



A sturdy 28' trawler.

Specifications:		
LOA:	28' 2 "	8,60 m
Max. Beam:	10'	3,05 m
Draft at DWL:	34"	86 cm
Displ. light/full :	7500/9750 lbs.	3400/4400 l
PPI at DWL:	920 lbs.	418 kg
Recommended HP	35 to 50	30 to 40 Kw
Material:	Composite	plywood or foam

NEW: the plans now include complete scantlings for foam sandwich (October 2007)

Our Trawler 28 is a sturdy offshore trawler with a straight inboard diesel.

The hull is a typical displacement hull, trawler type. This means a relatively wide beam for her length.



Displacement hulls are typically used for work boats, fishing boats and pleasure boats where moderate speeds are sufficient to fulfill operating requirements.

Displacement hulls are generally considered more suitable for serious offshore cruising than planing hulls. With their big rudders, and deep keels, these boats can turn on a dime and punch through seas that would stop lighter ones. They also use less fuel, have smaller engines, more range and cost much less to operate than planing hulls.

Her optional mast with steadying sail will ease the motion in a beam or following sea. Rigged with a jib, it enables her to reach a downwind port in the event of engine trouble. The boom can be used as a dinghy hoist with the tender stowed on the roof during long passages .

Displacement hulls can carry much larger loads than planing hulls of the same length: no problem with storing more than 2,000 lbs aboard our Trawler 28.

This makes our Trawler 28 an ideal boat for a couple to live aboard or for a crew of 4 that wants to go far in safety and comfort.

The economical diesel engine gives her a range of around 1,000 miles at displacement speed.

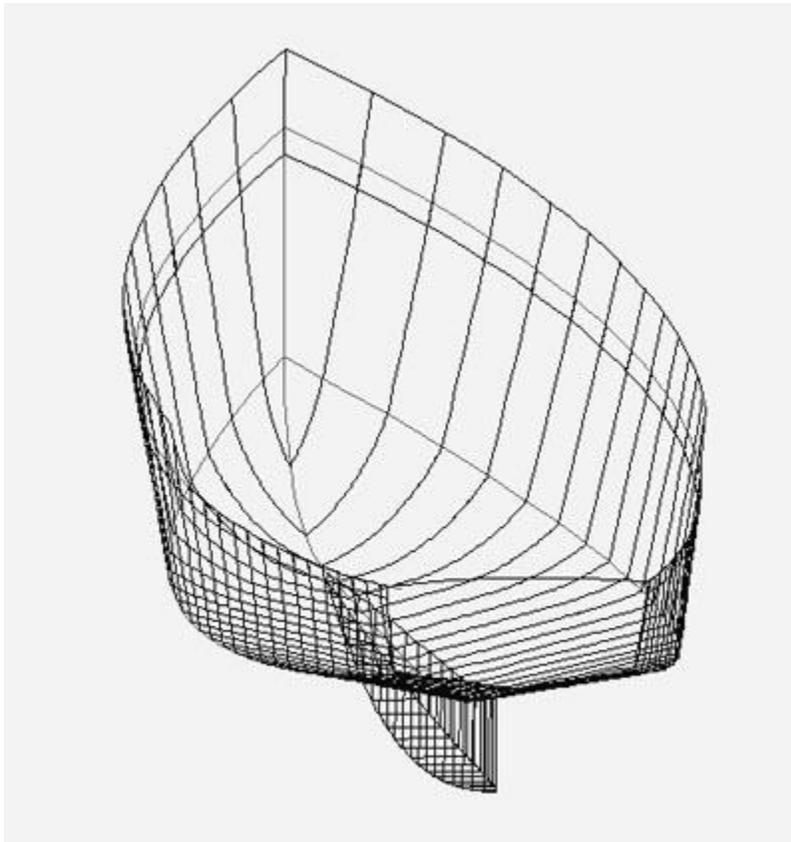
This type of vessel is not limited to short day cruises from harbor to harbor, she can remain offshore for long cruises going steadily 150 miles a day.



[Right click here to download a high resolution version of this picture.](#)

One particularity of this design is the relatively wide box keel somewhat in the style of the Jersey skiffs. W. Atkins was a great believer in that feature and we have used it on long range sailboats between 32 and 65 feet. That keel is a NACA profile and has very little drag. It is easier to build than a keel with outside ballast and allows us to install the engine very low. This gives a shallow shaft angle which is more efficient and the low engine installation angle gives better lubrication, extends engine life. Plus, it lowers the engine weight and gives easy access to trim ballast.

Access to the shaft coupling and stuffing box is also much easier than on most boats



This hull is designed to have around 2,000 lbs of ballast, some of it is trim ballast. We say "around" because some amateur builders will increase the scantlings and increase the hull weight despite our assurances that the boat is strong as designed. In that case, less ballast will be needed to bring her down to her lines.

Others will outfit the boat with plenty of extra equipment and the amount of ballast can be adjusted accordingly.

Some figures:

Our Trawler 28 is a medium to heavy displacement boat with the motion and feel of a little ship. Her D/L (displacement to length ratio) is 240 fully loaded and 216 at medium load. For comparison, a Kroger 48 trawler has a D/L = 267 and most of the G. Buehler designed trollers are lighter between 165 and 220.

Her calculated range with the 80 gallons tanks is as follow:

At 5.1 kn. (6 mph): 1360 NM,

At 6 kn. (7 mph): 800 NM

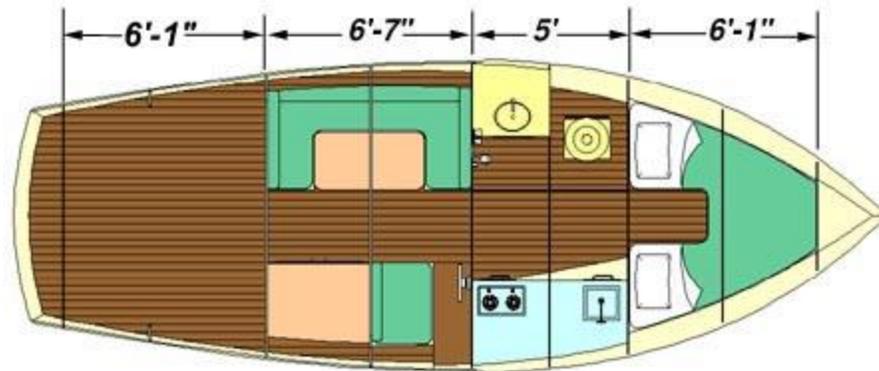
At 7 kn. (8 mph): 465 NM

Those figures are for calm weather but even with a 50% safety margin the range is impressive. BTW, there is room to double the tank capacity and range.

She is designed to operate around the theoretical hull speed of 7 knots. To achieve that speed requires less than 20 HP at the shaft but we designed her with a 40/45 HP diesel engine, either Vetus Mitsubishi or Nannidiesel/Kubota.

Layout:

This is a real double cabin "yacht" that will easily accommodate a family of four if not five in comfort and privacy. The standing headroom is 6'-1" in the pilot house and 6' 4" in the galley, shower and forward cabin.



The plans show some layout options: one with the cockpit sliding door in the middle and a U shaped dinette and one with a door offset to the side and larger L shaped dinette. If you build the boat with the steadying sail mast, you must use the offset door.

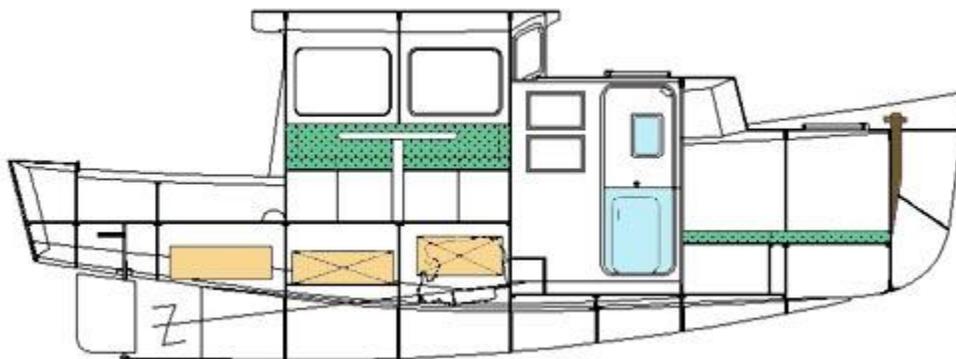


The dinette that will seat four or more and the table drops down to become a double bed. There is room for a cabin heater or even a wood stove with chimney behind the steering station.

That side of the pilothouse can also be fitted with a fold back steering seat and a sofa behind it that becomes a full size extra berth.

As designed, the space behind the steering position is a chart table with room underneath for an entertainment center.

The three part windshield windows can be hinged along upper edge to open for ventilation in hot climates. The plans also show small hatches in the cabin roof.



With two more hatches forward, the Trawler 28 has enough air circulation and will not require AC to be comfortable in tropical climates.

From the saloon, you step down to the full size galley on the starboard side. There is ample room for a stove with oven, a good size sink, fridge and storage. There is a dorade vent over the galley and another one over the head plus an optional large hatch in the middle.



Across the galley there is a fully enclosed roomy head complete with shower. There is at least 6' 2" standing room in the shower.



The forward cabin has a wide and long vee berth that becomes a double with an insert in the vee. It is possible to build a one piece double on the port side with a seat or cabinet on the opposite side.

The builder has complete freedom to modify the layout as long as all the framing is present. Along the full length of the cabin, there is storage room under the sole and much more under the seats and berths. The box keel is deep and can be used to store reserve anchors and chain.

Outside, the self bailing rear deck is wide enough for folding chairs, a barbecue and more. The transom lockers are large enough to store good sized fenders plus plenty of lines and other gear. Gunwales run along the full length of the cabin and handrails on the roof will make maneuvers easy.

The self-bailing rear cockpit is wide enough for a lounge chair or more storage. It can be covered it with a bimini top or, if the mast option is chosen, covered by canvas over the boom. The forward deck is raised: there is a 10" step in the gunwale hidden behind the bulwark. This explains all the headroom downstairs and the unusual feeling of space for a boat of this size.

There is a sturdy sampson post on the foredeck. That post extends under the deck, workboat style, along the chain locker bulkhead: much sturdier than the tiny little cleats with almost no backing plates found on production boats. You can anchor in real bad conditions without worrying about the deck being torn apart. The anchor locker drains overboard.

Building method:

The Trawler 28 is built the stitch and glue way: simple, fast and strong. She is not a plywood boat held together with some resin and glass tape. The hull is a true composite in which most of the strength comes from the fiberglass/epoxy skins. The bottom planking thickness varies from 3/4" to 2". Epoxy is used for all fiberglass laminations and all plywood parts are saturated with resin. Completely encapsulated in epoxy, the plywood will not rot. The monocoque structure with its fiberglass framing is typical of composite boats: stronger than plywood on frame.

The hull assembly is very simple. The Trawler 28 is built [upside down on a jig](#) like most large boats. It is also possible to build this hull in a [basket mold](#), right side up.

The superstructure can be build from our plywood-epoxy-glass composite or as a foam sandwich composite if the builders chooses that option. There are several advantages to a foam sandwich superstructure. Lighter topsides and excellent insulation, an important factor for long cruises. Less condensation and an easier temperature control.

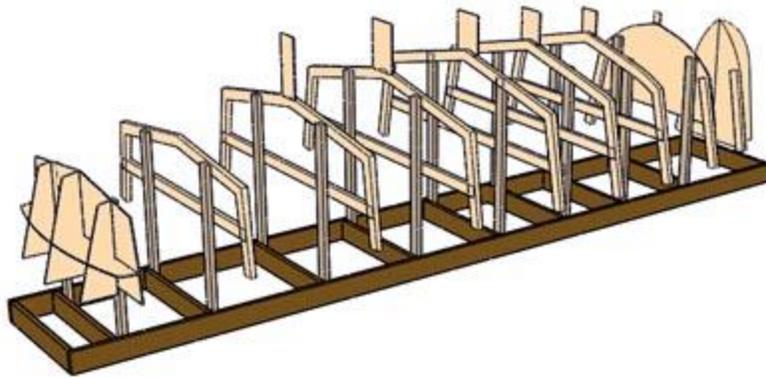
The plans show specifications for the two methods: cabin made of regular plywood and epoxy and our sandwich panels. We can supply all the materials for either method.

October 2007: the plans now include scantlings for the foam sandwich hull. See our [foam sandwich tutorial](#). That is how you would build the TW28 in foam sandwich with one difference. For the TW28 we would use wide foam sheets, not strips.

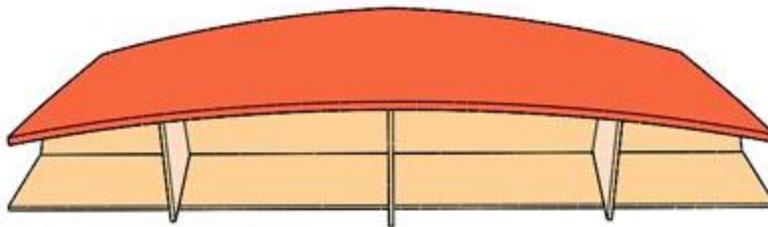
Required Skills:

As all our stitch and glue boats, the TW28 is easier to build than plywood on frame or fiberglass boats. There is no wood framing, no delicate assemblies with tight fits, no need for special tools. Since the strength comes from the fiberglass, small gaps between parts are recommended: a 1/4" cutting mistake becomes a blessing! The plans are very detailed. Each part hull panel, stringer, bulkhead, frame, floor etc. is described. We understand that engine installation and alignment, rudder and steering, exhaust and other parts of the building may be intimidating but we divided the building process in simple steps described in detail in our building notes. There are specific plans included for the rudder and steering system, complete engine installation with shaft, fuel, electricity, cooling, exhaust etc. etc. On request, we will supply more drawings and specifications if necessary but our plans are more detailed than any others: see the list of drawings at the end of this page.

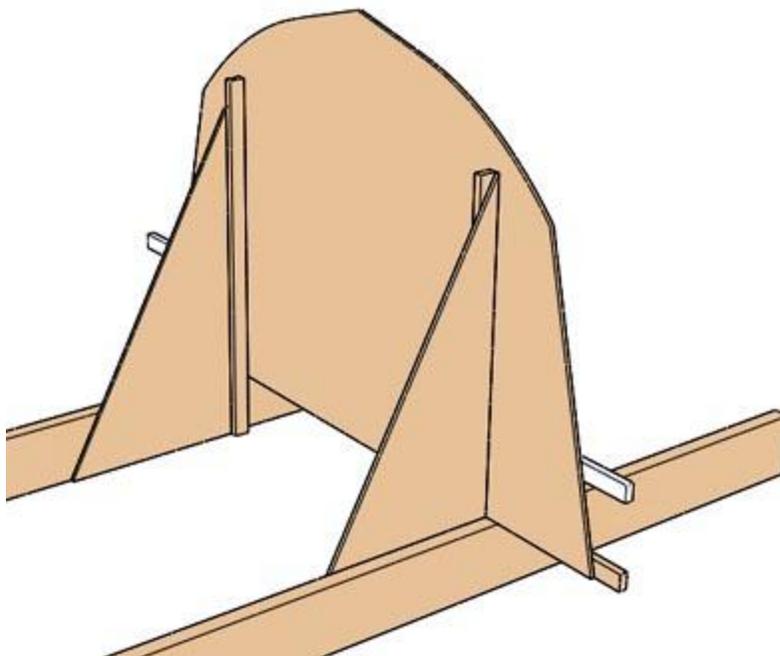
Here are some picture excerpts from our building notes:



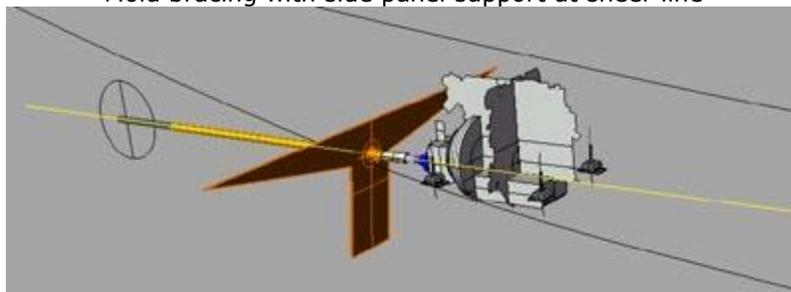
Jig with molds



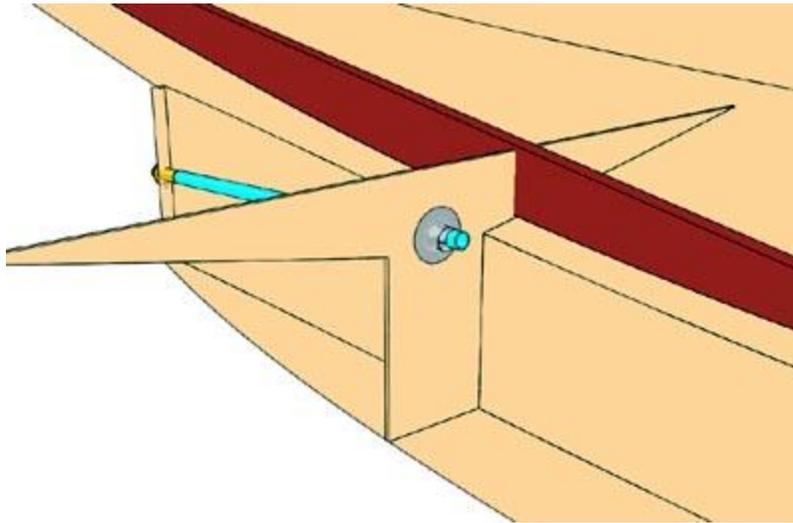
Transom mold



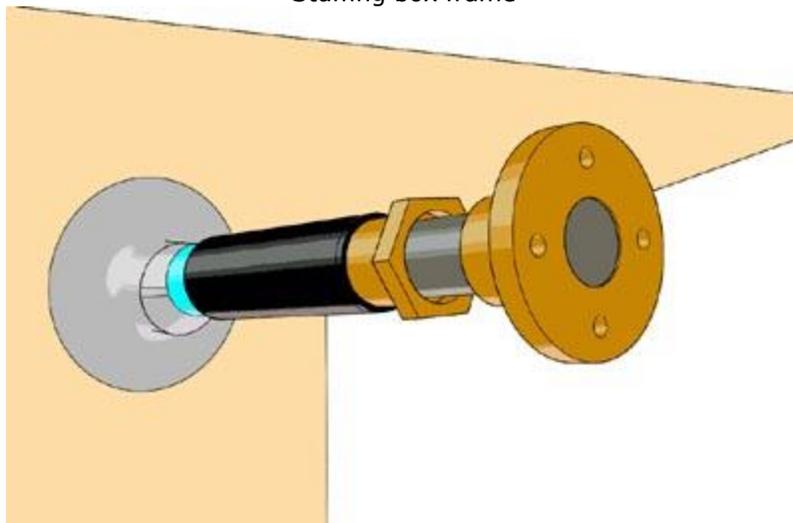
Mold bracing with side panel support at sheer line



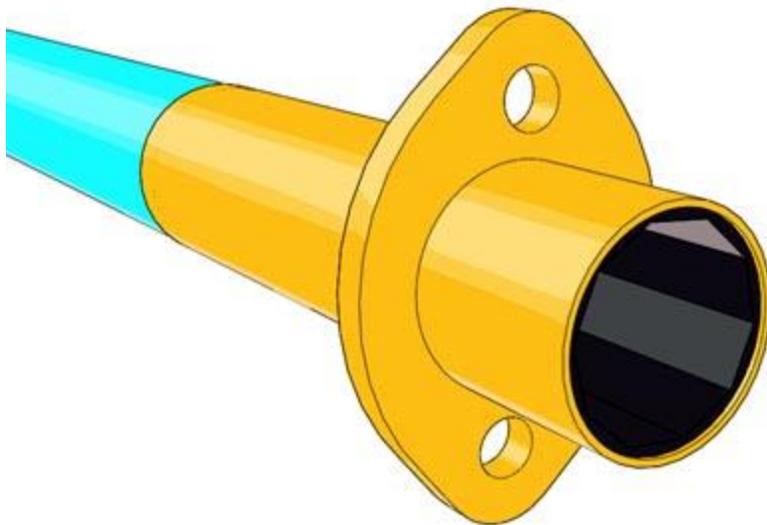
Shaft axis



Stuffing box frame



Shaft with coupling and packing box



Cutless bearing

The building notes include many more pages of pictures and text describing not only the building of the hull but the installation of the engine step by step.

Options:

We highly recommend to build the superstructure from foam sandwich. This option will result in a very sturdy cabin structure with great insulation. Condensation is greatly reduced in a foam sandwich cabin, it is a great factor of comfort.

Next, we highly recommend to build the steadying sail mast. It will not only stabilize the boat and add the safety of an emergency sail but the Trawler 28 looks much better with a mast.

We show two types of steering: cables on quadrant and hydraulic.

Other engines than the one shown can be used for example the Toyota or Kubota diesels from Nannidiesel Engines and all engine room parts can be purchased from BoatBuilderCentral.com.

Many parts like tanks, hatches, steering quadrant, vents etc. can be made by the builder. The plans show details for those parts but also manufacturers part numbers.

It is possible to build the Trawler 28 completely in foam sandwich. This will increase the cost of the hull materials by around 60%. Fiberglass scantlings are shown below.

There are many possible changes in the layout: as long as the builder keeps the framing intact, almost anything is possible.

Some will ask to enlarge the boat. Lengthening is possible to maximum 10% but the builder will have to recalculate most dimensions. Scaling her up in 3 dimensions would require new complete hydrostatic calculations and scantlings, we do not support those changes.

Bill Of Materials:

(Excerpts from our BOM)

The BOM list materials based on our standard layout and includes a 15% waste factor for fiberglass. For plywood, we use standard sheets 4' x 8' (122 x 244 cm). Please read the building notes and see the plans for detailed specifications. Okoume or Meranti marine should be used and cost starts at around \$26.00 a sheet (1/4").

Plywood 4x8' (122x244cm)		
1/4" (6mm)	16	
1/2" (12mm)	40	
Fiberglass (totals)		
FG tape	420 yds	378m
Woven tape	50 yds	45 m
Directional Fabric	240 yrds	216 m
Woven fabric	150 yards	135 m
Resin		
Epoxy, total	39 gallons	156 liters

Foam sandwich BOM:

Foam sheets 4x7' (122x244cm) 1/2" or 5/8".		
H45	8	
H80	52	
Fiberglass (totals)		
Woven tape	50 yds	45 m
Directional Fabric	250 yrds	216 m
Woven fabric	150 yards	135 m
Resin		

Epoxy, total	55 gallons	220 kg
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Note that while the area of directional glass is close to the plywood version, we use much heavier glass.

Resin quantities will vary in function of the experience of the builder. Keep in mind that a 33% glass content lamination uses two times more resin than 50% glass. The quantities above are based on 40% glass.

Glass quantities will vary in function of the cuts. The quantities above are for glass used in full length with some recycling of leftover pieces.

Cost:

We do not list a complete epoxy-fiberglass kit because most builders will buy supplies as work progresses. One of the big advantages of amateur boat building is the gradual outlay of capital. You can start with most of the plywood and our epoxy-fiberglass starter kit. This is sufficient to build a complete hull shell.

Labor:

The hull will go together fast: around 200 hours for the average builder. The superstructure, appendages, mechanical installation and inside cabinetry will require more labor. This will bring the total up to 1,000 hours for a boat show finish or as little as 500 work boat style.

More:

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

Plans Packing List:

- 14 Detailed drawings with all dimensions required to cut the sides, bottom, bulkheads, deck, floors and all parts from flat plywood sheets: no lofting, no templates required.
- Nesting drawings for the best plywood layout with numbered parts.
- Construction drawings showing assembly and parts numbers for small hardware.
- Drawings list:
 - B262_1 Plan and Profile
 - D262_2 Nesting of all panels and major parts
 - D262_3 Construction, 4 views with details and notes
 - D262_4 Stations (hull dimensions, lines)
 - D262_5 Frames
 - D262_6 Expanded Plates with dimensions for hull panels
 - D262_7 Expanded Plates with dimensions for inside structure
 - B262_8 Details: typical rubrail, cap, backing plates, butt blocks for soles etc.
 - B262_9 Steering system, rudder and post, quadrant etc. with part numbers
 - B262_10 Engine Room Details: shaft axis, shaft log and stuffing box, engine mounts
 - B262_11 Engine room 2: fuel lines with tanks, exhaust, cooling water, siphons.
 - B262_12 Hull Details: dorade vent, floor and deck hatches etc.
 - B262_13 Mast Option with fittings and offset door
- B221 Typical Small Boat Electrical
- Specific building notes for this boat including foam sandwich option.
- Bill Of Materials
- Help files reference list and more.