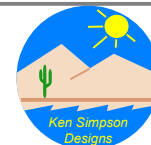


# The 1 SHEET WEDGE Small, Lightweight, Very Portable and Low Cost.



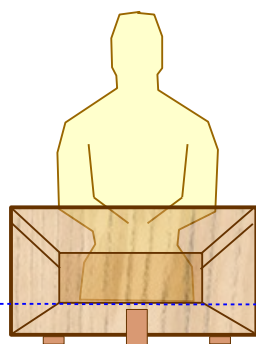
Drawn 09-20-2015

Rev. 8-25-2018

Print in Landscape Mode with 1/4 inch borders. Print only the pages you need.

The 1 SHEET WEDGE may look similar to my other wedge designs, but differs in one important aspect, the hull is primarily constructed from just a single sheet of 1/4" plywood. This lone occupant hull weighs only 35 pounds, and nests to a 4' x 2.5' x 1.5' storage size. The 1 Sheet Wedge is just the right size for single person capacity, up to 225 pounds. It also has many options to satisfy the builders needs. So, why build this design? Well, it's less costly, simple to build, and acts more like a Kayak than a Punt. It powers effortlessly with minimal wake, can accept a trolling motor, and will also fit in almost any car. But, equally important, it is fun ! Fun to build and fun to use. So get busy, order the plans, and, view the many options.

The straight sides contribute to the lateral stability of the small hull. And, the wedge shape puts the load over the most buoyant area, insuring good axial hull balance.



Front View

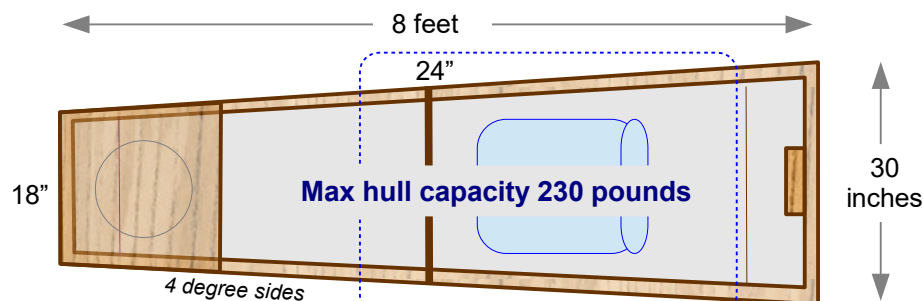
Empty weight = 35 pounds

See specifications on Page 3

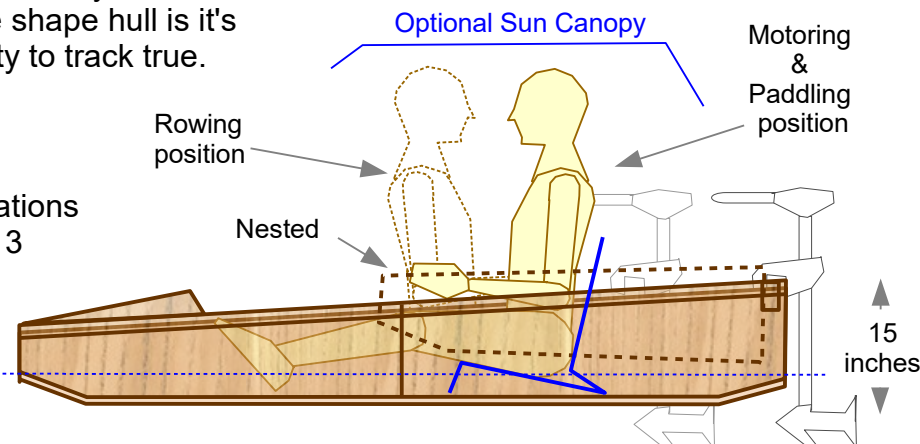
Water Line

As you can see from these sketches, the hull is ultra simple, all straight lines, no frills, thereby creating an easy to build boat that will provide many hours, and even years, of pleasurable use.

**Bare bones cost to build about \$100**



The beauty of the wedge shape hull is it's ability to track true.



Row, Paddle or add a Trolling Motor for power.  
Always keep a bow-up attitude.

An even lighter version can be constructed of 5 MM thick Plywood, with a double floor, for lighter weight occupants.

See the last pages of these plans for other unique design variations !

[PortableBoatPlans.com](http://PortableBoatPlans.com)

Page 1 of 38

This is an experimental design drawn up by an untrained amateur. The Designer accepts no liability for any loss, harm or damage sustained during construction or use. Builders may use these plans to construct a small quantity of boats for their own use only. Commercial manufacturers must ask the Designer for permission.

## General Notes

The idea for the **1 Sheet Wedge** came from my desire for a simple, low cost, yet useful small portable hull design.. It includes an ample beam and freeboard, decent volume, seating for one, and optional safety buoyancy. It is sturdy, easy to build, very portable and utilizes paddle, oar or a standard trolling motor power.

To have strength and yet be lightweight, the plans use some non-traditional methods of assembly , specifically the **"Tape & Glue 2"** construction process developed and incorporated by the designer.

This provides a durable, yet truly portable, finished boat, and the building process is easily mastered by the home handyman and amateur boat builder.

As a result, only hand tools, a jig-saw, a power drill and a large carpenters square, scissors, and tape measure are all that will be required throughout the assembly process.

Be selective in your choice of materials. Use plywood that is preferably exterior rated (X). Marine Plywood is very expensive, so the use of **ACX** Grade, or better, is recommended, but be choosy. It is important to note, the final choice of materials is the decision of the builder. We have made specific recommendations, but if the builder has previous experience with different methods and materials, that is their choice, and we respect that decision.

Certainly, minor changes in design are encouraged, to provide a 'custom' boat to satisfy a builders specific needs. We do not make changes to the drawings.

This would be up to the individual builder, and their responsibility. Also, it is very important that none of the basic design parameters be drastically modified, as this may adversely affect overall boat safety or performance.

Seating choice is also up to the builder. I have folding seat plans available for free on the website.

It should also be noted that the hull modules can be glued and screwed together, for those that do not have limitations of storage or transportation.

The hull is constructed using 1/4" plywood, for greater durability, but the exterior could also be fiberglassed , allowing yet thinner and lighter (5 mm) plywood hull building material .

Any questions or comments regarding the construction and/or design of this project will be responded to in a timely fashion.

**Note**, these plans are hand drawn one line at a time, not CAD, and as such are prone to minor drawing flaws.

Thank you for your interest, and for purchasing these plans, and good luck with your project.

And don't forget to visit [www.PortableBoatPlans.Com](http://www.PortableBoatPlans.Com) for new designs and updates.

Happy Boating !

***Ken Simpson , Designer***

# The 1 SHEET WEDGE

Constructed the same way as most of my designs, Tape & Glue all seams and joints. Waterproof inside and out. Finish to your requirements. An excellent lightweight boat for getting out on the water whenever you want. Stores easily, in minimal space. Low in cost, high in fun !

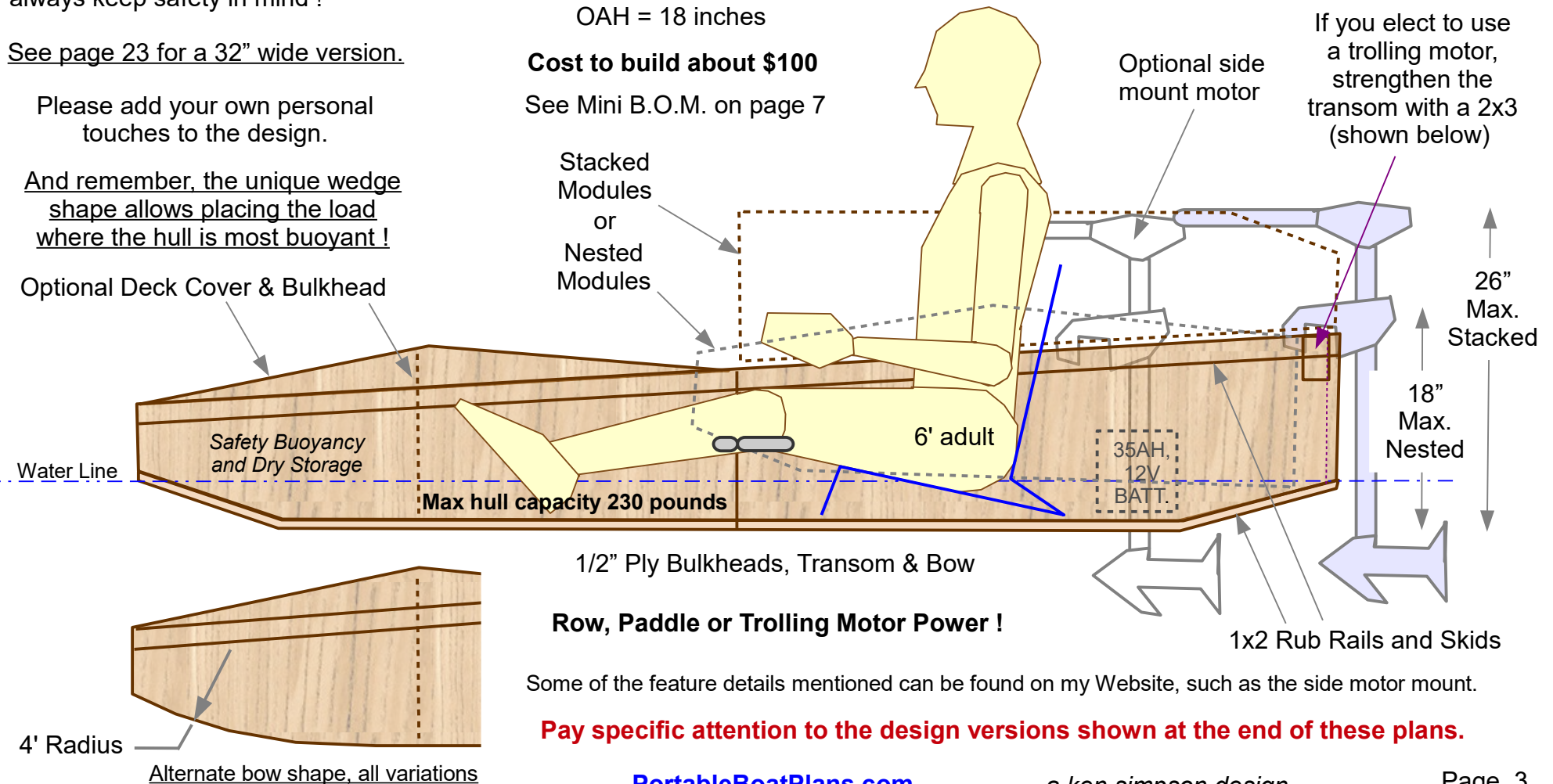
Good luck with your build, and always keep safety in mind !

See page 23 for a 32" wide version.

Please add your own personal touches to the design.

And remember, the unique wedge shape allows placing the load where the hull is most buoyant !

Optional Deck Cover & Bulkhead



## FEATURES

### SPEC'S:

OAL = 8 feet  
OAW = 30 inches  
OAH = 15 inches  
Weight = 35 pounds  
Capacity = 230 pounds,  
Includes Single Occupant

Motor & Battery

### Transport:

OAL = 50 inches  
OAW = 30 inches  
OAH = 18 inches

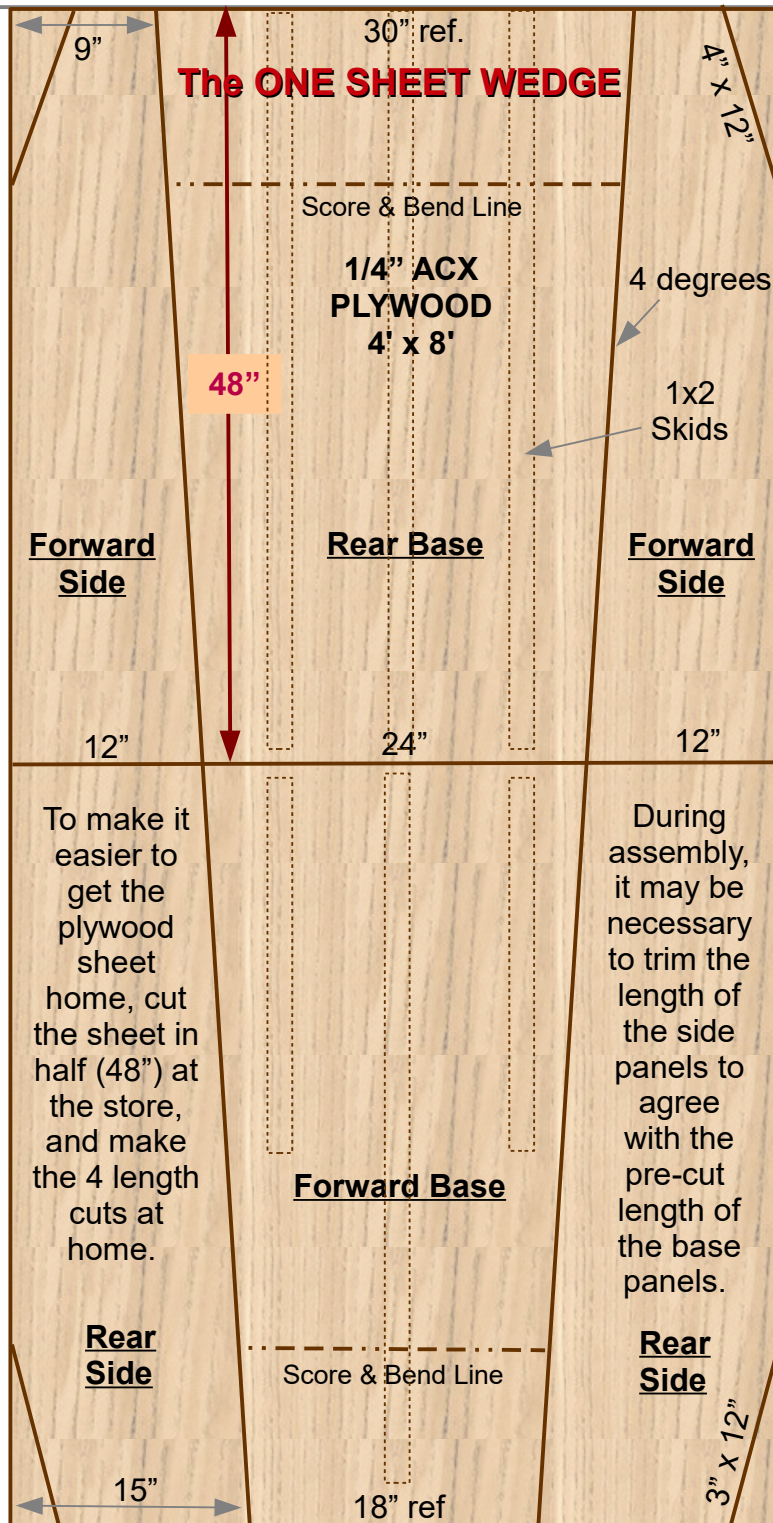
**Cost to build about \$100**

See Mini B.O.M. on page 7

## A unique design for unique people.

Although not originally designed as a multipurpose boat, the **1 Sheet Wedge** is an ideal vehicle for children to learn about boating safety. It's small and stable, and it floats, even when full of water. Further, the older set will find it to be a practical choice for the occasional trip to the lake, for fishing or just to get away, and then be able to store it in a confined space when home. It really can be many things to many people! Try it, you'll like it ! **Note** max hull capacity includes occupant, motor, battery and/or gear.

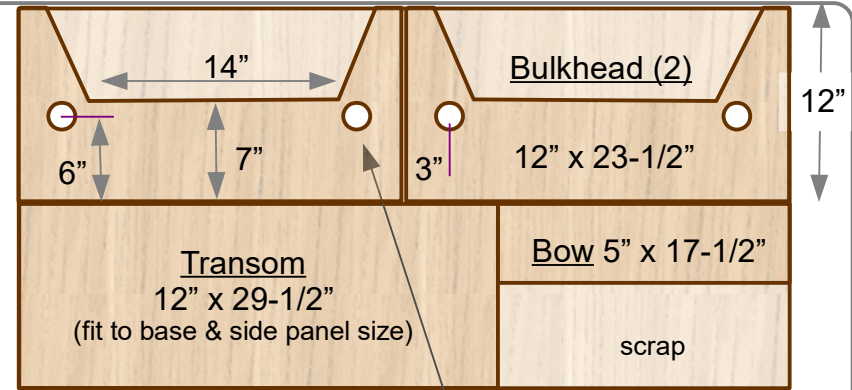
**Pay specific attention to the design versions shown at the end of these plans.**



## PLYWOOD LAYOUT

A lighter version can be constructed from 5 MM Plywood, for loads not to exceed 190 pounds, including occupant, gear, motor and battery.

Also note, for those of you that do **not** have a transport or storage problem, the hull can be made all one piece. Just do not make the **48"** cut. And, make only 1 center bulkhead.



**2' x 4' 1/2" Plywood**  
Bulkhead dimensions Page 6

1/2" Assembly Bolt Holes  
See page 18



Note: This forward enclosed area can be used for dry storage, and safety buoyancy.

As there are only a few simple cuts to be made, I will not go into much pre-assembly detail. Just use a good plywood saw blade, and cut straight lines. This is best done by using a straight piece of lumber, clamped to the plywood, as a saw guide. Always cut from the inside surface of the plywood, which prevents splinters on the outside, as the good side of the plywood always goes on the outside of the hull. And remember, measure twice, but cut only once !

The next page shows typical tools that can be used to build this boat.

**NOTE: 5 MM Plywood can be used for an occupant 180 pounds, or less.**

For purposes of plan detail, the latest version of the **T&G Process** (6 pages) can be downloaded from my Website, Accessories section, before starting construction.

[www.PortableBoatPlans.com](http://www.PortableBoatPlans.com) ← Click Here

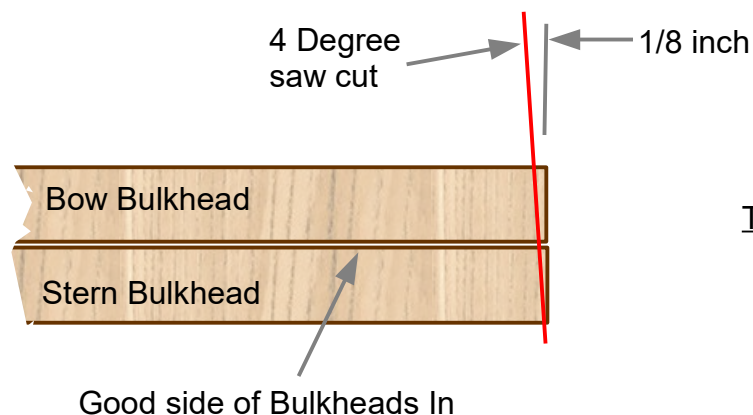


## The ONE SHEET WEDGE

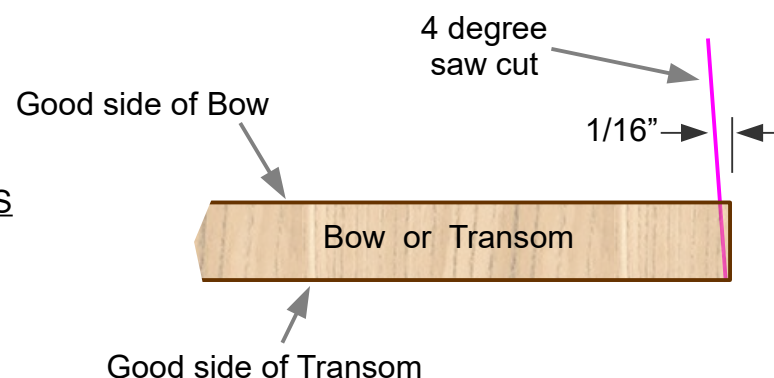
### Bulkhead, Bow & Transom Edge Trim

It will be necessary to trim the outside edges of the Bulkheads to conform to the 4 degree angle of the side of the hull. To do this requires that the 2 identical Center Bulkheads be placed face to face (good side of plywood facing each other), as shown below. Using small clamps, secure them together, flush on all sides. Next, mark a pencil line down one side, 1/8" from the edge. Do the same on the opposite side of the same panel. Now, set your saw at a 4 degree angle. It is suggested you again use a saw guide, to insure a straight cut. Do one side of the double bulkhead assembly, and then the other, a total of 2 cuts. You can then release the clamps. Mark the bulkhead with the deepest cut, the Bow end bulkhead. The other is the Stern end bulkhead.

Also shown below are the Bow and Transom panels. The 4 degree side angle cuts are done as individual panels, and only 1/16" from edge. Insure that the good side of the plywood will face the outside of the hull.

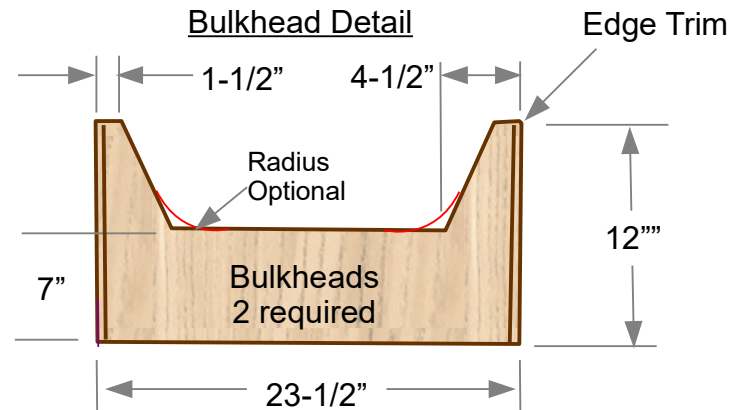


TOP VIEWS  
Full Size



### IMPORTANT: Side Panel to Bulkhead Assembly

Here is where the fun begins. The methods and materials used for this assembly will be the same for all future assemblies. Bond the Side Panels to the Bulkheads using **Titebond III waterproof wood glue**, and secure using **5/8" Brad Staple Nails**, as defined on the next page. First, apply a small bead of glue to each surface to be bonded, and wipe into the wood with finger. Remember, Titebond III is a water clean up glue, so it is OK to get on your hands. Next apply a thick bead of TB3 on the Bulkhead and align the panel in place. Secure with Brad Nails from the outside. Hammer nails flush to the panel. Allow to cure for at least 4 hours. Very important, place on a flat surface to prevent the assembly from warping. See sketches on next page. Repeat this process for all panel assemblies.



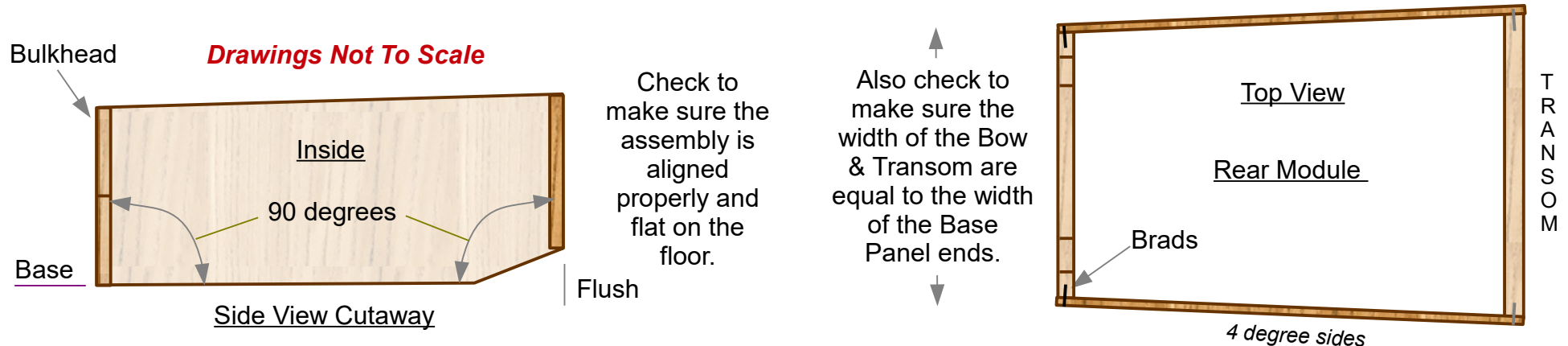
Check to insure the assembly fits the size of the cut Base & Side Panels.  
See next page.

## The ONE SHEET WEDGE

## TYPICAL MODULE ASSEMBLY

### Rear Side Panels Assembly

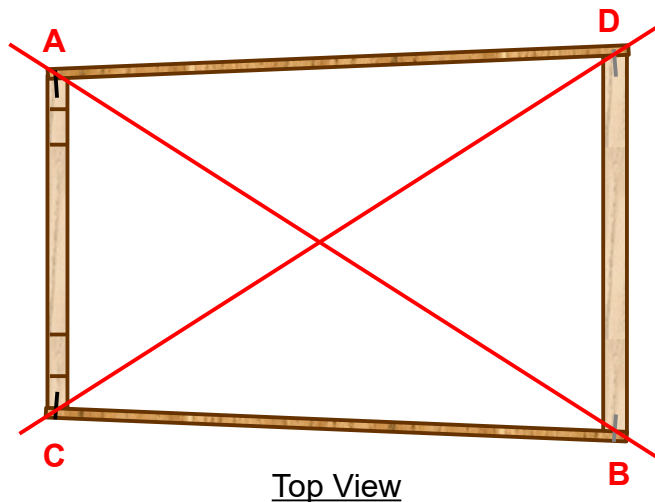
The assembly process of mounting the Side Panels to the 1/2" Bulkhead and Transom is easy, as defined on the previous pages. Make sure the Side Panels are mounted flush to the ends of the Bulkhead and Transom assemblies, and are square to the base. See sketches. This is a good place to use the small square, shown on page 5. **Note:** You may have to trim the length of the side panels slightly, to agree with the already cut length of the base panels. **Check base panel length fit prior to this assembly !**



**Note,** the Forward Module is assembled exactly the same way, and looks very similar, only narrower.

### Aligning the Modules

Prior to fastening the Base to the Hull Assembly, it is very important that it be square. The easiest way to do this is to measure from corner point **A** on the assembly, to point **B**. Then measure from point **C** to point **D**. Both dimensions should be the same. If not, adjust the Hull until they are within 1/4" of each other. Hold the shape with heavy objects (books or bricks, for example), and then continue on to the base panel assembly, as described next.



Mini B.O.M. (2015)

#### The 1 Sheet Wedge Est. Cost

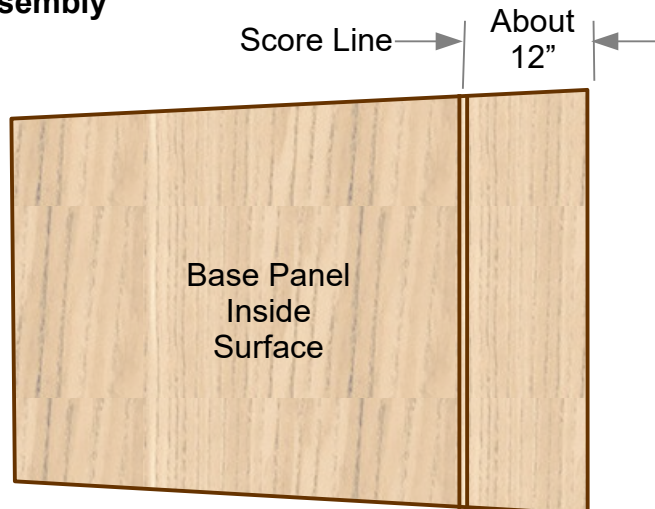
- 1 - sheet of 4'x8' 1/4" Plywood - \$25
- 1 - 2'x4' 1/2 inch Plywood - \$15
- 1 - gallon of TB3 Wood Glue - \$30
- 6 - 1x2x8' Framing Lumber - \$10
- 1 - box of 5/8" Staple Brads - \$4
- 1 - roll of Ultra-Thin Fiba-Tape - \$8
- 1 - roll of High Stick Masking Tape - \$3

## The ONE SHEET WEDGE

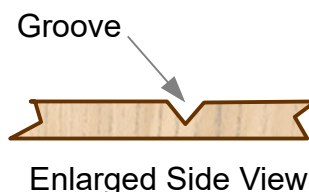
Review II construction pages, but especially page 15 for this assembly process.

### Base to Module Assembly

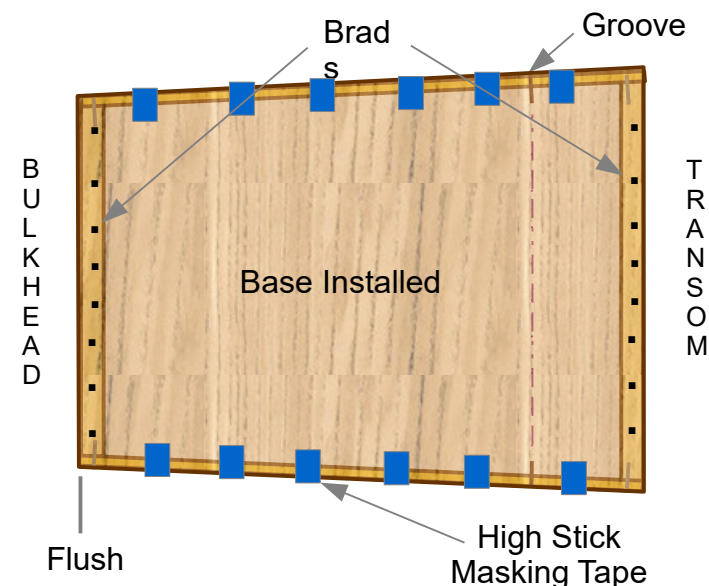
Now it's time to place a score line on the inside of the base panel, where it has to bend down to meet the Transom.



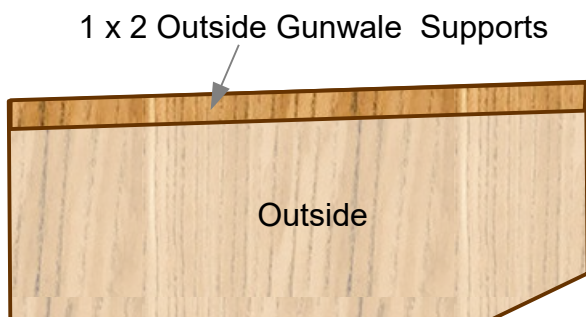
Mark a pencil line across the panel, from the points you marked. Using a sharp utility knife, cut a groove, as shown below, about  $\frac{3}{4}$  into the panel. Do not cut through the panel. You may want to use a steel guide to prevent knife wander.



**Critical:** Refer to previous page to insure base panels fit entirely over the module assemblies !



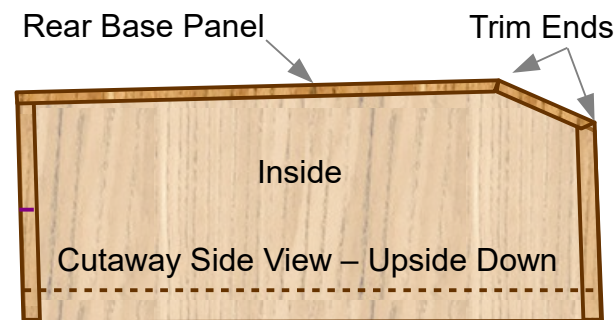
**Note:** Apply the 1x2 Rub Rails to the Side Panels, shown below, prior to installing the Base Panel. Allow to cure. Next, slowly start to bend the Base Panel up at the groove line. Do not force. It might be best if you clamp a straight piece of lumber (2 x 3) next to the groove, for support. Do not over bend, otherwise it may splinter on the other side. Then, turn the panel over and prepare to mount to the module assembly. Align the panel carefully, after applying TB3 glue to all the Module interface surfaces (edges), and Staple Brad in place the Bulkhead end, while working along the sides applying High Stick Masking Tape. Then slowly bend the end down to the Transom surface and brad staple in place. You may need a helper to do this. Insure the sides and bottom panel are aligned and well bonded. Add glue to any visible voids. Some groove splintering may occur, but sanding the hull will smooth it all out. Trim as necessary. Allow the assembly to cure overnight. REPEAT THIS EXACT ASSEMBLY PROCESS FOR THE FORWARD MODULE.



These supports make the side panels rigid.

### Gunwale Supports (Rub Rails) and Rear Base Assembly

Before applying the Base Panel, cut, fit and glue the 1 x 2 Gunwale Supports to the outside of each Side Panel, flush to the top of the panel, per sketch at left. Allow to cure.





Print in Landscape Mode with 1/4 inch borders.

The TAPE & GLUE PROCESS has been around for a few years, and hundreds of small boats have been constructed successfully utilizing the process without incident. There were two goals in developing the construction process, which is similar to Stitch & Glue. First, it had to be people and earth friendly, meaning it had to be as biodegradable as possible, and a non-allergen to those using it. Second, the materials used had to be low in cost to purchase. A third, but lower priority, had to be ease of assembly. The process has proven to be very popular with the small boat building community. Some builders have asked if other materials could replace those specified, and, up until now, none proved better. However, recent tests of various other materials has prompted a change to the materials list. Specifically, the "tape" can be replaced with a commonly available alternative, FibaTape, an ultra thin fiberglass drywall tape, with adhesive backing. The weave is small enough, and the thickness thin enough to provide just the right combination of features to replace the fiberglass cloth previously recommended. The following instructions will guide you through the process, in words and pictures, so that you should have no problems in producing strong and water sealed assemblies. Remember, the T&G Process is applied to most corners and seams after the basic hull modules are assembled, to provide a water seal at the edge of the plywood, and to enhance the structural integrity of the overall hull design. As a result, it is recommended that the boat being constructed be designed specifically to take advantage of this process.

The materials specified should be available at your local home improvement stores. The bonding glue is **TITEBOND III**, waterproof wood glue. It is biodegradable, non-allergenic, and FDA approved. It is available in 16 oz and 128 oz containers.

The tape is **Ultra Thin FibaTape**, used in drywall construction. It is an adhesive backed fiberglass mesh tape, that is mildew resistant. It is available in 75 foot and 300 foot rolls

Combined, these two materials produce a strong, thin, and easy to process alternative to other boat construction methods.

The photo at right is an edge seam processed with this new T&G2 method. As you can see, it covers the corner completely, and produces a smooth surface finish. Only light sanding is required after the glue has cured, typically in about 4 hours, weather depending. Like all processes, the ideal working conditions are at room temperature, around 72 degrees F, or 22 degrees C.



## TAPE & GLUE PROCESS 2

### Materials

The photos below are of the two components that make up the Tape & Glue Process 2. In combination they provide a strong, waterproof panel sealing system, that adds strength and rigidity to the hull components. The following instructions will show, in text and pictures, how to easily accomplish this process, and they will also indicate those areas of caution..



Available in 75 foot and 300 foot rolls  
Purchase the 75 foot roll..



Available in 16 oz and 128 oz containers.  
Purchase 32 oz for T&G only

Typically for small boats, one layer of tape is all that is necessary. However, if you are going to portage the boat over rough terrain, rocks or gravel, it is recommended two overlapping layers of tape be applied, for best seam protection. Also, do not skimp on the glue, as it is what holds all components together, and provides some abrasion resistance. All my designs utilize bottom skids, and some even utilize chine rails, to protect the hull panels from damage. The T&G Process 2 is intended for small boats only, 12 feet in length, or under. Larger boats, which are heavier and carry a bigger load, should use more traditional methods of assembly, for safety purposes.

Follow the instructions, and do not replace the materials specified, as they have been tested and proven to work on this boat.

## TAPE & GLUE PROCESS 2

Make sure that all panels to be taped have been cleaned and are free of sawdust. Wipe all these areas with a damp cloth, and allow to dry. Make sure all surface preparations, including rounding and sanding, have been made prior to starting.

You will be taping the inside and the outside seams of all hull modules. I like to do the inside first, and get it out of the way, but it's your choice. Whichever, always allow sufficient curing time for the TB3 glue, a minimum of 4 hours.

### DO's and DONT's

DO take your time in performing these instructions.

DO wear protective gloves and eyewear when applying the glue.

DO plan ahead to insure you have sufficient materials to finish the job.

DO NOT take shortcuts, follow the instructions.

DO NOT crease or fold the Tape, as it is a stiff fiberglass mesh and may crack

DO NOT water down the TB3 Glue, as it will be difficult to control the drip.

DO NOT sandpaper through the corner edge of the Taped joints.

Other Do's and Dont's may show up where necessary.

## The T&G PROCESS 2

A simple process description: **Cut Tape to Length, Press Adhesive Side Firmly to Panel, Apply a Bead of Glue, and Smooth Out.**



Sharp Shears to Cut the Tape

Press the tape firmly and evenly over the rounded corner of the hull. Repeat this action for the other edges. Make sure there are no loose spots. If there are, make note of it, as you will have to re-seat these after the glue has started to cure.

It is not necessary to tape the inside joint of the bulkheads and side panels, only the outside corners, as shown.



Protective Gloves

## TAPE & GLUE PROCESS 2

### The Process



Typical glue bead size

Notice the bead size of the glue, and also note the small plastic trowel. This will be used to spread the glue evenly over, and into, the surface of the tape.

Be consistent in the application of glue, and how you spread it out onto the tape. Allow the glue to settle into the weave of the tape. Pay particular attention to the corners, as the glue has a tendency to dry out in these areas.



Spreading glue with a small brush

**When lightly sanding the taped edges, take special caution not to sand through the fiberglass tape !**



Finished taped edge

Note: A second coat of TB3 will be applied to all taped seams, after the first has fully cured. This will add strength and fully conceal the tape. Patience is the keyword when performing this process. Allowing the glue to fully cure is critical to achieve the full strength of the finished project. When ready to add the second coat of TB3, first lightly sand the taped surface to provide better bonding.



Typical corner application

After using both the trowel and the brush, I found the brush to be easier to use, and causes less disruption to the tape.

## TAPE & GLUE PROCESS

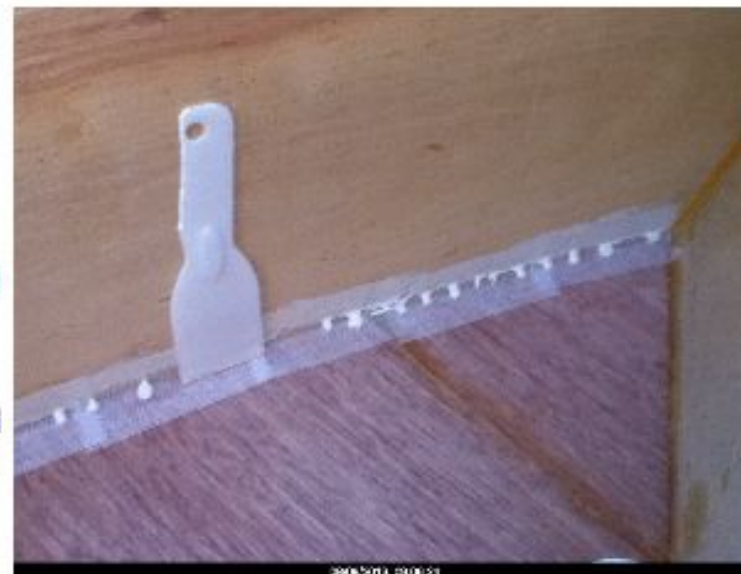
### Interior and exterior application



4 inch lengths of tape

What seams and corners need the T&G Process ?  
INSIDE:  
All Base to Side Panels.  
The Bow and Stern ends.  
OUTSIDE:  
All Base to Side Panels  
All Side Panels to Bulkhead  
All Base to Bulkheads  
The Bow & Stern ends.

You will note that the curved sections of the inside base require the tape to be cut into 4 inch lengths.  
See below.



Glue being spread up the tape

As stated earlier, I like to do the inside first, because it is harder to reach, and therefore more difficult.



Overlapping Taped Sections

As previously mentioned, the tape is stiff, and as such, cannot be stretched. So it is necessary to apply it in overlapping sections to achieve a fully taped curved seam. These photos should provide a good view of that process.

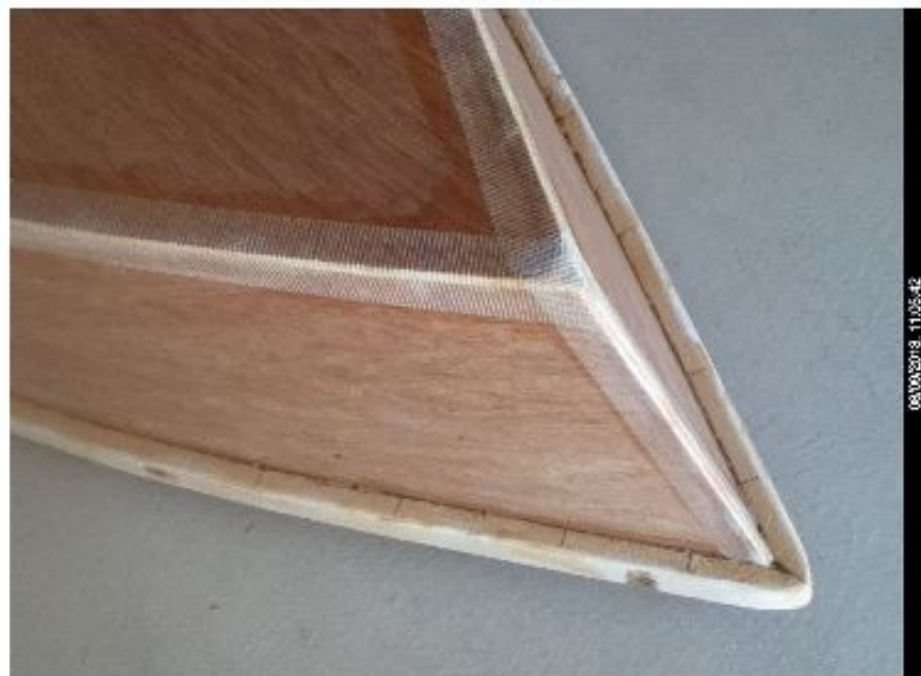
On the exterior curved surfaces, it is best to apply the tape to the side panel, and then slit the area to fold over, every 4 inches, as shown at right.



Exterior method on curved surface

## TAPE & GLUE PROCESS

### Final Notes



These are photos of the finished T&G Process, utilizing Titebond 3 Glue and FibaTape Ultra Thin, with a second coating of glue over all taped edges. Next process is to lightly sand all taped surfaces, taking caution not to sand through the tape !

If I told you taping was a simple task, I would not be truthful. There were times the tape lifted from the plywood after I had applied the glue, and this required special attention in those areas. I had to wait for the glue to start to harden, then press the loose tape down to the plywood, to achieve a bond. This occurred several times. It is possible the roll of tape I bought was older, as the adhesive backing was weak, and not very sticky. Or it could have been that I did not clean the plywood surface well enough. A second roll of tape, purchased at a different store, produced the same results. My conclusion is that this is not going to change, and the few times it lifted were tolerable. It is still far easier than the previous fiberglass cloth material, which moved every time it was touched, and unraveled upon application. The FibaTape is easier to work with, and should produce a strong assembly.

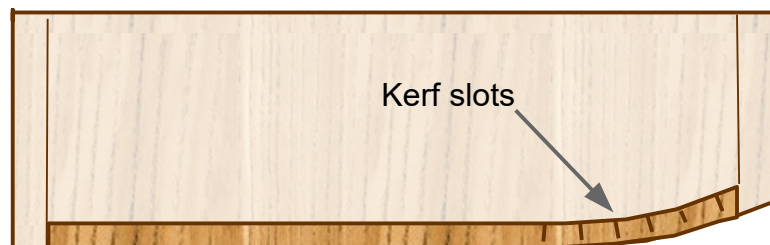
Taping the inside and outside edges of a four module hull took me 2 days to complete. I would assume you could do it in the same amount of time, or a long weekend. Just remember, this is a necessary process, and the protection it provides to the hull design is certainly worth the time and effort.

Good luck with your project ! Take your time, have patience, and you too will be rewarded with a safe and watertight hull.

*Ken Simpson, Designer*

## The ONE SHEET WEDGE

### Alternate Construction for Internal Corner and Edge Sealing.

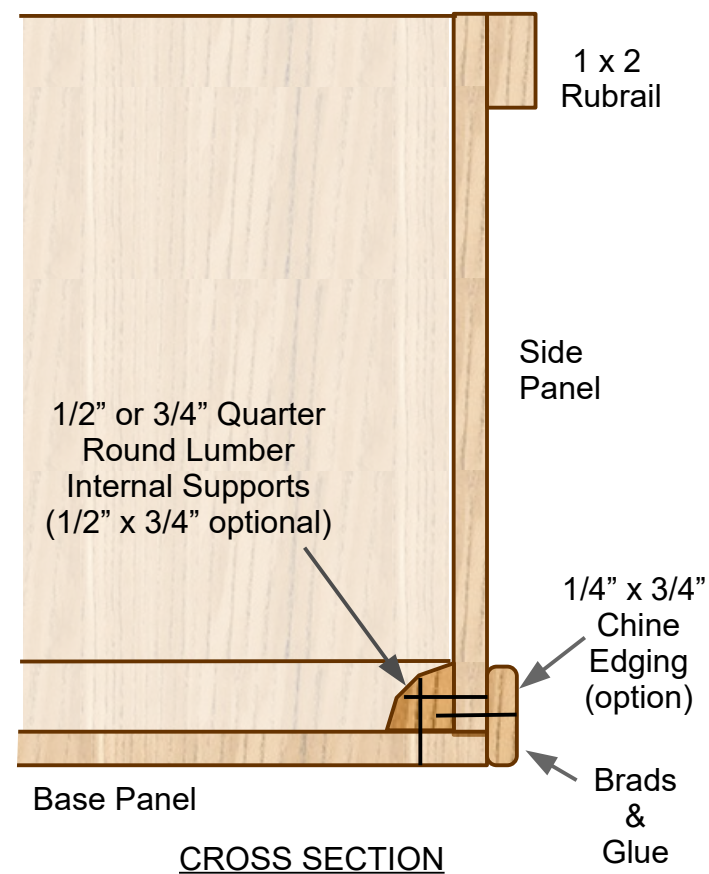


This is an example of alternate edge sealing, used to further describe the need for plywood edge protection.



One of the few things that will determine how long your boat will last, is how well you sealed the plywood edges and surfaces from water penetration !

Remember to keep the boat stored indoors if possible, upside down, and away from moisture when not in use.



CROSS SECTION

Some builders may opt out of using the T&G Process for sealing all hull joints and seams. This could be because they are familiar with another process, or the materials may not be available to them. If so, they should place 3/4\" Quarter Round Stringers along the bottom edge of the side panels, prior to mounting the base panel, to provide sufficient strength and area on which to assemble the base. See sketches above. In some cases, where there is hull bottom or side curvature, the stringers will have to be "kerffed", partially slotted every inch or two, to fit properly along the curved edges. Others may choose to use the stringers on the inside, because it may be easier for them to accomplish, and then apply the T&G Process to only the outside corners and edges, for the best water protection. This is quite acceptable.

However, if the stringer method of assembly is used exclusively, without the T&G Process, special care must be given to the exterior edges and surfaces of the hull, where plywood edges are completely exposed. Rounding all corners is necessary, and then special waterproofing of the edges must be applied. I would also place a chine stringer along the bottom edges for further hull protection, as shown above.

## WATERPROOFING the HULL

Over the years I have tried quite a few waterproofing methods, as I am sure you have also. It is important to note the objective: To seal out water and water vapor from penetrating the plywood surface and edges of the hull. Period. The problem is that it is most difficult to accomplish. Because I recommend non-marine plywood for my boats, the problem is accentuated. As a result, even more precaution must be taken. Up until a few months ago (2013), I was recommending Thompsons Water Seal as the best waterproofing method for the ACX Plywood recommended. It penetrates the wood surface and provides a good water barrier. The downside of this method is time; after application, the manufacturer suggests at least 72 hours minimum drying time. I recommend 24 hours, but only if you use oil based paints for the finish, and sand all surfaces prior to painting. Non-oil based paints will not adhere well to a surface treated with Thompsons. This has proven a problem to some builders.

Well, that was then, and this is now. After a couple of builders suggested I try a different process, I can now recommend an alternate method. We already use Titebond II Waterproof Wood Glue for construction, so why not use it as a water barrier? That is exactly what I recommend now, and here is how to apply it.

**WATERPROOFING METHOD** Follow the directions and photos below, for best results.



NOTE: It is important to water seal the inside surfaces of the bow & stern openings prior to assembly of the deck panel, and also the underside of the deck panel, and then all other inside surfaces of the hull modules. So, mix a container with 1/3 **water** and 2/3 Titebond III, by volume. Shake very well. I use an empty glue container, with 1/3 markings on the bottle, as shown above. Pour some into a plastic dish, and use a 2" disposable brush to apply. Brush evenly and completely over all interior surfaces of the module assembly. Allow to dry for at least 4 hours, at room temperature. This same process will be used for all waterproof sealing of all the hull assemblies, all surfaces, inside and out. The brush and dish can be water cleaned and reused for the next assembly, a big advantage using TB3. After the mixture has dried on the plywood, lightly sand all surfaces in preparation for a finish. The plywood surfaces will now be smooth, water sealed, and also strengthened by the application of the TB3 mixture.

Note: If the mixture is too runny on vertical, or horizontal surfaces, change the mix ratio to 25% water and 75% TB3.

Use this method for both the Inside & Outside surfaces.

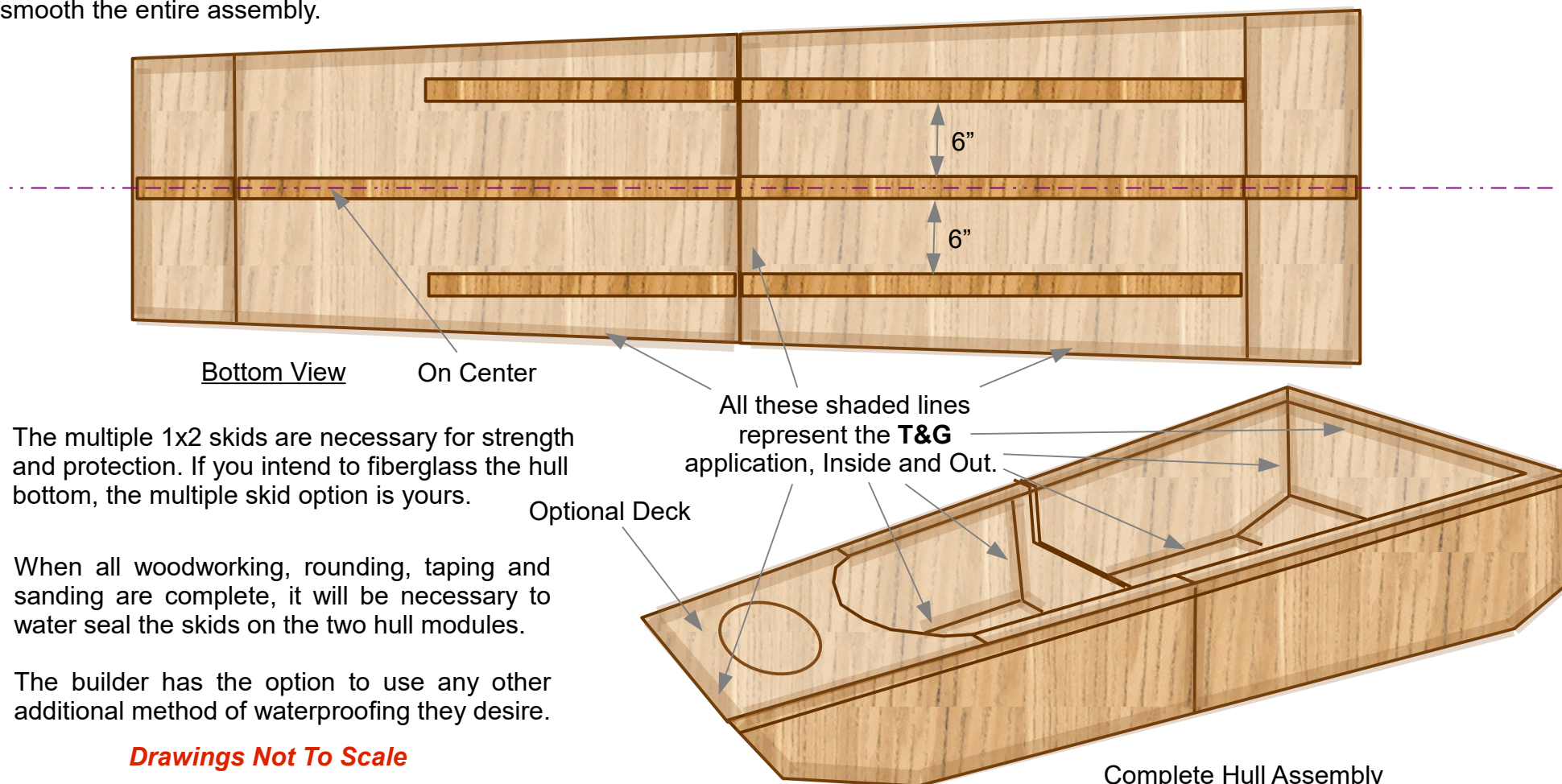
## The ONE SHEET WEDGE

Download T&G Process : [www.PortableBoatPlans.com](http://www.PortableBoatPlans.com)

Prior to the **T&G Process** it is necessary to round all edges and corners of the hulls. I use a  $\frac{1}{4}$  inch radius router bit in a high speed Roto-Tool. After rounding, it is important that you lightly sand all surfaces, inside and out, to provide a smooth & clean hull surface. For this particular design, it is imperative that **ALL** seams, corners and edges, inside first, then outside, be treated with the **T&G Process**. After all taping is complete, and cured, it is necessary to **Waterproof** the entire hull, inside and out. Allow to cure, and sand lightly.

**NOTE** : The Skids are to be applied AFTER the **T&G Process** & **Waterproofing** is completed to the finished hull modules !

The 1 x 2 Skids perform a couple of different functions. First, they protect the base when beaching or launching the boat. They also add considerable strength to the floorboards, and structural stiffness to the overall hull design. Cut the 1 x 2's to the length shown along the bottom, and up the bow and stern. Mark their location, and drill through clearance holes, on center, for #6 screws, about every 6 inches. Apply generous glue to the skid, and hold in place, while inserting #6 x  $\frac{3}{4}$ " screws from the inside. It is best done if two people are involved in the process. Make sure the screws are flush to the inside base panel. Allow to cure. Then round all skid edges and sand smooth the entire assembly.



The multiple 1x2 skids are necessary for strength and protection. If you intend to fiberglass the hull bottom, the multiple skid option is yours.

When all woodworking, rounding, taping and sanding are complete, it will be necessary to water seal the skids on the two hull modules.

The builder has the option to use any other additional method of waterproofing they desire.

**Drawings Not To Scale**

[PortableBoatPlans.com](http://PortableBoatPlans.com)

Complete Hull Assembly

# The ONE SHEET WEDGE

## ASSEMBLY BOLT HOLES



Accurately align and clamp the hull modules together. Using a 3/16" dia. bit, drill through both modules, as shown. The hole should be straight & 3" from the side panel, and 5" up from the base.

## SEQUENTIAL ASSEMBLY PHOTOS



Unclamp the modules. Using a 1/2" dia. spade wood drill bit, drill from one side, halfway through, then drill from the other side through. This prevents breakthrough chipping or splinters. Repeat for all four holes.

[www.PortableBoatPlans.com](http://www.PortableBoatPlans.com)



This is a 3/8"-16 T-Nut. It will be placed in the hole, glue applied (TB3) to the flange inside face & corner, and pounded flush to the support plate. Apply glue to exterior face and around the support surface.



After the two T-Nuts are applied, align the hull modules and secure with the Assembly Bolt Knobs. Hand tighten as best you can. Allow the glue to cure.



Assembly Bolt Knob.

See drawing on next page of this plan.

Bolt length to be 2 inches exposed.

Place the T-Nuts on the least occupied Module.



Detail view of Assembly Knob.

Not necessary to overtighten.

Hand tight is sufficient.

I put a little petroleum jelly on the threads to ease installation.

# The ONE SHEET WEDGE

## ASSEMBLY KNOB

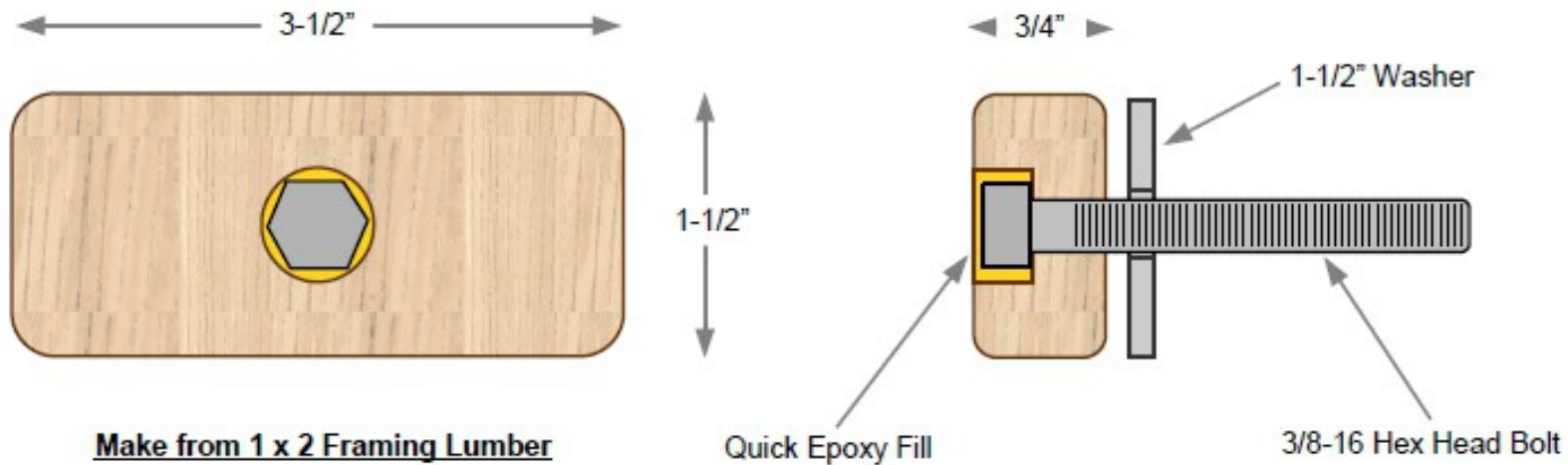
A convenient method of portable hull module assembly.



Drawn 01-20-2012

Rev. 07-11-2016

Print in Landscape Mode with 1/4 inch borders.



- \* Cut Knob to length. Radius all corners and edges.
- \* Drill 3/8" hole through, on center.
- \* Drill 5/8" hole, 3/8" deep, one side.
- \* Insert Bolt into Knob, about halfway.
- \* Apply Quick Set Epoxy into 5/8" hole.
- \* Seat the Bolt into Knob. Remove excess Epoxy.
- \* Check for straightness. Allow to cure.
- \* Paint Knob color of choice. Add large washer.

Use this design for all hull module-to-module assemblies. Similar knobs, 1-1/2" square, with smaller 5/16"-18 bolts can be used for other less secure assembly, such as lateral support bars. Do not use 1/4"-20 threaded bolts, as the threads tend to cross or strip too easily.

Length of bolt to suite application.  
Generally used in conjunction with a 3/8-16 T-NUT



[PortableBoatPlans.com](http://PortableBoatPlans.com)

Page 1 of 1

This is an experimental design drawn up by an untrained amateur. The Designer accepts no liability for any loss, harm or damage sustained during construction or use. Builders may use these plans to construct a small quantity of boats for their own use only. Commercial manufacturers must ask the Designer for permission.

# The ONE SHEET WEDGE

## SEATING

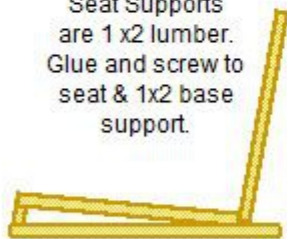
### UNIVERSAL SMALL BOAT LOW PROFILE PLYWOOD SEAT

Can be used on all my designs that do not specify fixed seating.

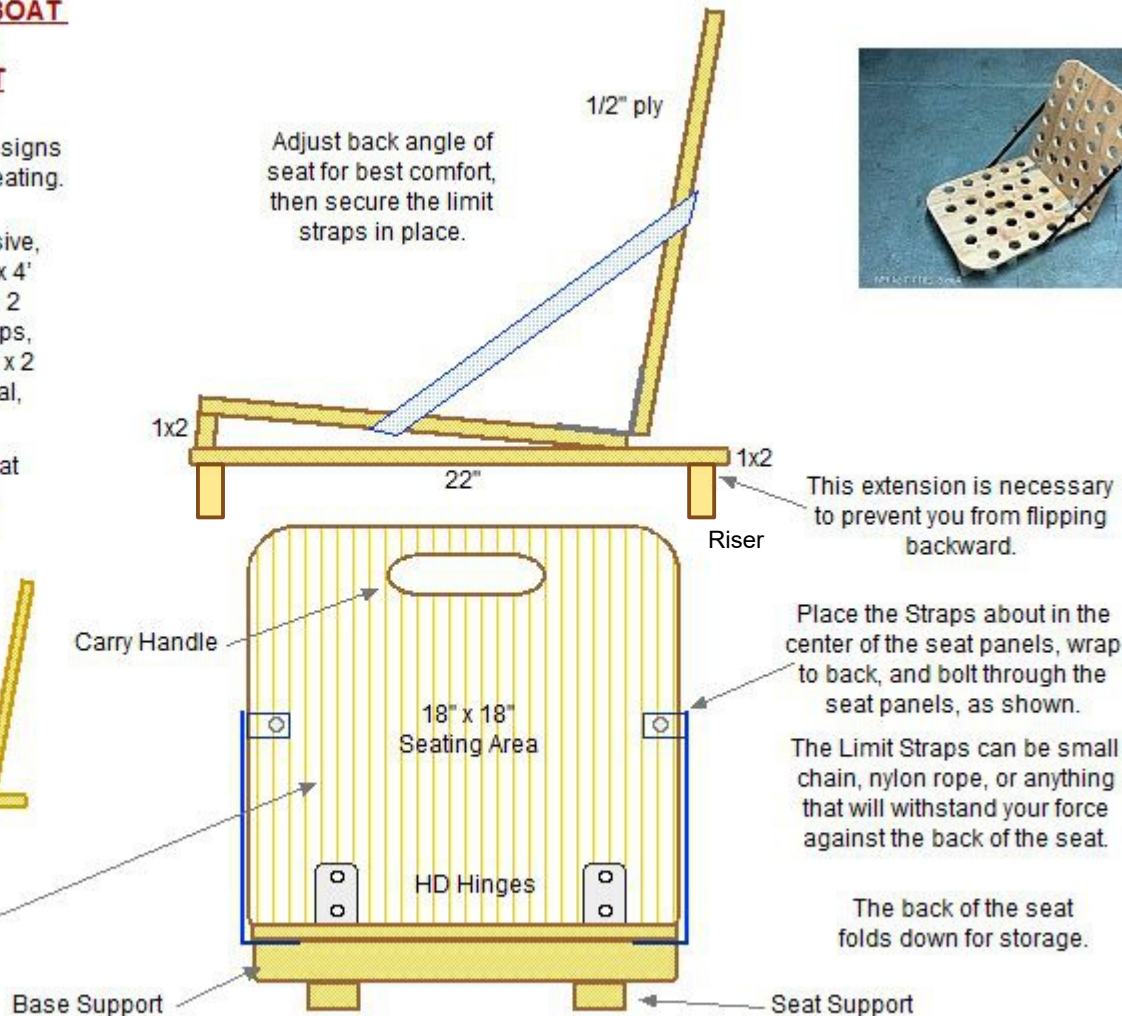
Easy to make, inexpensive, and only requires a 2' x 4' piece of 1/2" plywood, 2 strap hinges, limit straps, and a 8 foot length of 1 x 2 lumber. About \$20 total, plus paint.

Place cushions on seat base and back for additional comfort.

Seat Supports are 1 x 2 lumber. Glue and screw to seat & 1x2 base support.



NOTE: Grain of plywood is important for strength.



The folding Beach Seat, below, also works very well in this type of boat, and is comfortable too. I recommend it for all but the largest of people. It can be purchased from many sources on-line for about \$10.



Folding Beach Seat  
Available at TARGET  
About \$10

Modify the seat any way you like to suite your specific needs.

PortableBoatPlans.com

The Folding Seat shown above can be made by the builder for a reasonable cost, about \$20. However, I do recommend the Folding Beach Seat. I got mine at Target on an end of season sale for only \$10. Either one will work well with The One Sheet Wedge designs.

**This is the end of the plans. Finishing the hull, paint or varnish, is up to the builder. Select only quality materials, and apply carefully. Remember, you built it, you want to be proud of it. Happy and Safe Boating !**

**Hull Module Assembly****Nested Hull Modules**

This is a 1/5 scale model, made from foam board, with a scale outline of a 6 foot adult. It shows the internal volume of the hull, defining the sitting space and the space for gear. Depending on the weight of the operator, and if a trolling motor will be used, the battery could go behind or in front of the operator. The important element is that the hull should rest level in the water, and this is accomplished by shifting weight fore and aft. The long somewhat narrow hull is very functional, with the bow slightly elevated while underway, providing smooth water passage. As shown, this is a bare bones hull, no deck or forward storage area. These are all builder specific items.

**Here's a Ten Step recap of the assembly process.**

- 1 Layout & cut all panels from the 1/4 inch and 1/2 inch plywood sheets. 2 Angle trim edges of bulkheads and the bow and transom panels. 3 Assemble the 2 hull modules. 4 T&G all inside seams and corners. 5 Round all outside edges and corners. 6 T&G all outside edges and corners. 7 Lightly sand and clean all surfaces. 8 Waterproof all surfaces, inside and outside. 9 Apply skids to bottom of hull, and waterproof them. 10 Apply a finish per the builders requirements.

If, for some reason, this design does not satisfy all your needs, but you do like the concept, I suggest you look at the **F.I.T.** Plans for a more adaptable design. The enlarged version can be powered by a 2.5 hp gas outboard, and achieve planning speeds, up to about 10 mph. Also, it can accommodate at least 2 people, plus some gear

Build photos by Tice Porterfield of Bertram, Texas, USA.



Forward and rear modules after waterproofing.



Typical inside construction of the rear module.

This is the end result of the fine work completed by Tice. He has a few children and wants them to enjoy the freedom that boating offers. In this photo, on a cold December day, his young Daughter Emma is showing the relative size of the boat. The hull is literally sitting on the water, due to her light weight. An adult would sink it down a couple of more inches. Please note she is wearing her PFD !

Tice is in the process of adding a sail rig to the boat, patterned after that of the folding MicroCC Sail, as suggested on the plans.

I will add photos when available.



## The ONE SHEET WEDGE, W I D E Version, with Options.

This is the "Wide" design version of the hull. The transom is 2 inches wider, providing nearly 15 pounds of additional buoyancy to the aft of the hull. The slightly wider design also produces a little more lateral stability, great for a slightly heavier occupant. The bow is one inch lower to the water, which should not pose a problem for general use. The application of a small deck (as shown), with a splash guard, is suggested. Choppy waters are always a concern in small boats, and this one is no different. Otherwise, all other aspects of the design remain the same.

So, what's the main difference between the 2 hull designs ? Well, not much, other than the "Wide" version is capable of a heavier occupant, due to the increased buoyancy aft. For most, this would not make a significant difference. However, if you also decide to make the boat into a day sailer, then the wider hull would contribute added stability.

However, the 30 inch wide standard hull would be more capable of transport in smaller cars, and consumes less storage volume. And the bow provides a little more freeboard, which translates to possible increased safety. Your choice !

All assembly details are the same as the standard hull.

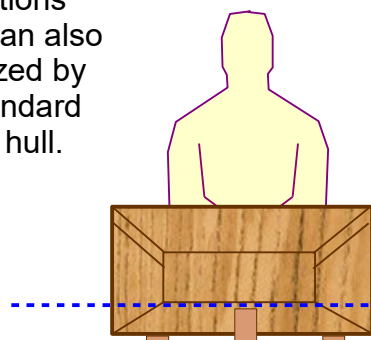
Good luck with your project.

### OPTIONS

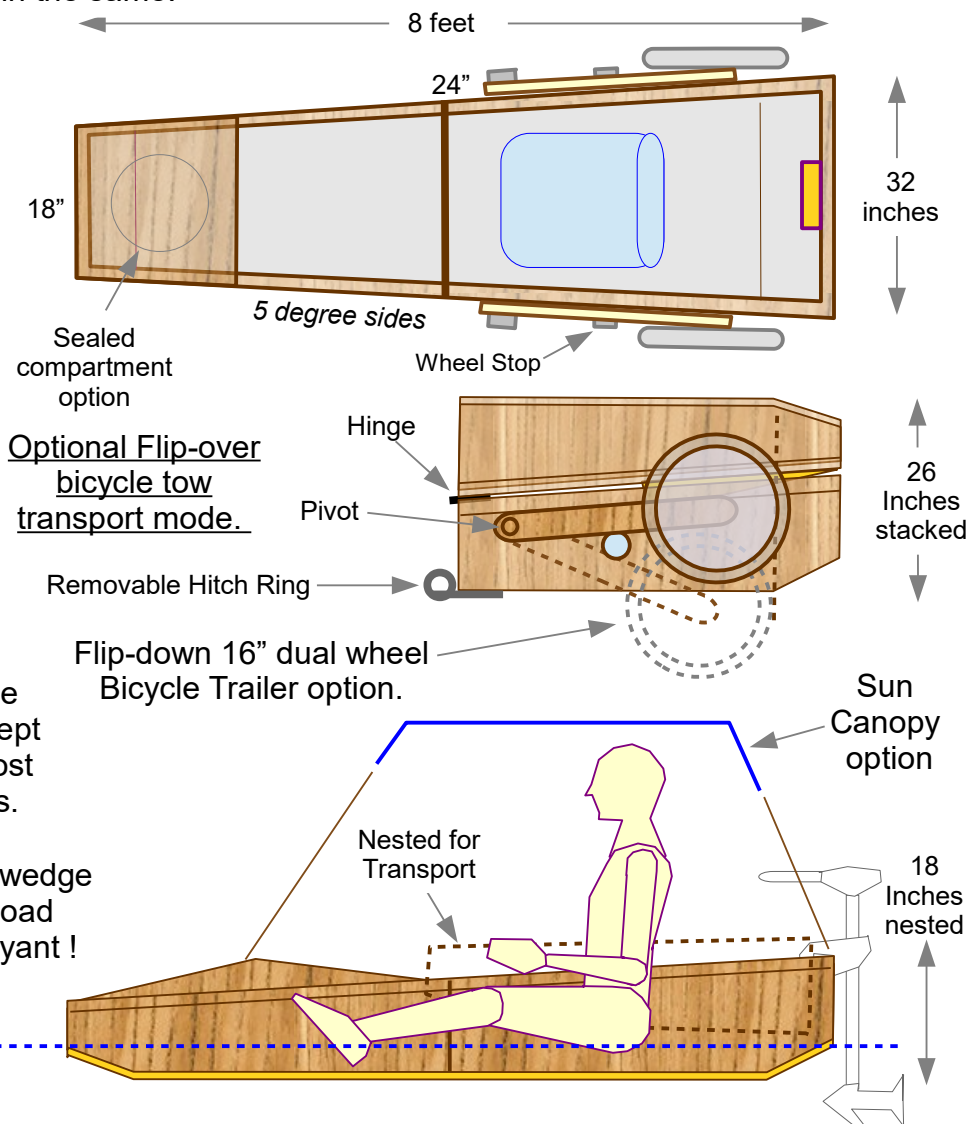
The beauty of this wedge design is it's ability to accept options unavailable to most conventional hull shapes.

And remember, the unique wedge shape allow placing the load where the hull is most buoyant !

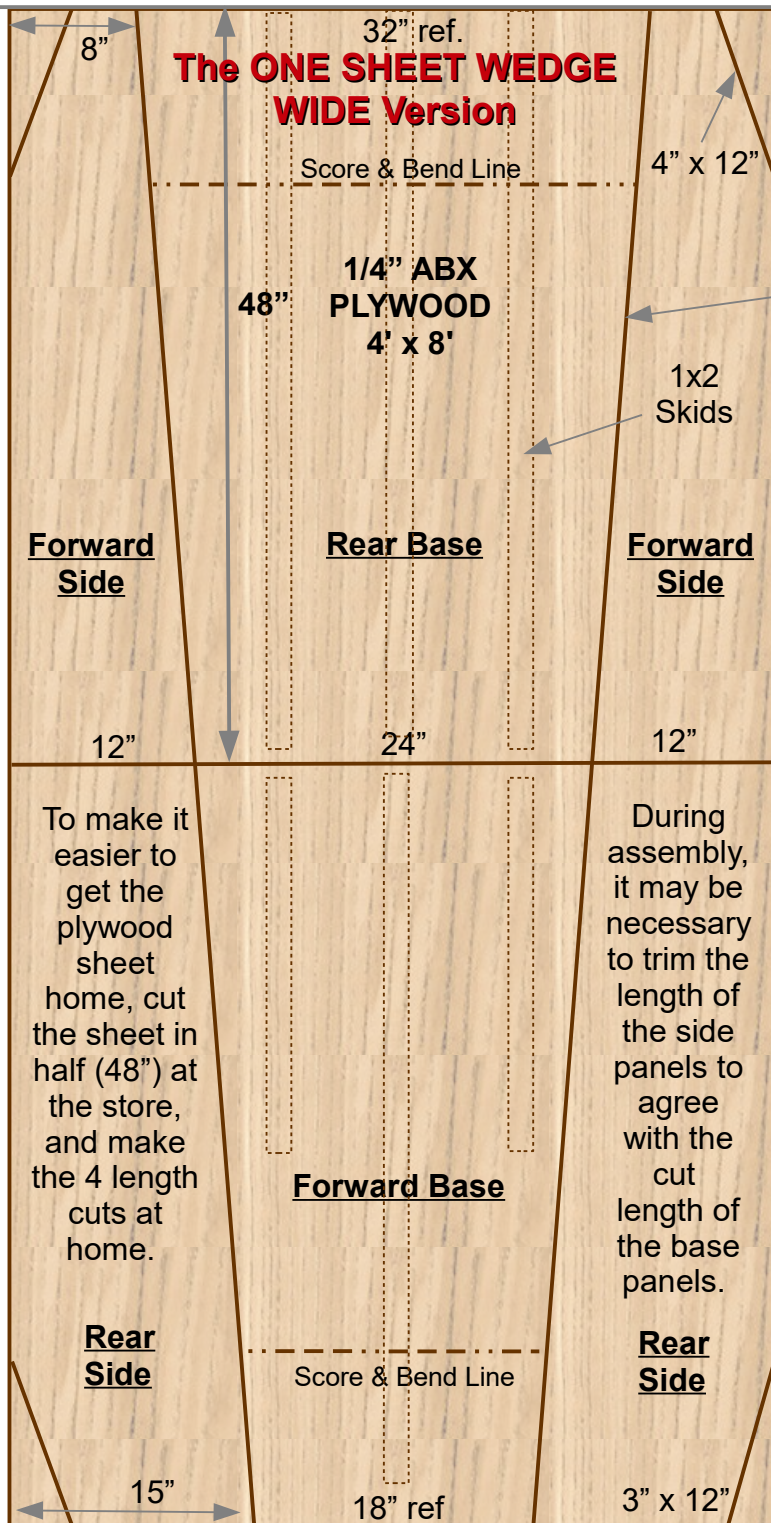
All options shown can also be utilized by the standard width hull.



Front View



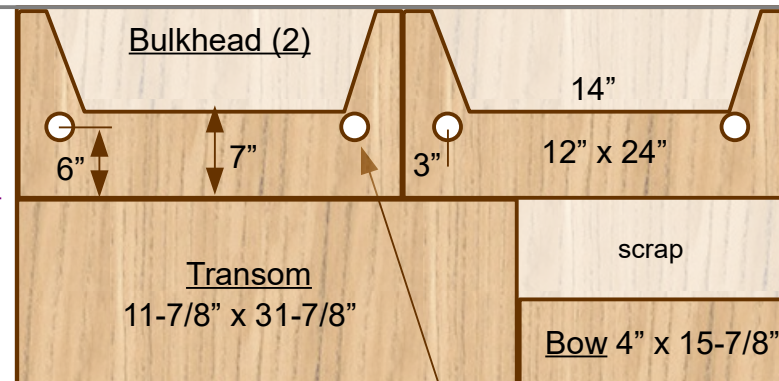
Paddle, Row or add a Trolling Motor for power.



## PANEL LAYOUT

12"

**Note: The side trim of the bulkheads, transom and bow is 5 degrees for the "wide" design.**



**2' x 4' 1/2" Plywood**  
Bulkhead dimensions page 6

1/2" Assembly Bolt Holes  
See page 18

## Optional Sailing Rig Concept Only

### Sail, Rudder and Sponsons

No daggerboard or leeboards required.

Sail area is small, and hull speed is slow.

Just right for leisurely sailing.

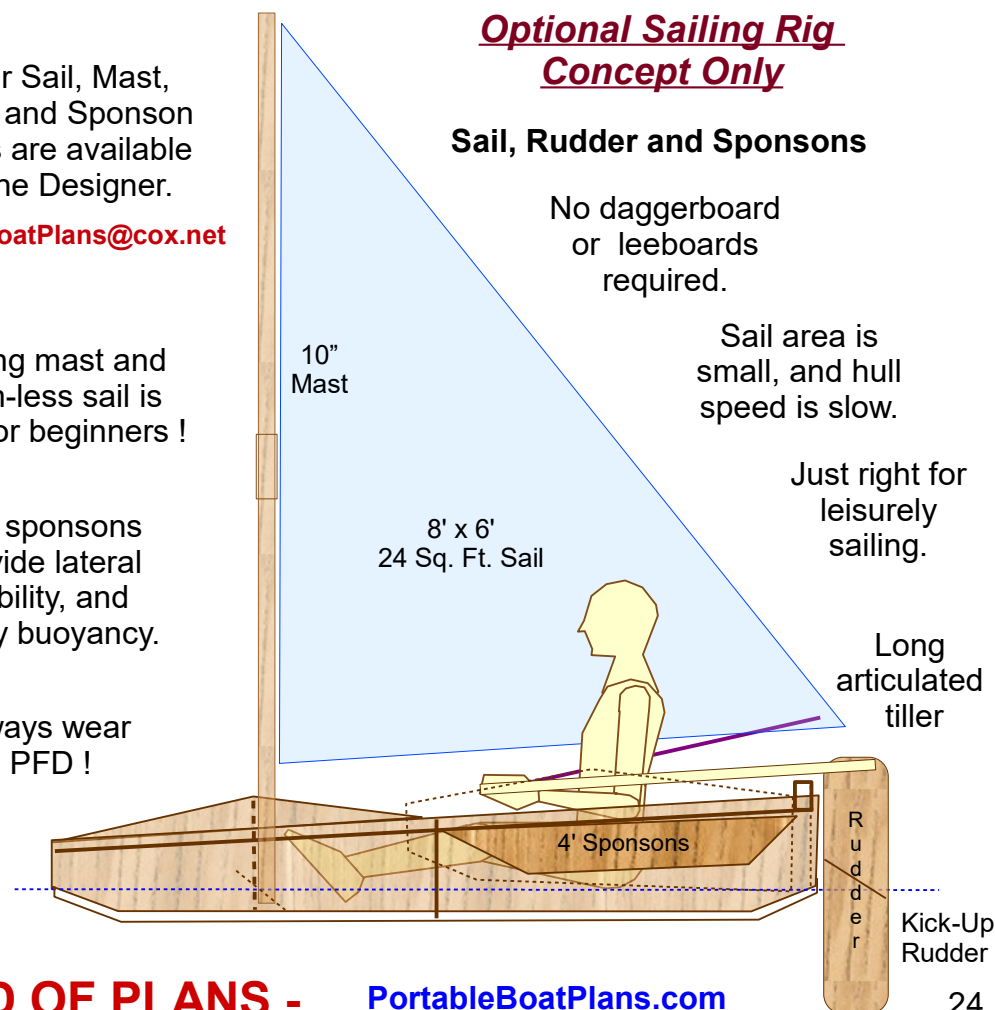
Similar Sail, Mast, Rudder and Sponson designs are available from the Designer.

[PortableBoatPlans@cox.net](mailto:PortableBoatPlans@cox.net)

Folding mast and boom-less sail is great for beginners !

The sponsons provide lateral stability, and safety buoyancy.

Always wear a PFD !



**- END OF PLANS -**

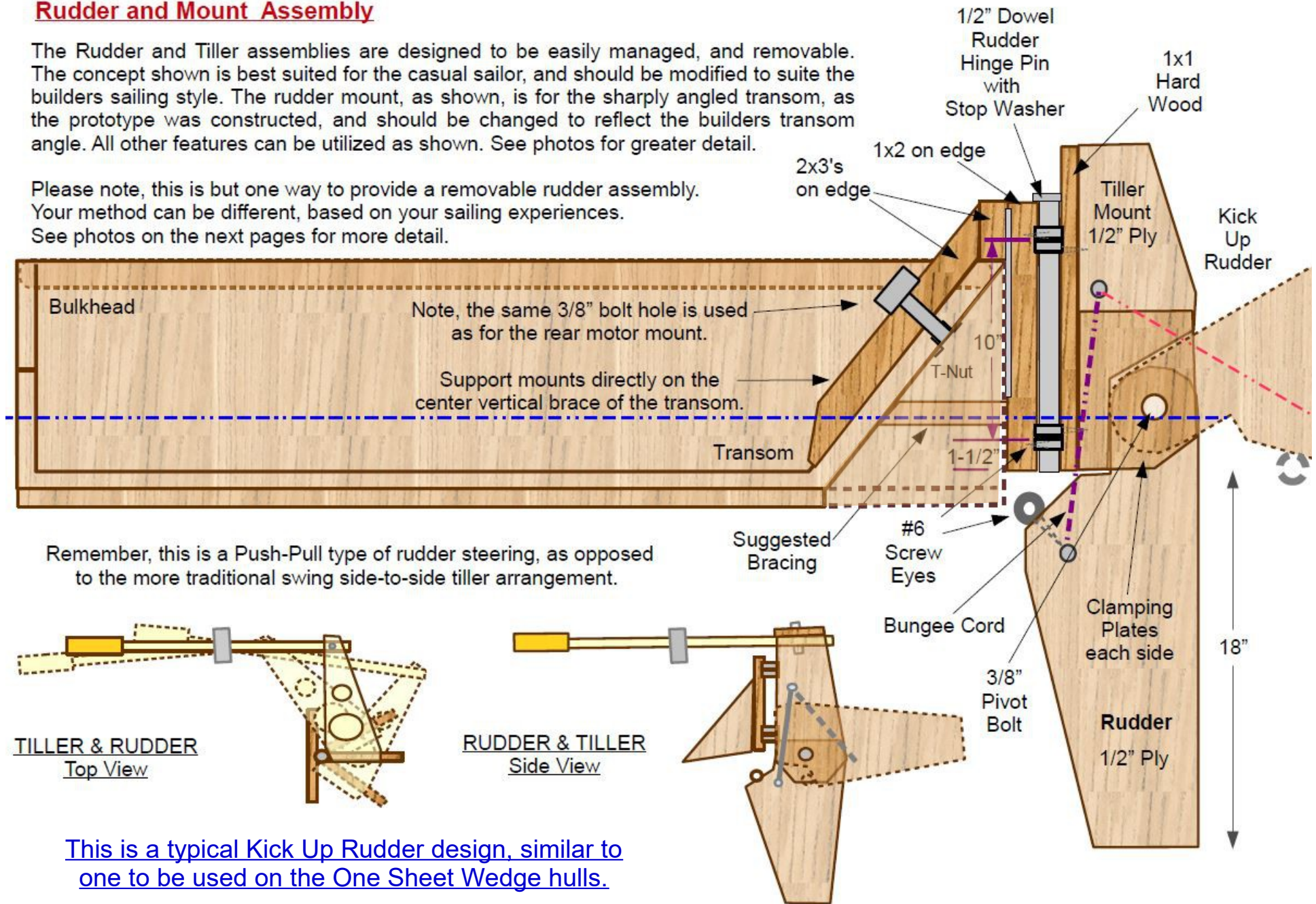
[PortableBoatPlans.com](http://PortableBoatPlans.com)

## The ONE SHEET WEDGE

### Rudder and Mount Assembly

The Rudder and Tiller assemblies are designed to be easily managed, and removable. The concept shown is best suited for the casual sailor, and should be modified to suite the builders sailing style. The rudder mount, as shown, is for the sharply angled transom, as the prototype was constructed, and should be changed to reflect the builders transom angle. All other features can be utilized as shown. See photos for greater detail.

Please note, this is but one way to provide a removable rudder assembly. Your method can be different, based on your sailing experiences. See photos on the next pages for more detail.



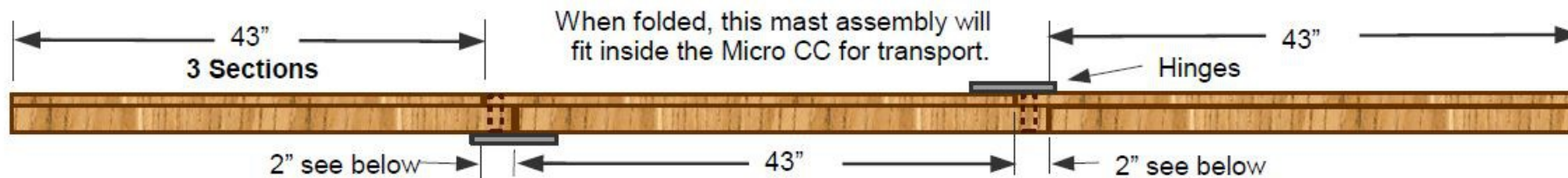
This is a typical Kick Up Rudder design, similar to one to be used on the One Sheet Wedge hulls.

Note: The rear enclosure will not be used for the sailing or the rear motor mount versions.

## The ONE SHEET WEDGE WIDE Version

### MAST SECTIONS

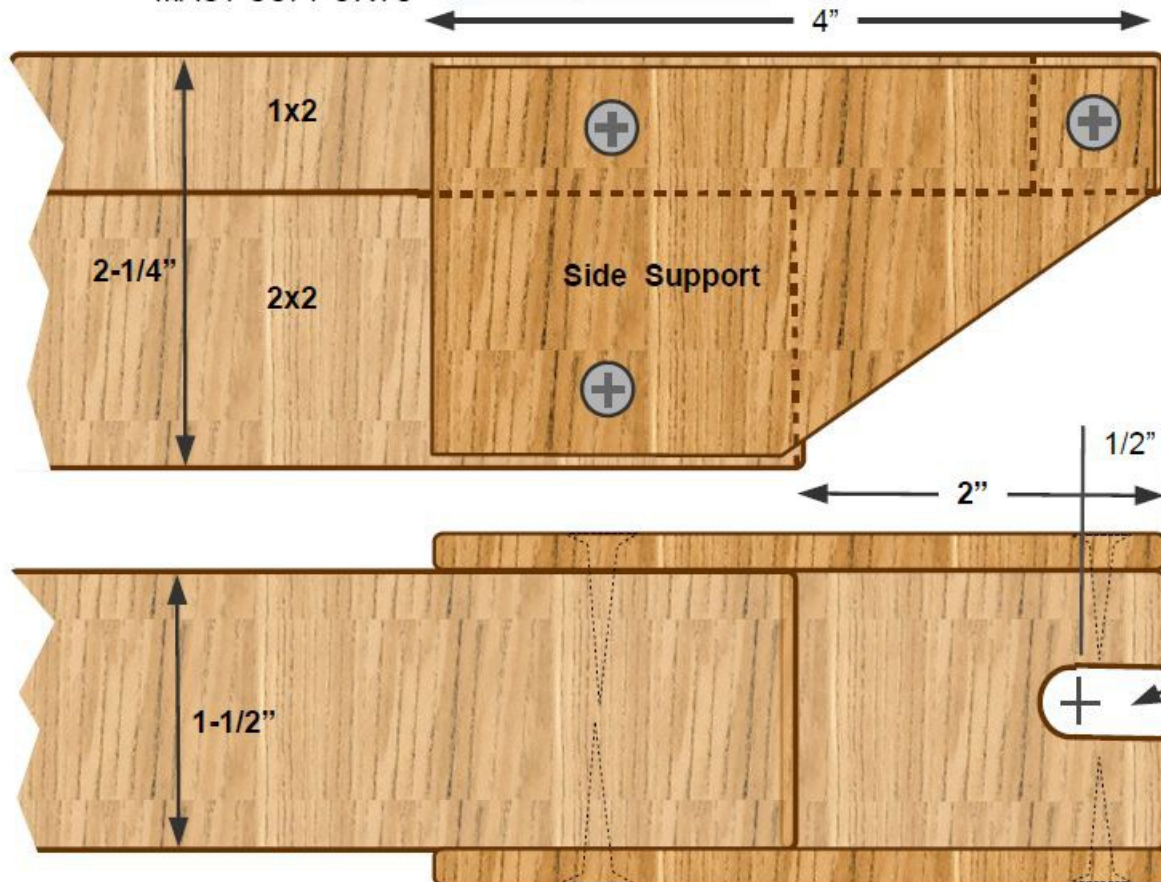
*I chose the 1.5" x 2.25" Oblong Design, for it's ease of construction and light weight. I only do light wind, small lake sailing.*



**OPTION :** Two – 5' 5" sections. Will not fit in the Micro CC, but will fit in most hatchback cars and trucks.



### MAST SUPPORTS



### TYPICAL CONSTRUCTION

#### Mast Supports

These 2 side supports can be made of 1/4" plywood. They are placed, as shown, on the mating ends of the lower and middle mast sections. Their purpose is to support the mast at the hinged pivot joints, and when erected, hold the mast sections in line until secured with the 3/8" security bolts.

Besides these supports, the hinges will be placed on the short side of the mast connection sections, as shown on the next page.

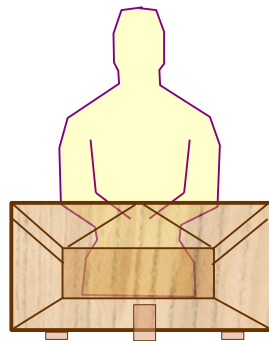
Note also, the optional Boom has not been detailed. It should be made of 2x2's only, and constructed similar to the mast ends. Your choice.

This is a typical Folding Mast design, similar to one to be used on the One Sheet Wedge hulls.

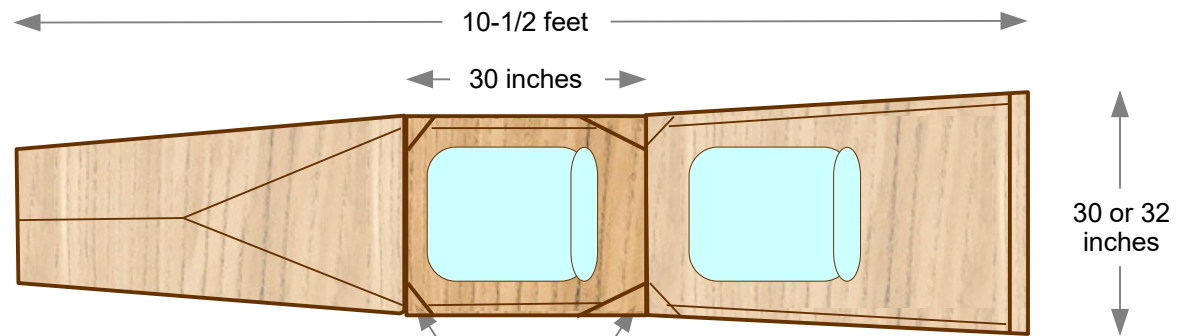
## The ONE SHEET WEDGE, with a 30" Rectangular Center Module, 2 Occupants !

The optional addition of a 30" center module increases the buoyancy of the 1 Sheet Wedge to a 2 occupant design.

A simple to build rectangular module, scaled to fit between the other 2 existing modules, converts the design into an easy to transport double occupant hull, ready for some serious paddling, or effort free motoring, for you and your best friend !

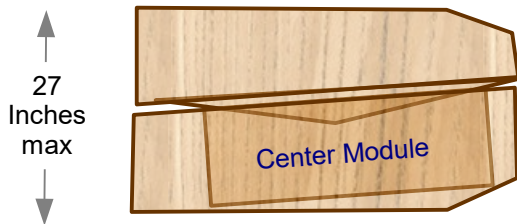


Front View

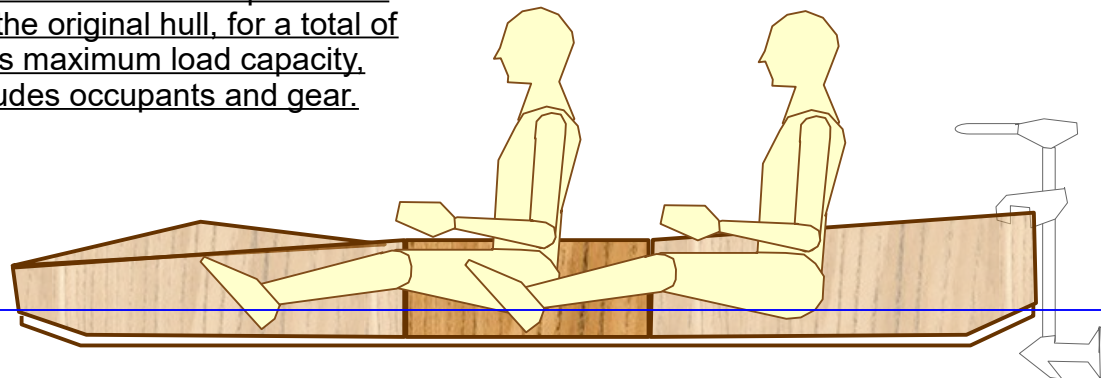


Note the additional gussets for increased rigidity.

The Center Module adds 120 pounds of buoyancy to the original hull, for a total of 350 pounds maximum load capacity, which includes occupants and gear.



Nested Modules for Transport

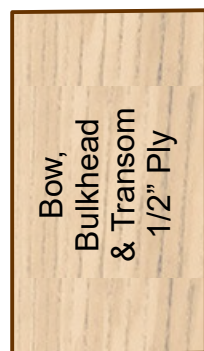


Paddle, Row or add a Trolling Motor for power.

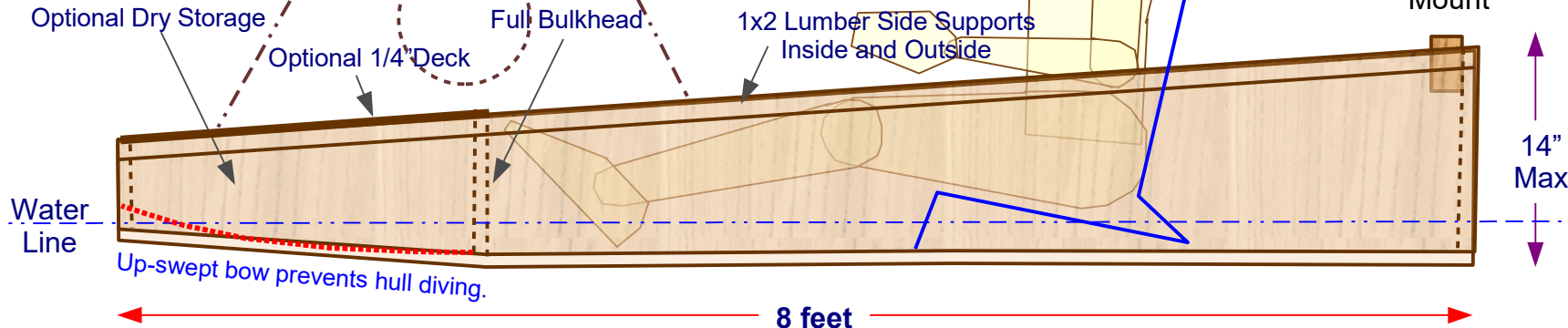
Constructed using the same design processes as the other hull modules. The bulkheads are identical, and the method of attaching the modules together is the same. Use the boat in either configuration.

## The ONE SHEET WEDGE – Single Module

Finally, for those that are not limited in vehicle storage, a single module version !  
Will fit in the most trucks & suv's, and even some hatchbacks.



Cut to Fit



All construction and assembly processes will be the same as the 2 module hull.

Materials: 1 sheet of 4'x8'x1/4" plywood, 1 sheet of 2'x4'x1/2" plywood.

**Note:** Bulkhead and Transom does not need 1x2 supports, just T&G to all panels.

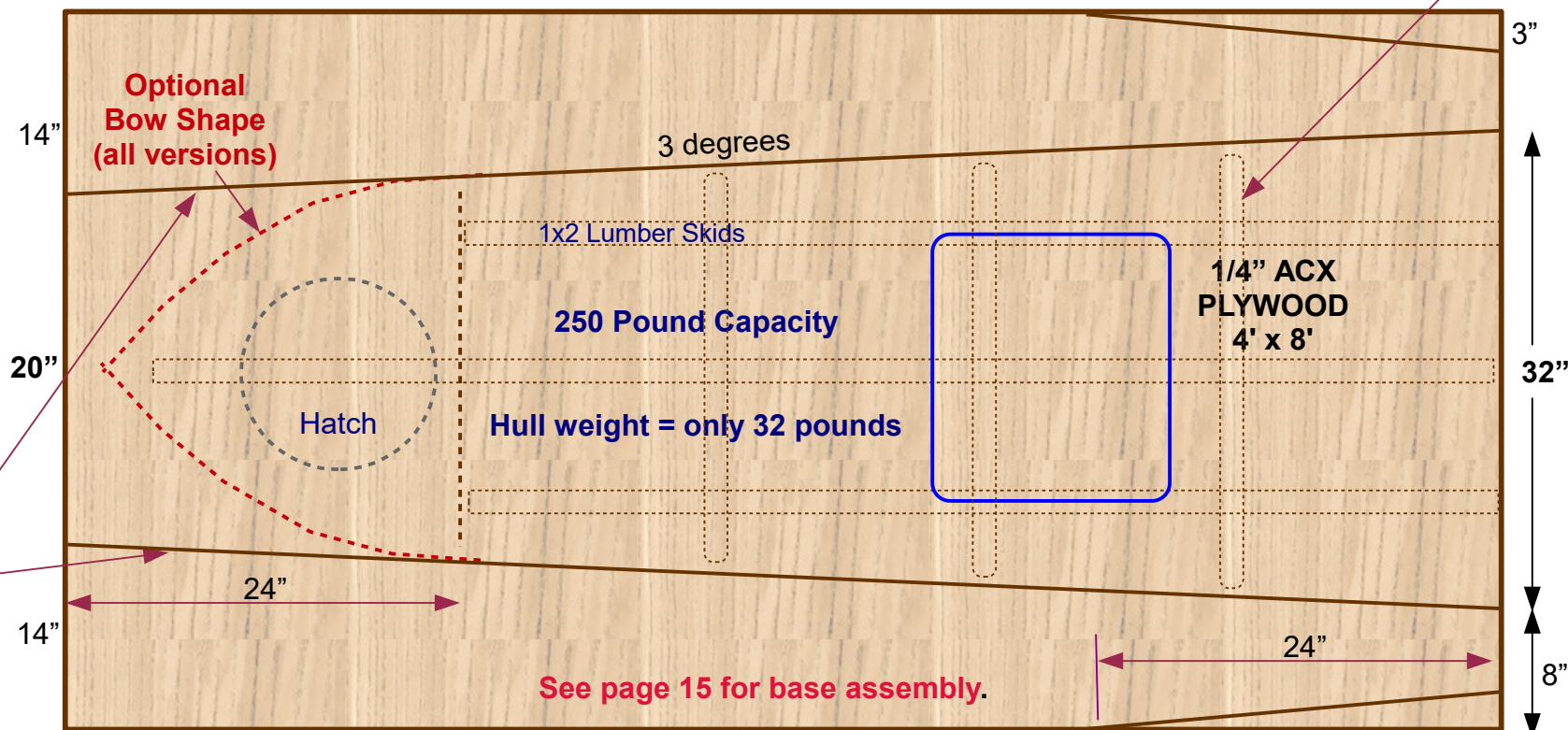
1x2 Inside Cross  
Supports  
Placed 12" apart

Merely measure the individual panels to determine the bulkhead dimensions. The Bow type is optional, flat or pointed, the Transom is full height.

Tape & Glue all seams and edges.

First Cuts

The advantage of a single module hull is that it can carry a heavier load, without possible washing over the inner bulkheads.



Transom has a 2x3 bonded to inside top edge as a motor mount.

[PortableBoatPlans.com](http://PortableBoatPlans.com)

## 7 Foot Monohull

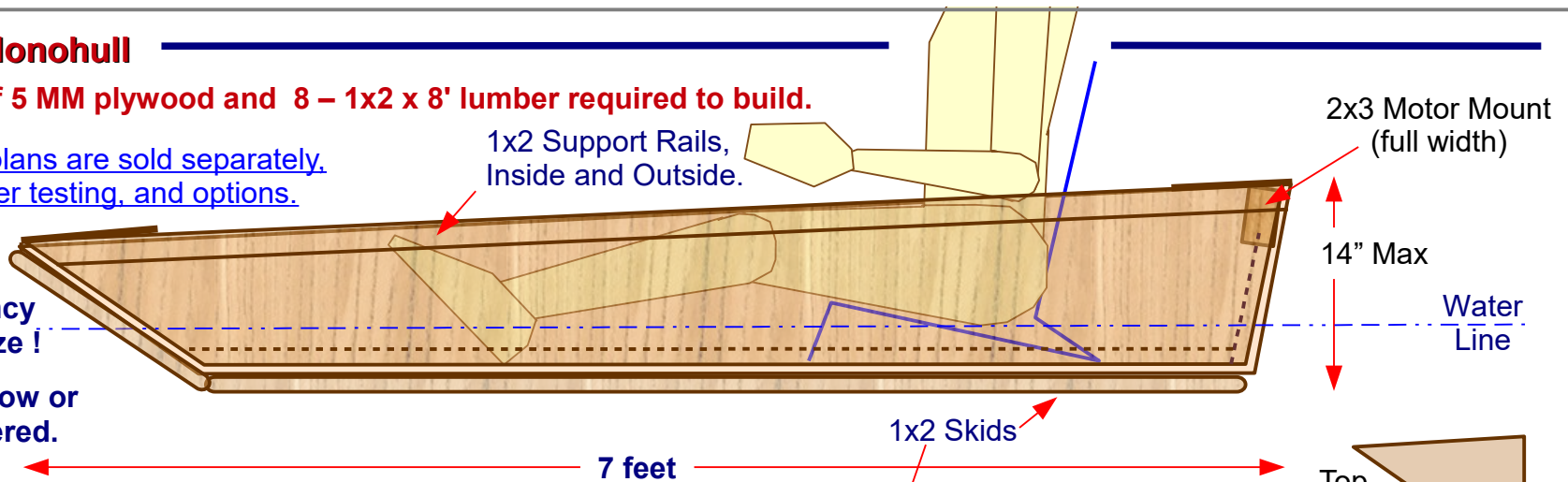
Only **ONE** sheet of 5 MM plywood and 8 – 1x2 x 8' lumber required to build.

The **MINIMALIST** plans are sold separately, with photos, in-water testing, and options.

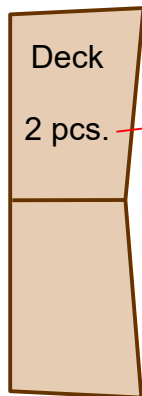
Maximum Buoyancy  
from Minimum Size !

Easy to Paddle, Row or  
Small Motor powered.

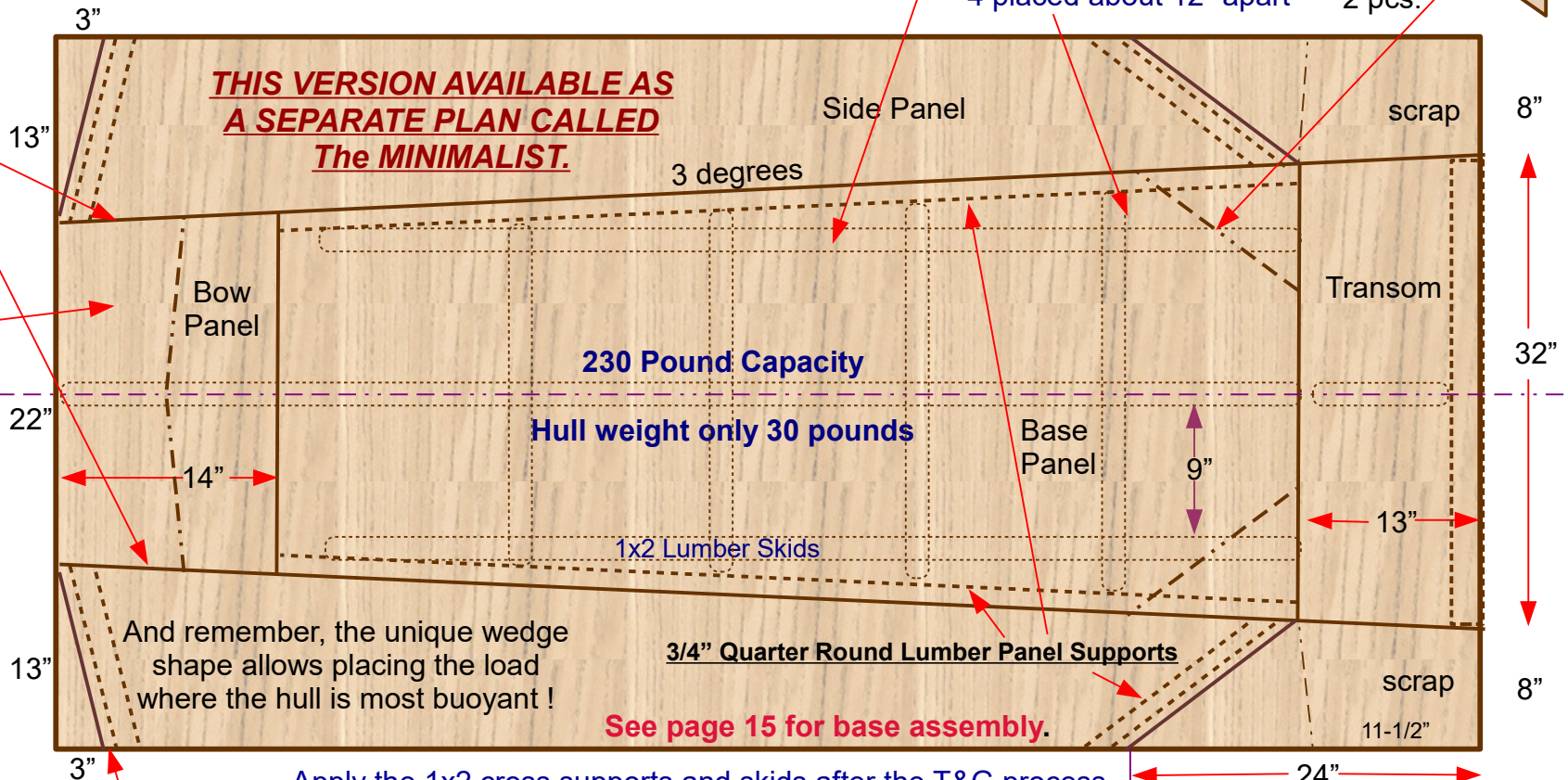
Cost to build = approximately \$75 (includes 1 qt. Marine Spar Varnish, no hardware)



Cut these 2  
lines first.



All seams  
and corners  
Taped and  
Glued, inside  
& outside !

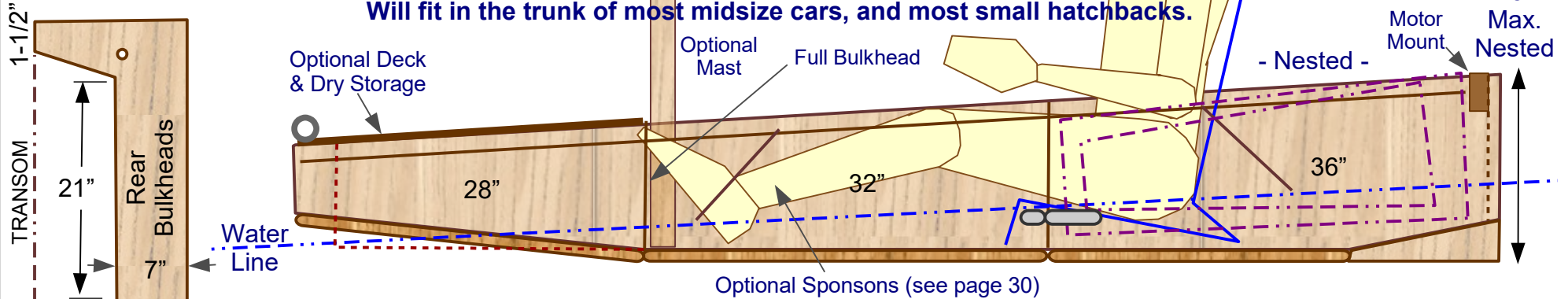


Note: allow panel thickness gap  
for Bow & Transom panels

Apply the 1x2 cross supports and skids after the T&G process.  
Make the Deck and back Top Braces from the 2 scrap pieces.

## The ONE SHEET WEDGE – 3 Module

Finally, for those that are very limited in vehicle storage, a 3 module version, only 36 inches long when nested !  
Will fit in the trunk of most midsize cars, and most small hatchbacks.



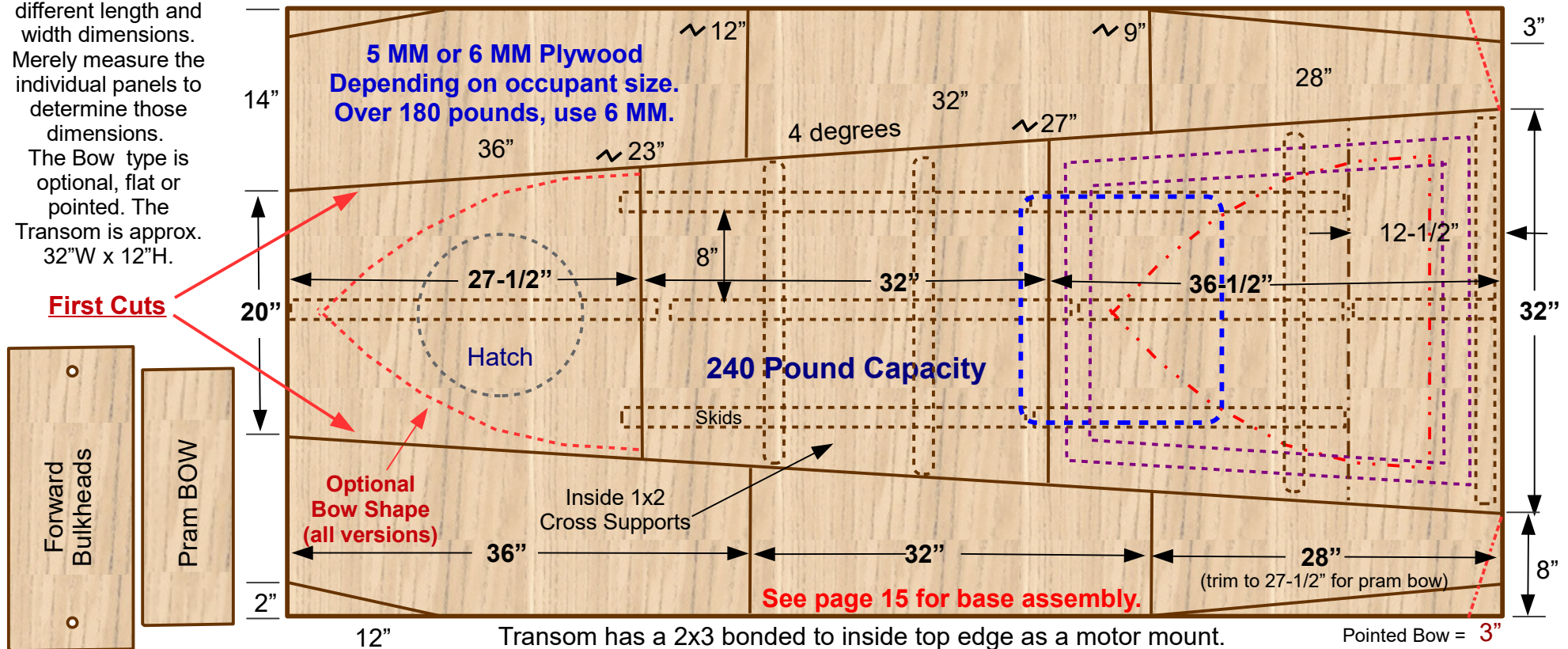
It will be necessary to make the two 8 foot long base cuts first, then the 28, 32, and 36 inch individual panel cuts, as shown. All other construction and assembly processes will be the same as the 2 module hull.

**Materials:** 1 sheet of 4'x8'x1/4" plywood, 2 sheets of 2'x4'x1/2" plywood, and 6 – 1x2's

**Note:** Bulkheads, Bow & Transom do not require 1x2 supports, they are just T&G to all other panels, in & out.

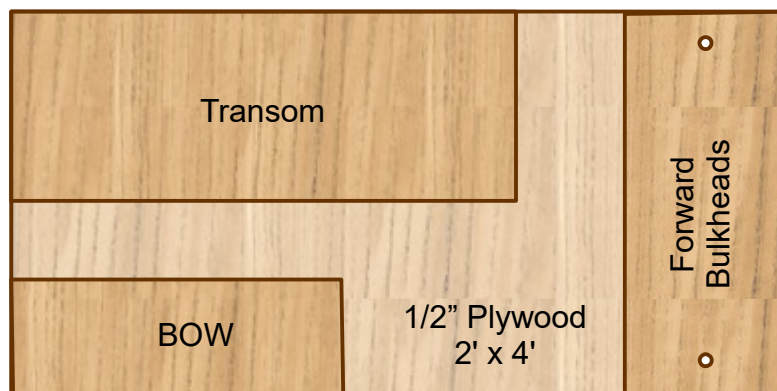
Note that the two Bulkheads will have different length and width dimensions. Merely measure the individual panels to determine those dimensions. The Bow type is optional, flat or pointed. The Transom is approx. 32"W x 12"H.

### First Cuts

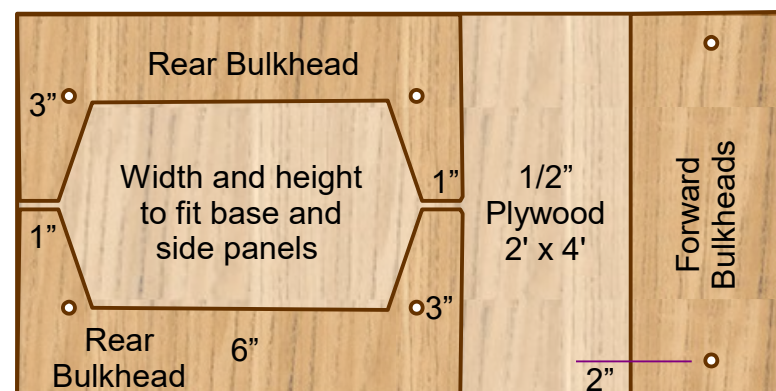


## The ONE SHEET WEDGE – Extension Module

## TYPICAL 1/2" PLYWOOD LAYOUT

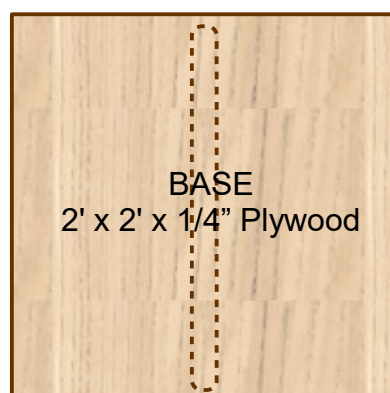
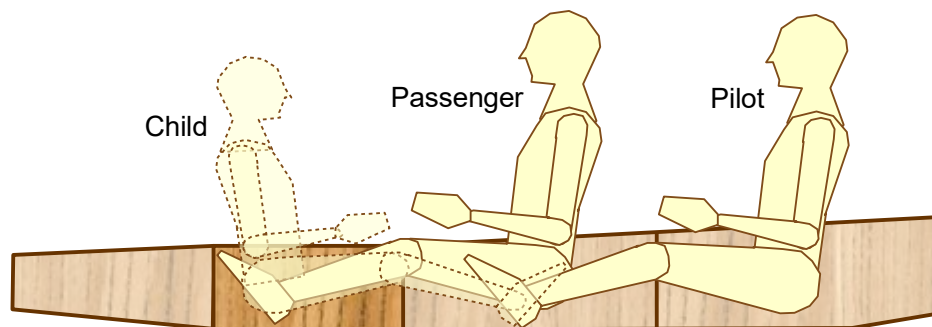


The width and height of the bulkheads must be calculated. The width is the base width minus 2 side panel thicknesses. The height is the measured height of the individual side panel ends.

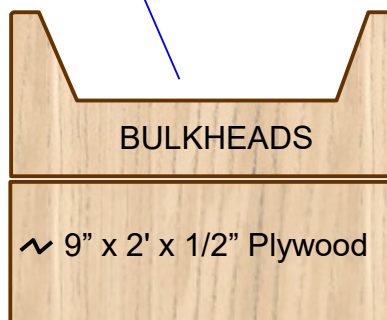


## HULL EXTENSION OPTION

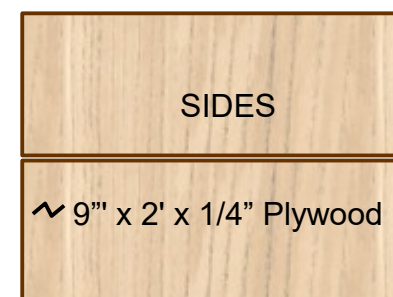
**MAXIMUM CAPACITY = 330 pounds**



~ = approximately



Don't forget to cut the sides of the bulkheads at a 4 degree angle.

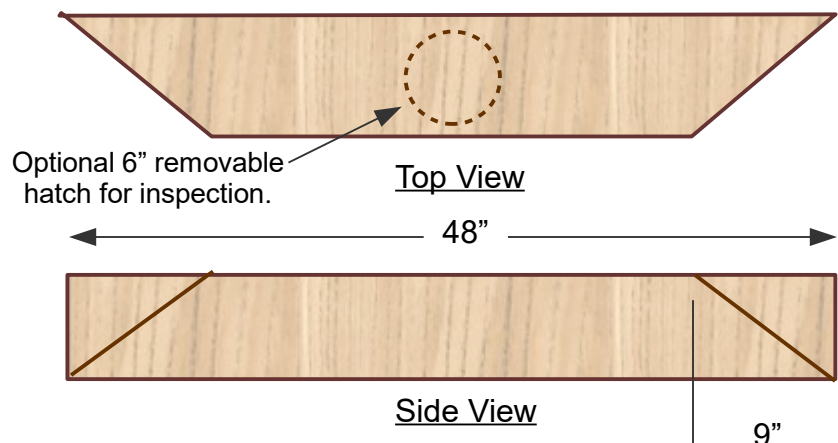


A 2 foot square extension module, for a second occupant, or gear.  
Fits between the front and center modules.

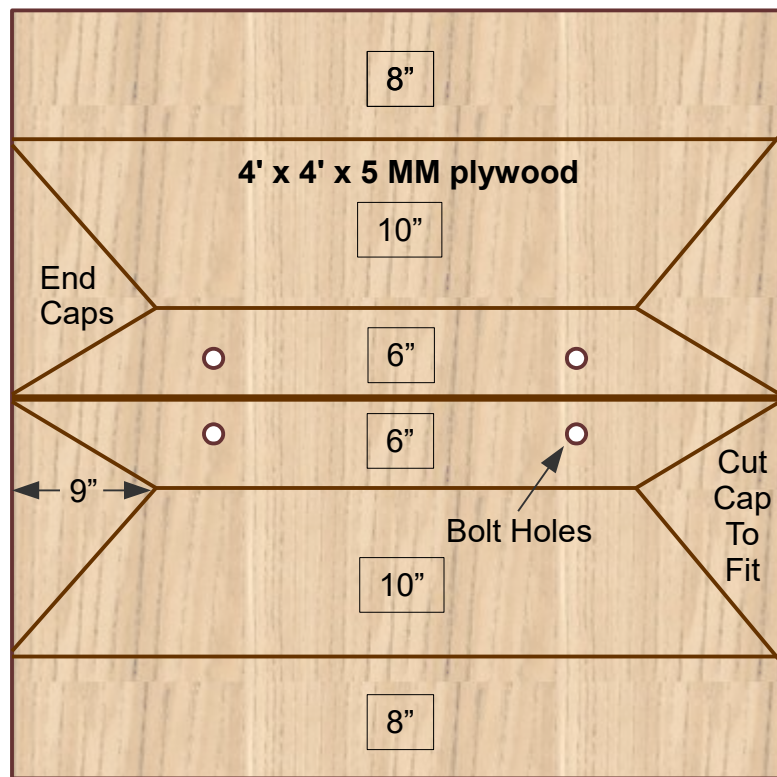
Constructed just the same as the other modules.

## The ONE SHEET WEDGE – 4' Sponsons

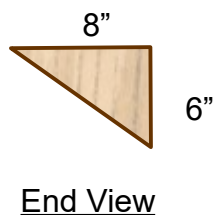
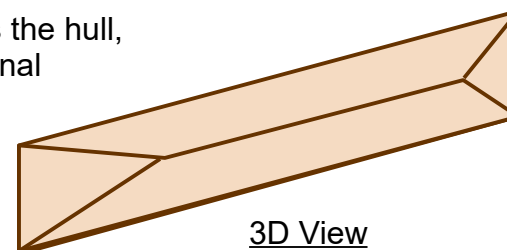
These can be used on any of the hull designs shown on these plans.



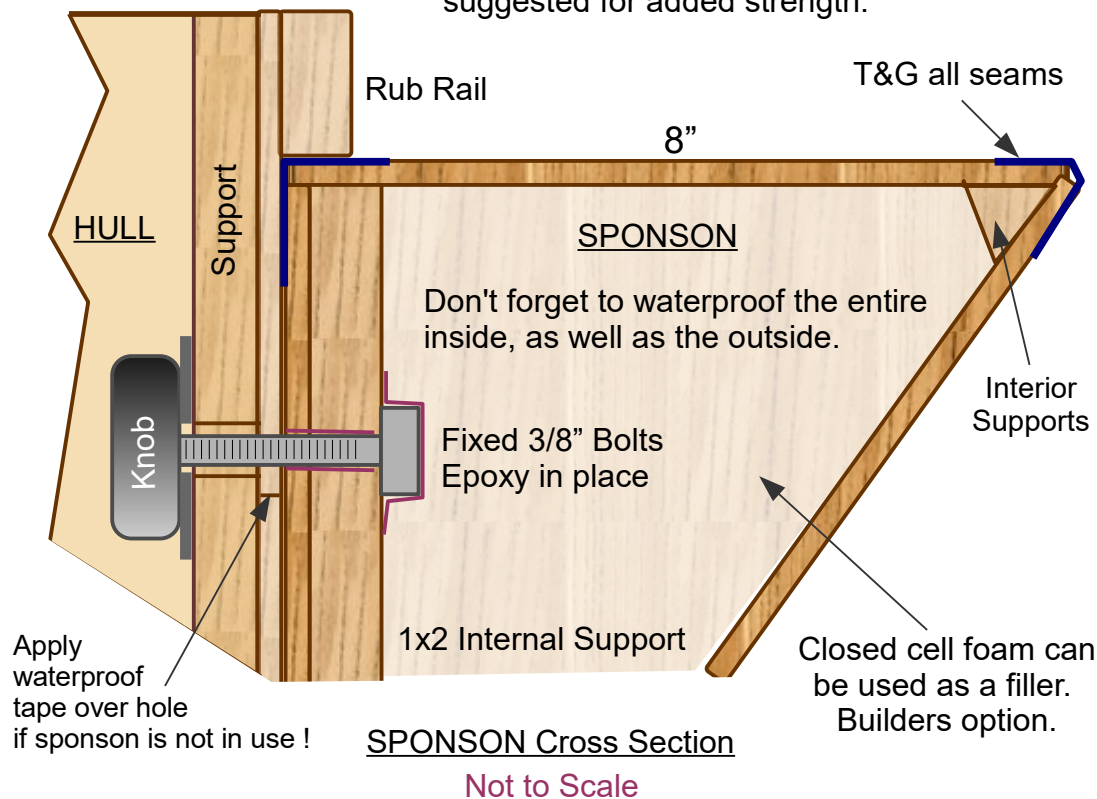
**Additional 30 pounds of capacity per sponson.**



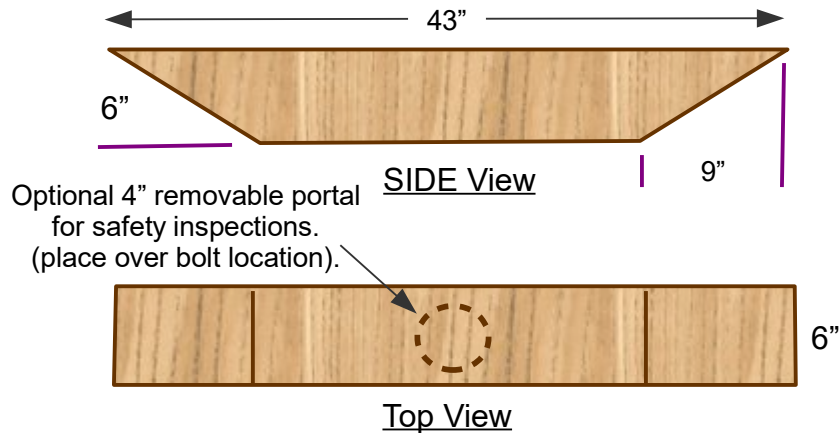
Assemble in a similar way as the hull, T&G all seams. Provide internal supports. Only a couple of 3/8" bolts necessary for mounting. Held vertically in place by the rub-rail.



The use of a sponson is for increased buoyancy under heavy load conditions. As the load increases, the sponsons provide greater support and hull stability. Ideal for the fisherman or in rough water situations. Make as durable as your needs dictate. Internal baffles are suggested for added strength.

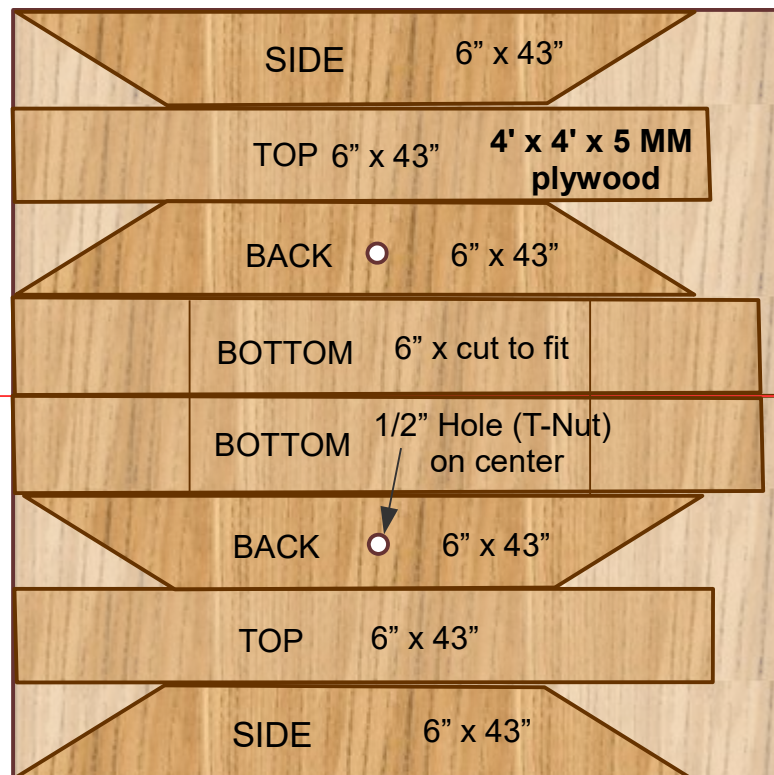


## The ONE SHEET WEDGE – 3-1/2 foot Sponsons

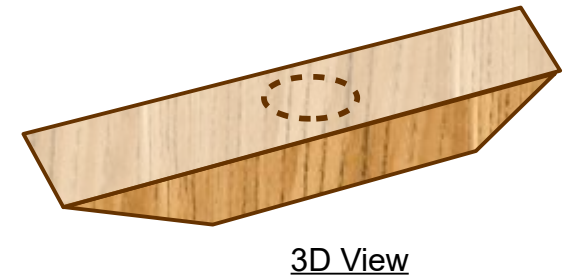


**Additional 32 pounds of capacity per Sponson, plus righting buoyancy !**

These can be used on any of the hull designs shown on the plans.

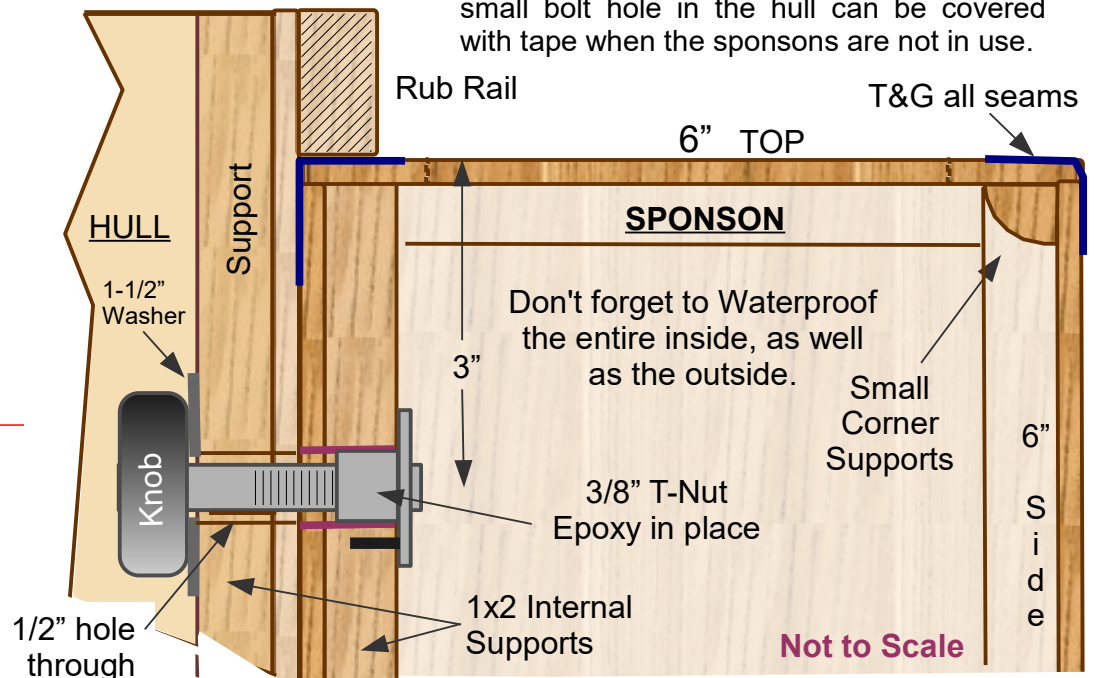


After much deliberation, I settled on this design which provides relatively smooth water flow, and a simple build. Attach top, back and side panels first, with internal brace, then cut to fit the bottom panels. Waterproof inside, attach bottom panels & Tape & Glue all exterior seams. Waterproof exterior.



Note: Additional inside hull side panel support must be added to mount the sponson

The use of a sponson is for increased buoyancy under heavy load conditions. As the load increases, the sponsons provide greater support and hull stability. Ideal for the fisherman, sailing or in rough water situations. Make as durable as your needs dictate. Internal baffles are suggested for added strength. Mount directly under the rub rails for maximum support, as shown. The small bolt hole in the hull can be covered with tape when the sponsons are not in use.



Don't forget, there is a Right and a Left Sponson (unless you make them identical as I did).

### SPONSON Cross Section

Mounting hole in hull to be in Rear Module, 3" behind Bulkhead, for 3 Module hull only.

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Day20



3/8"-16 T-Nut placed internally on center of vertical support.

Be sure to protect the T-Nut threads when applying a finish.

Lightly sand between coats.

Let dry for 48 hours.



Base panels cut to size, glued and brad stapled in place.



Edges Taped & Glued, ready for Waterproofing.



Finished Sponsons

Note: Each Sponson weighs less than 5 pounds.

Two Coats of Spar Varnish

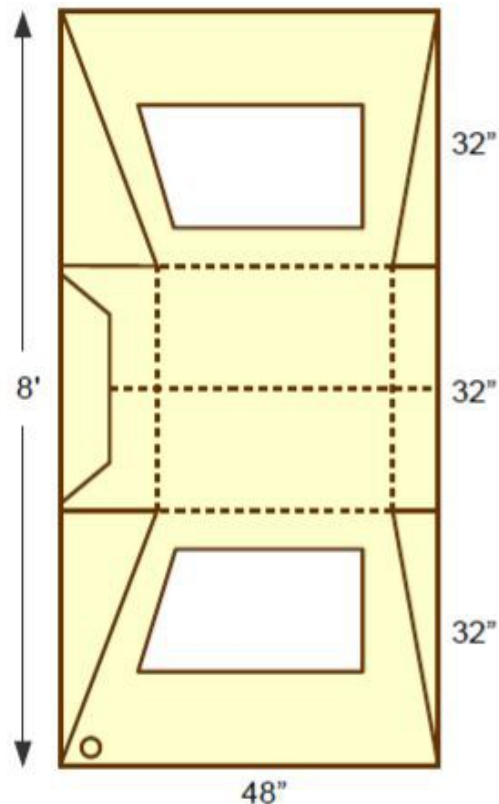
Internal Access Detail



**Assembly of Mast is Next.**

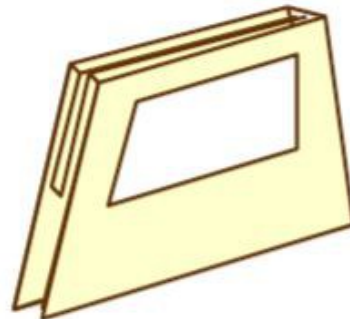
4mm Coroplast 4' x 8' Sheet, any color

Dotted lines are fold lines.



Windows can be open or clear plastic.

These are conceptual drawings only, intended to inspire you to make the 1 SHEET WEDGE your own !



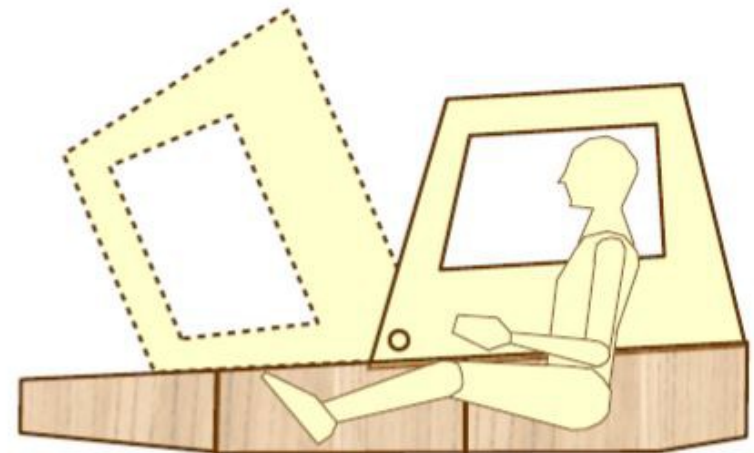
Folded Flat for Transport

Tape all edges to insure no water gets in the corrugated cells.

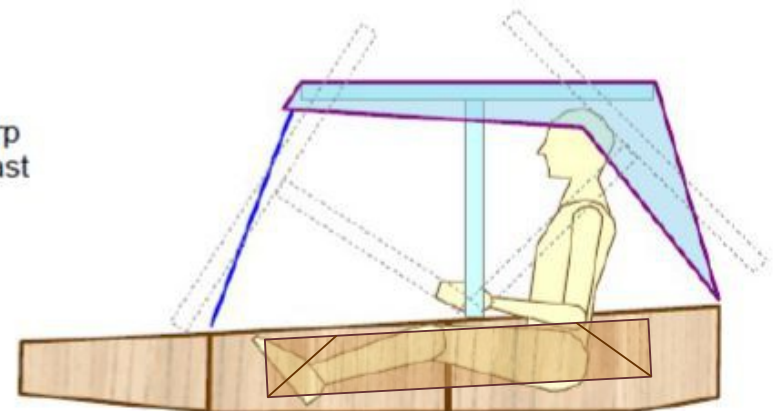
Certain measures must be taken to make the sides and top more rigid.

Can be completely enclosed using tarp material taped to edges of the Coroplast sides, similar to the CPB boats.

An alternative is a soft top canopy, as shown at right. This might be easier to implement, but may provide less protection from the sun. Builders choice.



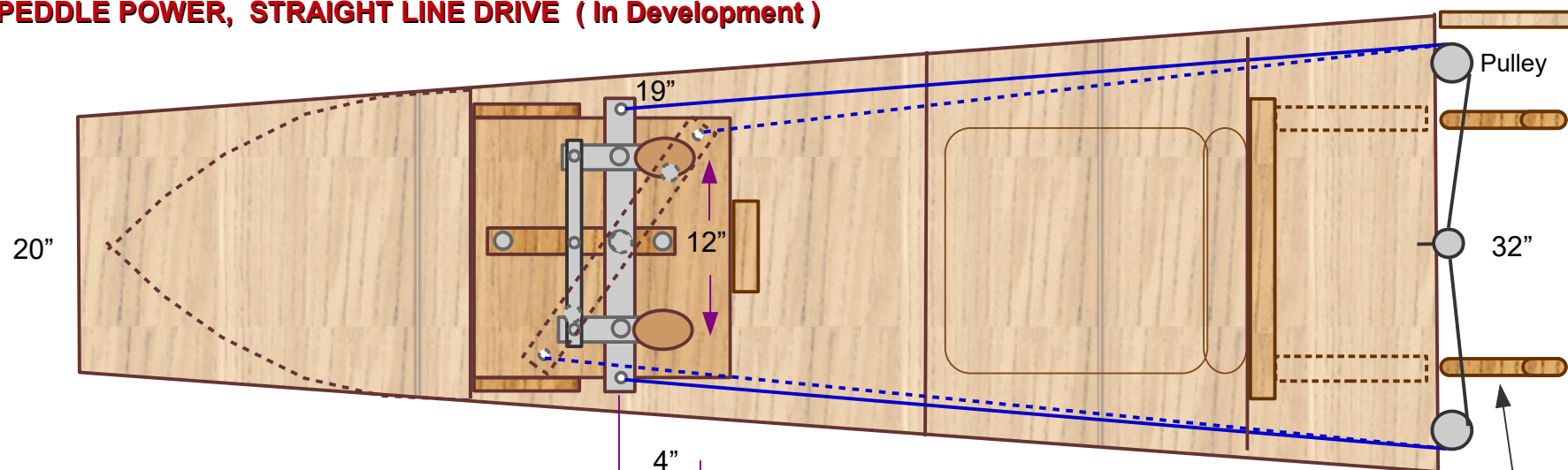
Pivots for Entry & Exit



Light Canvas Soft Top

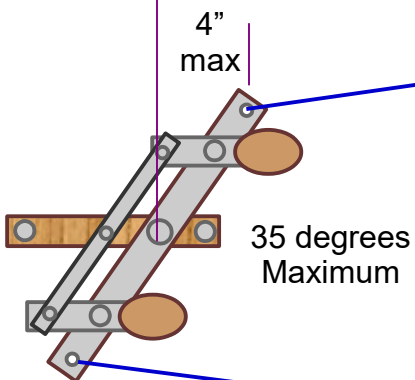
Pivots forward or backward for entry or exit.

**The ONE SHEET WEDGE** This is a typical layout of the removable Peddle Drive assembly in a small 8' hull.  
**FLIPPER PEDDLE POWER, STRAIGHT LINE DRIVE ( In Development )**



A Patent is being applied for this design.  
A Trademark for the name is in process.  
The conceptual data is copyrighted.

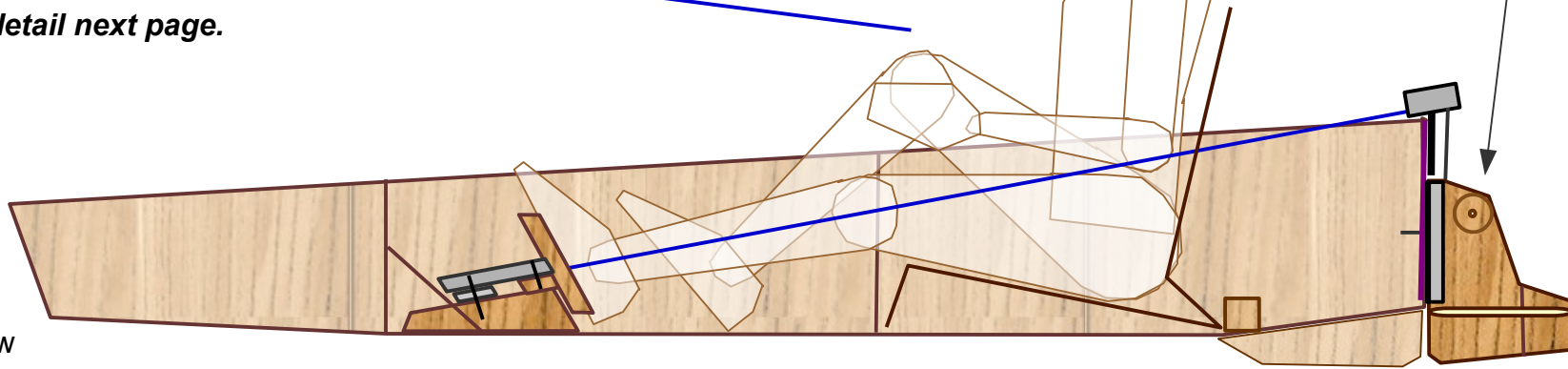
Foot Peddle Assembly



*See enlarged detail next page.*

Articulated  
Flippers

Pointed Bow  
Option



Flippers

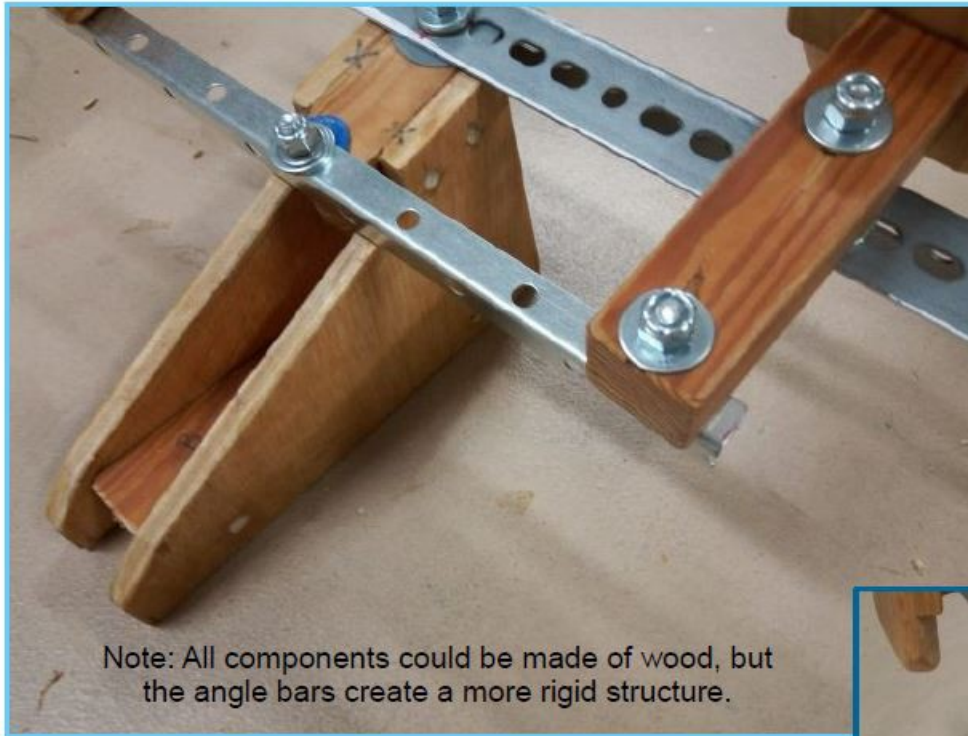
**Refer to PEDDLE POWER DRIVE Assembly Plans for Complete Detail.**

## CONSTRUCTION PICTURES

### Prototype Build

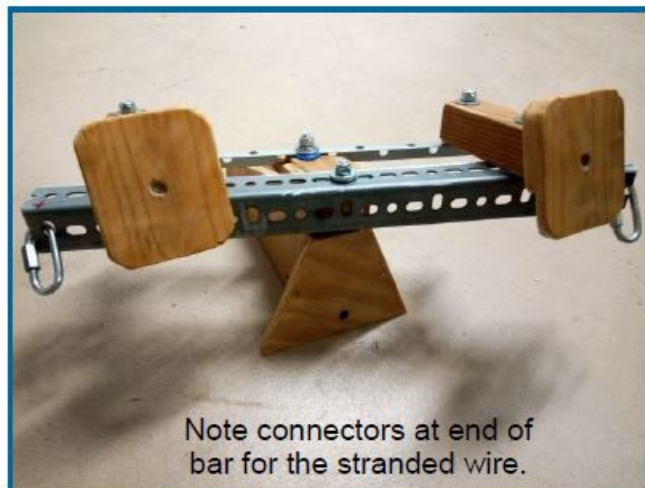
Bolts and Washers to be Stainless Steel if possible, for corrosion resistance.

**FPPD**



Note: All components could be made of wood, but the angle bars create a more rigid structure.

Note the forward cap below, which keeps the assembly horizontal



Note connectors at end of bar for the stranded wire.

Detail of the Peddle assembly. Do not over tighten the lock nuts.

Note large washers between the wood and metal parts..

Use only Locking Nuts (NyLock) for assembly.

Do not over tighten, allow easy, but not loose travel of the components



The 1-1/2" angle bar takes most of the load, the smaller rear bar is to keep the peddles in line.



Peddles will have a rubber face applied after assembly is complete.

**INCH to METRIC CONVERSION**

1 Inch = 25.4 MM

7/8" = 22.22 MM

3/4 Inch = 19.05 MM

5/8 Inch = 15.875 MM

1/2 Inch = 12.70 MM

3/8 Inch = 9.525 MM

1/4 Inch = 6.35 MM

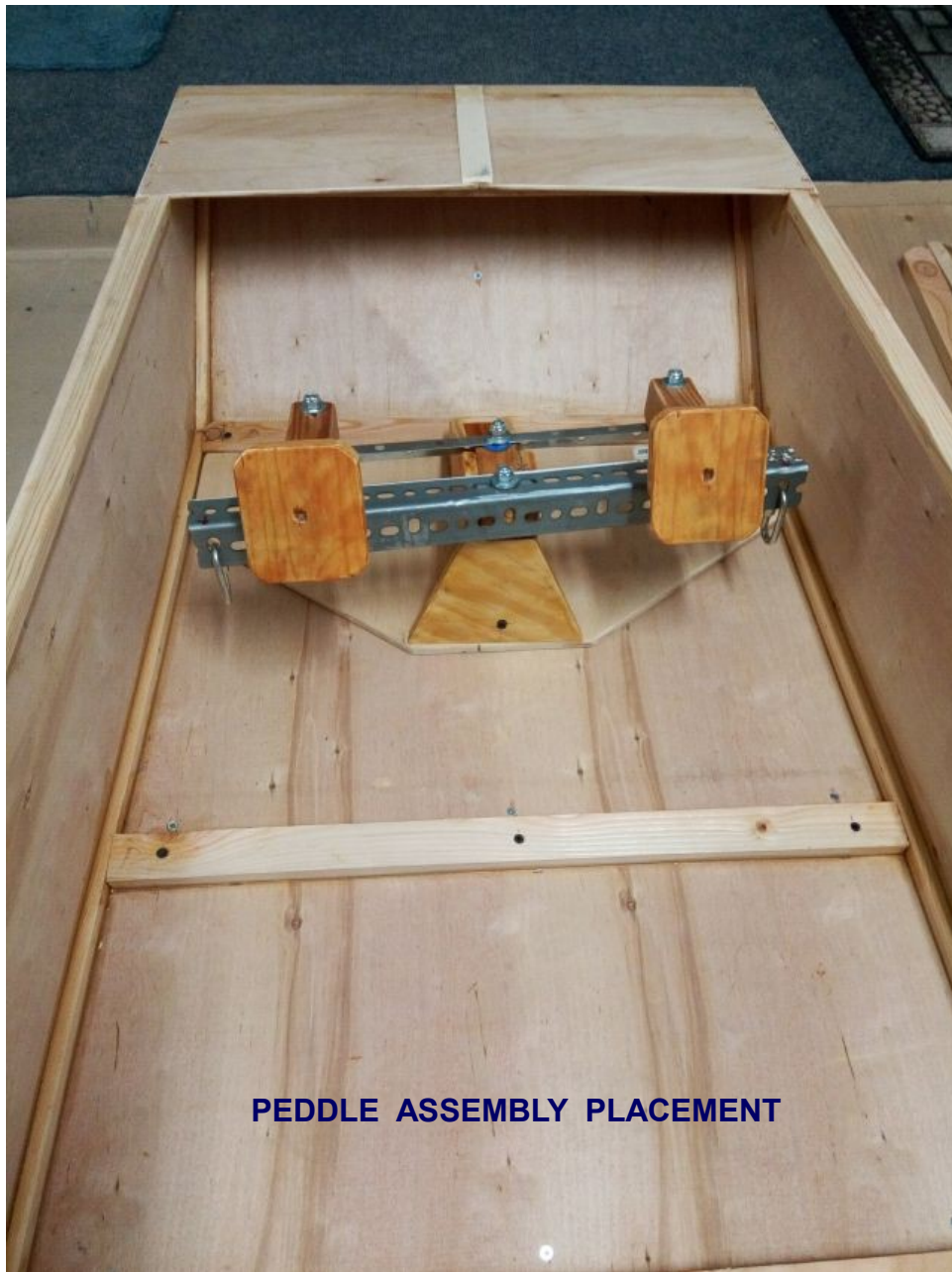
1/8 Inch = 3.175 MM

This should be helpful to  
those that have to convert  
the drawing dimensions.

**1 Sheet MINIMALIST – 230 pound capacity.**



**7 feet long, 30 pounds, only 1 sheet of 5 MM plywood !**



**PEDDLE ASSEMBLY PLACEMENT**