47’ CATAMARAN

THIS NEW 47’50’ CRUISING CATAMARAN DESIGN AGAIN AVAILABLE FOR BUILDERS.
IT IS BUILT IN FOAM/GLASS WITH TRIAXIAL ROVING.
MY LATEST THINKING IN SAFE, COMFORTABLE CRUISING IS EMBODIED IN THIS DESIGN.
PLANS COST $6,000,.
STUDY PLANS ARE $100.
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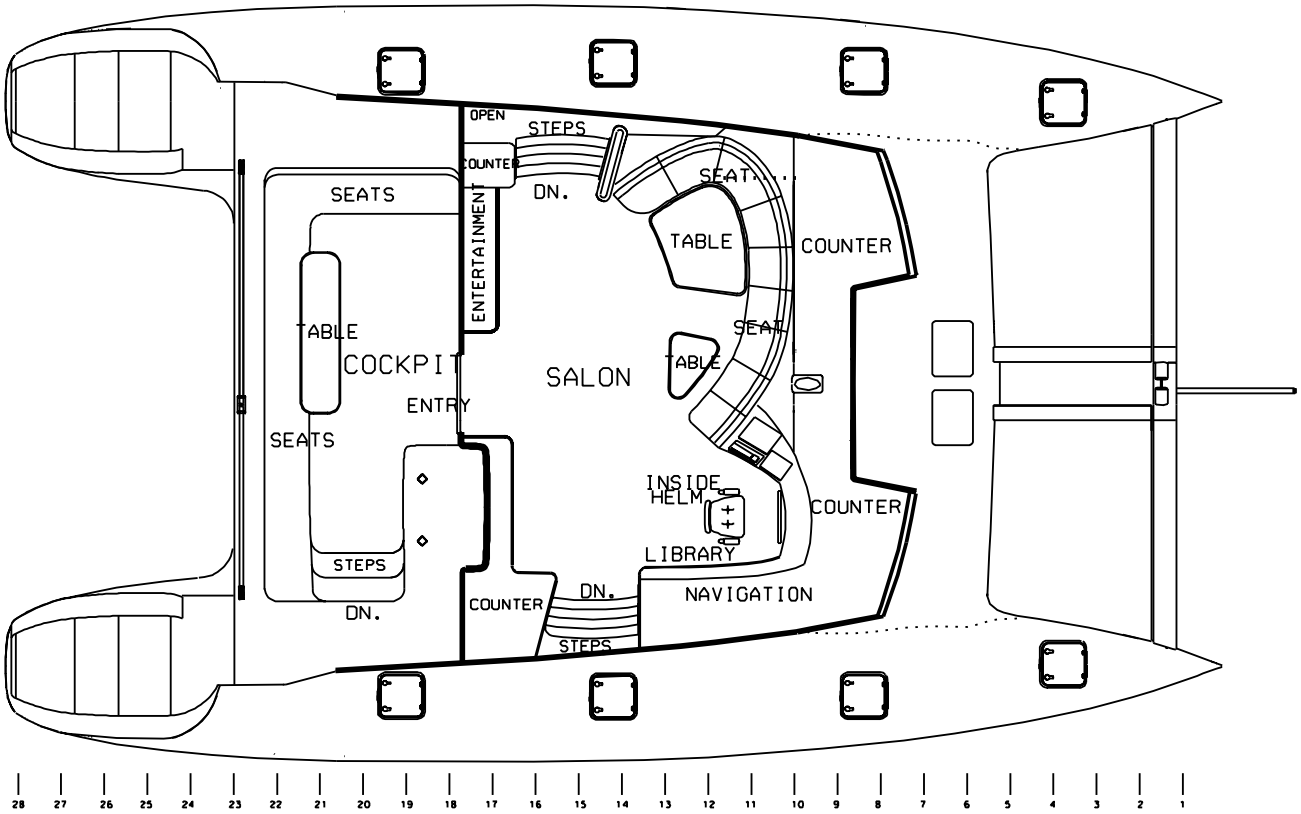
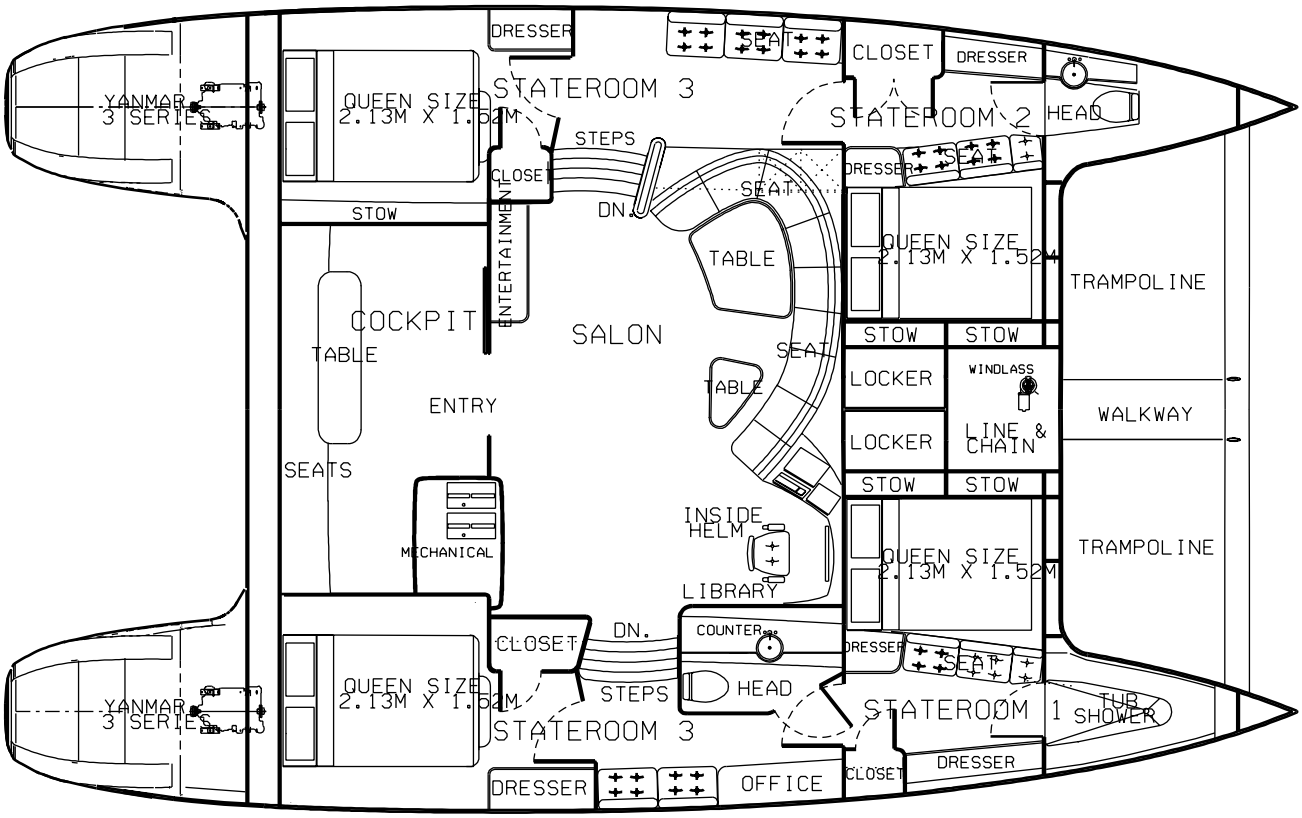
courtesy randy hogan

LOA		46'-6"
		14.17M
BOA		29'-0"
		8.84M
DRAFT		1'-8"/7'-9"
		0.5/2.36M
WEIGHT		12,734 LB
		5,776KG
DISP		18,603 LB
		8,438 KG
SAIL	M	922 SF
		85.66 SM
	G	609 SF
		56.58 SM

47' CATAMARAN Model 12



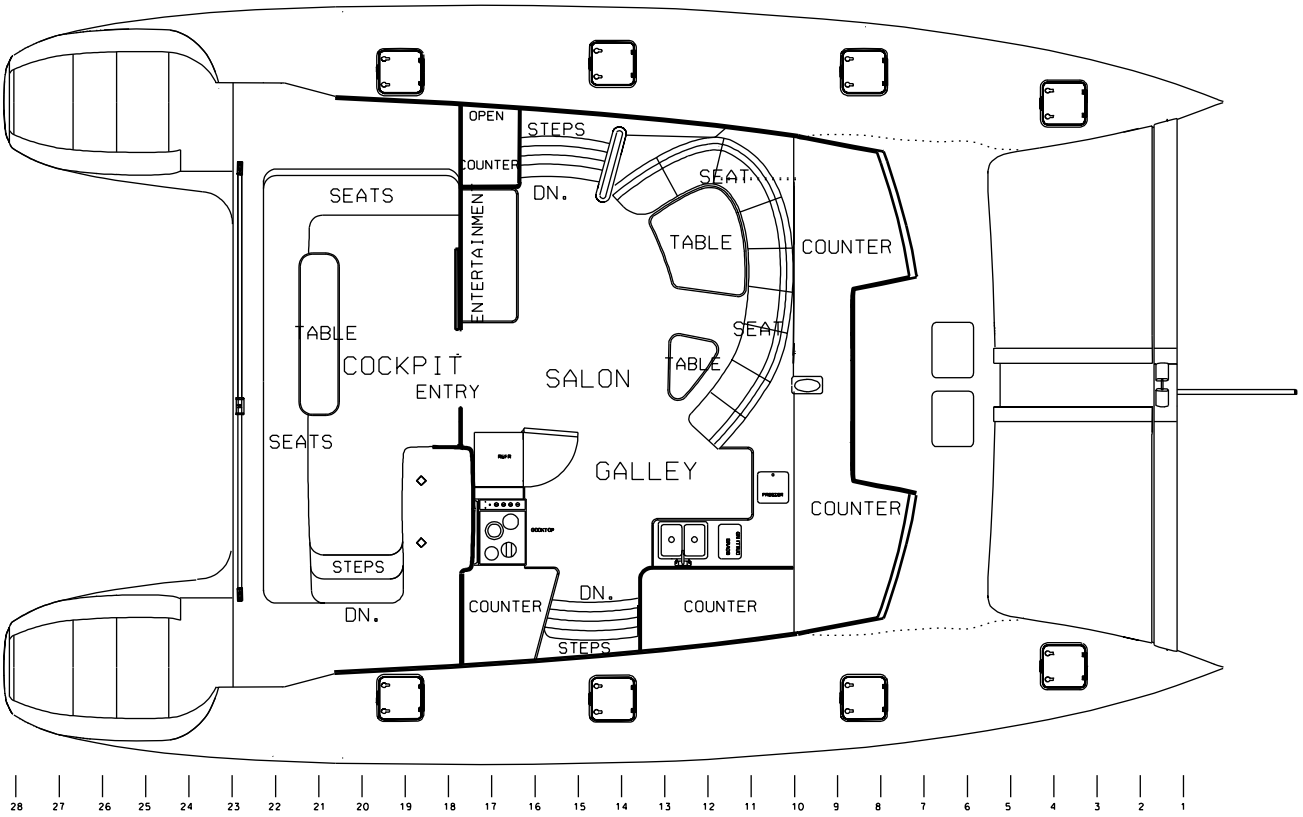
INTERIOR- UPPER SURFACE



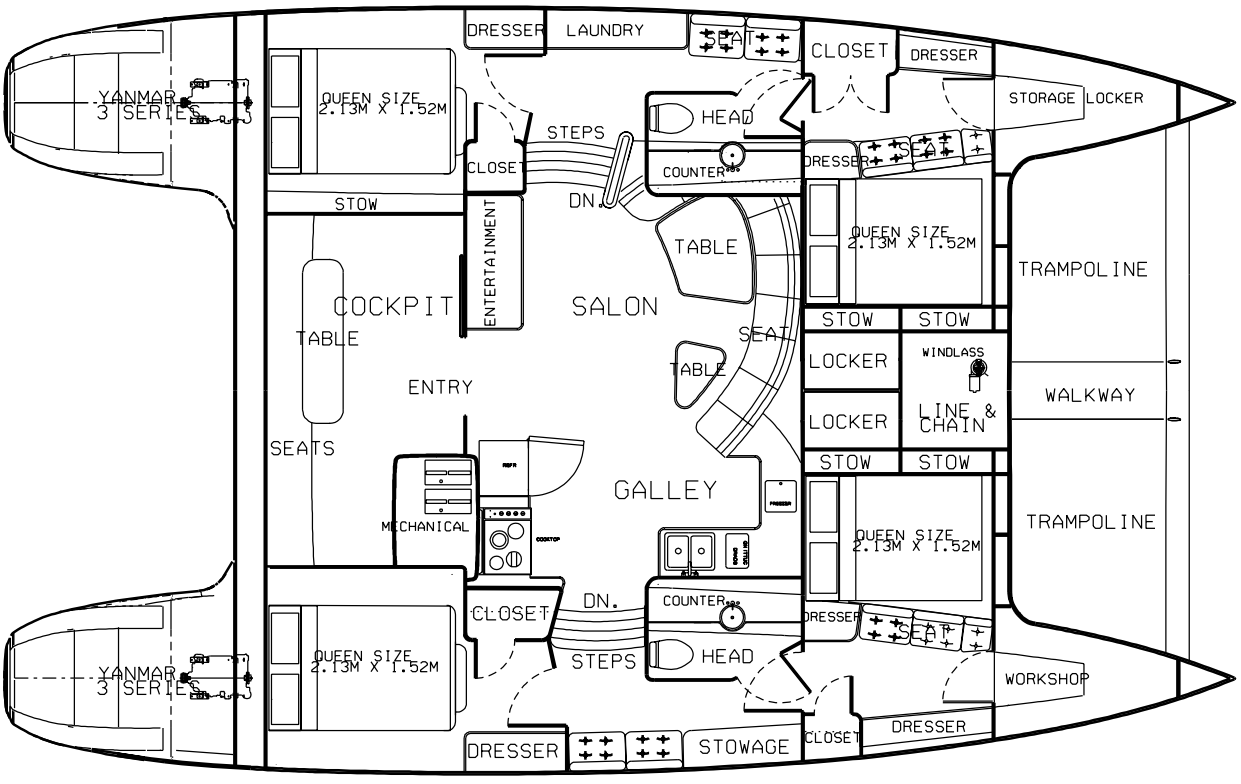
INTERIOR- LOWER SURFACES

47’ CATAMARAN

Model 14



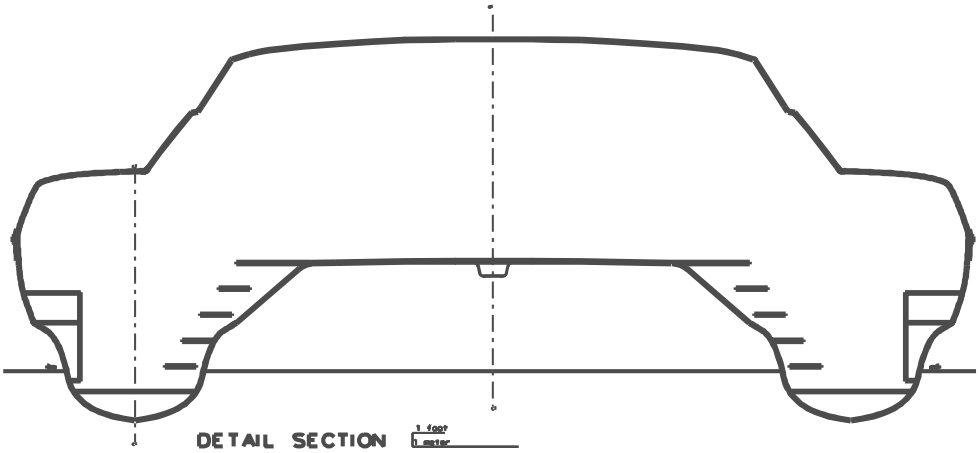
INTERIOR- UPPER SURFACE



INTERIOR- LOWER SURFACES

47’ CATAMARAN

This offering provides my latest thinking in creating a safe, easily handled ocean cruiser. My design provides both the comfort and spaciousness that cat buyers have come to expect, with the ocean going seriousness that is too often lacking in recent production catamarans.
This design was to go into production as the Rainier 460. See www.cmiys.com/rainier460.htm. I am offering this design to one-off builders and especially to interested production groups.
An option to increase hull length to 50’ is available. That will give even better ride and speed at very little increase in cost.
If this design goes into production again, the developers may want an exclusive. This design could be removed from sale at any time. If that does occur, I will fully support all plans sold. The plans price is $6,000us. The set has an amazing amount of detail and has full size patterns for almost everything. This design was fully 3D modeled, through all nine design iterations, so modifying the design to suit individual needs can be easily visualized. I can provide CNC surface code to any production yards that want to create molds that way.



One of the interesting aspects of this cat is the hull shape. It has a generous topsides flare that provides tremendous amounts of room inside, but allows a slender hull shape in the water. The length: beam ratio of a hull is almost 11:1 which means the hulls will be very easily driven, but still be able to carry the weight of stores for long voyages. I hear that one designer new to doing cats believes that the flare should only be on the inboard side. I heard he thinks the fenders will not protect the hull if there is flare on the outboard side. They sell some big fenders down at Fisheries Supply.
When slamming to windward, the hull flare diverts the surge of water that the hull splits. It gives a far drier ride than a hull with no flare.
On deck, the wide hull surface provided by the flare gives a great feeling of safety.

There are many other nuances in the hulls coming from over a decade and a half of doing these cats. The center of buoyancy and the center of lateral flotation are not the same location. That dampens pitching. The water plane is decidedly asymmetric as seen fore and aft, that also dampens pitching. The prismatic coefficient at 0.64 is as high as I can push it to put fullness in the ends, but still be easily driven.
In section, the hull in the water is nearly the round, minimum wetted surface shape, but with just a bit more dead rise angle than true round. That comes from the experience on the earlier cats that when they are leaping fully out of the water at speed, they can land hard if there is no deadrise angle. Just one of those tweakings that comes from doing a few of these.
The displacement is 18,603 lbs. (8438 kg.) The lightship weight will be 12,734 lbs (5,776 kg). That gives a payload of 5,869 lbs (2,662 kg.).

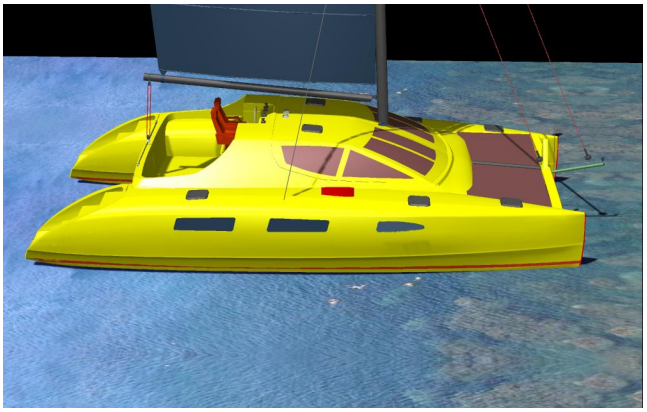
47’ CATAMARAN

Experienced sailors will notice that the forefoot is not as deep as some designs have. That helps the cat to tack more easily and provides some lift up when being driven at high speed. The forward lift up means the hulls can have a powerful flat run aft. If I had been silly enough to give it a deep forefoot, I would have had to put a lot of rocker aft to suck the stern back down. Drag sucks.

The nice, rounded shear helps to minimize the apparent height of the hulls, provides more resistance to crashes than a sharp shear edge would, and reduces aerodynamic drag to windward.

The House

Inside the main cabin it is huge! The 29' (8.84m)beam overall means that the over 7' (2.13m) wide hulls don’t intrude on the main salon at all. The design headroom is 6'-8"(2.03m). Unit #1 was built with 7'-0" (2.13m) clear headroom. I think that is excessive for an ocean boat. People do forget that with a bridgedeck catamaran, you literally have to shove a house to windward. I have had catamaran salesmen tell me “It doesn’t have to go to windward, it has to look good stern-to at the dock in Miami”. My goal is to use relentless inventive engineering to allow this design to feel like a big boat inside, and still sail like a serious ocean vessel, especially upwind.



The cabin top of unit #1 is almost 11' off of the water. I think it is a credit to the design that it does not look that tall.

40 inches is what the loaded bridgedeck clearance is. I intend that to be part of the package of being able to work offshore safely. Compare that to any other designs in this size range.

The sloping front windows are intended to help shove that house to windward, and to shed the odd green wave that jumps aboard. Imagine trapping a green one with vertical windows?!

The front windows will use the amazingly lightweight tempered safety glass from Bentglass where windshield wipers are used. The side windows will be acrylic.

Sunshade strategies have been designed. Unit #1 did not have any of these.

Notice that seen in top view, the house tapers forward. That detail also helps the boat push less projected area to windward. Less projected area being pushed to windward means better speed made good to windward. The taper shape also lets a screecher sheet in tighter too.

The little notch forward in the house allows better access to the anchor ing equipment.

Over the cockpit is a sunshade that projects back from the cabin top. We all have to be more careful about direct sun these days. It is a cantilever that is engineered to be walked on if needed.

Transom steps on both hulls promote easy access to a tender, a low dock or for diving.

The cockpit has generous space and seating for any outside activities.

The Helm

The helm is located up high, in a place that allows visibility in all directions. Some of the early model simulations had a helm cover but that was removed. On long voyages the vessel can be on autohelm and the crew can stay below in the shade perhaps.

I totally reject the notion, and I have seen this, that the helm can be down low, looking forward

47’ CATAMARAN

through the cabin back window and the front window. That is one of those helm designs that might look great until it is actually used.
All the strings on this design are led back to the helm. The sails can be set, controlled and reefed from the helm station. Especially when single-handing, at night, it is great to not have to go forward away from the helm. More than great, it might save your life. I remember one stormy night in the Bass Strait near Tasmania. Nobody would have left the cockpit for any reason under those conditions. And what about the cat design with the sail controls on the back crossarm? That requires a crew to sail it; not allowing singlehanding in dicey conditions. Imagine getting hit by a gust. You adjust the helm then hike back down to ease the sheet. Then back up to the helm? Of course, most of those production cats aren’t really meant to move are they? So you might never have to ease a sheet on them?
House batteries and water-maker are located under the helm.

Sailing
Expect to see some performance from this 47' cat. Especially if the weight can be controlled. The light weather rig shows a genoa. That model has 1,531 sqft.(142.2sqm) of sail upwind. Sailors expecting to be in tradewind conditions will prefer a non-overlapping blade jib. That would provide 1,170 sqft.(108.7sqm) upwind. The genoa powered model requires much bigger winches, and running backstays. Again, if the plans are followed and weight targets reached, it will show great performance, like my other cats, with just the blade and main. The blade can be made self-tacking.


courtesy randy hogan

The main is fully battened for ease of handling and best control.
The mast is a fixed aluminum extrusion. It will also accept a rotating mast. The rigging is the simple tripod style with the fewest number of swages to keep track of wile voyaging.
It has composite chainplates located at the shrouds.

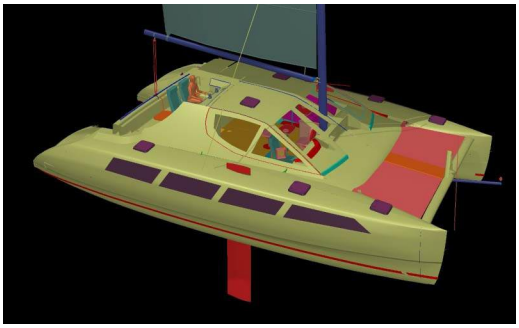
Construction
The vessel is constructed from foam/glass, using triaxial roving and core materials with densities varying according to the particular location on the boat. The boat’s hull structure is designed to conform to ABS Offshore Racing Yachts Guide. That will help sailors when they go to insure the cat.
The hulls use _” (18mm) core. The bridgedeck is double that and the house top is 1"(25mm) thick core.
The connectives are also foam/glass.
Builders using vinylester resins in cold climates can expect low degrees of cure of the laminates. I will work with builders on formulations of catalysts and accelerators to get the highest degree of cure possible.

Power
The plans show a 3 series Yanmar engine in each hull. These are located aft of the rear beam.

47’ CATAMARAN

Expect to see about 18 knots in an empty condition and about 15 knots pretty loaded down with the 77-hp. model. Only 11 hp per side is required to go hull speed (almost 9 knots). If fin keels are chosen over boards, take a couple of knots off the top speed.
This design has incorporated Joe Smullin’s ground-breaking work on controlling structure-borne noise generated by engines.

Foils
This cat is designed with either fixed fin keels or dagger boards. Expect keels to generate 1000 lbs (453.6kg) of lift at 10 knots. They will also cause 85 lbs (38kg) of drag at that speed.
Boards of the same size will generate 2,400 lbs (1,089 kg) of lift, more than double the lift of keels, and just 70 lbs (32 kg) of drag.
Oddly enough, a catamaran with a large house needs great foils even more than one with no house. If it can point high, the projected area of the house is minimized. A cat with a large house and low aspect ratio fin keels is the worst combination. That huge house is jammed to windward showing most projected windage area.

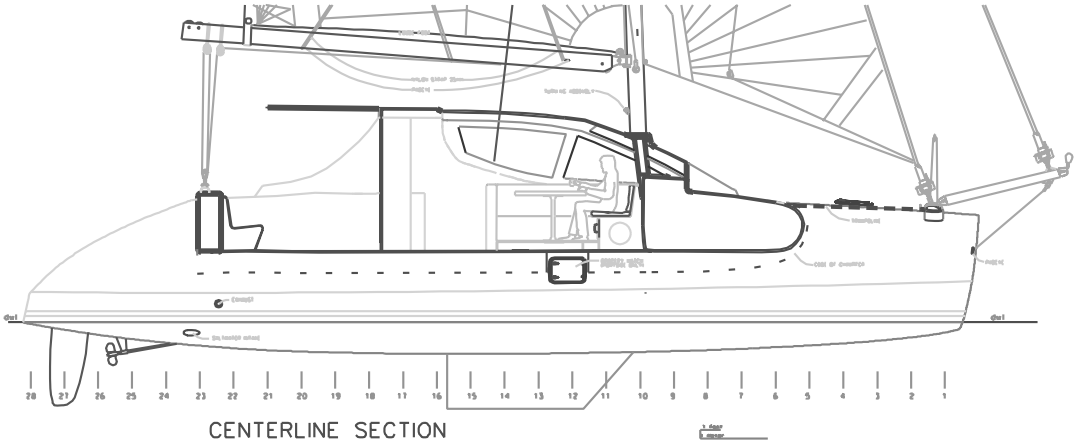


Keels on catamarans create a unique hazard running aground. If a monohull runs aground, the crew can heel the boat and kedge off. A catamaran with keels cannot do that. If you mush into a mud bank with fin keels, you wait until the tide comes back to lift you off. If you crush into a reef, you haul out at the next stop. With boards, and the accompanying crash-blocks, crushing a reef with the foils merely means repairing the boards, while underway. Of course if a cat with boards mushes into a mudbank, they simply pull up the boards and make a U turn back out. The cats with boards have kick-up rudders. That lets them nose up into shallows as little as 2' deep.

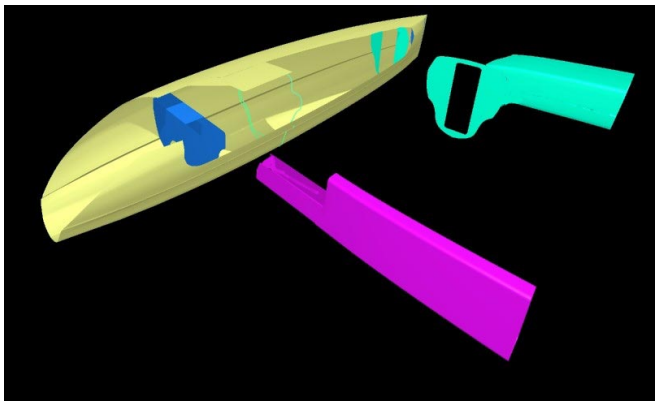
Inside
The bridgedeck salon, as noted before, is huge inside. Unlike most of my bridgedeck cats, the Unit #1 is a galley-down model. Galley up is shown here in two versions. In fact, this design went through 14 iterations, and all are available as variations on the design. This cat does have sit-down dining for 8 persons.
All interior structures are built with the exceedingly light Tri-cell cored panels.
There is an inside helm for driving under power and a large navigation area on starboard. Aft on port is an entertainment center. On the front counter, close to centerline, are a quarantine locker for use while staying in a host country, and a safe locker.
On starboard is the galley. It is a large galley with 225 linear inches(5.72m) of counter-top. It has a convection microwave, JenAir Range, full size side-by-side refer/freezer with ice/water in door, large double SS sink and many cabinets.
A large sliding door opens aft into the cockpit.
Down below you find 6'-8" (2.03m) of headroom. It can be increased to 6'-10" (2.08m)if the sole is lowered, but that cuts into the cruising water and fuel tank size.
Aft there is the owner’s staterooms with pedestal king berth. Forward of the steps is a head and office space. Up on the bridgedeck, port and starboard, forward of the mainstrength bulkhead is a queen berth. The berth has 42" (1.07m)headroom above it. Inboard of the berths are stowage

47’ CATAMARAN

pockets.
Up in the forepeak is a shower/tub and seat surround. In the seaway this tub area can be sail storage. Forward of the steps is washer/dryer in the laundry area. Forward again is a queen berth as on star-board, and in the forepeak is a head area.



Demountability
As this design evolved, I worked out a method to be able to have the components built on one location and as-sembled in another. I have seen a demountable scheme that requires cuts in the beams. That is inefficient. The biggest load, mast load, is a curve decreasing as it moves out from under the mast. Instead of cutting into the beam along its span, I will have the joint at the hull where the mast loads are least. The demountability designs will be made available to future builders.



This latest design is chock full of my total experience in making a comfortable, safe ocean going cat. I think it looks pretty cool too.