

A 21' Seabright Tunnel boat

Specifications:		
LOA:	21' 8"	6.60 m
Max. Beam:	5' 10"	1,80 m
Displacement/draft	1760lbs/6" up to 2900 lbs/9"	800l/ 15cm up to 1320l/23cm
Recommended engine	21 HP diesel	15 KW

* hull weight vary in function of options and materials

Our web site shows plans for several designs that float and run in a few inches of water but all are outboard powered. Some of them have a tunnel.

When it comes to inboards, a few boat manufacturers produce mostly large tunnel boats but that type of hull shape impose a large penalty on performance. There is no small and efficient diesel inboard designed for moderate speeds available as a production boat.

If one accepts moderate speeds, up to 20 mph, an efficient inboard powered shallow draft tunnel hull shape exist : the Atkin's type tunnel.

The best know model of that type is the famous Rescue Minor, a 19' hull powered by a 20 HP engine. The Rescue Minor was designed more than 50 years ago,:

<http://www.atkinboatplans.com/Utilities/RescueMinor.html>

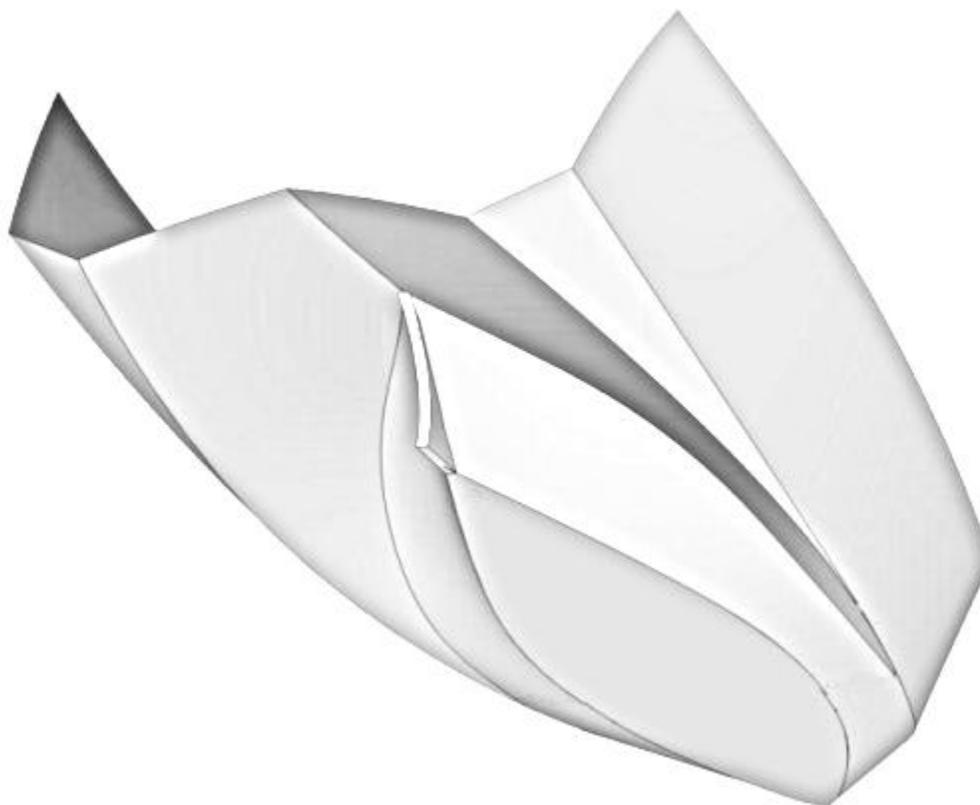
In the last 10 years, several variations on that hull type were built: Robb

White <http://www.robbwhite.com/rescue.minor.html> to [Dave Gerr](#), from 18 to 60' long and many more.

The ST21 is our variation on the Rescue Minor theme.

Ours is slightly larger than the Rescue Minor and it's hull shape is closer to a later design, the Shoals Runner. Like that last boat, our hull includes a chine break.

We believe this is the only boat of the type designed for epoxy-composite. Our material allows us to have a finer stern post with a better flow of water to the prop. It also produces a lighter boat, a very important factor for good performance.



The drawing above shows the box keel with tunnel before fairing of the stern post.

ST21 means Seabright Tunnel 21'.

The Atkins tunnel shape is derived from the Seabright Skiff. The Seabright Skiff is a hull with a wide box keel.

William Atkin designed many Seabright type hulls but combined some with an unusual hollow in the hull from which the box keel protrudes.

Those who are interested in the history of the hull shape should visit the links above.

I owned a sail boat based on that hull shape and can attest of its seaworthiness and good performance. Despite its unusual shape, a box keel hull can perform surprisingly well but it's main advantage is the shallow draft.

Another advantage of the box keel is that it allows to put the engine in the keel and this not lowers the CG but gives us an efficient straight shaft.

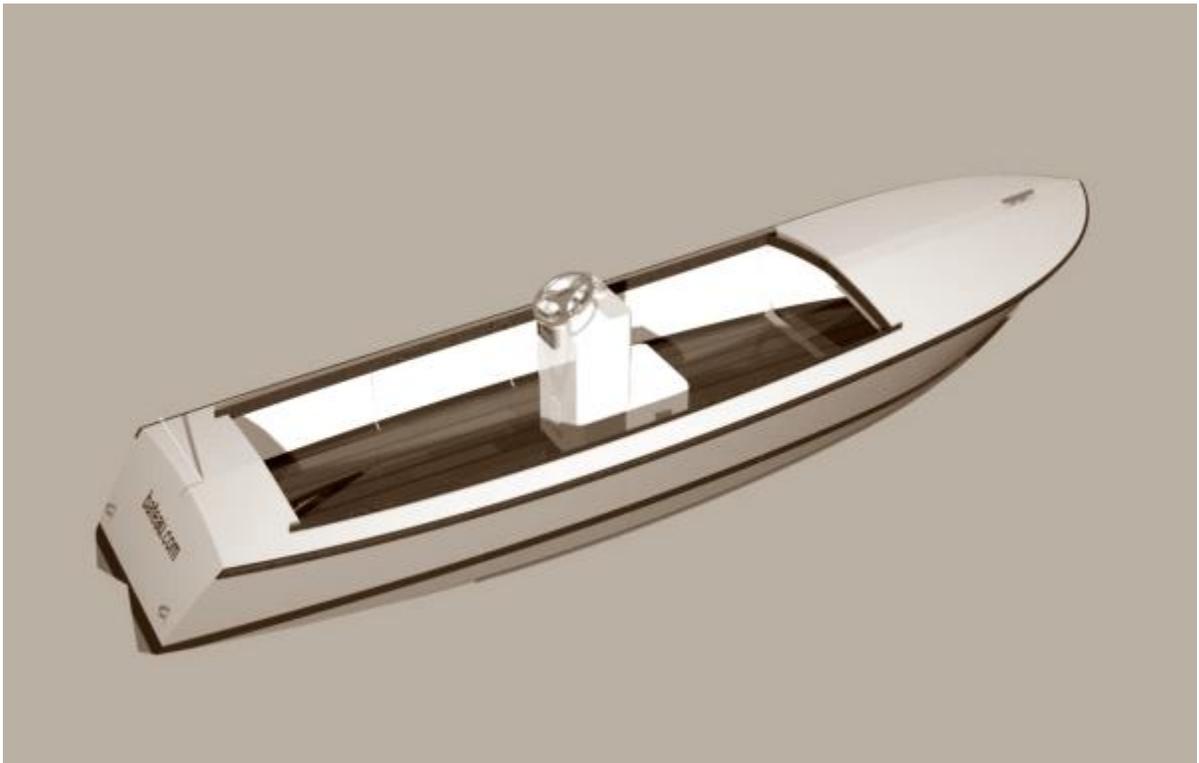
A drawback can be a reduced water flow to the prop as it is hidden behind the wide keel but this can be corrected with a thin well faired [stern post](#).

In those boats, the tunnel ceiling is above the waterline.

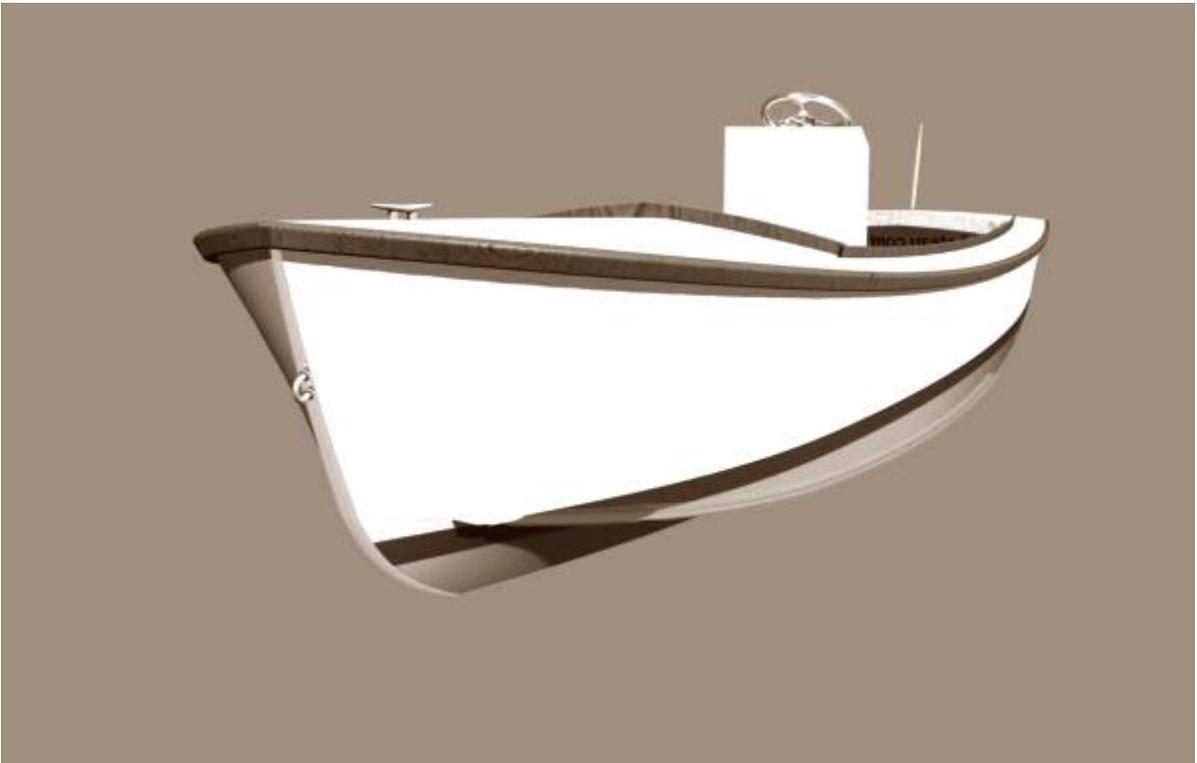
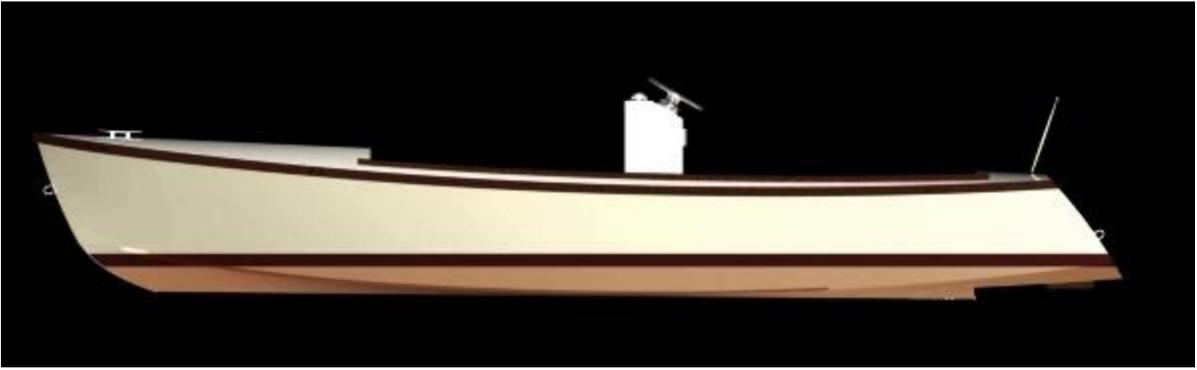
The prop shaft goes through the keel and at rest, the prop is only partially immersed. As soon as the boat moves, water fills the tunnel.



The cylindrical reverse transom hides the rudder.



The ST21 is a light and narrow boat. Her light weight is essential for good performance. Please do not over build this boat and do not ask to add a superstructure or increase the beam, it will not work.



Options:

Tiller or remote steering.

Remote steering hydraulic or push-pull cable.

Customize deck size and seating.

Twin saddle tanks or single tank under rear bench.

Spray rail.

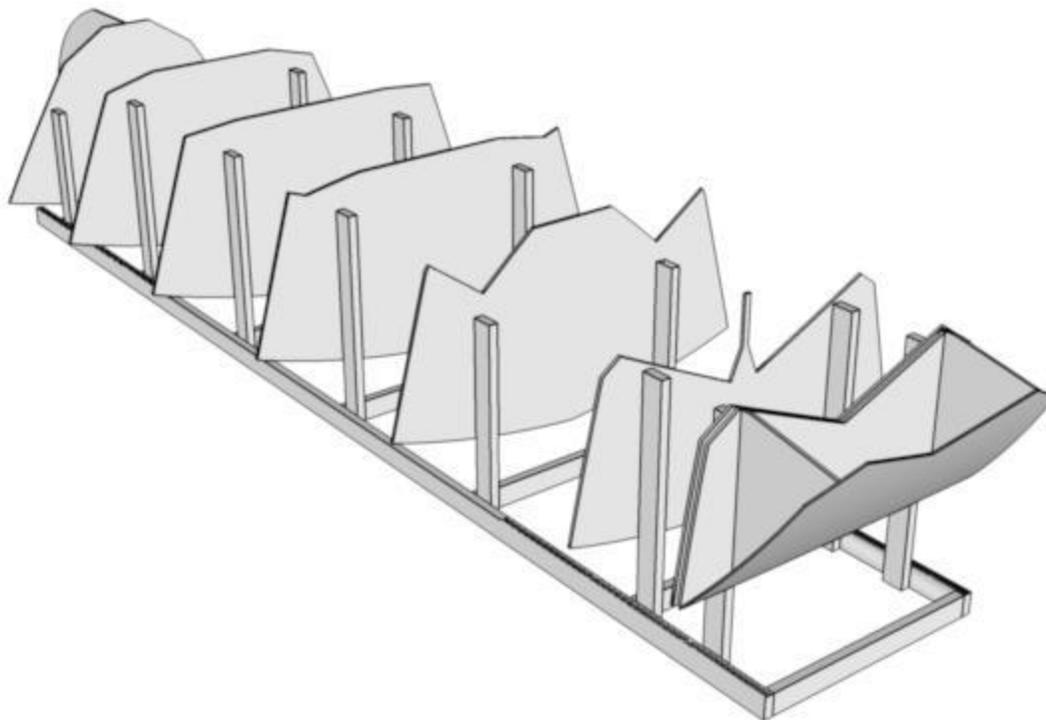
Partial foam construction: sole, decks and framing can be built in foam sandwich.

Keel cooling is left to the builder and not included in the plans. This is not a recommended option unless you are familiar with such systems in which case, you don't need plans.

No option to increase HP: this hull shape works best between 12 and 18 mph. Above that speed, the tunnel will ventilate.

Building method:

The ST21 is built upside down on a jig.



The plans include all dimensions for the jig and detailed notes. We use a mold for the rounded transom.

The framing includes two full length keel stringers that are used as engine girders. Engine beds will accept most small diesels in the specified HP range.

Also included in the plans, in addition to the specific building notes for the ST21, is our Plywood-Epoxy Composite Boat Building manual (about 80 pages). The manual includes instructions and drawings for the inboard engine installation.

Required Skills:

The ST21 is a **not** a first time builder project. The hull shape is complicated and the builder must be familiar with our method of fairing the shape by letting the panels take their natural shape.

BOM:

The plywood layout was calculated to minimize waste: we show the nesting of all parts on the plans. However, this is an intricate boat using a relatively large number of plywood sheets for it's size. The BOM does not include plywood or resin for the console/engine box but all other parts are included.

Epoxy resin usage is based on a 45% glass content, "your mileage may vary".

Marine Plywood 48x98.375" (122 x 255 cm)		
1/4" (6mm)	12	
3/8" (9mm)	5	
Fiberglass (Totals)		
Biaxial Tape	400 yards	370 m
Biaxial Fabric 50" wide	35 yards	32 m
Resin		
Epoxy, total	12 gallons	50 kg

Not included: fillers, some small cleats (battens), wood strips for the rubrail (from leftover plywood) and paint.

The plywood BOM is based on standard Okoume sheets but will stay the same with Meranti sheets which are about 2" shorter.

(10 mm plywood is a nominal value, in reality, the plywood is closer to 9 mm.)

More:

Visit our message board, help pages, tutorial pages and read our FAQ: most questions are answered there.

Plans Package List:

Detailed drawings with all dimensions required to cut **all parts from flat plywood sheets**: no lofting, no templates required. The plans include a complete lines drawings for those who choose a different assembly method or want to customize the design.

Drawings list:

- B294_1 Plan and Profile
- B294_2 Lines
- B294_3 Molds and stations
- B294_4 Construction
- B294_5 Frames
- B294_6 Hull Panels
- B294_7 Sole and deck plates
- B294_8 Jig and transom mold
- B294_9 Nesting 6 mm plywood
- B294_10 Nesting 10mm plywood
- B294_11 Rudder, steering, prop shaft
- B294_12 Cooling, Exhaust, tanks
- Specific building notes for this boat.
- Shop manual: Epoxy-Plywood Composite Boat Building
- Bill Of Materials and fiberglass lamination included in the notes and drawings.
- Help files reference list and more!