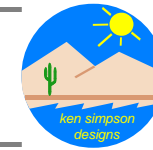


EASY ONE

A Small but Robust Paddle, Motor or Sailing Pram.

Similar in design to the "WEDGE", but with bow modifications.



Drawn 07-21-2013

Rev. 11-10-2013

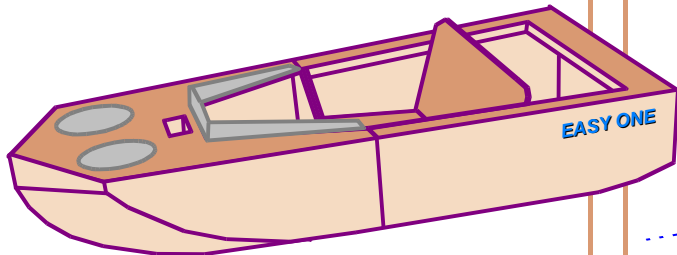
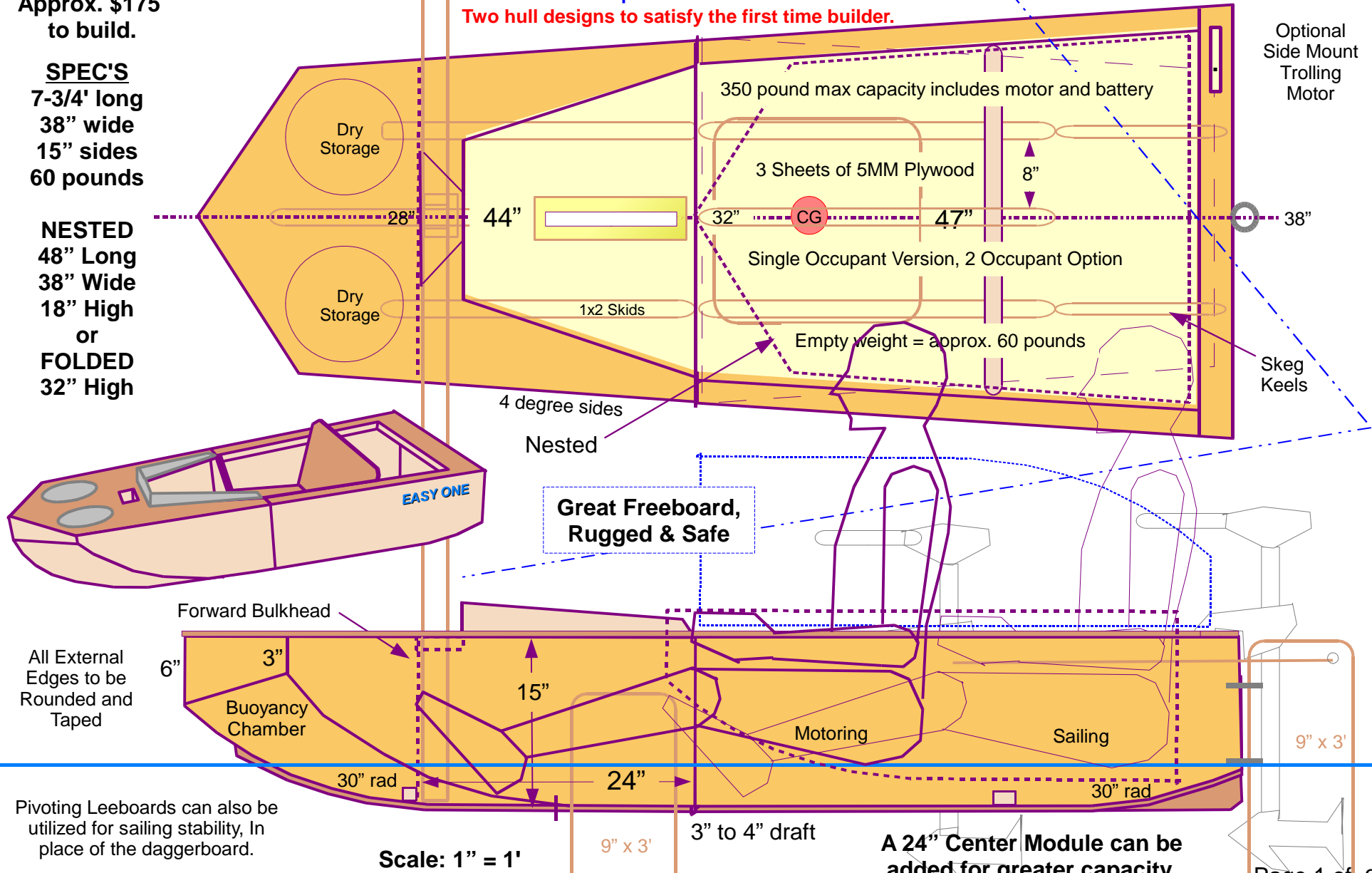
Build started 11-01-2013

Approx. \$175 to build.

SPEC'S
7-3/4' long
38" wide
15" sides
60 pounds

NESTED
48" Long
38" Wide
18" High
or
FOLDED
32" High

Print in Landscape Mode with 1/4 inch borders.
Two hull designs to satisfy the first time builder.



Great Freeboard,
Rugged & Safe

All External Edges to be Rounded and Taped

Pivoting Leeboards can also be utilized for sailing stability, In place of the daggerboard.

Scale: 1" = 1'

PortableBoatPlans.com

A 24" Center Module can be added for greater capacity.

A ken simpson design

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 **EASY ONE** came from the readers who requested a simple yet useful small multi-purpose hull design. It includes an ample beam, great freeboard, generous volume, seating for one (or two), and safety buoyancy. It is sturdy, easy to build, quite portable and utilizes a standard trolling or small gas motor.

To have strength and yet be lightweight, the plans use some non-traditional methods of assembly, specifically the "Tape & Glue" 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 carpenter's 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.

Marine Plywood is very expensive, so the use of ACX Grade 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 builder's 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 can be constructed using 1/4" plywood, for greater durability, or the exterior could also be fiberglassed, allowing yet thinner and lighter plywood hull building material.

Note that all renderings have been hand drawn, and as such may have some irregularities.

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

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 for new designs and updates.

Happy Boating !

Read and understand these instructions thoroughly prior to starting any construction.

Ken Simpson , Designer

PortableBoatPlans.com

**Remember Murphy's Law of Boat Building:
"The Glue Dries Before The Mistake Is Found !"**

Page 2

EASY ONE

Some unfinished photos of the assembly

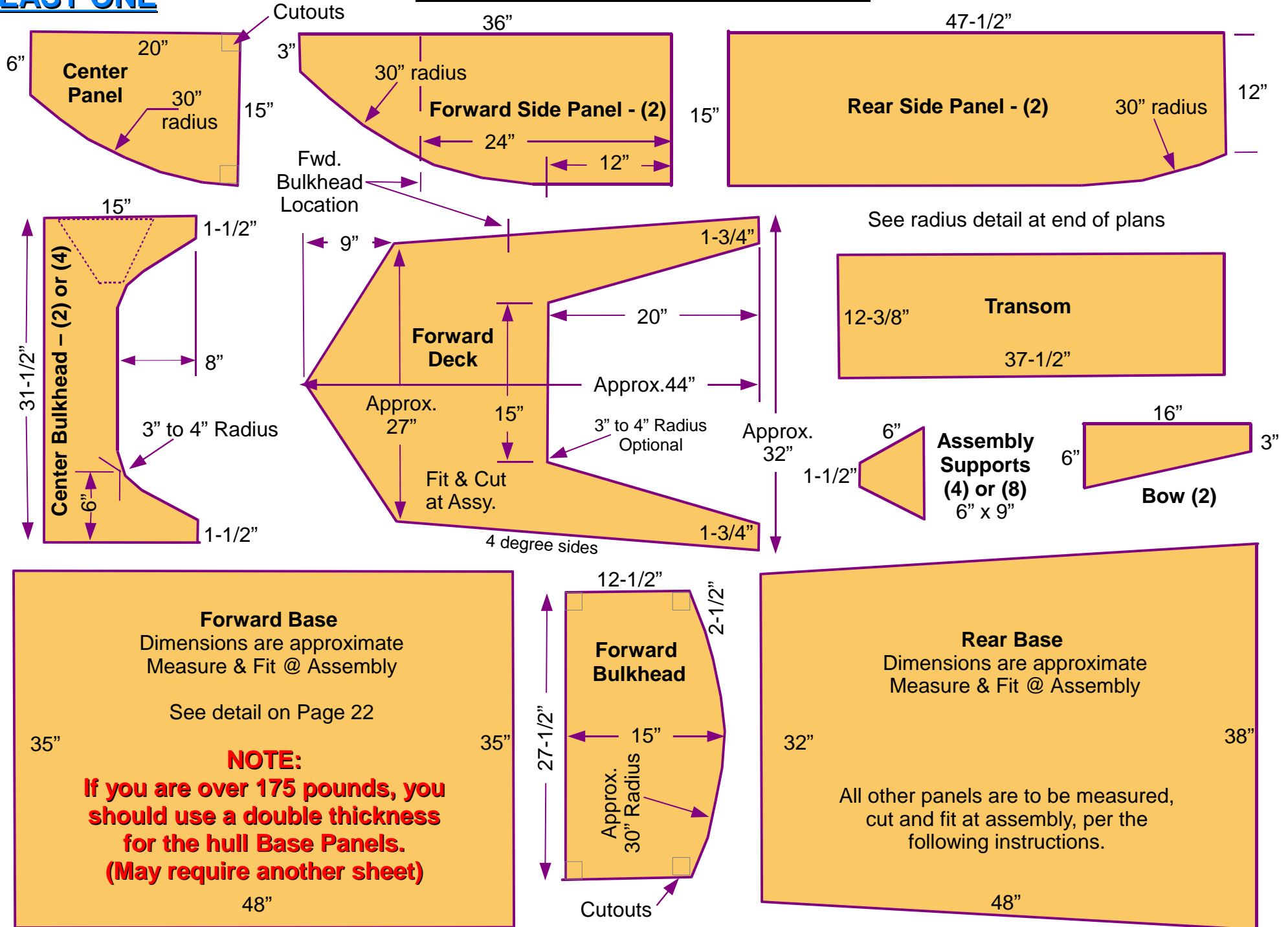


These photos will change as the build continues.

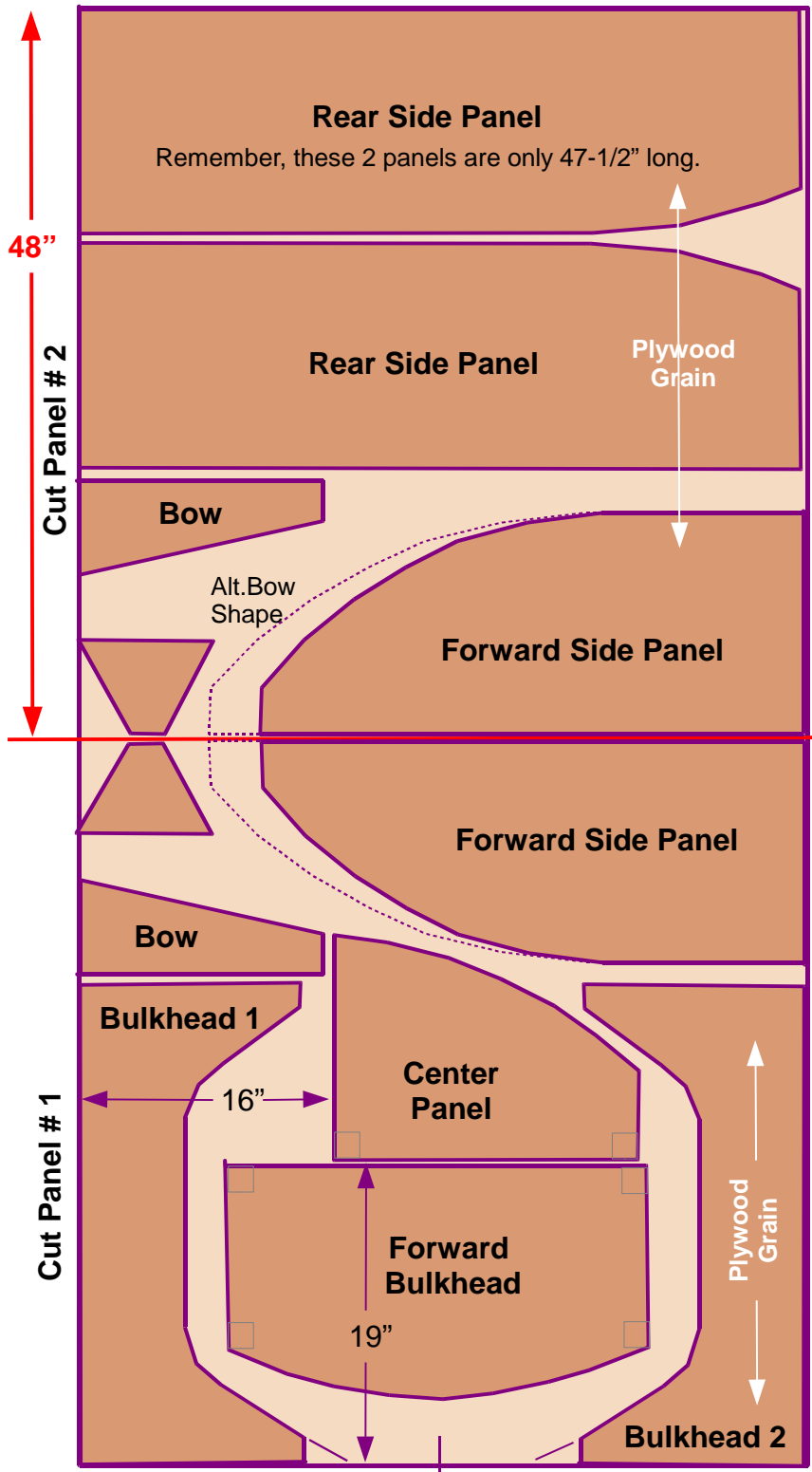


EASY ONE

5 MM Thickness Hull Panel Dimensions



NOTE:
If you are over 175 pounds, you should use a double thickness for the hull Base Panels. (May require another sheet)



EASY ONE

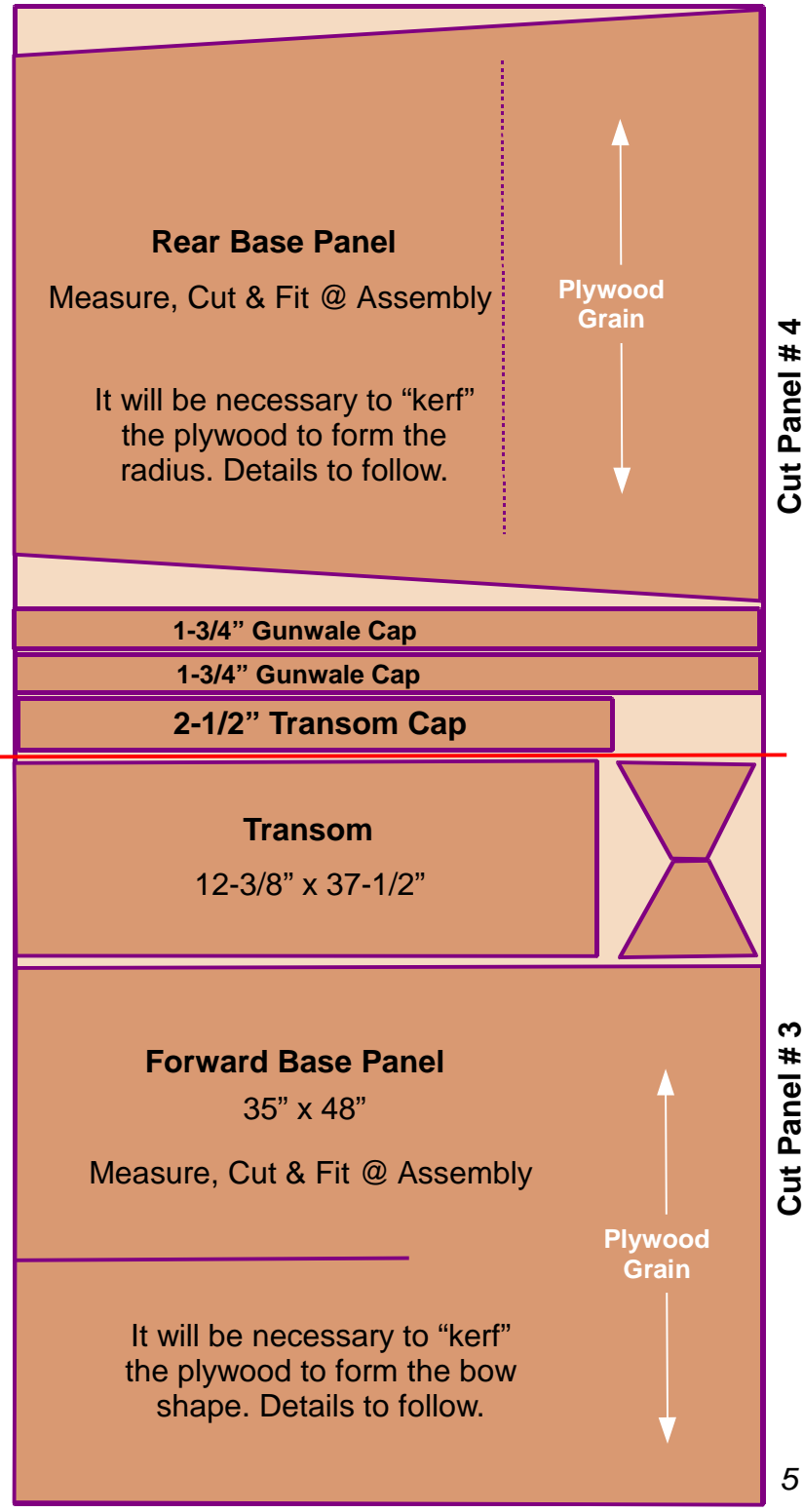
5MM 4' x 8' Sheet Plywood Layout

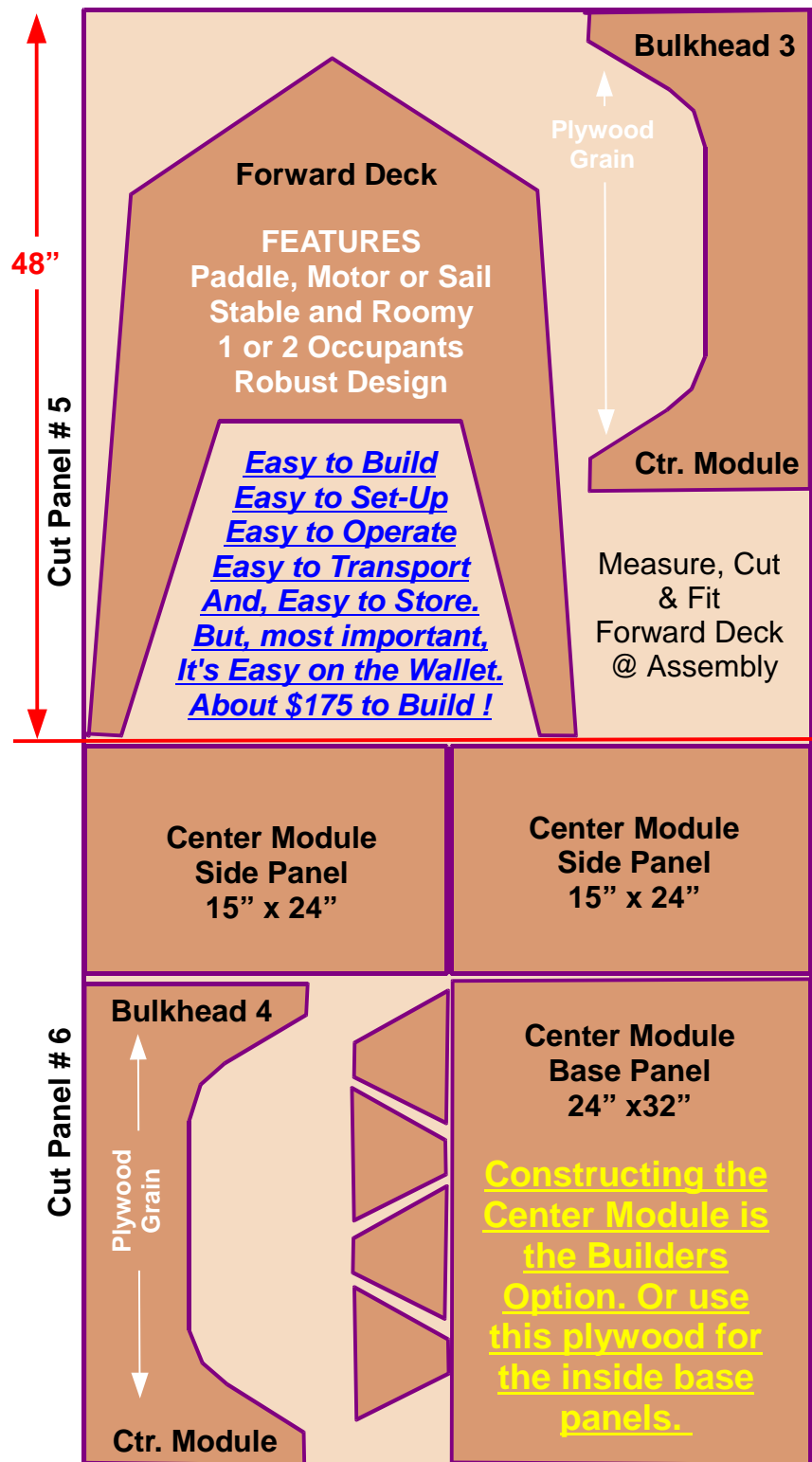
If you are over 175 pounds, you should use a double thickness Base Panel, on the INSIDE, in the standing and sitting areas only, for safety! May require another sheet of plywood.

Cut at Lumber Yard to Transport Home

IF it is not necessary for you to cut the sheets in half for transport, you can layout the panels in a different pattern. However, keep the panel orientation as shown, which aligns all like panels with the grain direction of the plywood.

Keep track of the plywood surface grain direction for panel consistency.





EASY ONE

4' x 8' Sheet
5 MM

ASSEMBLY NOTES & INSTRUCTIONS

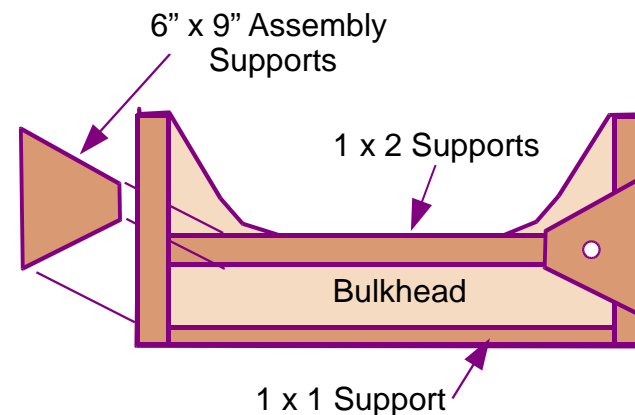
The basic hull can be constructed with or without the sail rig options. The primary difference would be the daggerboard slot and mast step. All other sail options are merely add-ons to the basic structure.

Plan, Execute and Enjoy is the principal focus of building a small boat. Because you will venture out into unknown waters, it is best to have confidence in the boat you built. This means that you must understand what the plans say, and what they mean. Taking short cuts can sometimes be disastrous, so if there are plan instructions that don't make sense to you, ask someone who knows. Also, if you are over 175 pounds, I suggest you use the double base option.

Start by selecting the best wood you can. This means going through a pile of lumber looking for those with the least imperfections; knots, cracks, bent or delaminated lumber or plywood is not wanted.

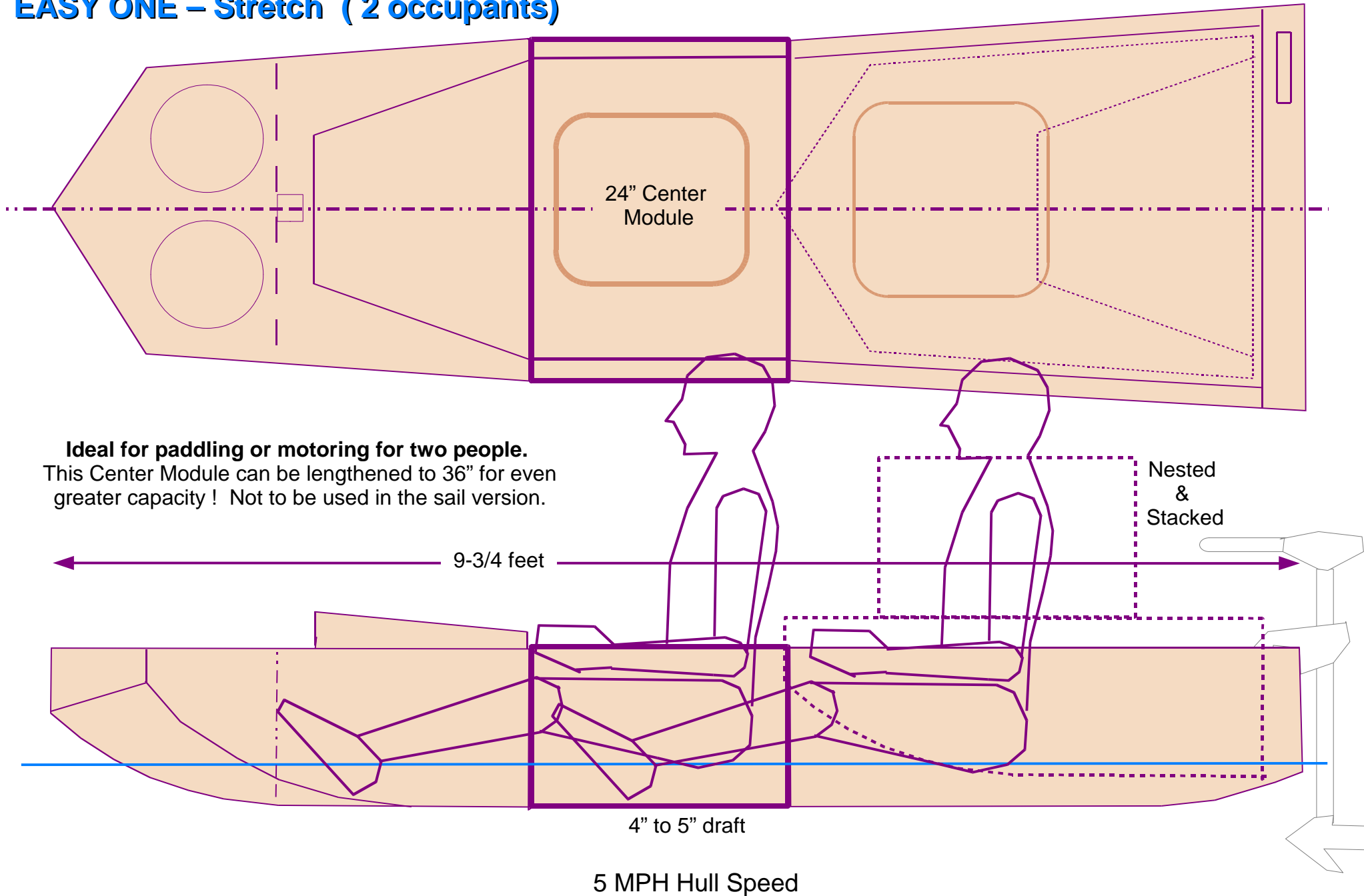
Next, determine how to get it home. I have laid out the plywood so that it can be cut in half at the store (4'x4'), for easy transport. If you can carry 4' x 8' without cutting, do so.

Then study the plans, and start laying out the panels on the plywood. My suggestion is that you layout all dimensioned panels with a dark pencil, or Sharpie, on the back side of the plywood (side C). This will give you a good appreciation for the overall size and shape of the boat, without having to make a cut. The sketch below is an example of a typical panel assembly.



See the layout on the next page for the 2 occupant Center Module.

EASY ONE – Stretch (2 occupants)

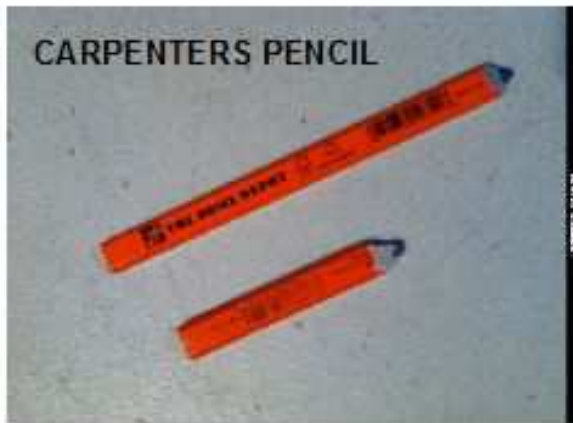
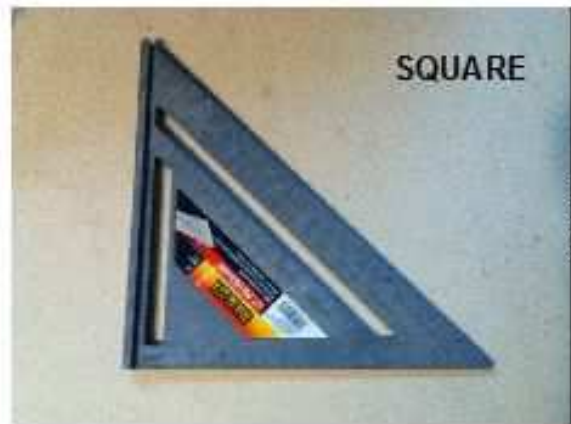


It's SCALEABLE

From 7-34' long (single occupant) to 9-3/4' long (2 occupants)

**Max nested size:
48" L x 38" W x 34" H**

Typical Tools Used In The Construction Process



EASY ONE

Construction Process

It is strongly suggested that you start by building the Rear Module first. It is simpler, with no difficult bends or curves. The plans will outline the steps necessary for completion of this module. Some steps will also be used in the construction of the Forward Module.

STEP # 1 Layout and Cutting Panels

Using a dark pencil, draw the outline of the panels on the plywood sheets, C side, as described on previous pages. Accuracy of drawing is critical for hull panel symmetry.

Using a jigsaw, start by cutting the Bulkheads and Side Panels from the plywood sheets. It is important you cut straight lines, so use a solid straightedge to guide the saw. Place the good side of plywood down while cutting, which reduces splintering on the boats outside edges. Lightly sand all edges after cutting.

Mark the name of all panels on masking tape, and secure to the "C" side of each panel for identification. Insure that all like panels (2) are identical, as these form the final hull shape.



The jigsaw blade must be one specifically intended for cutting thin plywood.

Material List (as of Nov. 2013)

QUANTITY	DESCRIPTION	COST EACH
3 or 4	5 MM Plywood, 4' x 8', ACX Grade (May use Underlayment waterproof type)	\$16
12	1 x 2 x 8' Lumber (Framing)	\$1.50
1	Gallon of Titebond III Wood Glue	\$35
1	Roll of FibaTape, Ultra Thin (1-7/8" x 75') Fiberglass Drywall Tape	\$7
1	Box of 5/8" Stanley Brad Nails (1000)	\$8
2 or 4	T-Nuts, 3/8-16 x 3" Bolts & Washers	\$3
	Approximate Total Material Only Cost	\$140

All of the materials can be purchased at your local home improvement store. I shop at Home Depot because it is close by. Prices may vary.

Finishing consumables and sealer, paint or varnish and brushes are all extra. Total finished hull cost for my build was about \$165. Paddles, PFD's (Life Vests) and Seating not included. Actual construction for the basic hull took me 3 weeks to complete. See the sail rig section for additional time and cost.

It's important to state that other materials can be substituted for those specified, however they must be of good quality, and at least water resistant. The glue, TiteBond III, should not be substituted, as it is uniquely qualified for this application.

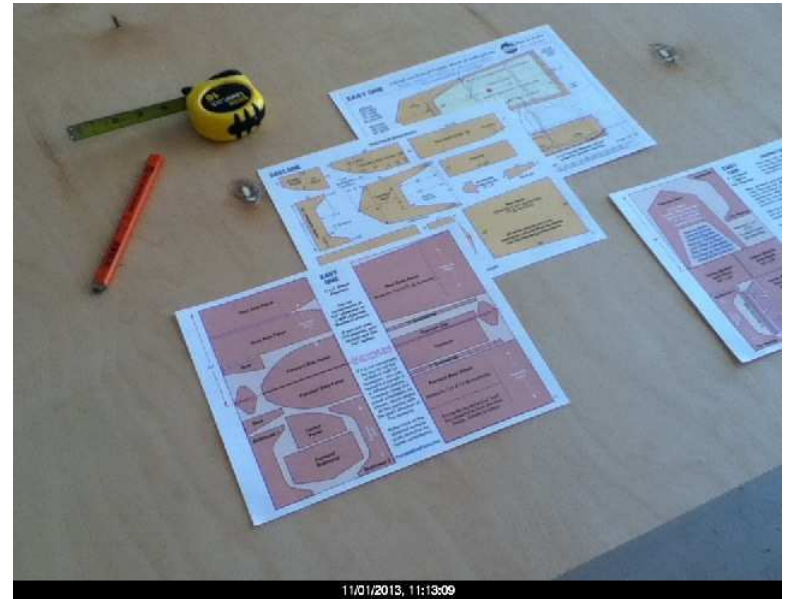
If your hardware store does not have it in stock, they will special order it for you.

EASY ONE

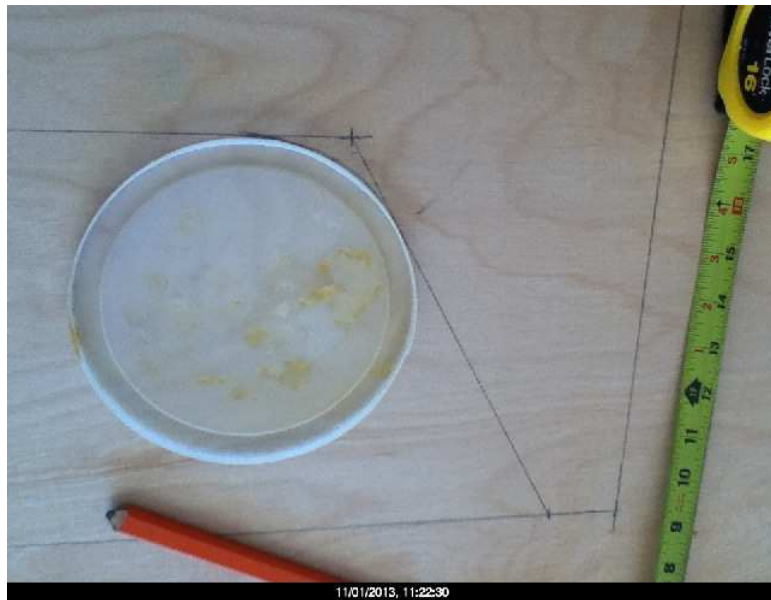
Construction Process



Plywood 4 x 4 sheets clamped together to keep them from warping prior to cutting.



Beginning of panel layout on plywood sheet. Take special note of grain direction.



Marking the inside corner radius of a bulkhead using a paint can cover as a template.



Marked Panels using a Sharpie. Notice the bow curve, and the masking tape panel markers.

EASY ONE

STEP # 2 Forward & Rear Center Bulkhead Assemblies

Start by cutting the 1x2 panel supports to exact length, as shown in sketch below. Supports need to be flush to all outside edges of the Bulkhead. Remember, the good side of the plywood is always on the outside. The supports are assembled to the inside surface.

Note:

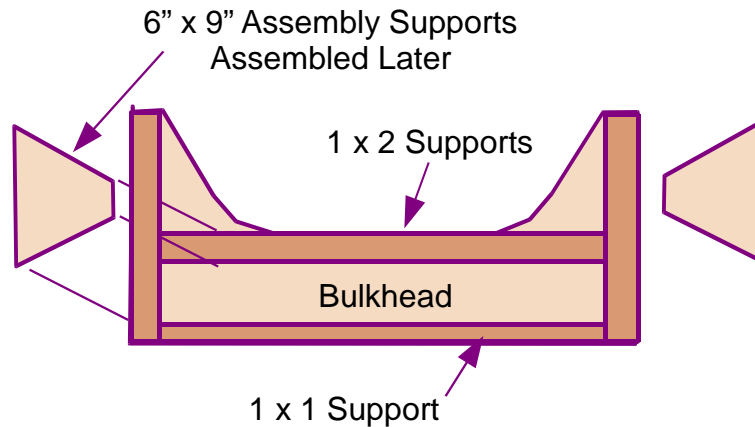
1 x 2 lumber is actually 3/4" x 1-1/2" in size.

1 x 1's are 1 x 2's cut in half down the middle.

Make from framing lumber, but be selective in your choice.

Straight, few knots and dry.

Place the two 1x2 side supports first, followed by the 1x1 base support, and the 1x2 center support. The 2 plywood Assembly Supports will be added after hull assembly.



The Process: Apply a thin bead of TB3 glue to both surfaces to be bonded, and wipe into the surface. This pre-treats the glue joint. Then apply a thicker bead to the support, place it on the panel, align to edges, hold in place with spring clamps, and staple the panel to the support with 5/8" brads, about every 3 to 4 inches. Repeat this for all panel supports. See sketch at right.

This method of assembly should be the same for all hull assemblies. Wipe away any extruded excess glue.

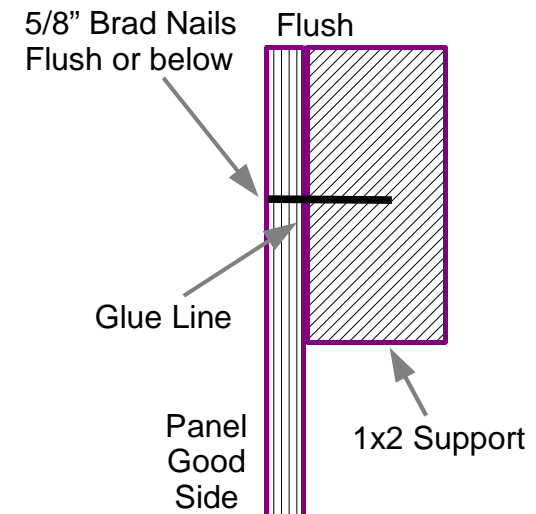
Now make the identical second bulkhead exactly the same way.

Note: If you intend to build the Center Module, make the 2 additional Bulkheads at this time.

Read Assembly Instruction Thoroughly Before Cutting.



**Remember Murphy's Law of boat building:
"The glue dries before the mistake is found"**



Typical Support Assembly
Cross Section

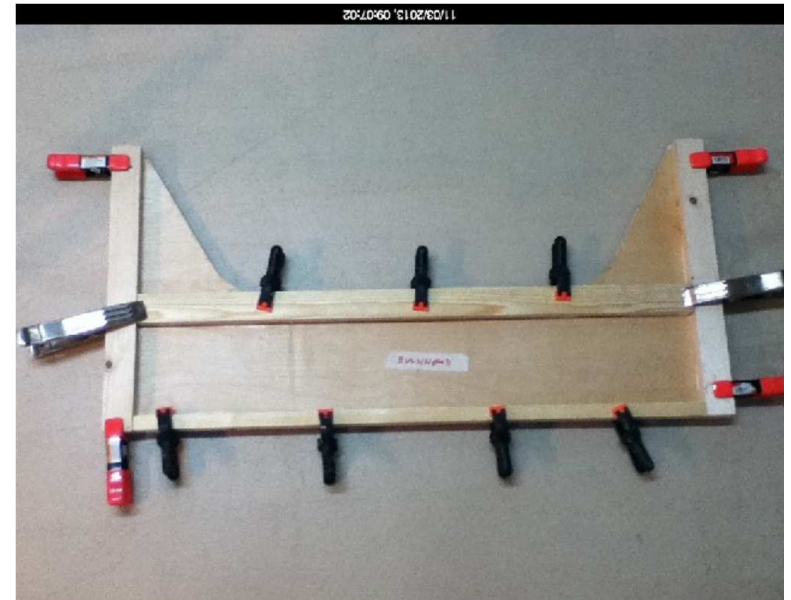
EASY ONE STEP # 2 Continued



Cutting a side support using a miter box.

What tools you use are probably the tools you already have. The important thing is that you take care of them. Damaged tools can cause bad cuts, poor assemblies, and even accidents.

The tools shown are a result of my long term boat building, and may not reflect what you may have in your collection.



All supports glued, and clamped.



Bulkhead brad stapled and laying on flat surface to cure. Weigh down if necessary to keep flat..

It is important that you take your time in construction. Rushing a task usually results in building errors, and work lost. Think ahead, and plan your work, you will be glad you did.

Remember, things slow down when it gets colder, so allow enough time for glue to cure, and finishes to dry.



Two bulkheads clamped together to insure they mate properly. Adjust as necessary..

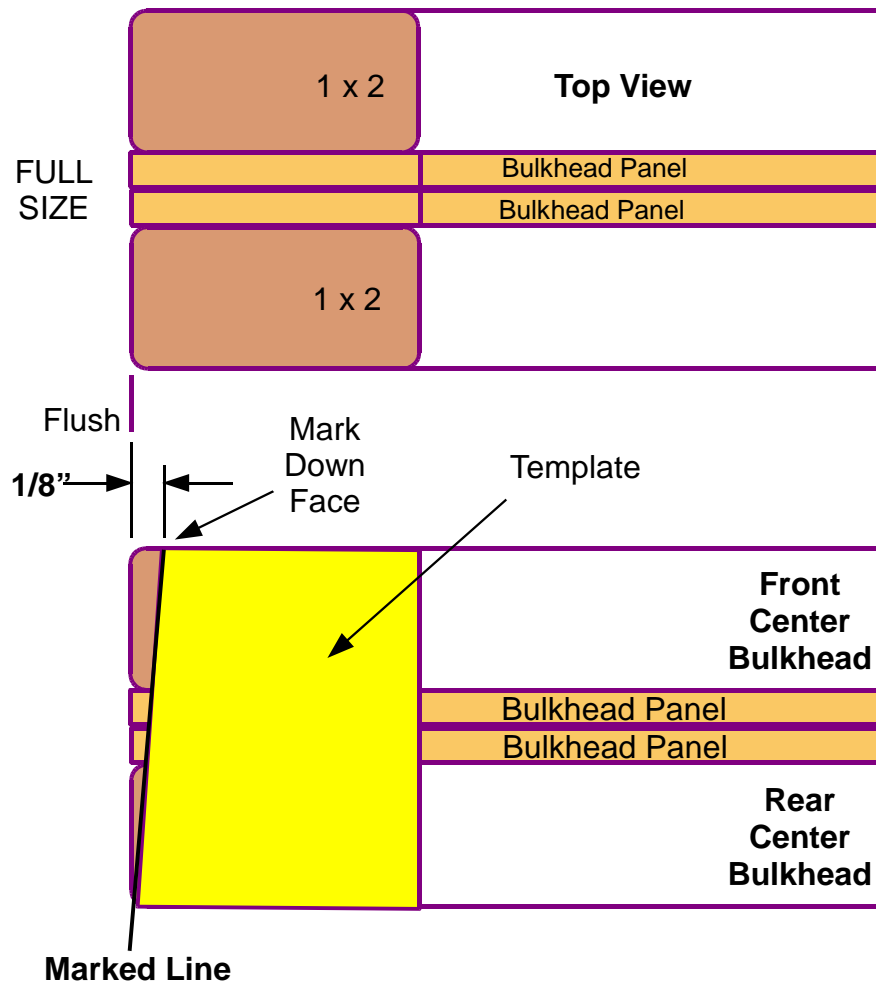
EASY ONE

Construction Process

STEP # 3 Forward & Rear Center Bulkhead Trim

It is necessary to trim the side edges of the two bulkheads to conform to the side angle of the hull, which is 4 degrees per side. Follow the instructions below.

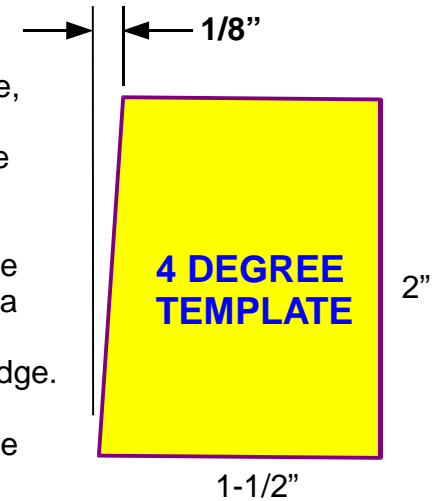
Clamp the two bulkheads together, outside to outside, as shown. Insure that they are exactly aligned to each other. Using the 4 degree template (right), mark the angle on the top of the side supports (below). Then mark a line down the support face that will be the cut line, 1/8" from edge..



Cut the Template from the page, and glue it to a piece of thin cardboard, for stiffness. Cut the cardboard to the template size.

Place the Template firmly on the assembly and mark a line with a dark pencil or pen. Repeat the process for the other outside edge.

Also use the Template to set the angle of the saw blade

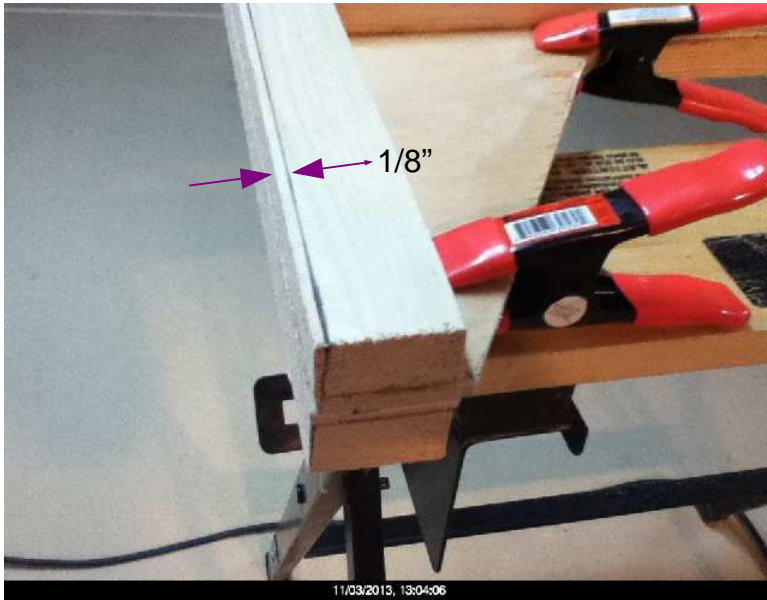


Once the angle cuts are made, they become 2 different bulkheads. A Front and a Rear bulkhead. Make sure you do not mix them up. Rename them with a new masking tape marker.

I have found it best to cut the angle with a circular saw, using a thin plywood cutting blade. I have also used the Jigsaw, but it does not cut as good a straight line. This is a critical operation, as the wrong angle, or oversize cut, could affect the hull shape and fit. Whichever tool you use, take your time in setup and cutting.

EASY ONE

STEP # 3 Continued



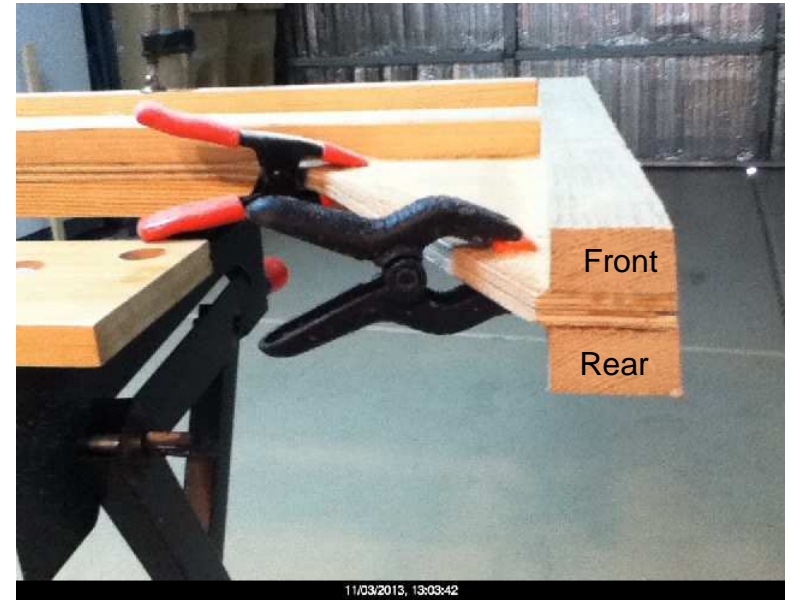
Marked reference line, 1/8" wide..

Don't forget to mark the bulkheads with Front and Rear.

Leave the bulkheads clamped together as long as you can. This will insure they are flat.

Also leave the saw set at the 4 degree angle, for the Transom cuts.

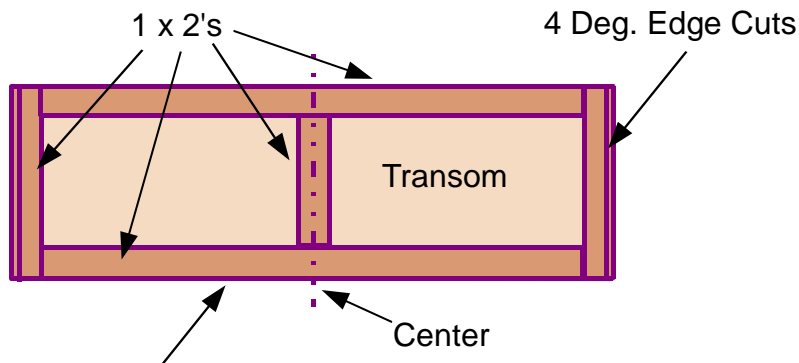
Now start work on the Transom Assembly.



4 degree cut edge

STEP # 4 Transom Panel Assembly

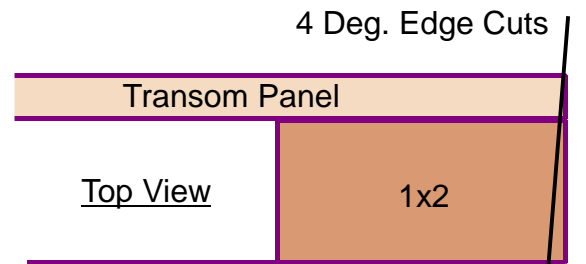
Use the same process as in Step 2. Apply 1 x 2 supports as shown, flush to the Transom edges.



22-1/2 Degree Cut on bottom to match side panel radius.

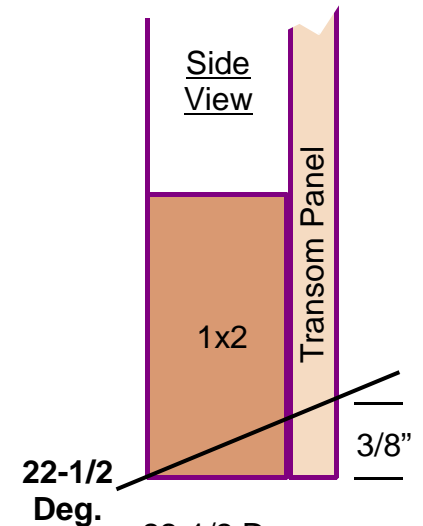
Insure you do not cut the angles in the wrong direction !
I did this once, and had to make a whole new transom.

This is a good time to use the woodworkers code:
"Measure twice, and cut once !"



Trim both Side edges
4 degrees, as shown.

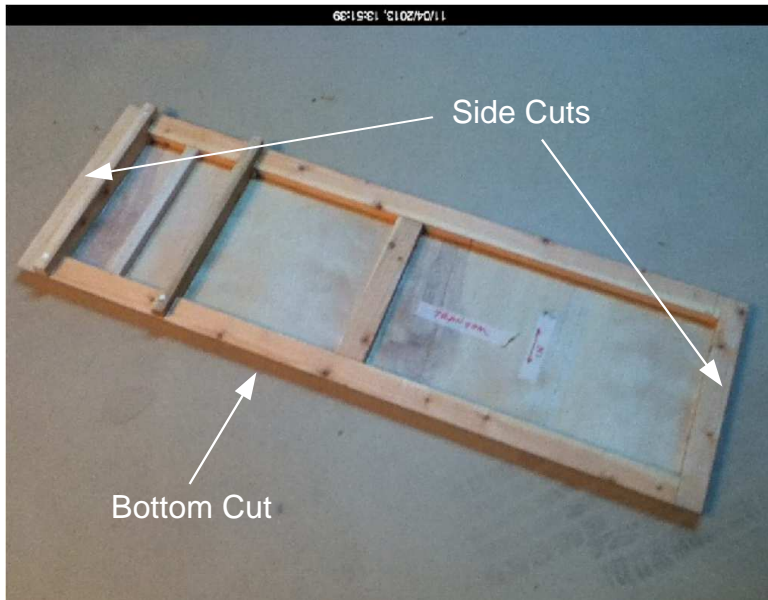
Same angle as the bulkheads.



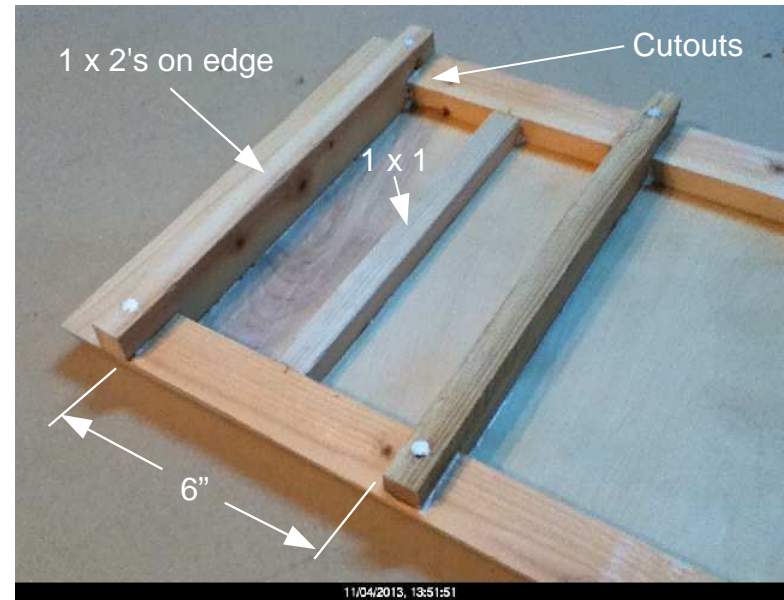
22-1/2 Degree
Cut On Bottom
(half of 45)

EASY ONE

STEP # 4 Continued

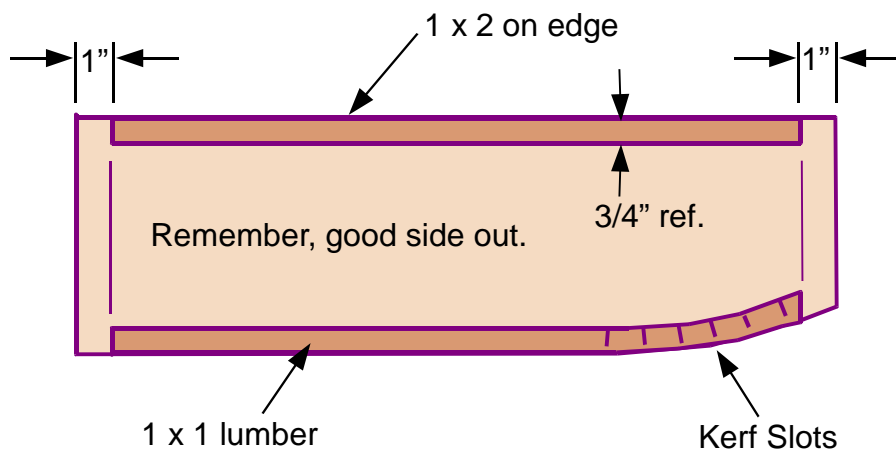


Completed Transom, with optional Motor Mount Slot

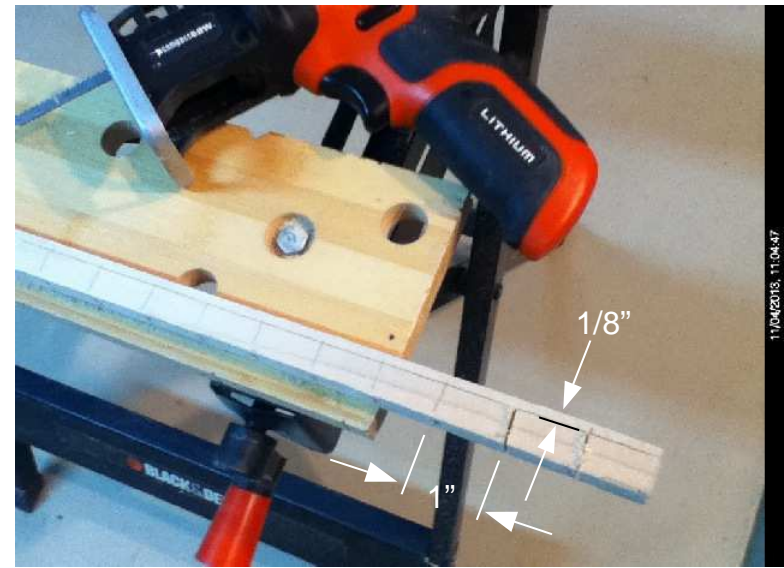


Motor Mount Slot detail, on starboard side.

STEP # 5 Rear Side Panel Assembly



“Kerf Cuts” are developed to allow the lumber to bend. They are cut with a hand saw or a jig saw, about $\frac{3}{4}$ the way into the lumber. Be very careful not to cut all the way through.

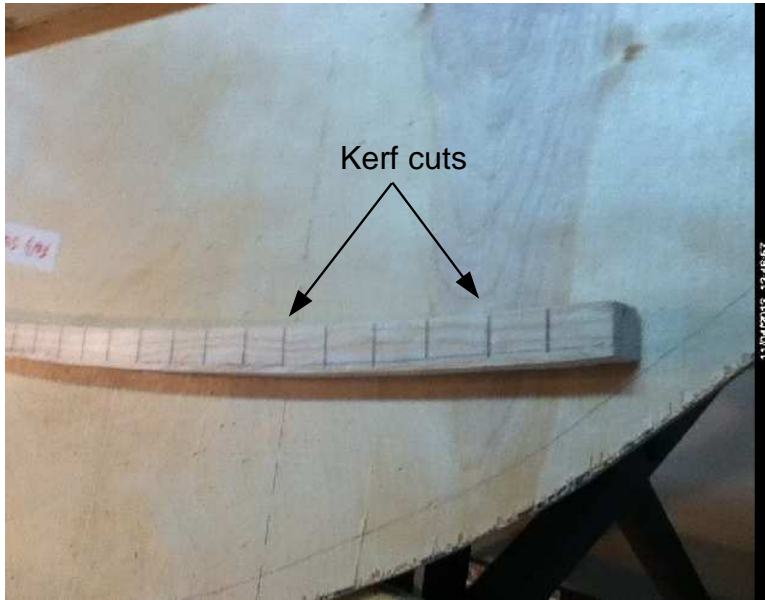


Cut kerf slots 1" apart, within 1/8" of backside.

EASY ONE

STEP # 5 Continued

Note: Plywood Saw blades are usually about 1/16" thick, or less.



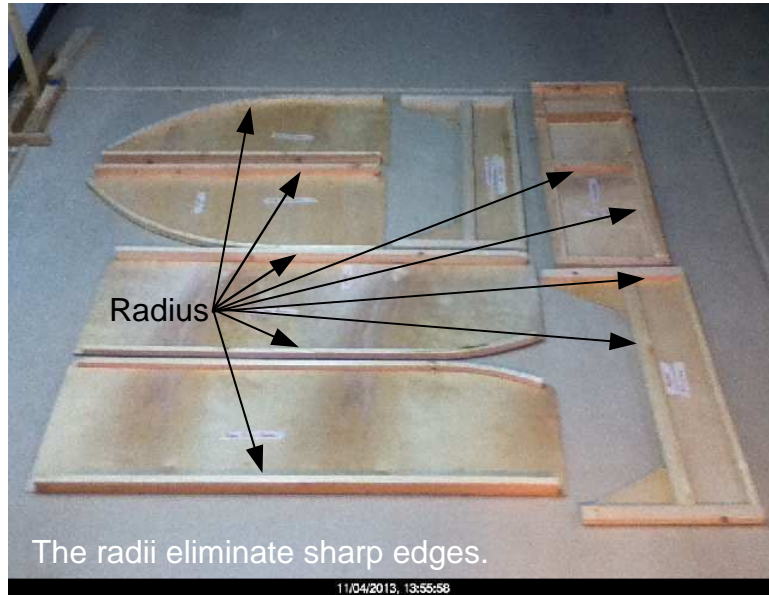
Kerfed bottom stringer

Performing the Kerfing process requires some patience. Space the saw cuts about 1 inch apart, to within 1/8" of the back of the stringer. Be very careful not to cut through. After all cuts are made, carefully bend the stringer inward to close the cuts, and pre-form the bend. Glue, clamp and staple the stringer in place, flush to edge of panel. Repeat for the other side panel.



Bottom stringer glued, clamped and stapled in place

STEP # 6 Rear Module Assembly

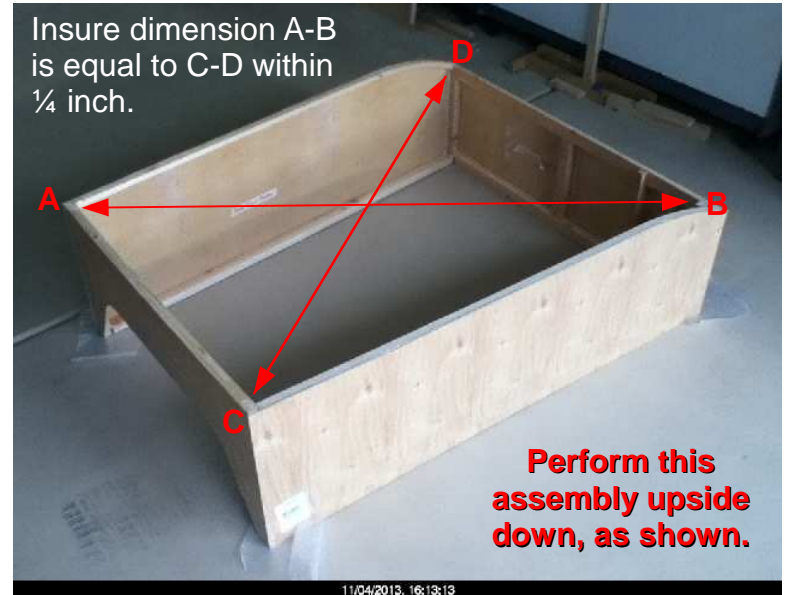


The radii eliminate sharp edges.

Assortment of completed panel assemblies

Round all inside corner edges of all supports on all panel assemblies, prior to hull assembly. I use a 1/2" radius router bit in a Roto-Tool.

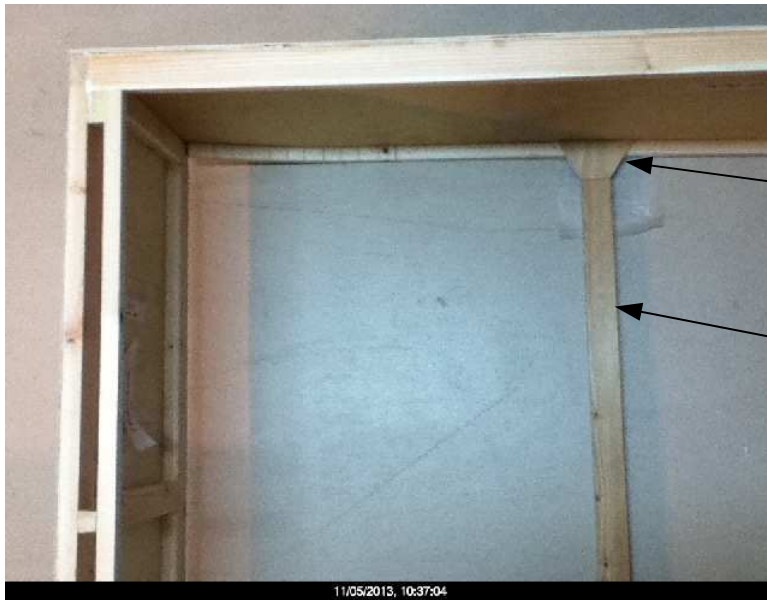
Check fit of parts before assembly. Start with the bulkhead first. Glue and staple one side panel, and insure bulkhead is square to floor. Glue and staple the second side panel. Make sure they both are flat on the floor. Finally glue and staple the Transom.



Rear Module panels assembled

EASY ONE

STEP # 6 Continued



Addition of 1 x 2 Cross Brace with Gussets

1 x 1 Stringer with side & center supports

2" W x 4" L 5 MM Ply Gusset each side

1 x 2 Cross Brace 24" back from Center Bulkhead, flush to bottom.

Sand smooth all surfaces prior to base assembly.



Completion of rear deck support, 1 x 1 stringer

2-1/2" Ref.

STEP # 7 Base Panel Assembly



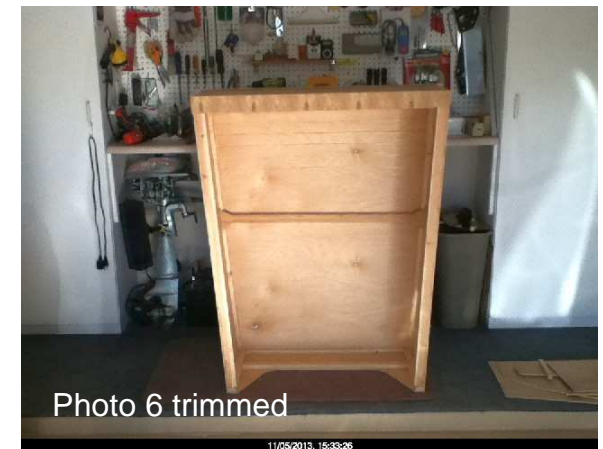
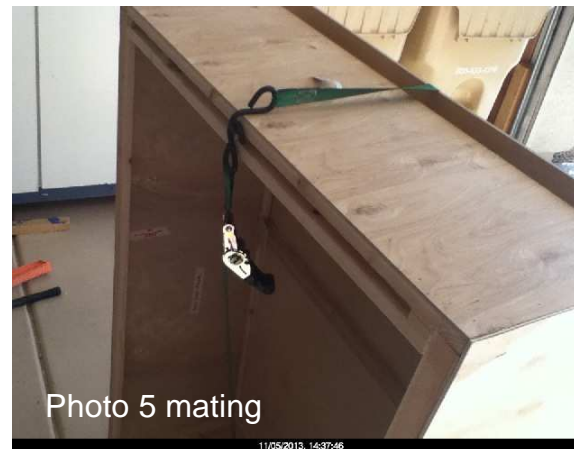
Panel Alignment

Lay the base panel on the floor, good face down. Place the hull assembly on the plywood, and align the bulkhead end to the corner edge of the plywood. Mark the outline of the module on the plywood, per the drawings.

Remove assembly, and cut the panel on the marked lines.



Marked Line



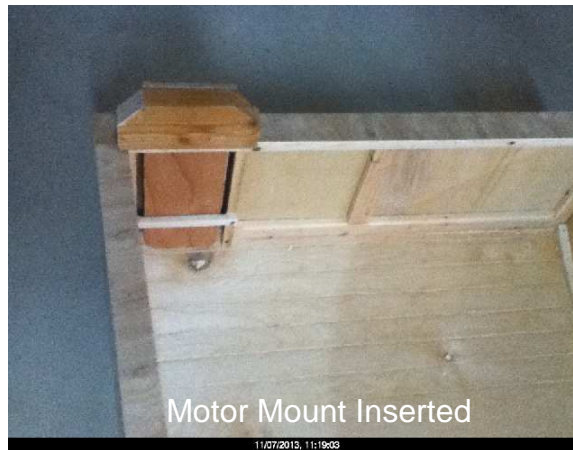
Note: Because of the stiffness of the “cheap” 3 layer 5 MM plywood used, it would be very difficult to bend over the bottom rear radius. So, it is necessary to “kerf” the plywood sheet to allow it to bend. This involves marking lines 2 inches apart across the base panel on the inside surface, only in the area to be bent, as shown in Photo 1.

Photo 2 shows a utility knife cutting a “V groove” across the panel. Cut about half way into the panel, but not through it.

Photo 3 shows the completed V groove kerf cuts. Now place the base on the module assembly (upside down), align the base panel to the module, and glue and staple to the bulkhead only. This allows you to tweak the module to insure it's alignment, per page 15. Now apply glue along the bottom edges of the module, up to and including the cross brace. Again staple the panel in place. The gap at the radius end is shown in photo 4. To bring the base panel in contact with the transom, I had to use a ratchet strap, photo 5. First apply glue to all remaining edges, including the transom. Wrap the strap around the assembly, on center, and slowly tighten until the base panel touches the transom in the center area. Start applying staples at the center and work out to the edges, one side at a time. Hammer in the brads as you go along. Allow the glue to dry, and then remove the strap. Trim and remove any overhang of the base panel to the side panels and the transom, photo 6.

EASY ONE

STEP # 8 Finishing Touches



This completes the Rear Module basic assembly. The next step is the Tape & Glue Process of all exterior seams and edges. You should now make sure all surfaces are clean, and free of any sawdust, by wiping all exterior surfaces with a damp cloth.

The Tape & Glue Process is pretty straight forward, and the instructions are included later in the plans. Other boat designers use the Stitch and Glue process, but on smaller boats like this one, T&G works just fine to water seal all the exterior edges.

I recommend that you apply the T&G when all the hull modules are complete.

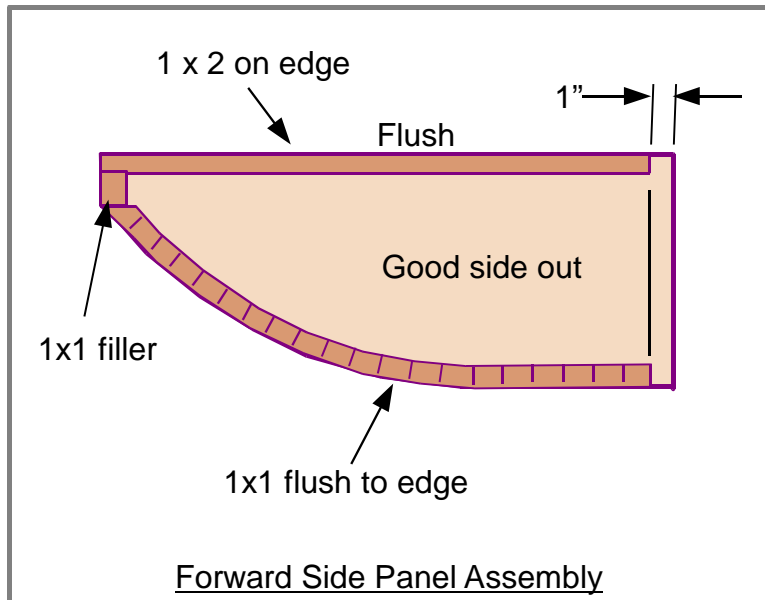
Now, let's start on the Forward Module. Many of the operations you have already performed are repeated on the Forward Module.

As a result, I am relying on more photos, and less text, to define the task of assembly.

NOTE: If you elected to add a second Base Panel, do it now, in the standing and sitting areas. Merely cut, kerf and glue the panel on the INSIDE of the hull. Weigh down with heavy objects to provide good bonding to the original base panel.

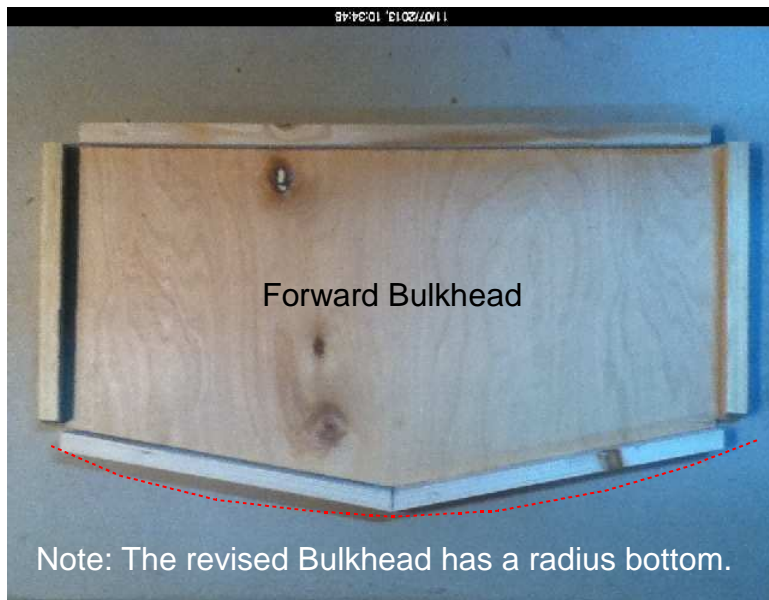
EASY ONE **STEP # 9** Forward Module Assembly

The forward Module is constructed much the same way as the Rear Module, except for the Forward Bulkhead Assembly. First build, and then assemble, the Side Panels to the Bulkhead, as shown below. Take the same alignment precautions as for the rear module.



The kerfed 1x1 bottom stringer is made the same way as the rear module sides.

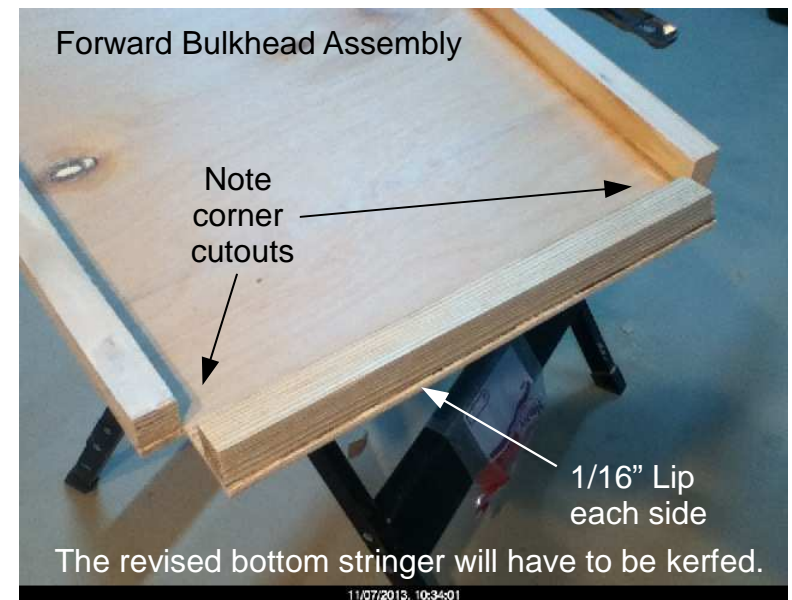
The Forward Bulkhead is similar to the Transom in construction, but note that the 4 corners need to be cut out to clear the stringers of the side panels.



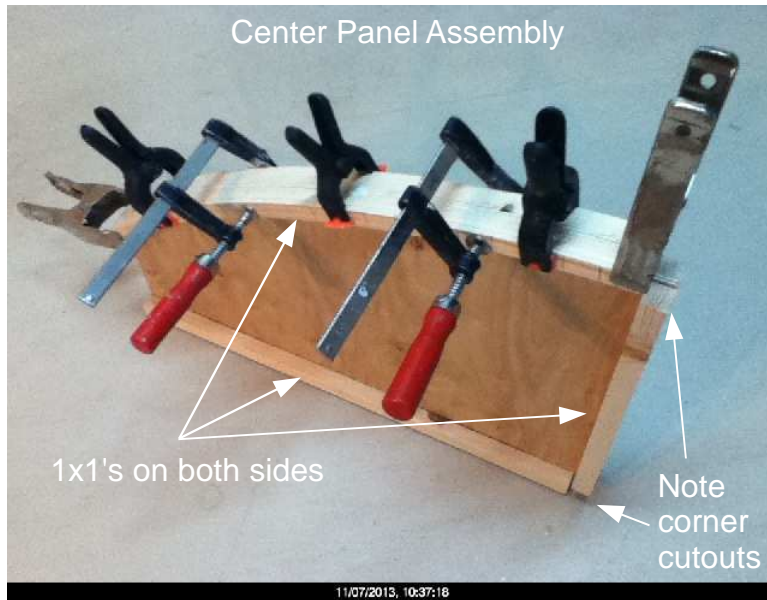
To eliminate the need to cut the 4 degree angle sides of the bulkhead, to match the side panels, position them inboard about 1/16 inch, as shown at right.

Of course, you can do it the other way, if you so desire.

Next is the Center Panel construction.



Note: Photos shown may not be the same as your build, due to later revisions.



The Center Panel build is the most difficult of the whole assembly.

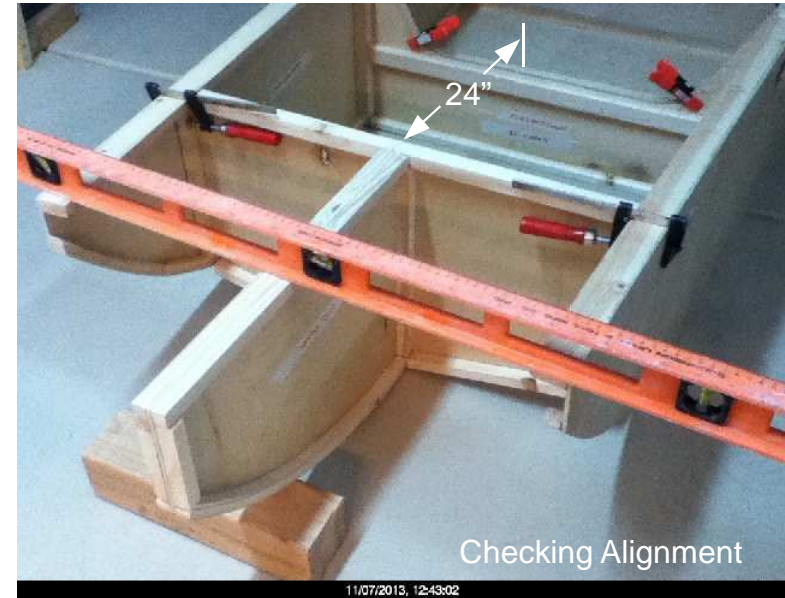
Start by applying 1x1 stringers to all the edges of the panel, on both sides. This is best done by doing one side, glue and staple, and then apply the second side, glue and clamp together. Allow glue to cure. Note corner cutouts in this assembly also.



Now, mark the center of the Forward Bulkhead, and Glue and staple the Center Panel assembly in place. This is best done with the assembly resting on it's top edges.. Check the squareness of the Panel to the Bulkhead.



Next, assemble the Forward Bulkhead assembly to the Side Panels, as shown at right. You should pre-mark the location of the Bulkhead, 24 inches from the outside of the bulkhead. Again, this is best done upside down. Finally, check to insure all 3 panels are in line with each other. Allow the glue to cure.



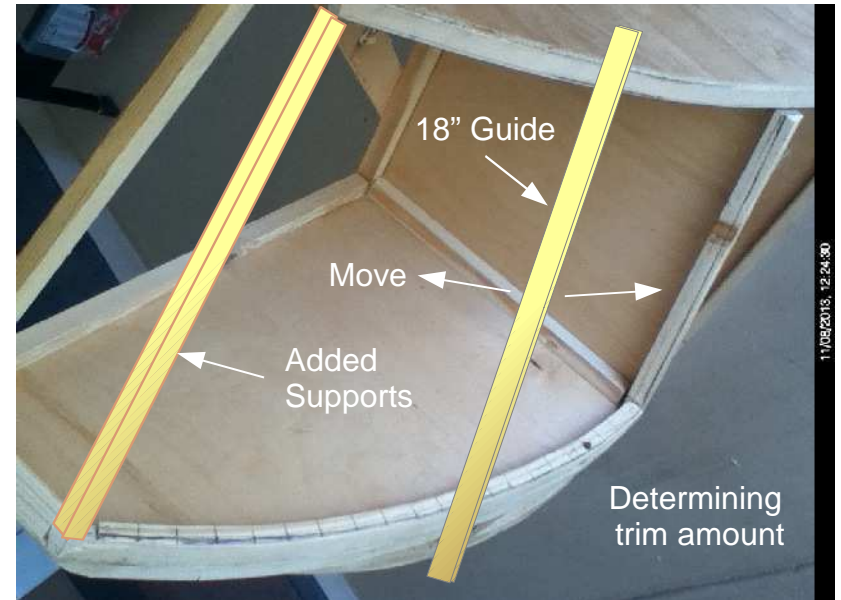
EASY ONE

STEP # 9 Continued



Cut to fit the 4 forward supports. Glue and staple them in place. Now starts the difficult task of trimming the various supports to agree with the mounting angle of the base panel.

It was necessary to add supports to the bottom of the bow area to attach the panels.



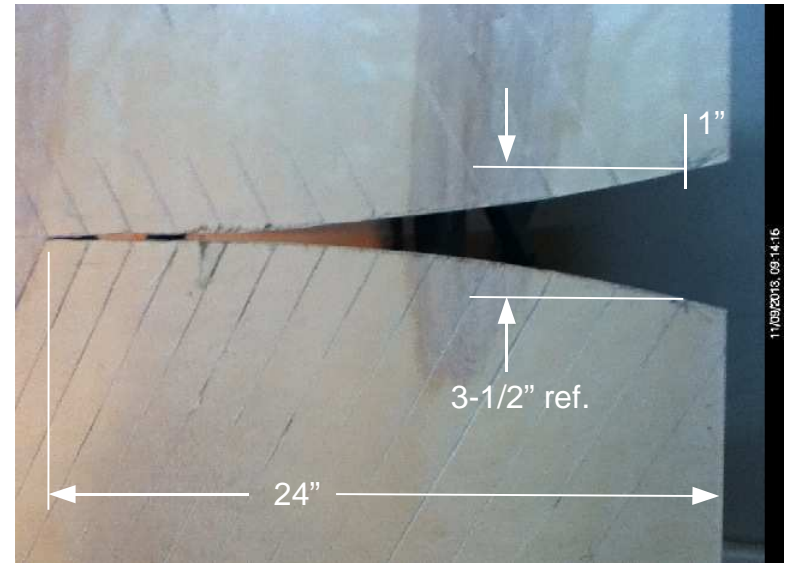
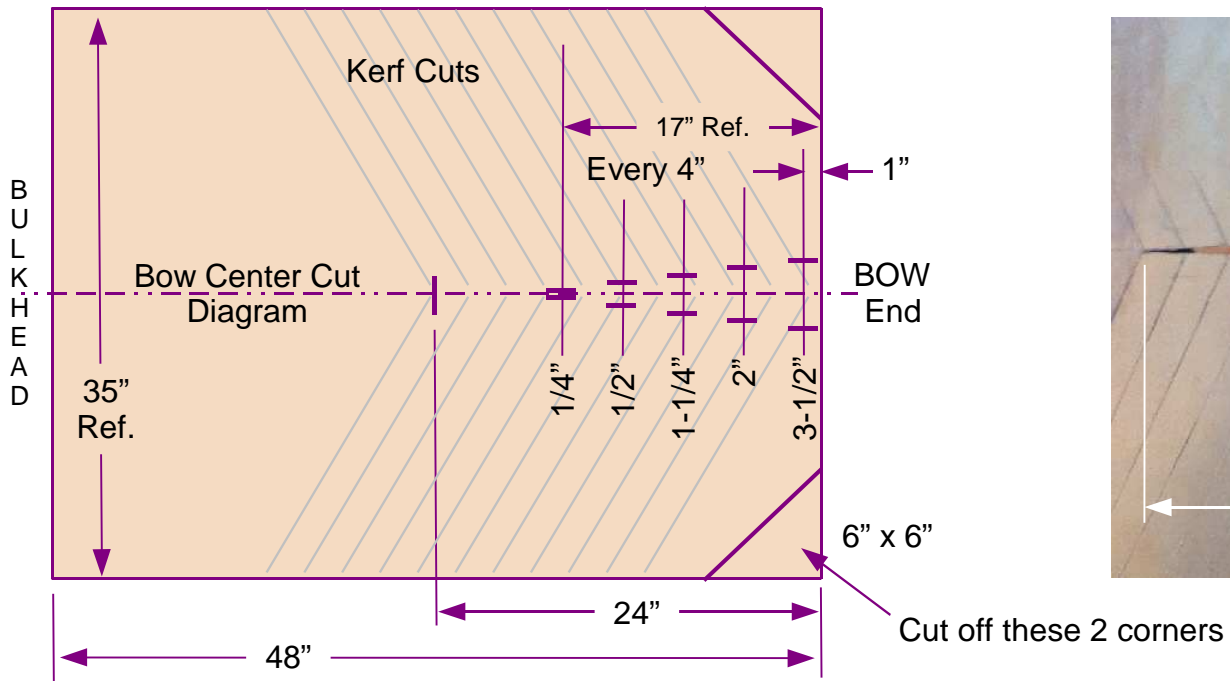
Cut a straight 18" length of 1x2 as a guide. Move it along the panel edge and center panel, as shown, to determine how much material has to be shaved off the center panel stringers, to allow the base panel to sit flat, for best fit and bonding.



I tried a hand saw and jigsaw to do this task, but found a sharp utility knife and a sharp coarse wood file the best method. Take your time, and it does not have to be perfect. The glue will fill in the low spots. Don't worry if the wood splits at the kerf slots, just file it smooth.



EASY ONE



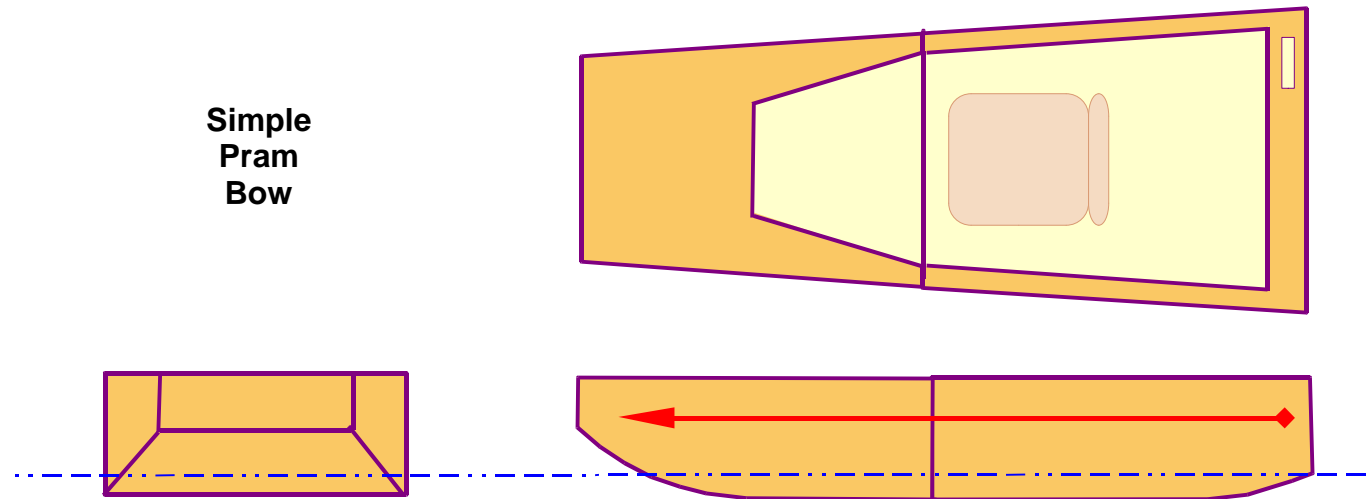
Actual Center Cut

EASY ONE



EASY ONE

Note: Because of the difficult assembly required for the forward module, I have defined a more simple hull shape that is a lot easier to construct for the first time builder. It is a more conventional pram bow, with just an upward sweep of the base panel.



FYI: The compound curve of the standard bow is better suited to the sail rig option of the Easy One.

MORE TO COME

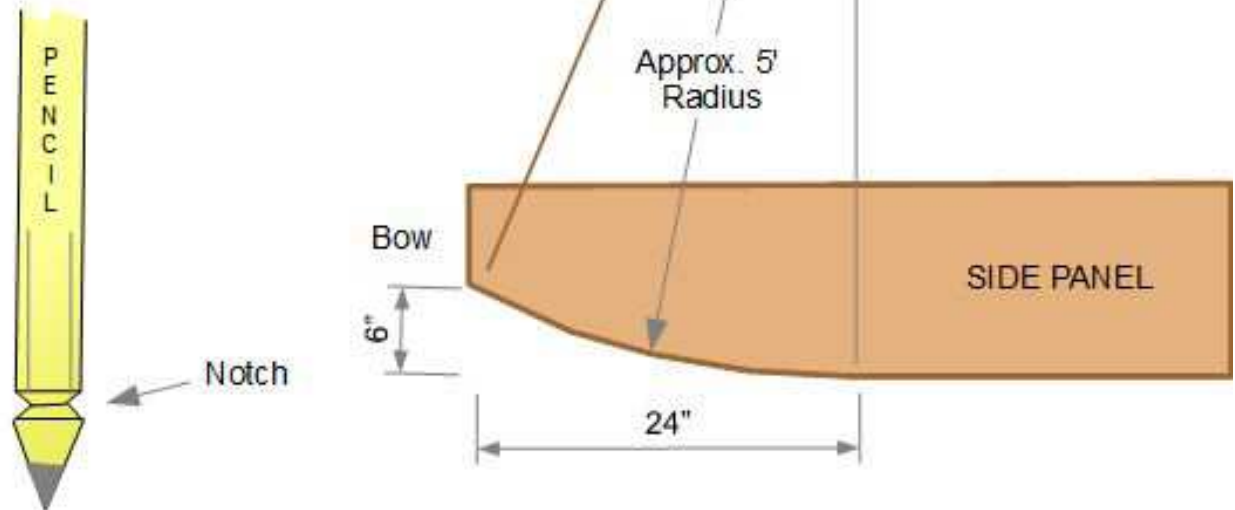
ADDENDUM

METHOD FOR LAYING OUT A LARGE RADIUS

To layout a large radius on a sheet of plywood, follow this simple process.

First, notch a wood lead pencil as shown in the sketch below. Next, secure a length of non-stretch string, and knot it around the notch on the pencil. Place a mark on the floor (the flat surface you are working on) the length of the radius, in this case 5 feet. That is the center of the radius. Make sure it is perpendicular to the Panel. And mark the end locations of the Radius on the plywood. Now position the pencil at the lower end of the radius, in this case the bow bottom of the panel. You will now need a second person to place the other end of the string on the center of the radius, pull it taught, not tight. Now swing the pencil down toward the base of the panel. If the radius does not match, adjust the location of the center point slightly and try again. Once you have found the correct line, make the radius line on the panel dark. This will be the cut line. Use it as a template for the other panels.

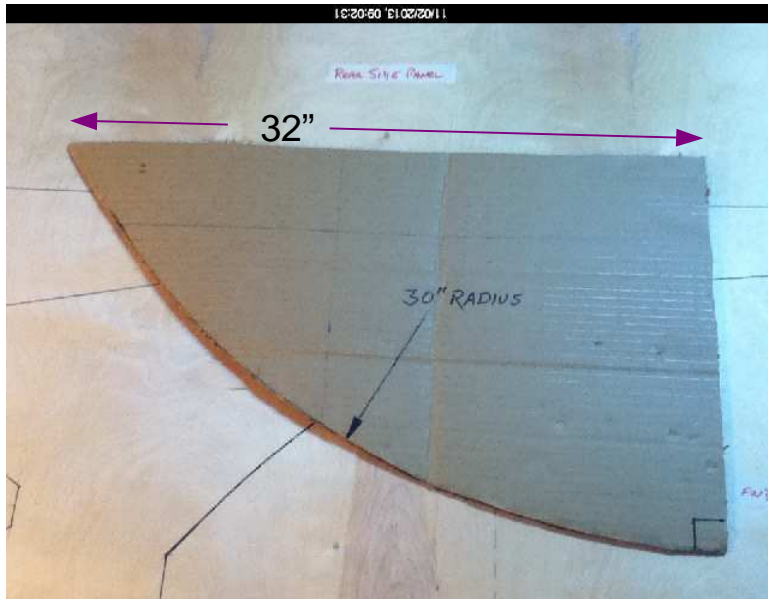
This is one method of developing a smooth radius. Another is to take a flexible length of wood, plastic or metal, and bend it between the start and finish points of the curve. Then trace the outline on the plywood. The important thing is that a smooth radius be developed, the actual dimensions of which are not important to the function of the boat.



See next page for a Radius Template.

EASY ONE

Because the EASY ONE has 5 panels that require a 30 inch radius, I found it easier to create a template out of cardboard. It then becomes a matter of tracing the radius on to the plywood, a much easier task. Just make the template large enough to trace the forward side panels, about 32 inches in length, as shown. Reference page 3 of plans.



Cardboard Template

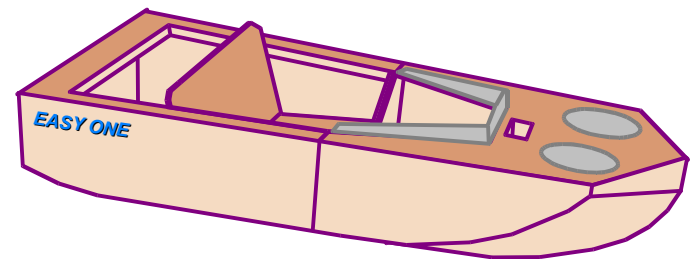
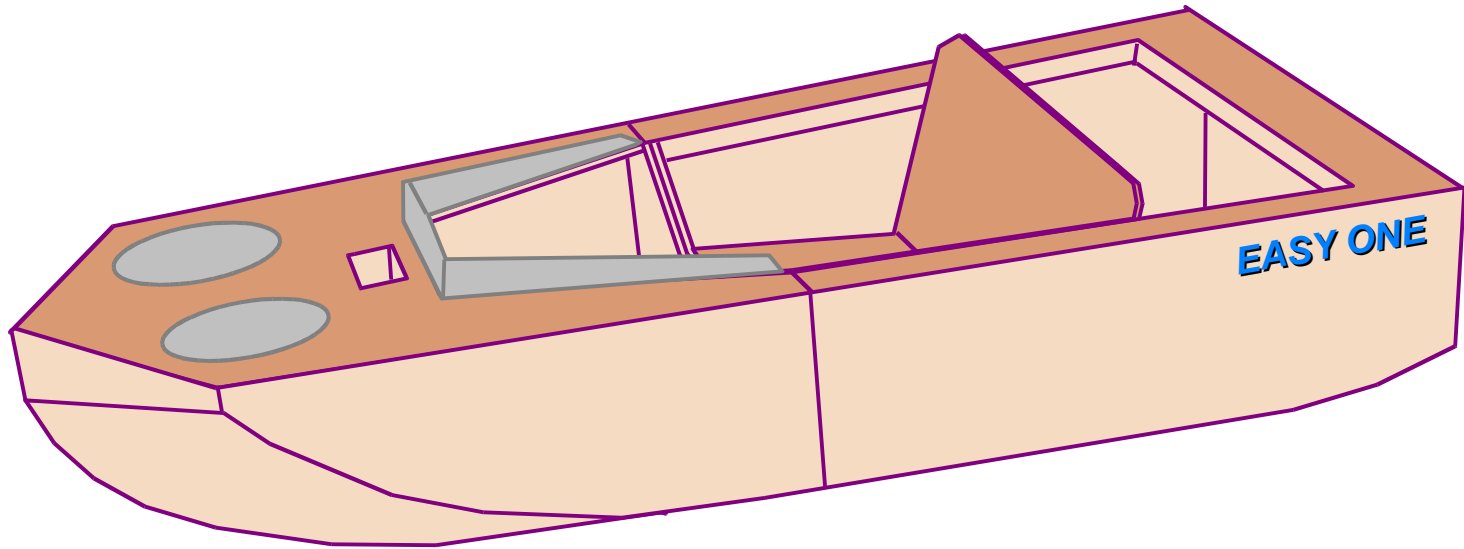
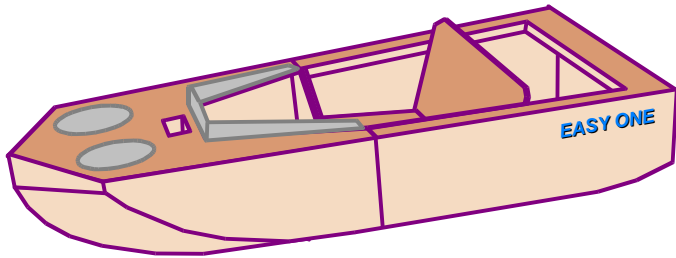


4 x 4 Sheet #2 Layout

Incomplete

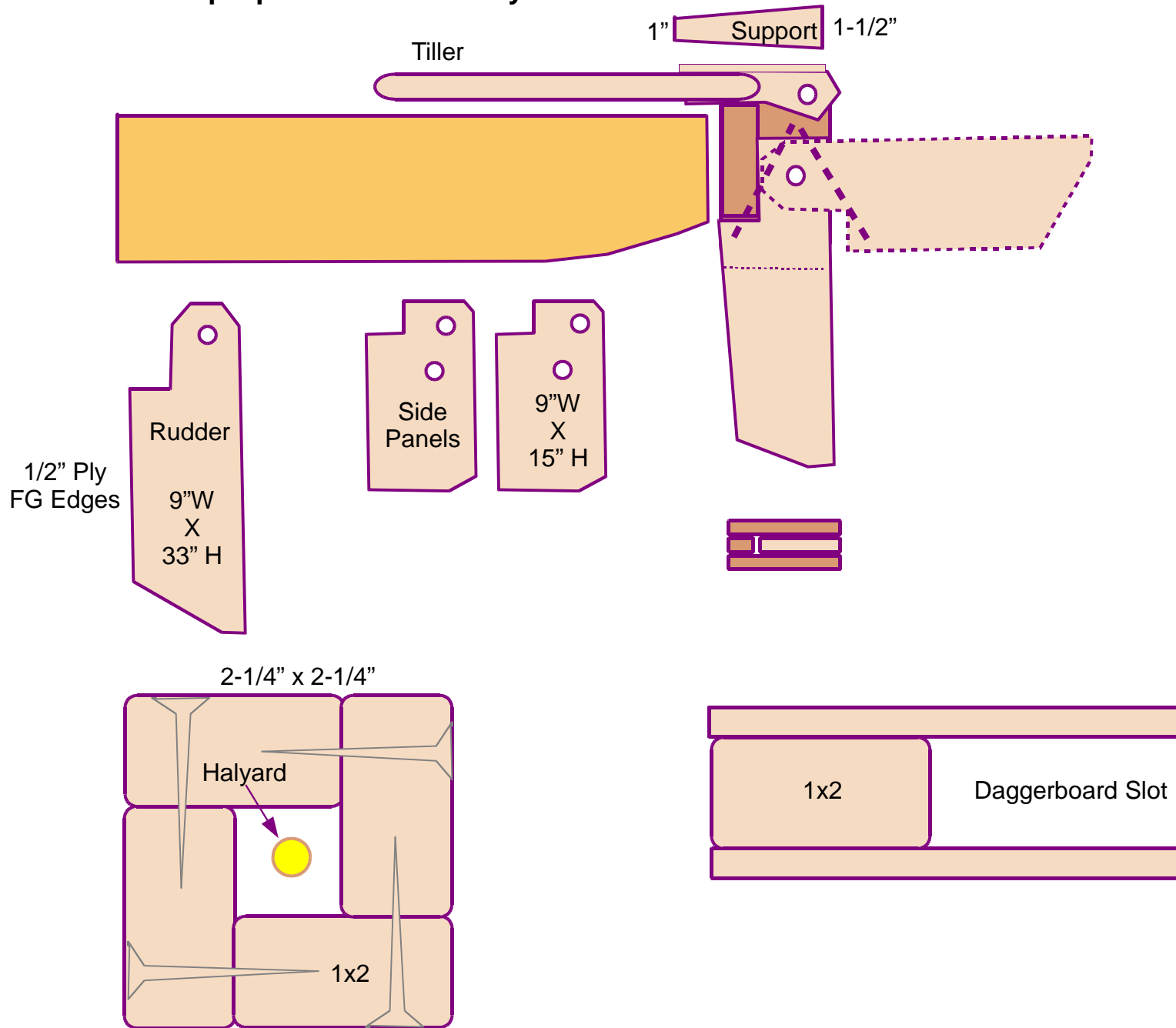
EASY ONE

3D Views



EASY ONE

Flip-Up Rudder Assembly



Mast Cross Section

EASY ONE

MORE TO COME