

Melonseed Sailboat

Myrtle

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I became interested in building a melonseed sailboat at the MASCF in the fall of 2010. At the time I was sailing my small 15 ft. canoe and finding that it really wasn't big enough for my size. I'm 6' 4" and weigh anywhere from 260 -270. During the festival I met Mike Wick and several others that had Melonseeds and we started to talk and discuss the options of one style of small sailboat over another. On reviewing my garage's length vs. width and the storage requirement for my woodworking business I decided the Melonseed was perfect for me. I could build the boat in the space that I used for my van and still have sufficient room to get in and out of my woodworking shop. So after hemming and hawing, reading reviews on the internet and talking to friends I ordered the plans for the 16 foot Melonseed designed by Mike Barto from the Wooden Boat School's store. They arrived on January 12, 2011.

The first thing I did was label the plans per the one page list of instructions. After reading other boat plans, schedules, lofting requirements, tables of offsets, etc., I found that the labeling process is very helpful in understanding how the boat is put together. I then started a "Cut List" to determine how much lumber I would need and the type of lumber that I would need. I quickly found out that this wasn't the place to start. There are so many pieces of various wood types and lengths that it's hard to get a realistic list together. So I decided to make a model of the boat to the scale of 1 inch to the foot. Here's the sequence of events that followed for the building of the Melonseeds hull.

Winter of 2011

I purchased a sheet of 1/8 inch birch plywood, a book of tracing paper, a can of spray adhesive and started tracing out the scaled plans for the Melonseed. I then cut out the station molds, formed the stem and transom and assembled them to a 'to scale' ladder back form. After doing all of this and recovering from bronchitis I started to put 'to scale' planking on the model. As I was moving along on the planking process I happened to drive up and see Mike Wick's new melonseed project and he suggested that I add 3 inches to the sheer line of the boat. So I decided to experiment with the model. This worked well, so I thought, why not, and I gave it a try. I thought the extra height of the hull looked good so I decided to keep it as part of the boat. Adding the 'to scale' station molds, stem, transom and planks really got me to thinking about the lumber size and requirement for the real boat. Between work, family and spare time I finally finished the boat's hull about the beginning of the Summer of 2011.

Fall 2011

In October I finally had some time to concentrate on the Melonseed project and I went ahead and purchased the necessary plywood to build the station molds. From the model I determined that I would need 10 sheets of $\frac{3}{4}$ inch plywood for the molds. I decided that I would make the molds from imported birch veneered plywood. This plywood has very few if any voids and the veneered face is great to draw on. Well, when I went to order the plywood I found out that it came from Peru and the plant that manufactured this plywood had a fire and shipments would be delayed for who knew how long. My supplier had 14 sheets in stock and I decide to buy all of them thinking that I could use the extra sheets for other parts of the boat. I also ordered 4 pieces of S/P/F lumber @ 2x6x16 for the mold's ladder back. The total cost was \$513 delivered.

November/December 2011

I started tracing the plan's described station mold patterns. I then glued each station mold tracing to $\frac{1}{4}$ inch luan plywood, added the extra 3 inches to the sheer and determined the distance from the plan's baseline to the top of the mold. I did the same for both the transom's mold and the stem. Once all the station molds were on $\frac{1}{4}$ inch plywood I faired each mold on my shop built stationary disc sander. I like to use $\frac{1}{4}$ inch plywood for a mold template to assist in transferring the proper curve and dimensions to the permanent mold material. Some will probably say that this is an extra step but after building 4 boats, I can assure you that it's time well spent. This method also assists in utilizing the best space on the $\frac{3}{4}$ inch plywood mold.



January 2012

Over the New Year's weekend I started cutting out the boat's permanent molds to the lines drawn on each mold from the ¼ luan plywood. This was quite a process balancing the 4x8 sheets of plywood in my workshop and then cutting them out with my jigsaw. I soon found out that a standard 'up cut' jigsaw blade doesn't lend itself to a clean cut line. The plywood splintered terribly so I changed to a 'down cut' jigsaw blade. Using this type of blade is harder to start but the end result is much better to work with, all the splintered edges are on the inside of the mold. I was able to make a jigsaw cut to 1/8 of an inch from the 'traced line'. By the end of January all the molds were cut and sanded to their individual mold lines. The sanding was challenging and I found the best solution was to build a mobile stationary disc sander from some parts I had hanging around my shop. It is important that the surface be square to the sides of the mold. While taking a break from all the sanding, I thought a change of pace was in order, so I built the 16 foot mold ladder back. On completing for ladder-back I found that it was quite unwieldy and decided that I would make legs for the mold with 6 inch wheels. This worked great.





February 2012

The next step was to build the stem's mold. I followed the plans and built a plywood form to bend the stem. For a uniform bend I have found that you need many, many clamps and since I didn't have sufficient clamps, I made clamps using two 5/16 x 6 inch eye bolts for clamps. Here's what I did: I drilled 1" inch diameter holes in the bending form and then used 3/4 dowels that went through the 'eyes' of the bolts and attached a short length on wood to the top to form a U bolt type configuration. These bolt clamps work extremely well as they don't leave a 'cupped' area in the middle of a piece of wood like a C clamp does.



To make the stem I purchased a white oak board that measured 2x6x60 and ripped the oak into 17 1/8 strips. The white oak board cost \$37. As you may know, white oak bends extremely well but it needs to be soaked in water prior to bending. I then soaked 8 strips in water for 3 days

and bent them around the form. I found that the white oak bent easily without having to steam the wood. The downside of water soaking the wood is that it took a long time to dry; particularly in March. So to speed the process I decided to glue the strips together with Gorilla Glue. The moisture content in the wood aided the polyurethane glue to form a tight bond and formed an interior stem that had little if any spring back.



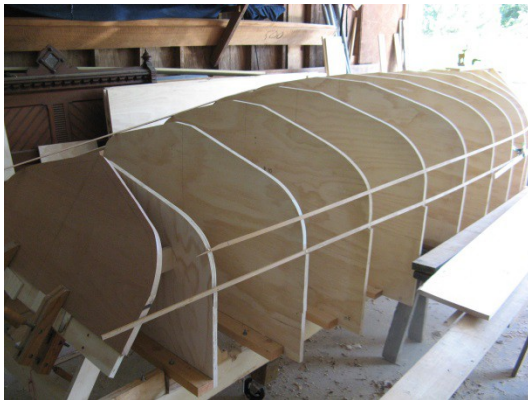
March 2012

Wouldn't you know it we had several weeks at the beginning of March that were mild enough to start placing the molds on the ladder back frame. My fellow boat builder friends; Bud and Ben came over one day and we temporarily placed all the molds on the ladder-back. We attached 2x4x 48 lengths of lumber to the edge of the mold that met the ladder back. Once these were attached we attached them to the ladder back with 3 inch screws. You know, all the books make it sound so easy to place the molds on the ladder-back and instantly they'll be aligned both laterally and horizontally. Well, that didn't happen in this case! It's a real job to make sure that each form is aligned to the center line. We needed to use a shim here and there but we did it. All the molds were in place and the stem was attached to the 1st and 2nd station mold. At this point I had spent 57 hours working on the boat and spent \$866.20.



April 2012

Now it was time to make sure that the station molds created a “fair line” for the boat and that the sheer had a nice fair line. Although each station mold was created from the plan’s drawings, I found a number of ‘hollow’ spots in the station molds. I believe part of the problem came from adding the additional 3 inches to each station mold and I didn’t have a ‘fair curve’ at the sheer with the additional 3 inches. Therefore I had to determine; “was I going to add the 3 inches to the stem or the transom”. I decided I’d add the 3 inches onto the transom and therefore assumed that the overall hull’s shape would ride better in the water with a fuller stern. Using the new transom sheer line as a reference I created a fuller aft and center for the hull and kept a fine entry on the stem. Now I determined a new sheer line for the starboard side of the boat. This entailed adding and subtracting shims on the side of the each station mold. I used the starboard side as a reference and then transferred these measurements to the port side of the boat. At last I had a fair sheered boat! Now the task of making sure that each station mold did not have any ‘hollow’ spots. I did this with battens placed both diagonally and lengthwise on the boat’s hull. After a few shims were added to the station molds the boat’s shape received my final approval. At this point I have invested 73 hours in the construction.





May/June 2012

Now starts the boat's actual building process. I have decided that I'm going to strip build this boat with cypress that will be edge glued. Many builders like to use the canoe cove and bead process but I found that it's an extra step that really isn't necessary. Edge gluing the strips works great as long as each strip is secured to each station mold and has additional clamps to assist as needed. The cypress strips are 5/16 inches by 1 inch wide. My lumber is in various lengths of 10 – 12 feet so I'll need to scarf these strips. To assist in the scarfing process I built an eight to one scarf jig that fit on my mobile stationary disc sander. This worked really well and aided in the scarfing process. All of my cypress lumber was rough cut and needed to be planed prior to cutting the strips. After the planing was completed I jointed one edge of each board to acquire a true edge. Then I made a 'run out 'sled for my table saw and ripped the 5/16 inch strips. This can be a tedious process so to prevent any machine errors; I only cut 18 strips at a time. Of course my shop buddy Gunther, our standard poodle was on hand for moral support.



Once the strip situation was solved it was time to think about building the transom. I purchased a piece of mahogany with these dimensions; 5/4 x 7.5 x 13ft. @ a cost of \$6.95 per board foot or \$88.88. I then cut the board in half and edge glued the two pieces together with epoxy to form the transom. On cutting out the transom, sanding the surfaces and edges I took a suggestion from one of the other melonseed builders and fiber glassed the inside surface of the transom for added strength. The difficult part of the transom was cutting the beveled top edge to meet that profile of station mold # 12. So I measured and then measured again and went ahead and cut the bevel. As it turned out the bevel was perfect on the sides but a bit short on the lower area of the transom, so I decided to just fill these areas with thickened epoxy as I went through the building process. The next step was to place, level and attach the transom to the boat mold. I thus made several supports to align the transom to station mold # 12 and to conform to the sheer of the boat.





Begin an old fashioned builder type I than went ahead and started building a keelson for the boat. The plans called for a ½ inch piece of plywood to be attached to both the transom and that of the stem, thus stabilizing the boat molds. Not wanting to use plywood I purchased a piece of clear white pine with the dimensions of 4/4 x 11 x 12 feet for \$16. Then I made a 4/4 x 2 x 14 foot keelson to join the transom and the stem. To attach the keelson to each station mold I glued small 2 x 2 x 4 inch blocks to each station mold and attached the keelson to these blocks with ¼ inch carriage bolts. I guess some of my building friends would say that this was 'overkill' but I must tell you the building form was extremely ridged and completely aligned on all angles.



July/August 2012

While attaching the keelson to the stem I found that I needed to make an adjustment to the stem. Since I had installed the stem into station mold # 2 and the keelson sat on top of the station molds I needed to add 3 additional 1/8 strips to the stem. Once these strips were glued in place with gorilla glue I could begin shaping the stem. What a job; the temperature outside was in the 90's. I started with my trusty spokeshave but found that the white oak was so hard and fibrous that the best tool for the job was my 7 inch sanding disc sander. I used 50 and 60 grit discs and this accomplished this task in short order.

In preparation for attaching the strips to the mold I applied gorilla duct tape to the edges of each station mold. On August 19th I installed the first strips to the mold, one on each side. I attached all the consequent strips with #6 1 inch hex head spatx screws. I started to use gorilla glue to edge glue each strip to the next and this worked great until I reached the bilge or curvature of the hull. Once I started making the compound bends to the strips the gorilla glue did not work and I needed to start using epoxy to edge glue the strips together. So here's the process that I used:

- ↓ For the strips to make a compound bend I found that this worked best if I soaked the strips overnight. I therefore joined 2 eight foot pieces of 4 inch PVC pipe together to make a sixteen foot soaking tube. Each strip was about 10-12 feet long and therefore needed to be scarfed to make the 17 foot strips required to fit the boat mold.
- ↓ If you have ever tried to scarf wet wood you will find that it doesn't work. I therefore scarfed the ends of the long strips prior to soaking and also made 5 foot strips with scarfed ends that were also soaked overnight.
- ↓ On pulling a soaked strip out of the soaking tube I attached the strip to the mold with the #6 screws and scarfed each strip in place with gorilla glue. I then let the strips dry which took about a day.
- ↓ Once the strips were dry I than lightly loosened each strip for the mold, applied epoxy to the edges and tightened the strips back to the mold.
- ↓ As I added more and more strips to the molds, I found that some of the epoxied edges would 'open' due to the drying of the wood so I applied more thickened epoxy to the edges/seams of these strips.



September/October 2013

I continued to add strips each week and to fill in all voids with thickened epoxy. When the 'football' got to within 8 inches of the keelson I found that I needed change the dimensions of the strips. I therefore switched to strips that were $\frac{1}{2}$ inch wide and a height of $\frac{3}{4}$ inch. My rationale was that I wanted the garboard planking to have a finished thickness of $\frac{1}{2}$ an inch which is similar to the $\frac{1}{2}$ plywood that is specified in the plans. Inserting the final strips takes careful cutting and splicing to get the tightest fit possible. All 88 of the strips were installed by October 31st. At this point I have spent \$1,298.97 and contributed 170 hours to the boat's construction.



November 2012

The weather is starting to change and it's dark in the garage by 6 PM so my time to work on the boat is limited. Therefore I am applying thickened epoxy to all seams that show any 'light' and to start the leveling process of the hull. By November 12th I have suspended work on the boat until the beginning of spring, which comes to our area in March.

March 7, 2013

More to follow.....