Inverted vee flats boat.

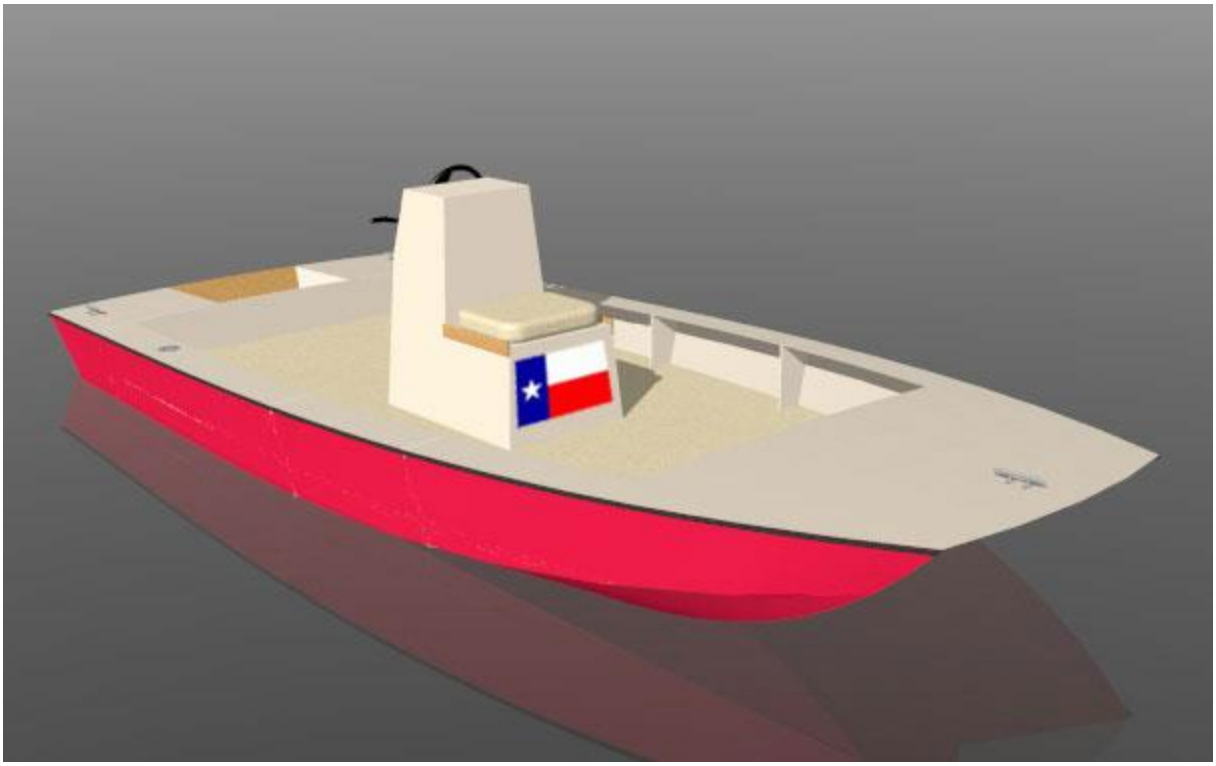
Specifications:		
LOA:	18'	5,50 m
Max. Beam:	8'1"	2,45 m
Hull dry weight:	850 lbs.	385 kg
Designed displacement/draft	1800 lbs/5"	815 kg/12 cm
PPI at DWL:	495 lbs.	224 kg
Average Cockpit Depth/ Freeboard	10"/10.5"	25/26 cm
Capacity weight/persons per USCG	1250 lbs/ 6 persons	565 kg/ 6 persons
Outboard recommended/USCG	50 HP/NA	35 kW/NA
Material:	Stitch & Glue	composite

The Texas Sled 18 is a flats boat with an inverted vee hull.
The inverted vee hull or Sea Sleds is a well proven concept: air trapped in the tunnel lifts the hull and creates a cushion that soften the ride.

The large water plane gives a very shallow static draft: 5" at 1,800 lbs. The TX18 is a very stable fishing platform thanks to the hull shape.

Speed and HP.
At 2000 lbs displacement, at WOT, the max. speed will be:
30 HP: 28 mph
40 HP: 32 mph
50 HP: 36 mph.
This is for an engine in good condition at wide open throttle.

The USCG calculations give a maximum engine HP so ridiculously high that we don't want to post it.



The TX18 has a low freeboard: it is easy to get in and out of the boat while fishing.
Based on builder's requests, we show a shallow cockpit and center console.
We show a standard layout that can be customized. The decks can be extended, the gunwales can be wider and the sole can be raised.

The fuel tank (20 gallons) is located under the console.

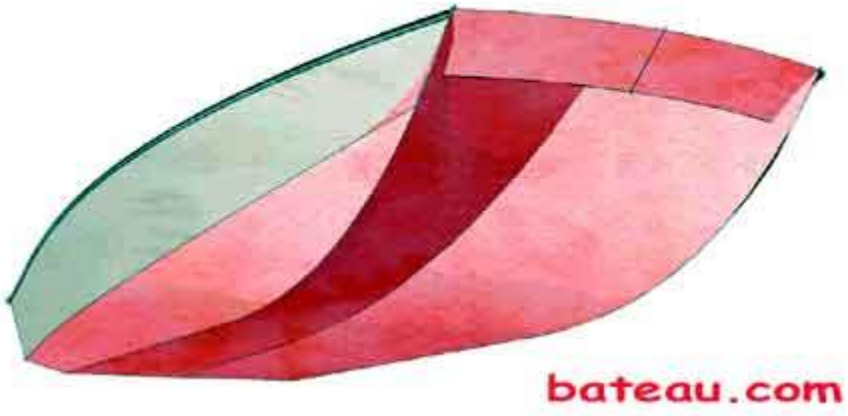
Comparisons and inverted vee features:

Differences between the flat bottom, vee hulls, catamarans and TX18:

Static draft:
Out of all hull shapes, everything else being equal, a flat bottom boat will always float in less water than any other

boat. Nothing can beat a large barge type hull like our XF20 in that area.
Catamarans will have the most draft, vee and inverted vee hull will be in between.
It is matter of water plane area.

Running:
A flat bottom with a tunnel will run in less water than any other boat but will pound in even a small chop. A shallow vee hull comes close and pounds less. The catamaran and inverted vee will run at around the same depth. The inverted vee may lift above the water but the outboard lower unit has to be lowered to catch solid water. With a super cavitating prop, the outboard can be raised a few inches in each case. Of all the hull shapes, the inverted vee will be the smoothest running one thanks to the air cushion lifting the hull. This is a major point for the Gulf Coast flats fishermen since they have to go long distance to reach their fishing grounds.



Take-off draft:
The catamaran and tunnel hulls have their cavitation plate at water level but once they gain speed, their behavior is very different. Water between the cat hulls becomes disturbed and cavitates if not lowered. Coming out of a tunnel, the water raises behind the boat and the outboard can be raised to run above the water level.
See our XF20 study plans for a complete explanation.
The flat bottom tunnel boat is again the winner.
A flat bottom boat without tunnel and an inverted vee will behave the same way at that stage.

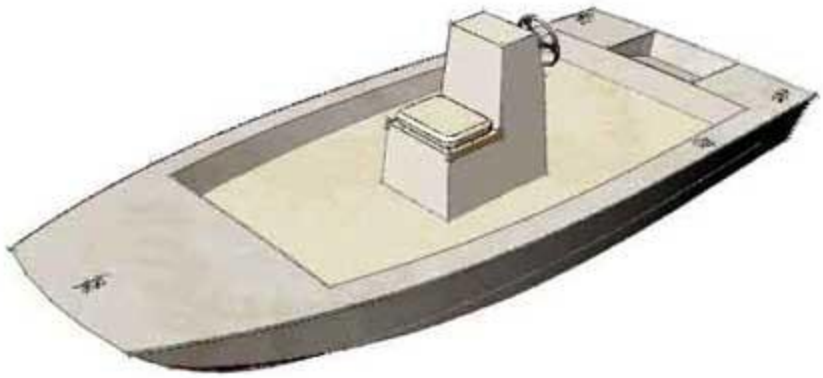
All together, the inverted vee combines features from every type and is a good choice when long distances must be covered with a very shallow draft boat.

Sneeze guard:
Some catamarans with a low under deck and some inverted vee are prone to "sneeze". This means that under certain conditions, the pressure under the deck forcefully pushes water forward and sprays from under the bow shower the crew. To prevent this, many inverted vee boats feature a "sneeze guard". This is a wide spray rail fitted under the foredeck.

For more information about inverted vee hulls, search the WWW for "Hickman Sea Sled" or "inverted vee".
Our TX18 uses the tunnel principle of the inverted vee but has wider slanted chines and less freeboard than usual. The proportions are are also unusual: inverted vee's are narrower. The under body of our TX18 is close to a Sea Sled, the keels spacing to length ratio is similar to the Sea Sled. Above the waterline, our hull is much wider.
Inverted vee hulls were difficult to build at the time Hickman invented the shape (1914), Their structure is subject to more stress than a regular vee hull but thanks to today's material, the problem is solved.

Building method:
The TX18 can be built in two different ways: with or without a jig.

We strongly recommend to build this boat on a jig and that is the method we describe in the building notes.

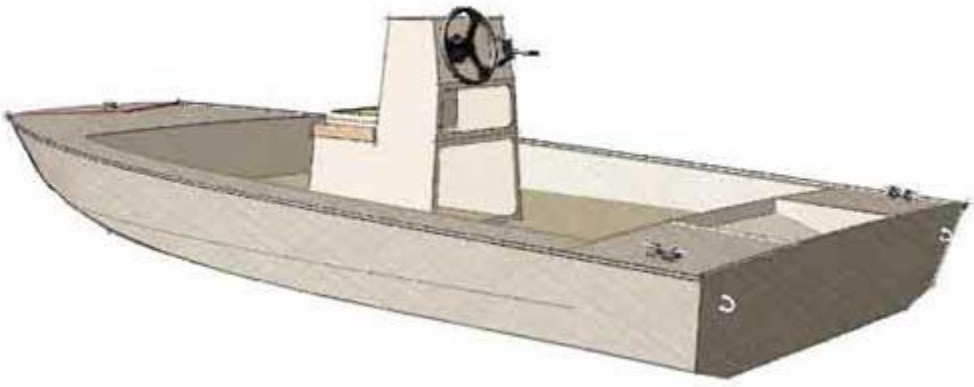


The structure is monocoque like all our other boats. The TX18 uses three stringers: once central stringer at the top of the tunnel and two stringers acting as keels in each side. Those two stringers are not parallel but the plans show notches in the frames, the parts come together as a puzzle. There is stem piece that shapes the bow and all parts participate in the structure.

Required Skills:

As all our stitch and glue boats, the TX18 is easier to build than other plywood or fiberglass boats.
We worked hard to keep the building as simple as possible: most of the plywood cuts are straight lines, the nice curves are created by well planned bending around the frames.
All the plywood parts have been precisely calculated: you cut them flat on the floor, no need for templates, no need to take measurements from the hull framing as in the plywood on frame method.
No beveling, no tricky adjustments, no lofting at all, no calculations of any kind: we show dimensions for all the parts on the plans.

However, this boat is more complex to build than a jon boat. Ideally, you should have build a small boat with our material before tackling the construction of the TX18.



It is not more difficult to build the TX18 than a PH18 but this boat will not forgive shortcuts taken in materials quality and scantlings. You must use marine plywood and respect our fiberglass and resin specifications.

Options:

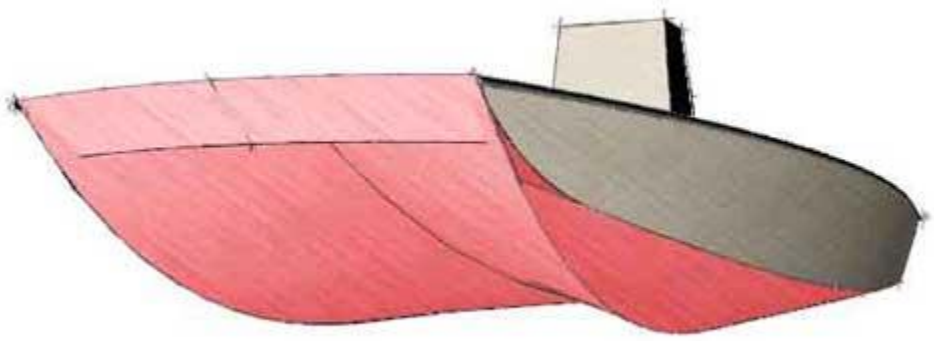
As mentioned above, the layout can be customized. The decks can be extended several feet, the gunwales can be made much wider. The sole can be raised but not lowered. Access to the bow and stern lockers can be through access holes cut in the cockpit frames or through hatches.

The main option will be to use or not use a jack plate.
The transom height is designed for a 20” shaft but, ideally, the TX18 should use an outboard mounted on a transom jack plate. This boat is sensitive to prop height adjustments. It is easy to understand that once on plane, the water escaping from under the transom will be aerated. On plane, the TX18 hull lifts slightly above the water. The propeller should then be a few inches lower than the bottom to grab solid water. This does not increase draft since it is the boat that moves up. A jack plate will allow the skipper to adjust engine height while running.

If the builder does not plan to install a jack plate, we recommend to cut the transom down 2 or 3”. How much depends on the type of prop. A 4 blade double cup or super cavitating prop will accept to run higher than a conventional prop. If you cut the transom down, the bottom of the splash well must be lowered by the same amount to allow the engine to tilt. The transom and motor well are designed to ABYC specifications for maximum 75 HP but we do not recommend more than 50 HP..

An important option is buoyancy.
Your TX18 will be stronger and unsinkable if the volume under the sole is filled with foam. This should be done with USCG approved closed cell foam, poured in place.

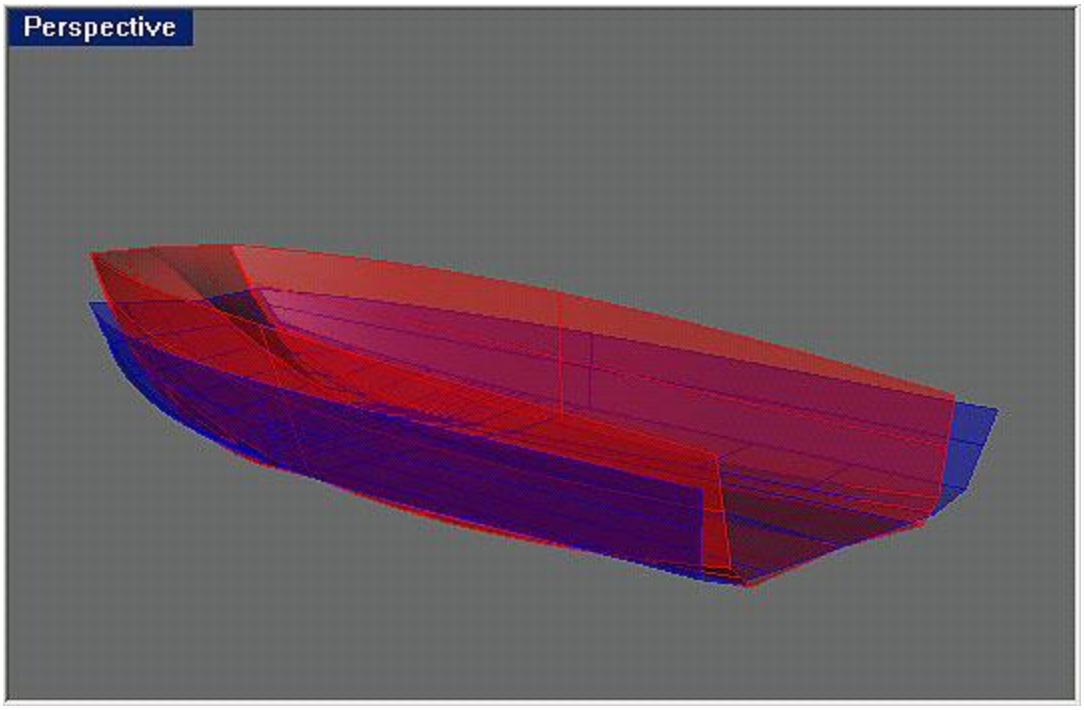
There is no "heavy duty use" option. The hull is very strong as designed.



Bonus plan:

The plans include a set of lines for a Sea Sled based on the original Albert Hickman drawings and on a set of plans for a Sea Sled drafted by Bill Jackson in the 50's.
Jackson was not only an excellent designer but followed closely the lines of the Hickman Sled. The HS18 differs from the TX18 in several aspects:

- higher freeboard
- smaller beam to length ratio
- narrower anti-trip chine panel
- negative deadrise at transom.



The picture above shows the differences, the bonus plan is red, the TX18 blue.

That bonus plan is not a complete set of plans but everything you need to build the boat is there:

- simple lines
- hull panels with dimensions
- all stations
- basic scantlings

This is a work in progress. The drawings and specifications are **for those who want to experiment** with the Inverted Vee hull shape.

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.
We recommend Marine grade plywood BS1088 for the hull, either Meranti or Okoume. Meranti BS6566 is acceptable as is marine Fir plywood or exterior plywood with no voids.
Note that BS6566, exterior or marine fir without voids is difficult to find and that fir or exterior will check.

Plywood 4x8' (122x244cm)		
1/4" (6mm)	11	
3/8" (10mm)	7	
Fiberglass (totals)		
Biaxial tape 12 oz.	175 yards	157 m
Biaxial fabric 12 oz.	47 yards	42 m
Woven cloth 6 oz	4 yards	4 m
>Resin		
Epoxy, total	15 gallons*	60 liters

15 gallons at 50% glass, 21 gallons at 33%.

Labor:
The hull can be build in 80 hours but a finished boat will require 120 hours or more depending on the level of detail and the skills of the builder.

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

Plans Packing List:

6 detailed drawings with all dimensions required to cut the side panels, bottom panels, bulkheads, seats and all parts from flat plywood sheets: no lofting, no templates required.

Nesting drawings for the best plywood layout, all parts nested.

- Drawings list:
- B278_1 Concept drawing, 4 views
- D278_2 Plywood nesting for all parts.
- D278_3 Stations, molds and frames
- D278_4 Hull and Sole panels
- D278_5 Deck, stringers etc.
- D278_6 Construction views and notes
- B278_7 General details
- B221 Typical Small Boat Electrical diagram
- B187 Standard Center Console
- Specific building notes for this boat with Bill Of Materials.
- Help files reference list and more.

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