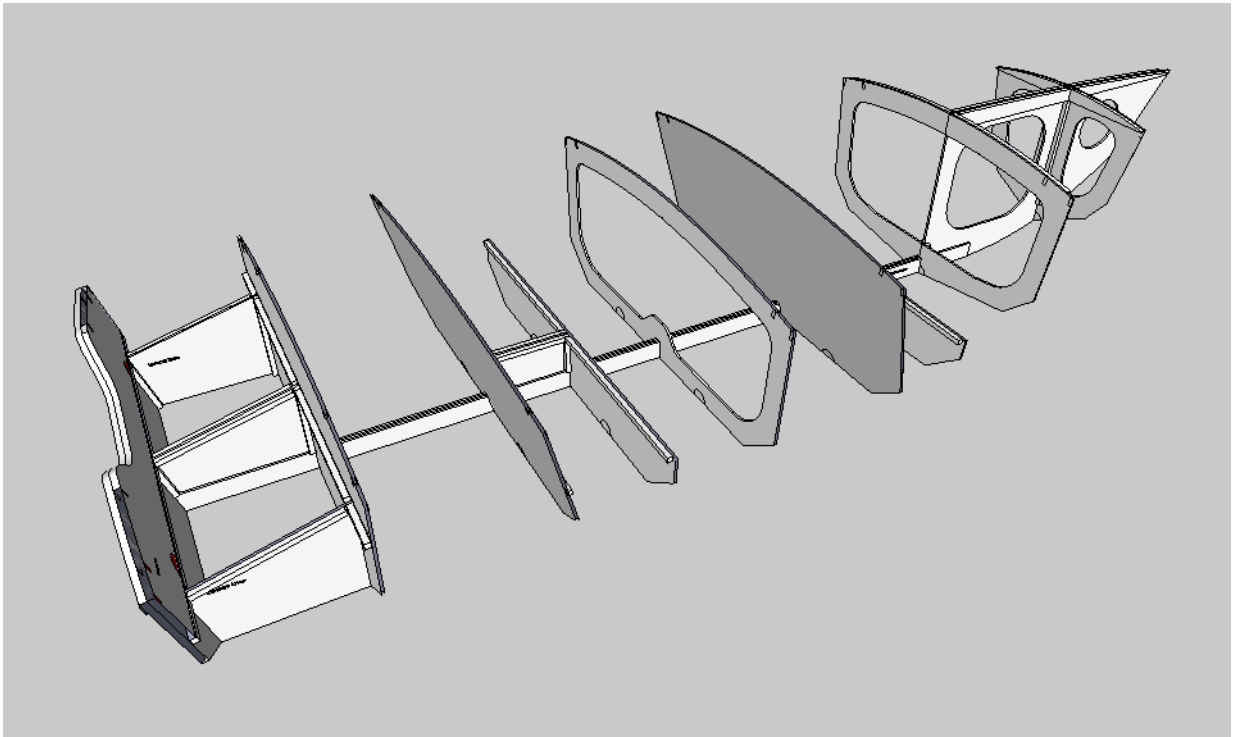
Cut out the stem / keelson



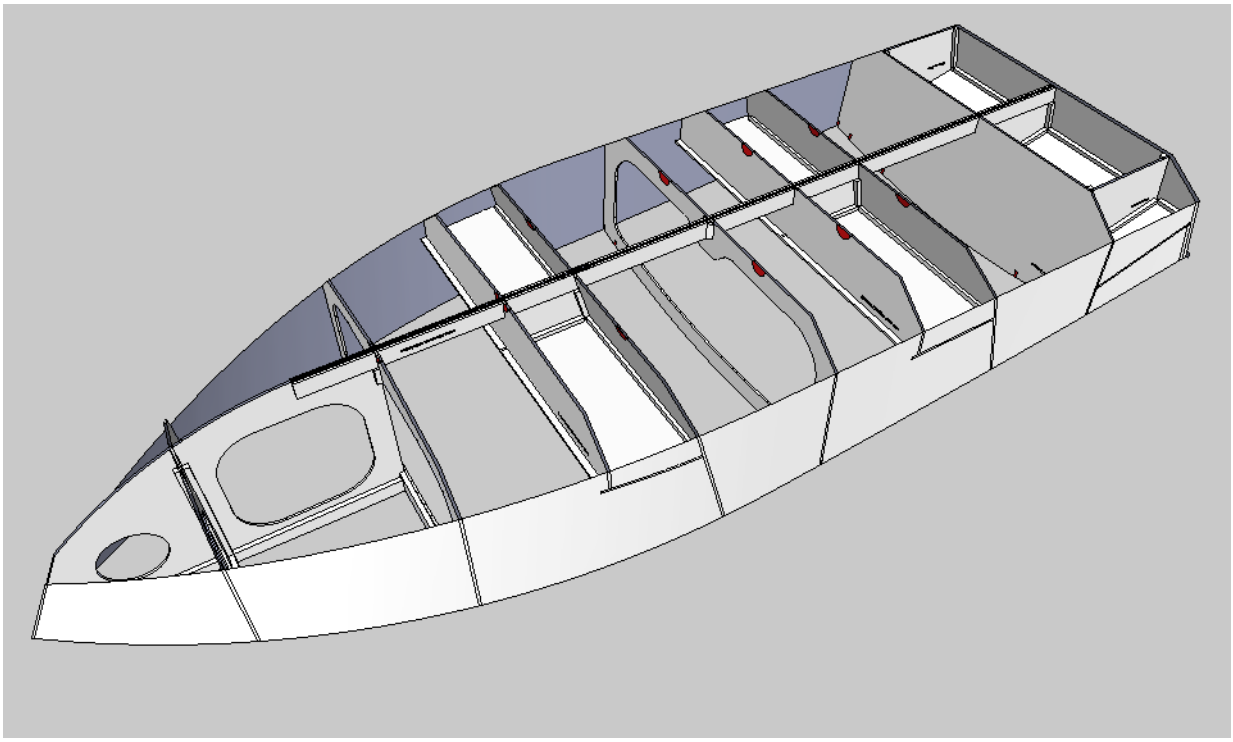
Fix the side supports



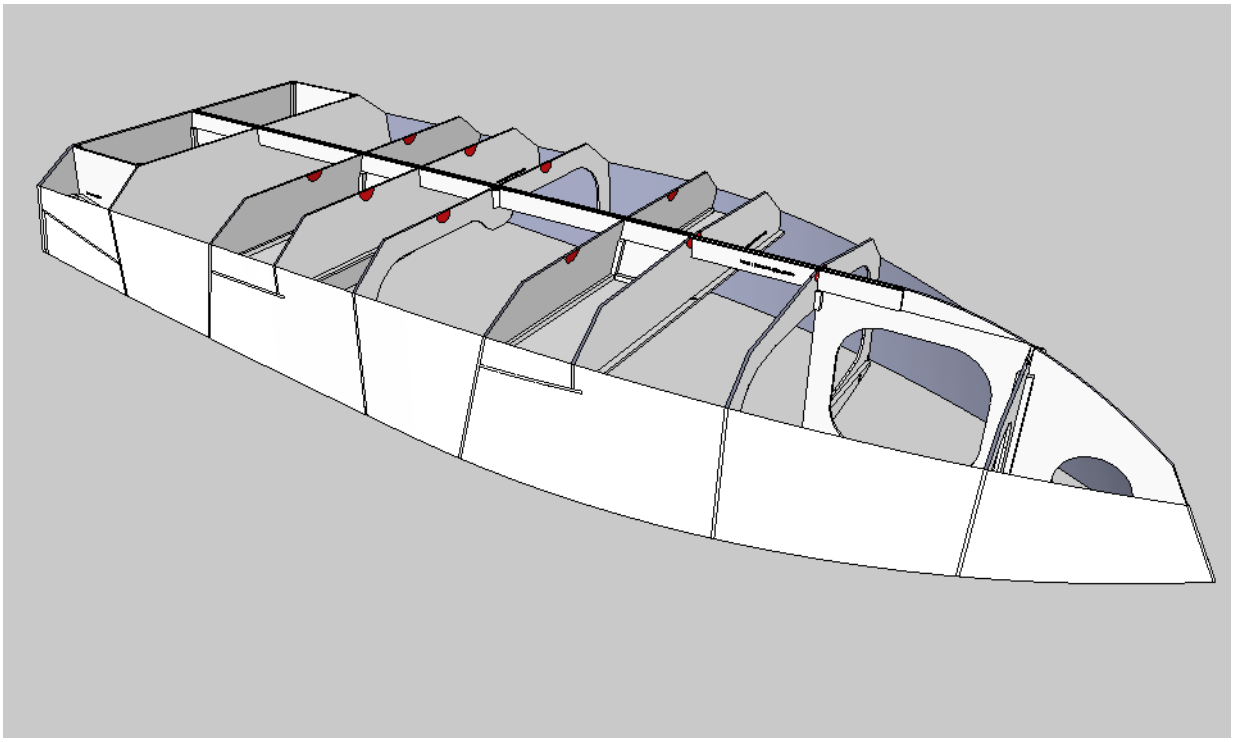
The completed inner structure / framework.



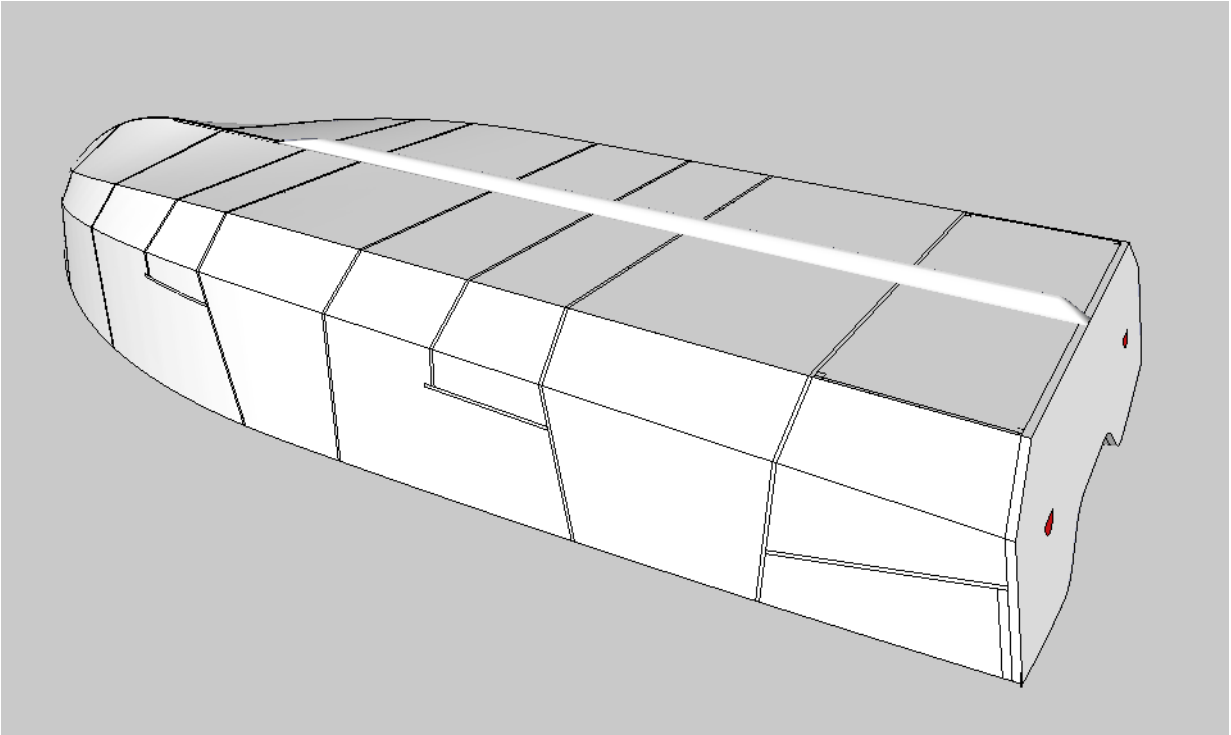
Add battens.



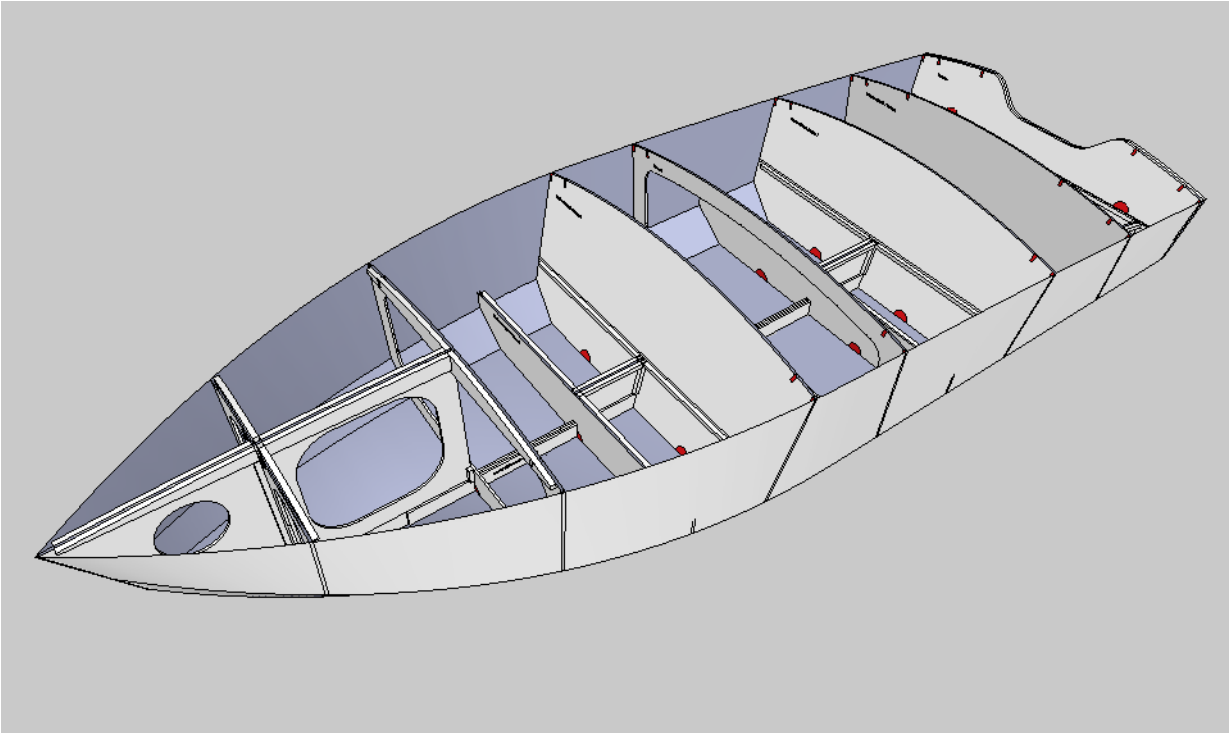
Now fix the side panels.



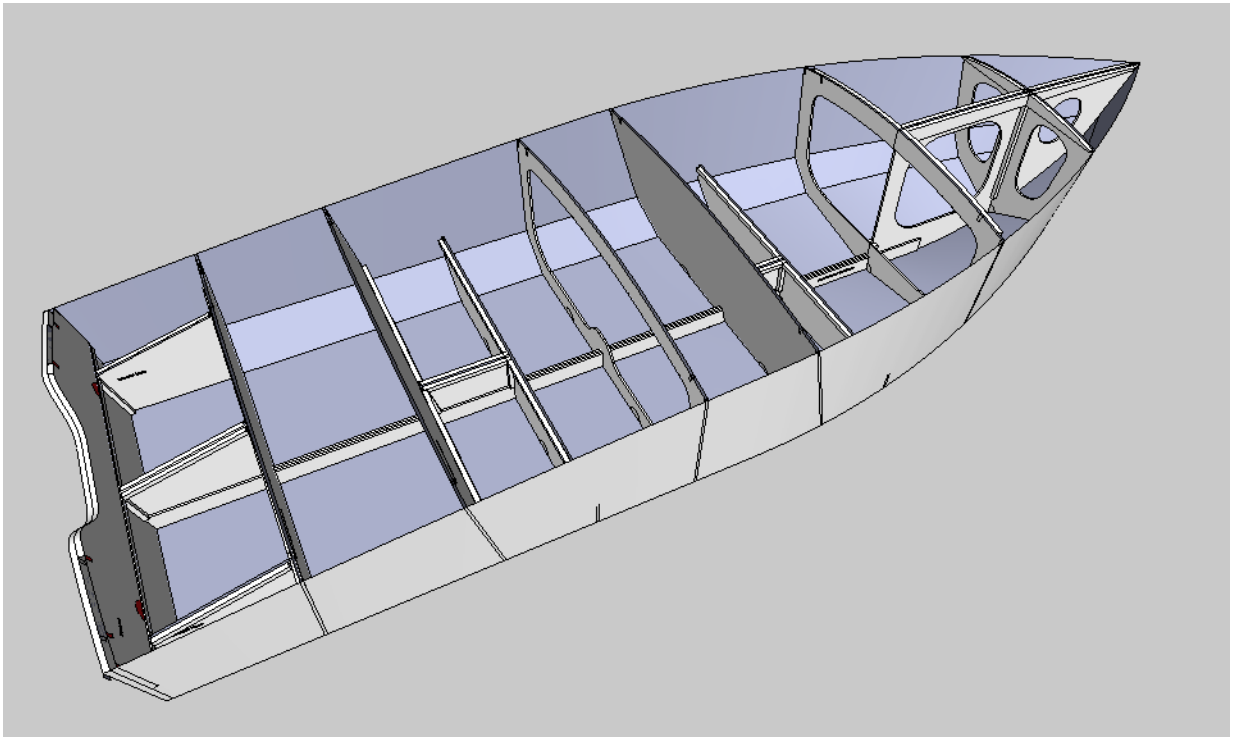
Another view.



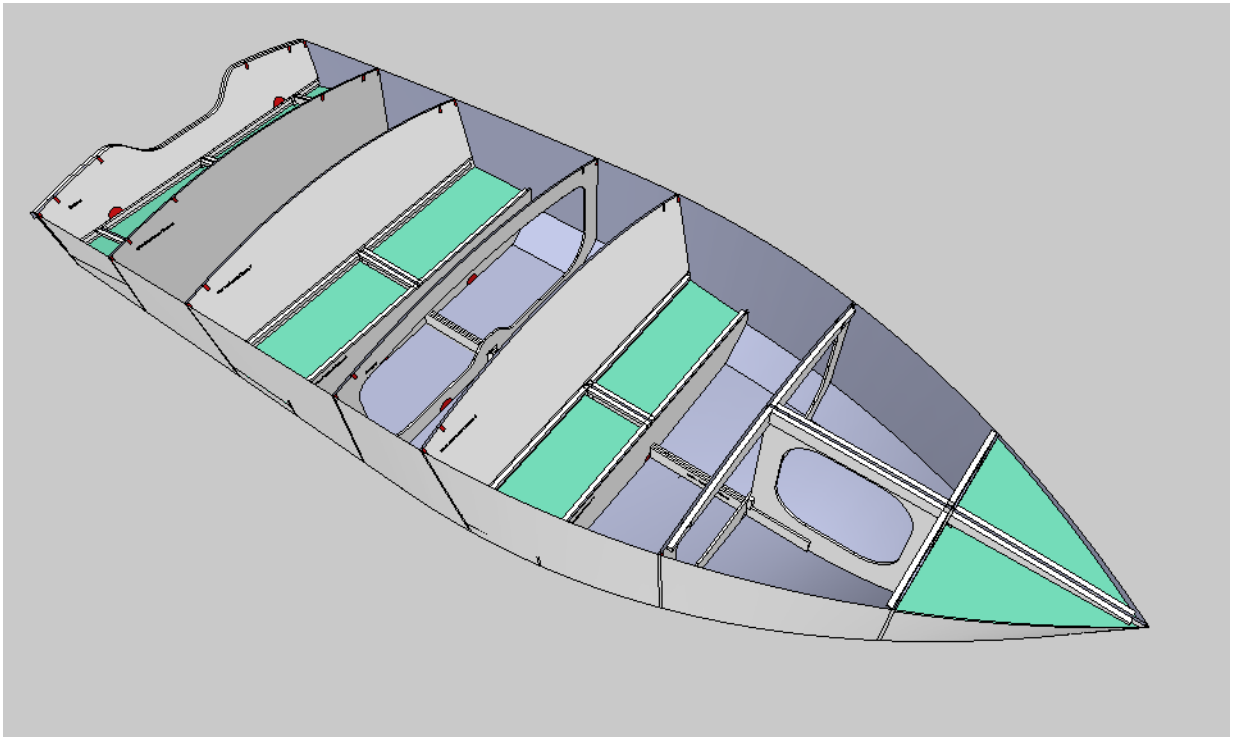
This view shows the bottom stiffener / skid which should be fixed after the bottom has been glassed.



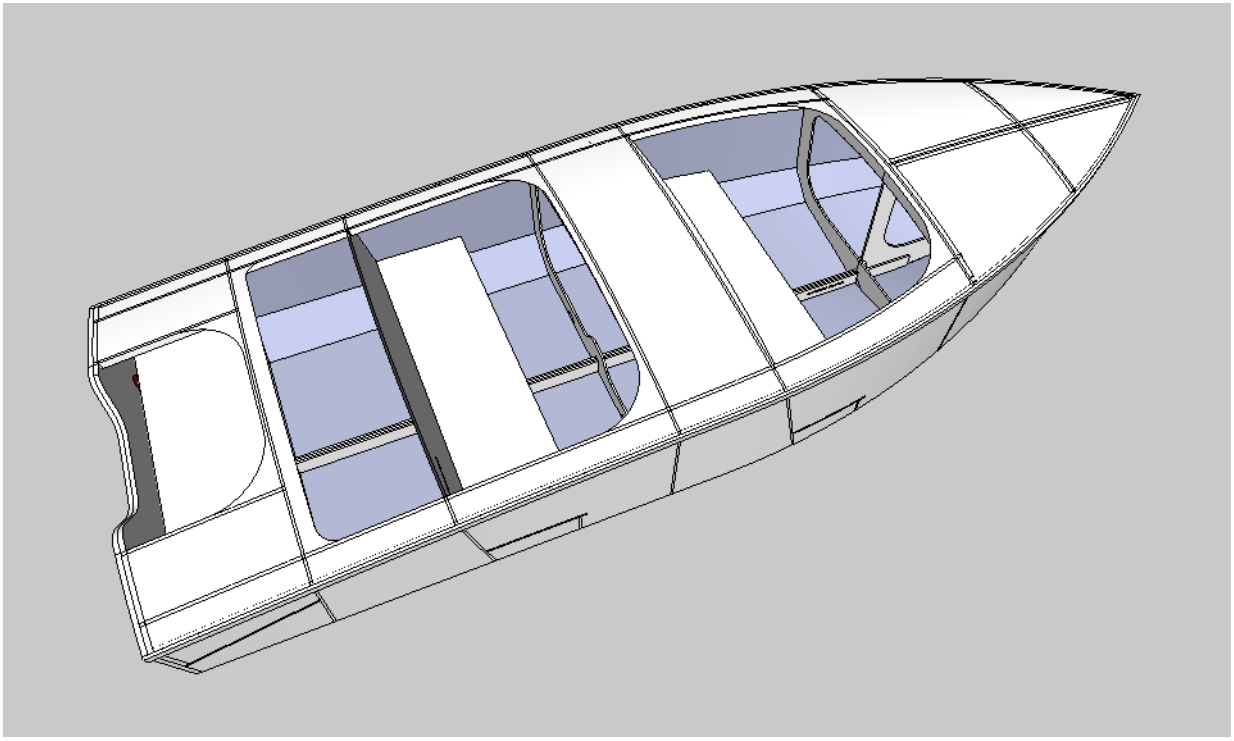
Now you need to make epoxy taped joints between all frames and the hull panels.
After that the hull is turned over again and covered with glass cloth and epoxy resin.



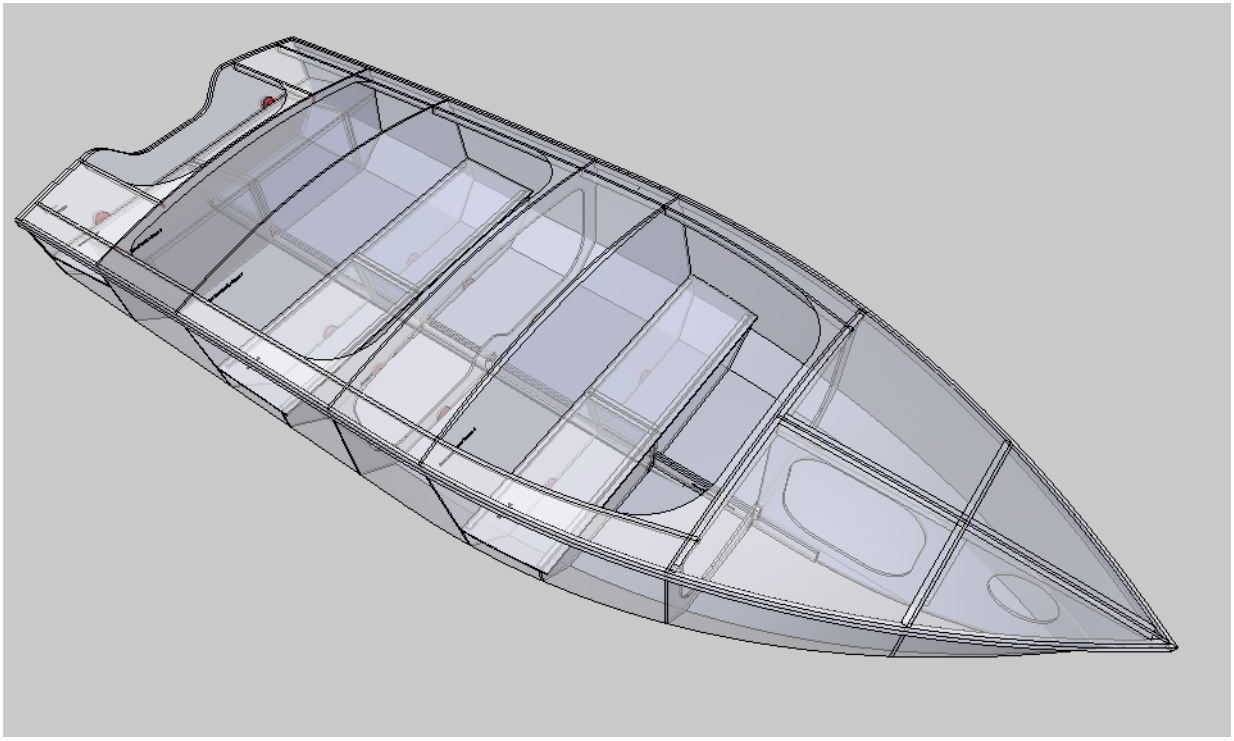
Here's another view.
Now is a good time to paint the inside of the hull.



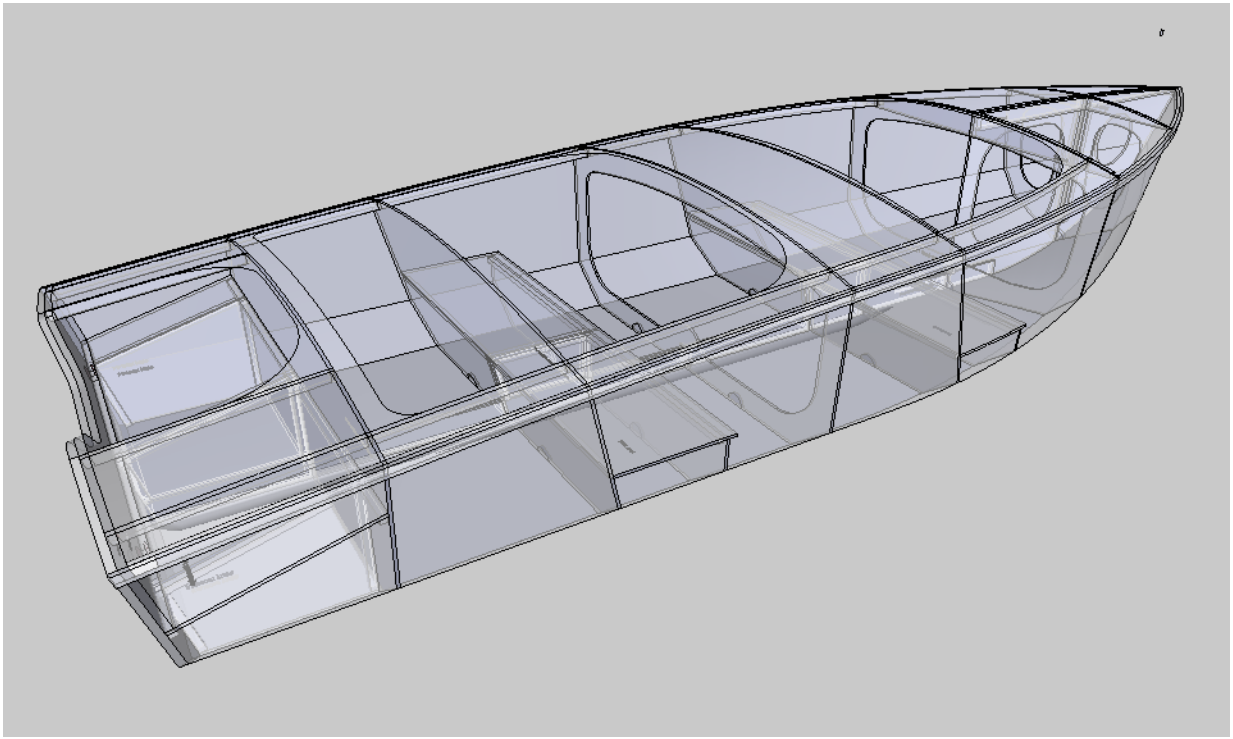
Add flotation.
Here it's shown under the seats, splashwell and in the bow section.
You may wish to use part of the space beneath the seats for storage and the fuel tank.



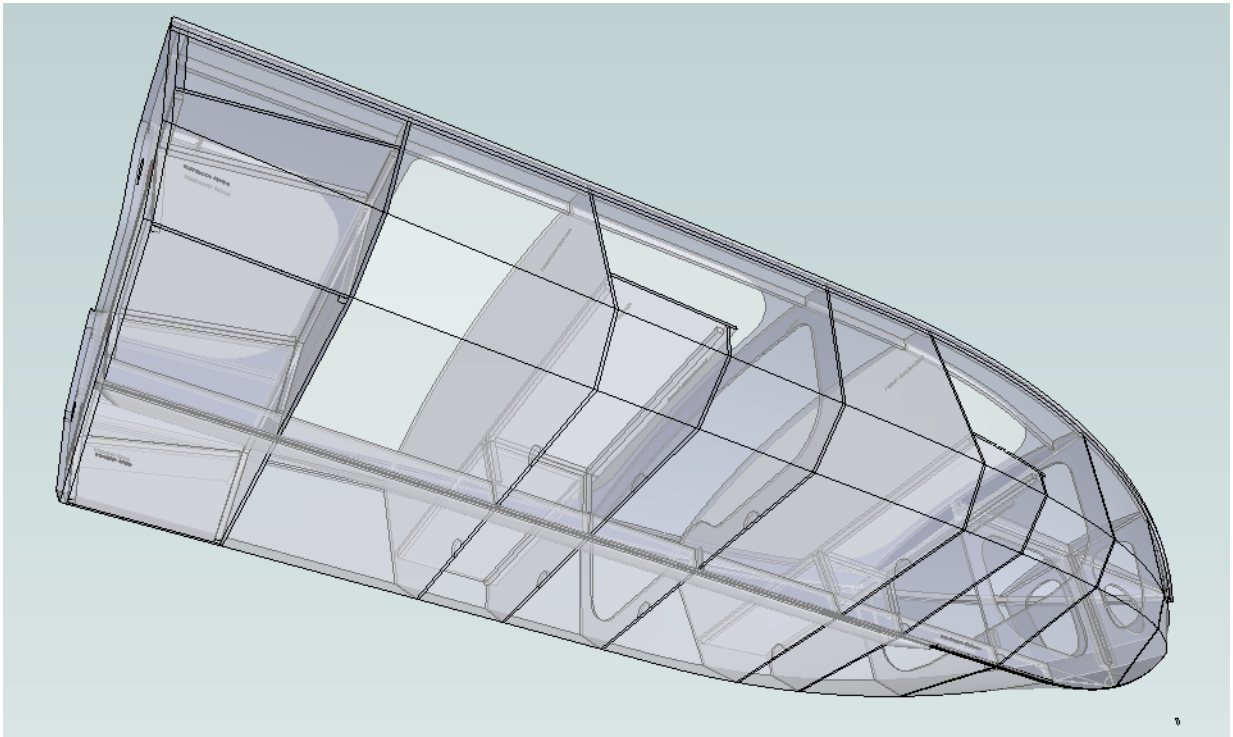
Here's another view.

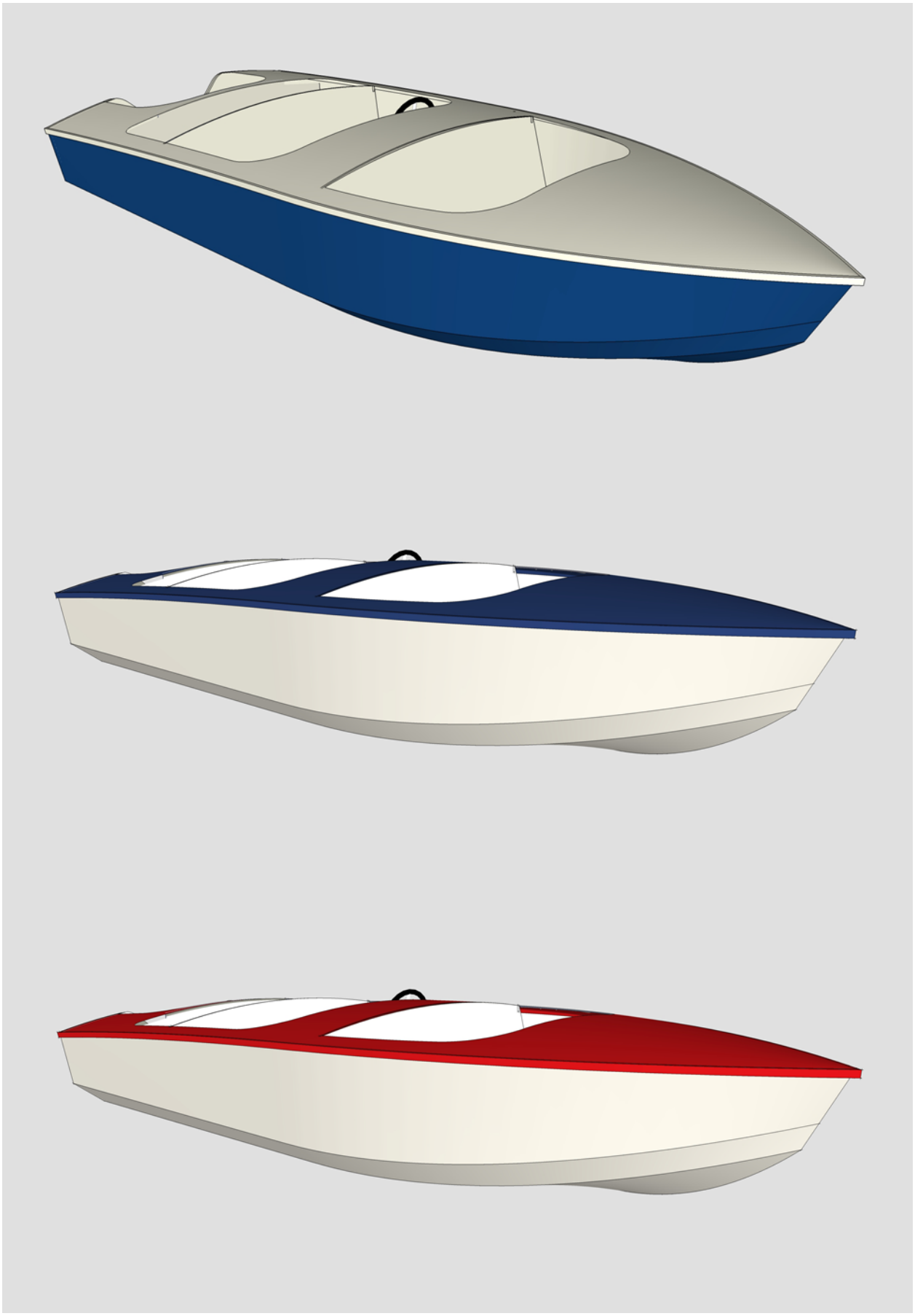


And an X ray view.



More X ray views.





And some colour schemes.