Skoota 24

By Woods Designs

www.sailingcatamarans.com

Introduction

Power catamarans offer many significant advantages over monohull power boats.

- They are safer, due to their twin engines, high stability and self draining cockpit.
- They offer low wake and much improved fuel economy.
- They are comfortable under way with no slamming or broaching in waves and have excellent handling in a seaway while being very maneuverable in harbour.
- They do not roll when fishing or at anchor and are easy and safe to beach.
- They have more deck and interior space for a given length, not just because of their wide beam, but also because they have an essentially rectangular living space.
- Thus they do not have to be as big as a monohull to give the same interior room, performance and safety.

Interior

Skoota's short length helps keep costs and trailing weight down. (There is no point in having a trailable boat to save mooring fees if you need to buy a bigger car to tow it). Furthermore, not every country has the big wide roads like those found in North America.

It is a centre cockpit design, so that everyone in the family can have some essential privacy. The aft cabin contains a 6ft 6in x 4ft double bunk for the parents, while the saloon has a dinette arrangement and thus two single bunks (each 6ft 6in x 2ft) for children in addition to space for a stove, counter top and sink. There is 4ft 6in headroom in the forward cabin (4ft in the aft cabin) with the hatches closed. With hatches open the forward cabin has 6ft headroom (5ft in the aft cabin).

The cockpit tent and bimini are not shown on the drawings, but are an integral and essential part of the design. Not only does the tent give another “room” with full headroom, but also provides dry, private access between the cabins.

During the day the toilet (portapotti) is used in the aft cabin, but at night it slides out into the cockpit locker so can be used by all on board (assuming the cockpit tent is in use).

The hulls are only used for bulky storage (like an inflatable dinghy), fuel tanks and possibly bait/fish wells. The forward cockpit is a fun place to sit when underway, and, as it is between the bows, is much safer and drier than an ordinary bow rider.

Performance

Most power catamarans are planing boats, with all the disadvantages that the type implies. Furthermore they tend to have a narrow, 8ft beam for trailing, so that many of the advantages of the catamaran form are wasted.

Skoota, on the other hand, uses semi displacement, non-planing, asymmetric hulls. The hulls are finer than those used on a sailing boat, because power boats always have power available to get over the hump speed, so low speed, wetted surface friction drag is less of an issue.

Tank testing has shown that there is significant extra drag caused by wave interactions between the hulls (up to 20% at certain speeds) if the hulls are close together. Thus, Skoota has widely spaced hulls, yet will still fit in a standard 14ft wide slip. The hull asymmetry helps fool the water into thinking the spacing is wider than it really is.

The computer predicts a 12 knot cruising speed at 10mpg using a central 40hp outboard.

Trailing

The boat folds for trailing in the same revolutionary way that has been used very successfully for over 15 years on similar sized sailing catamarans (eg Wizard, Sango).

In simple terms, the trailer is backed down the slip and as the hulls hit the water their buoyancy pushes them up, thus the boat unfolds automatically as it is launched. During retrieval the boat folds, again automatically, with this time gravity doing the work.

The trailer itself is a simple flat bed with T-section supports to match the cuddy bottom. Flexible mudguards are used to help reduce overall height. A 4 wheel trailer is recommended. Final trailer details will depend on the country of use.

Construction

Not everyone can build complex shapes, but everyone can build in flat panels. So for mass appeal Skoota is built using conventional plywood-stringer-frame construction with all surfaces glass/epoxy sheathed. Fortunately this building method is still the cheapest and quickest.

Because the boat is modular, it can be built in an ordinary garage (lengthened as necessary to build the hulls). Building in sections also has a psychological advantage, especially important for amateur builders, which is that it is quick to build each section, thus progress appears to be fast. Furthermore there is little fairing to do, just smoothing the glass joints.

Conclusion

The Skoota 24 offers: stability, low wake, the ability to maintain high speeds in rough conditions, superb directional stability, a self-draining cockpit, fully buoyant hulls for safety, fuel-efficiency, lots of interior space, low speed maneuverability and the security of twin engines.

A clear winner by anyone's standards.

Materials List and Weight Estimate

6mm ply 33 sheets (8ft x 4ft sheets of Gaboon/Okume)
9mm ply 9 sheets
Timber 48kgs
Epoxy/fastenings 53kgs
Glass (sheathing and joints) 21kgs
Engines, tanks/controls 155kgs
Safety gear 43kgs
Crew (4 people plus personal gear) 400kgs
Fuel 52kgs

Total Approx 1180kgs

Hydrostatics

LOA 7.52m
LWL 7.25m
BOA 3.95m
BWL (per hull) 0.5m
Draft (hull) 0.27m
Freeboard (hull max) 0.878m
Cp 0.688
VCG 0.75m above WL
LCB 4.37m aft of stem
WSA 10.05sqm
Disp empty 680kgs
Disp loaded 1190kgs

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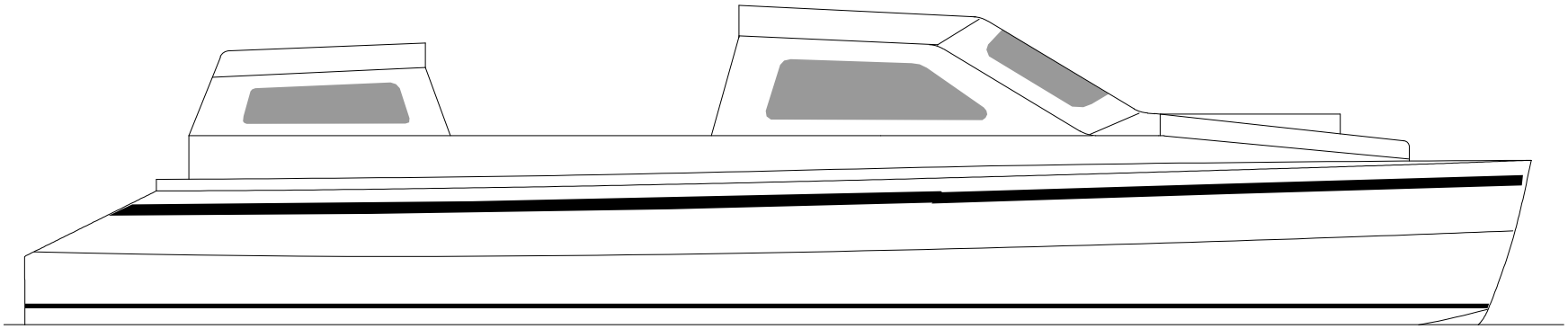

LOA 7.52m
LWL 7.25m
BOA 3.95m
BWL 0.5m

Empty Displacement 680Kgs
Loaded Displacement 1190Kgs

Engine HP) 1 x 40hp
Cruising Speed 10 - 14 knots
Fuel Consumption 10 mpg at 10 knots

Headroom 1.35m (plus lifting hatches)

Berths 2 single, 1 double

24ft Trailable Power Catamaran
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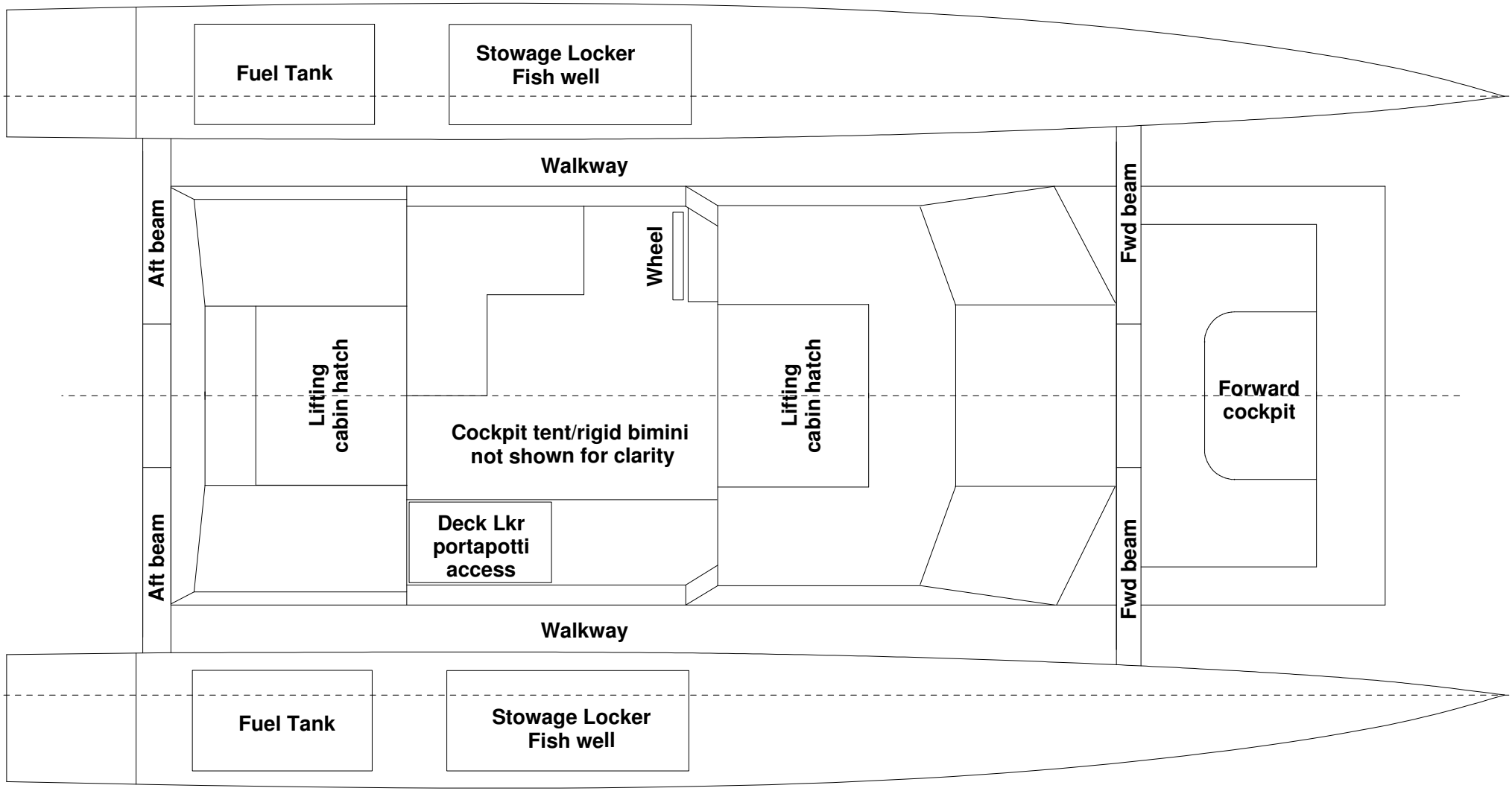

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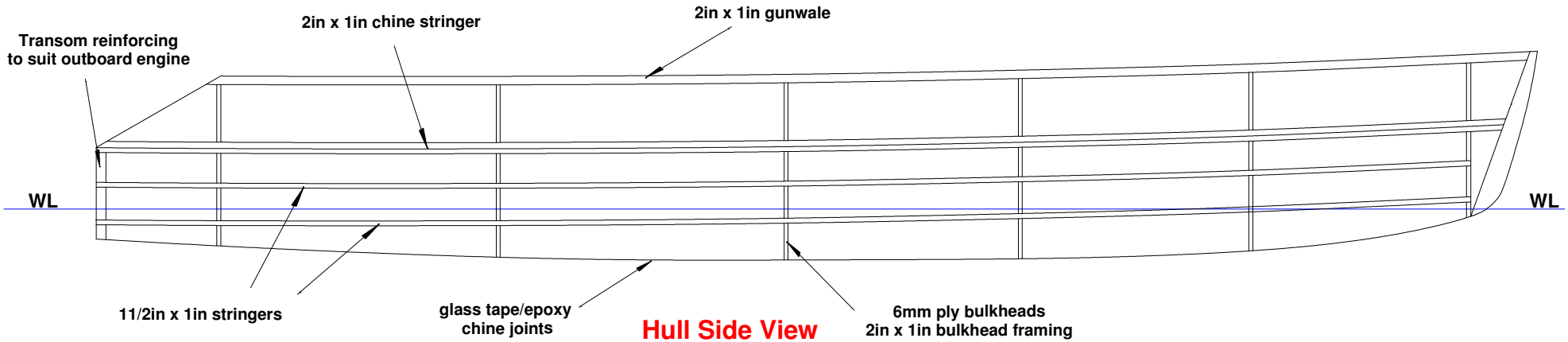
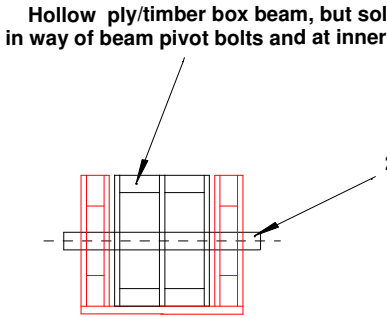
Deck Layout

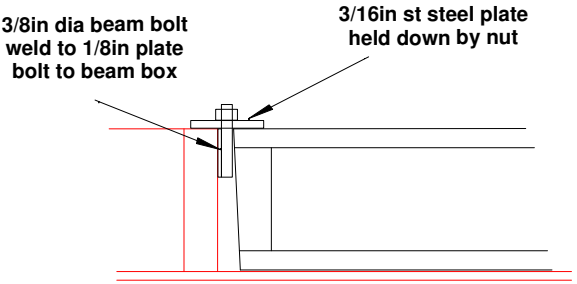


Hull Side View



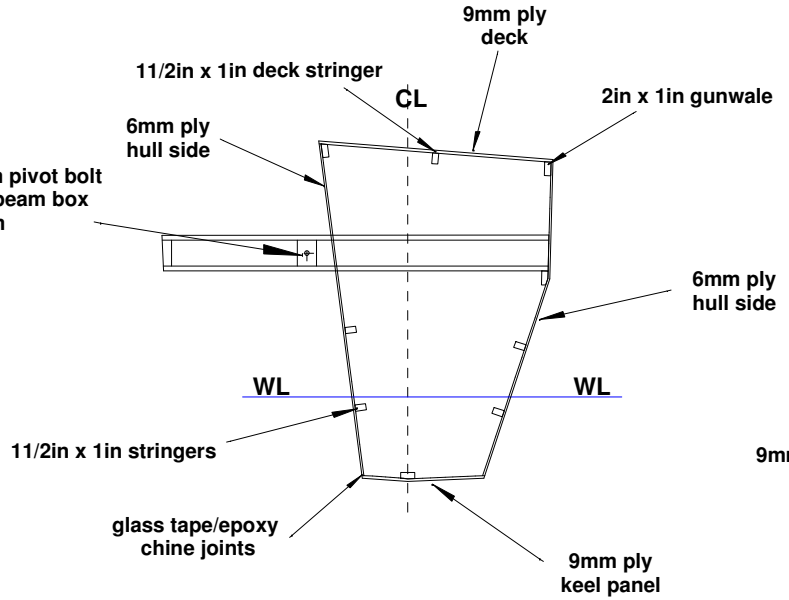
Beam in black
Beam box in red

Typical Beam Connections at pivot bolt

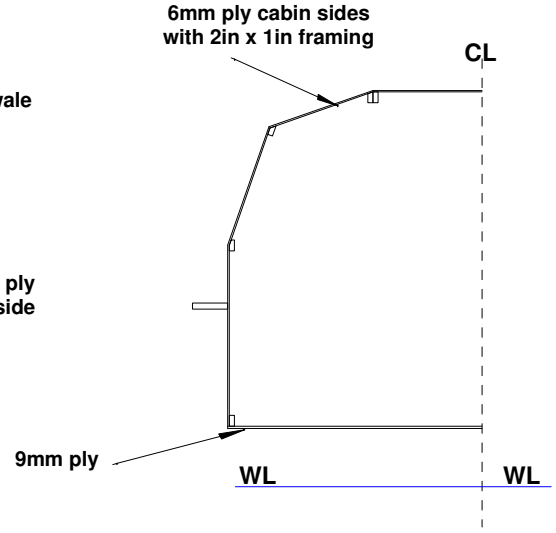


Beam in black
Beam box in red

Typical Beam Connections at inner end beam



Typical Hull Cross Section



Typical Cuddy Cross Section

**NOTE: All glue to be epoxy,
All inner ply surfaces to be epoxy coated
All outer ply surfaces to be sheathed with
6oz (200g) cloth**

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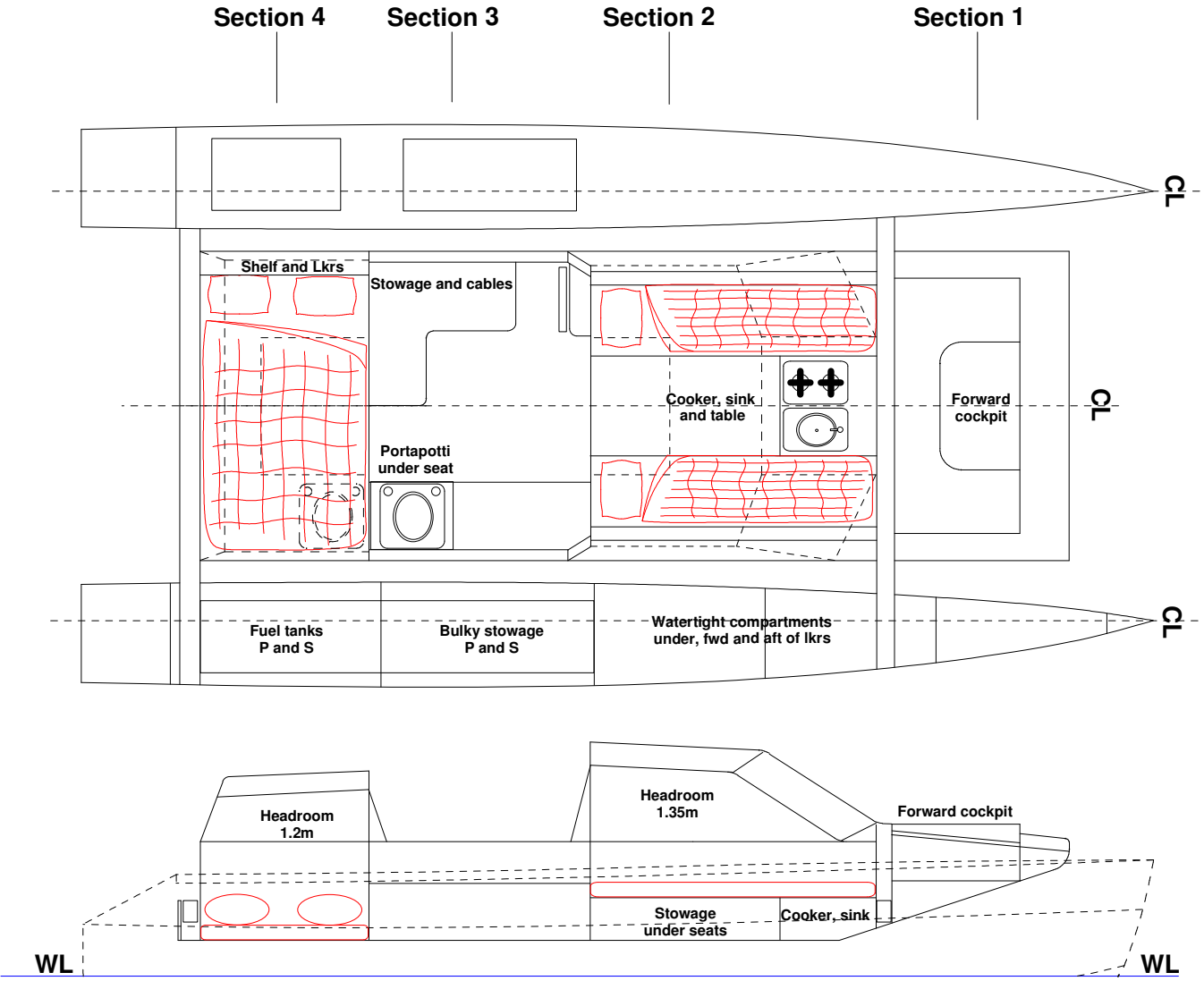
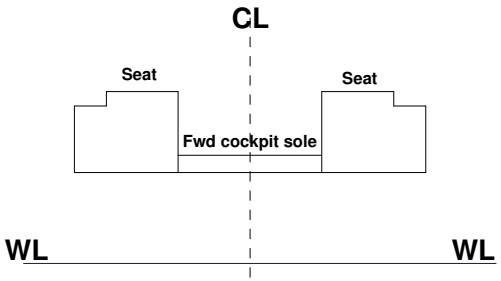
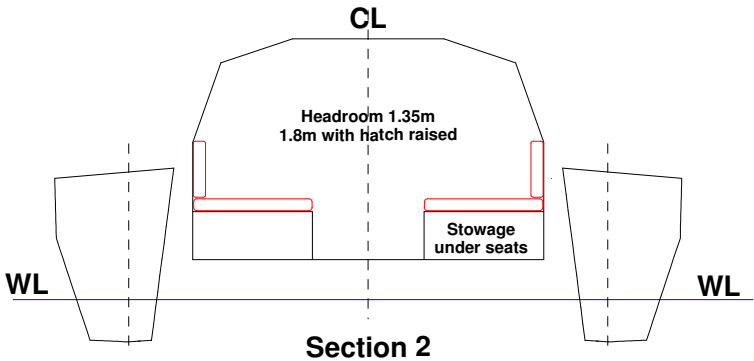
Typical Construction Details





Section 1



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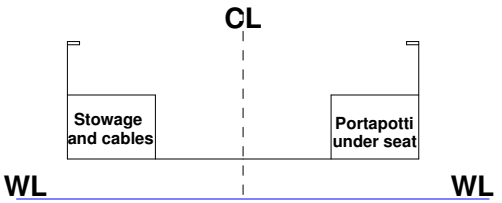

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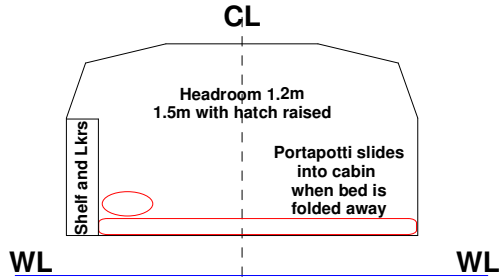

Section 4

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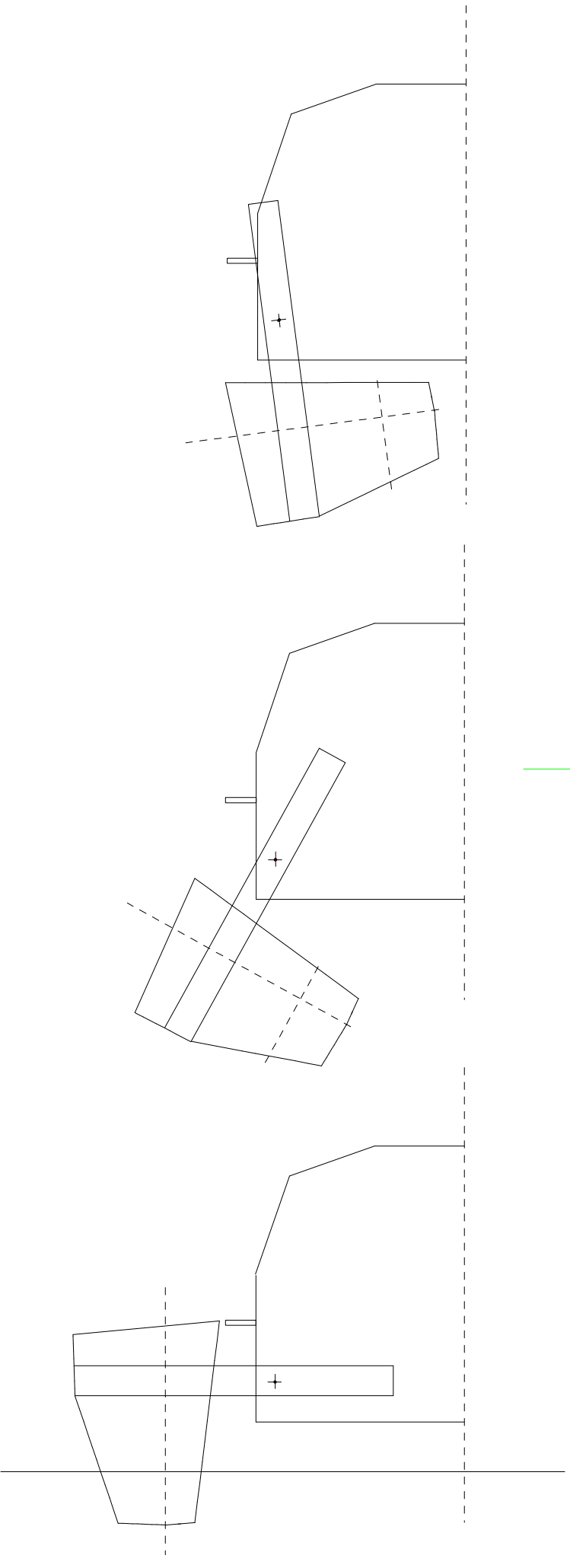
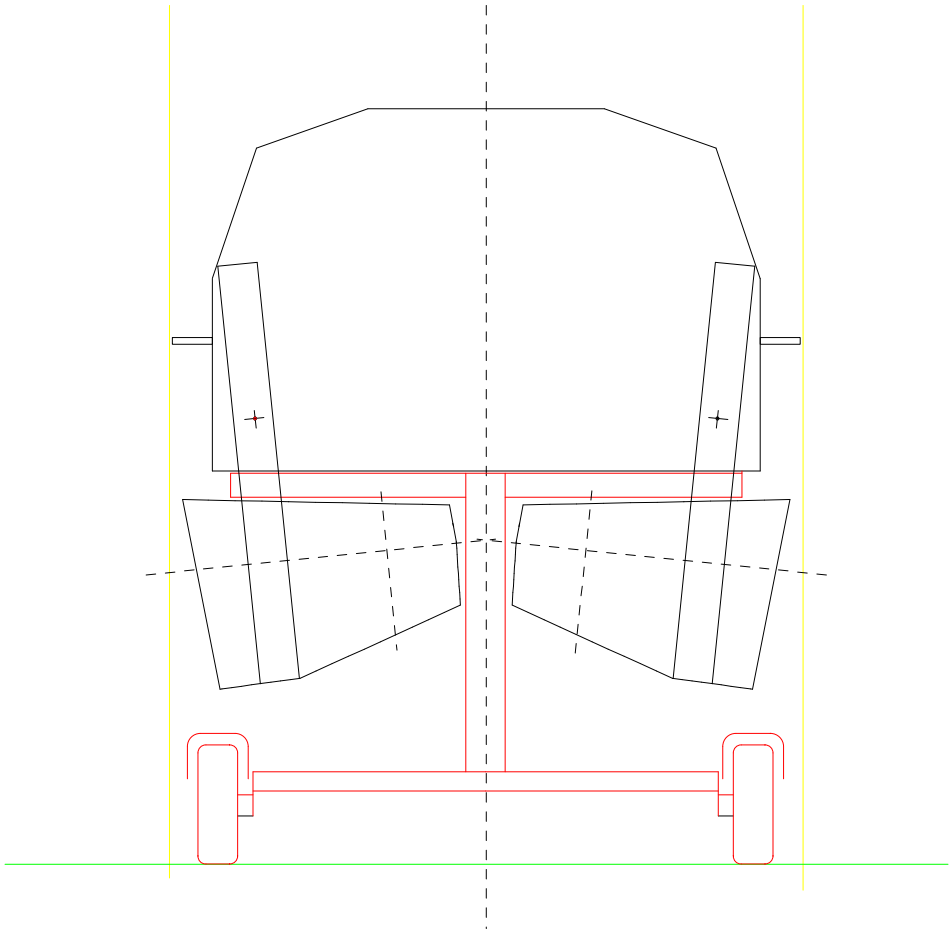
General Arrangement Interior





2.9m (9ft 6in) approx from road to top of cabin
Trailer shown in red
8ft width in yellow

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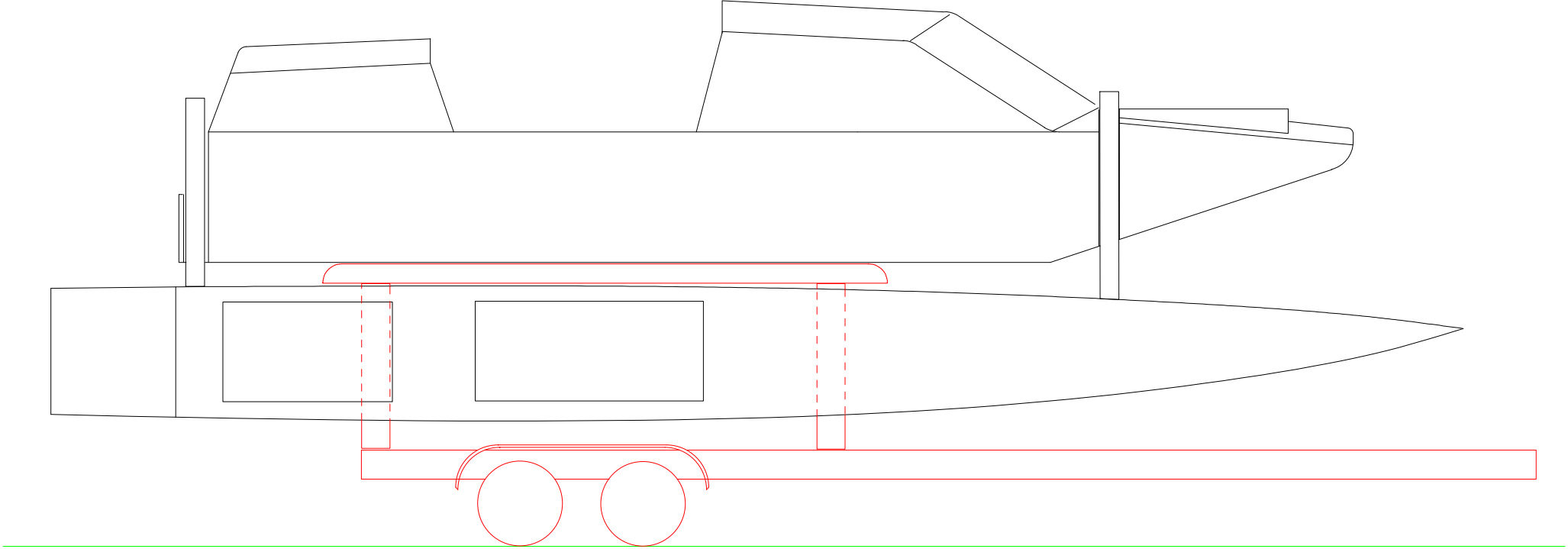
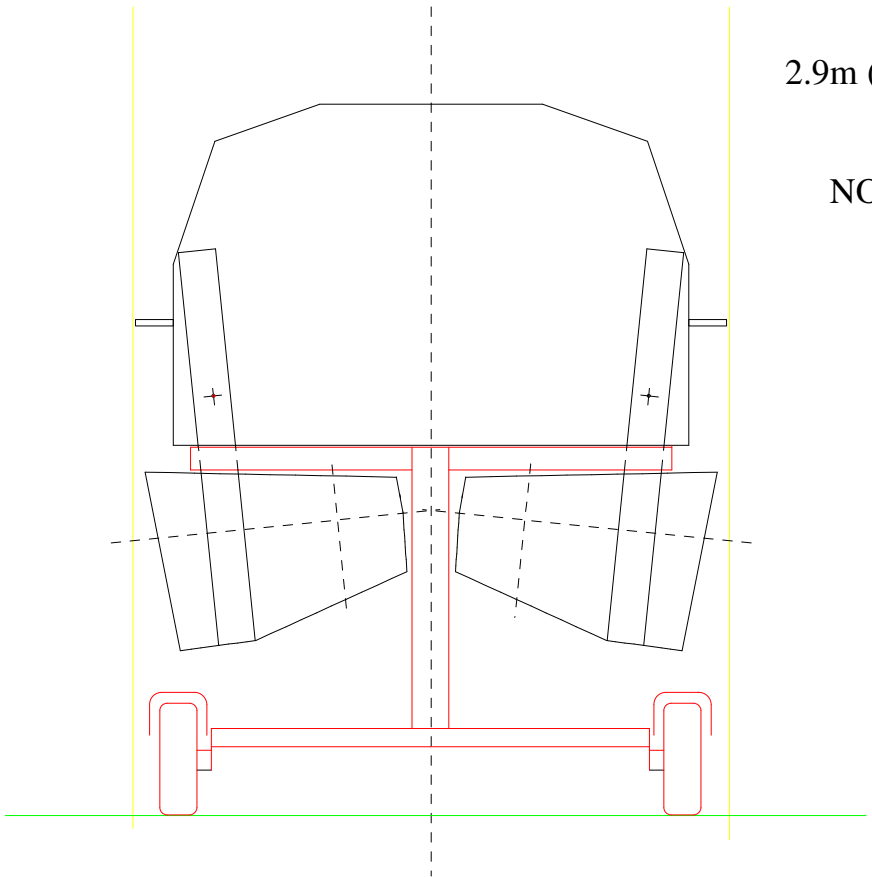
Hull Folding System





2.9m (9ft 6in) approx from road to top of cabin
Trailer shown in red
8ft width in yellow
NOTE: Trailer design depends in part on regulations in country of use

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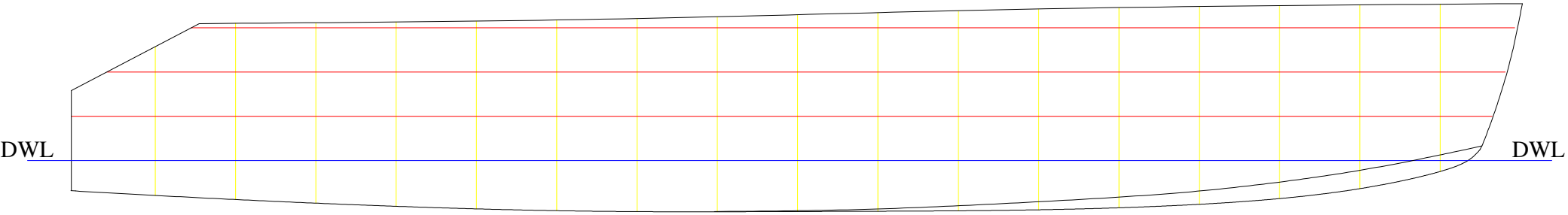
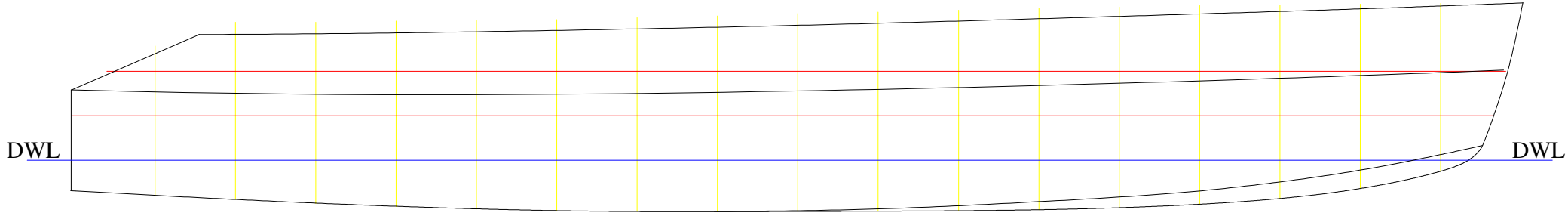
Basic Trailer Concept

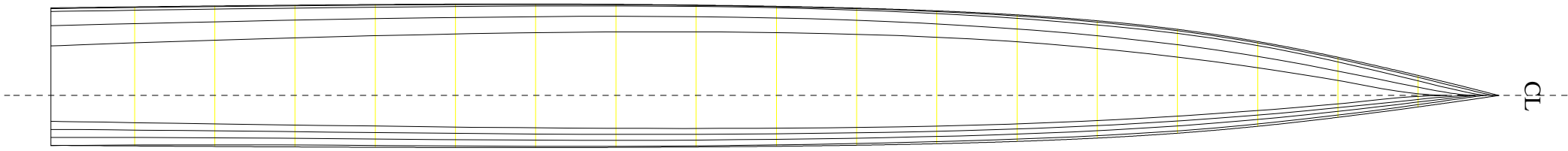


Inner hull side



Outer hull side

Outer hull side



Inner hull side

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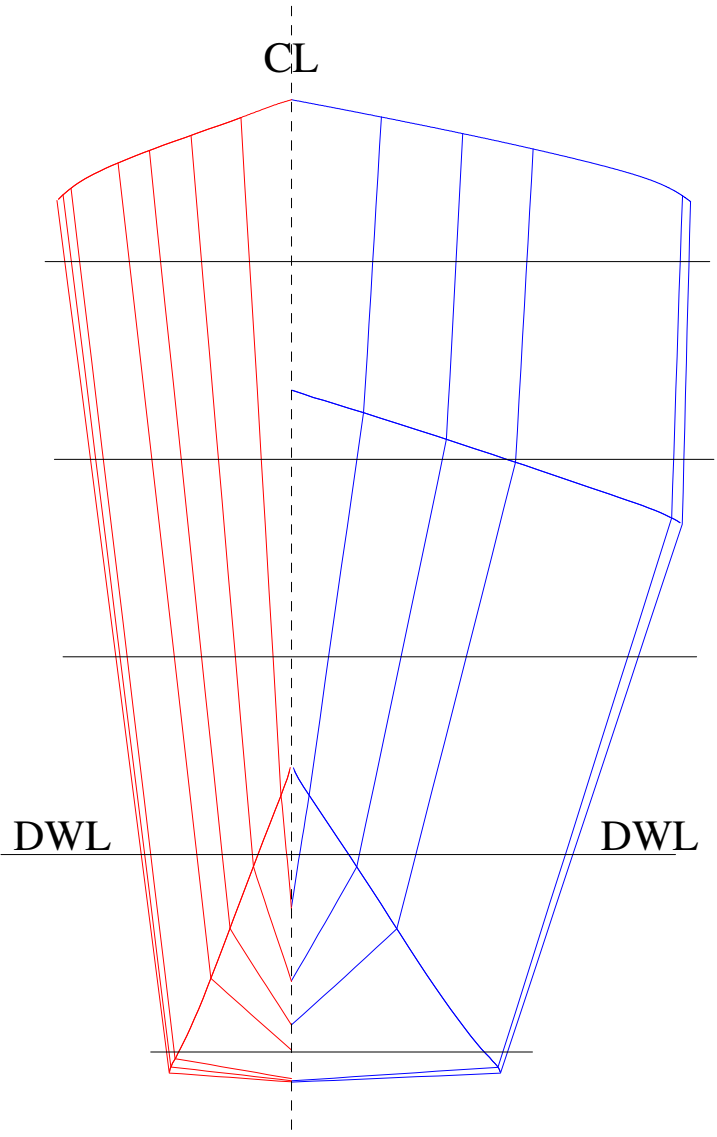
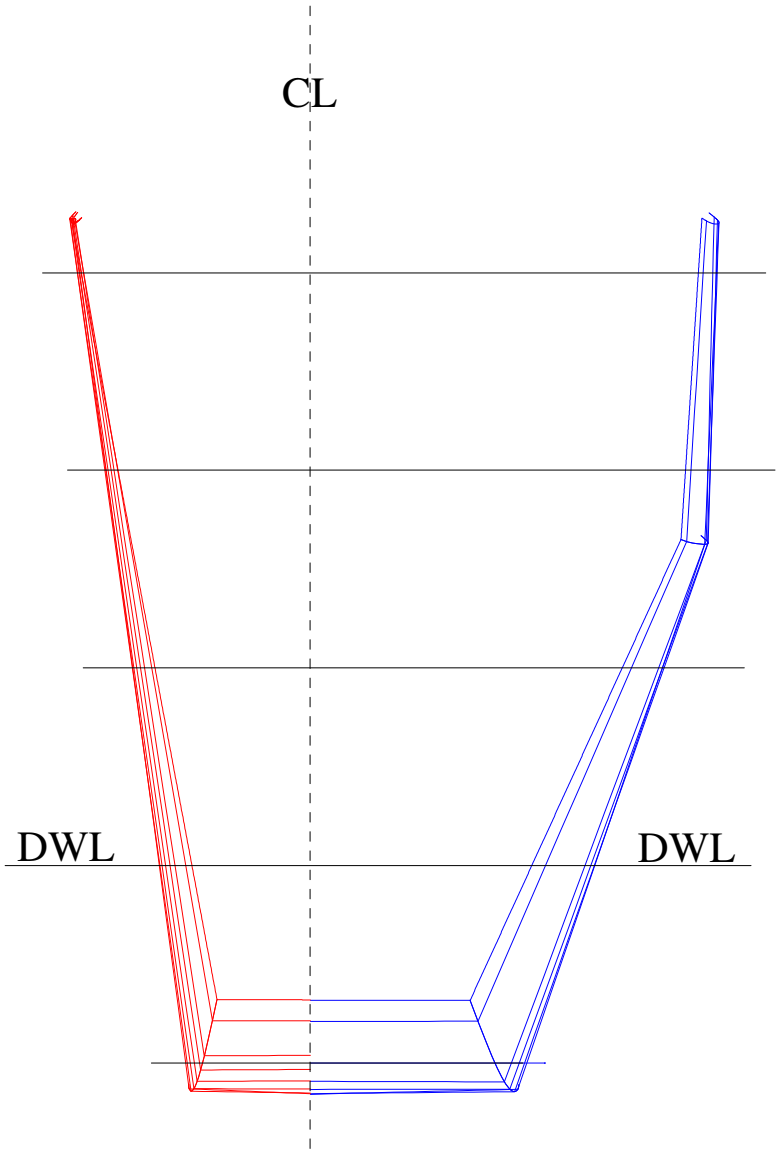
Lines Plan



Forward Sections



Aft Sections

NOTE: Red lines are inner hull side
Blue lines are outer hull side
NOTE: not all frames ares shown on this study plan!

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Body Plan