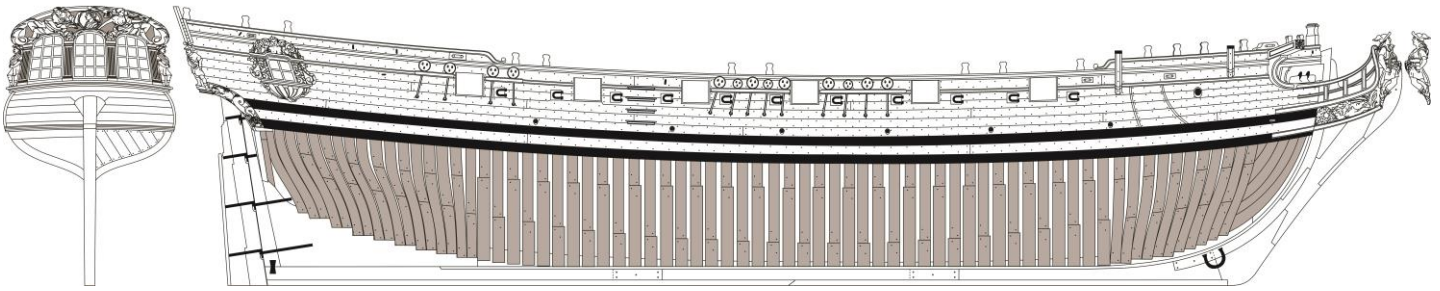


## Corrections...

**Note:** Those building from the laser cut parts, there are two frame parts mislabeled on sheet "M". The two frame parts etched as "Af" are actually supposed to be parts "10a". Please correct these parts on your sheet before you begin building. Only the first 12 kits are mislabeled. So chances are your kit will be just fine.



# The Ketch Rigged Sloop Speedwell - 1752

## Chapter One – Building a Plank on Frame model....

I am assuming most of you are somewhat familiar with the Ketch Rigged English Sloop Speedwell - 1752. David Antscherl and Greg Herbert have produced a wonderful series of books for model builders on how to build a great model of her. Not only can you build one as a POF model, but also as a POB and lift model as well.

Why would I choose this as my subject? Those of you that know me may realize that I have always selected a subject that is rather unique. One that has never been done!!! The Syren, The Winnie, The Cheerful etc. At least a project that is not a commercially available kit anyway. I chose this subject for several reasons actually, knowing full well that this would become a commercial laser cut kit like my other Syren projects.

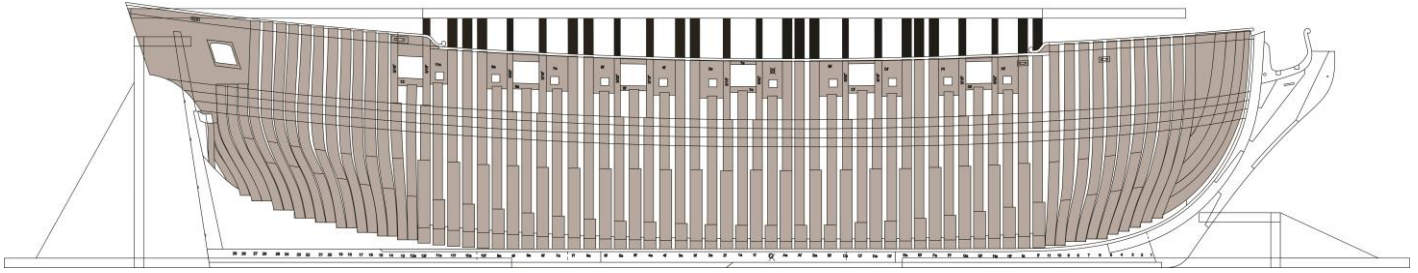
**First-** I have never really wanted to build a POF model. I prefer the look of a fully planked hull myself. But the craftsman side of me won out as I was looking for a challenge beyond just another advanced POB project. I can always build those and I sometimes feel like I am just going through the formulaic motions with each of them. This would certainly be a design and engineering challenge as much as a builder challenge.

**Second-** I am always increasingly frustrated and disappointed to regularly see fresh pirated kits come out almost monthly as of late. Mostly all the rage is with those POF kits from China.

***A coincidence?? That almost all of them released are also subjects of Ancre Publications, Seawatch Books, or from the Anatomy of the Ship Books. I think not.***

You may have noticed the latest pirated kit produced from one of David Antscherl's designs, the Hayling Hoy is now making its rounds. None of the parts fit as is typical and the instructions render this kit almost unbuildable....again very typical. Just check out the build logs of pirated Hayling kit from China on internet forums. It's a complete disaster and a waste of money. Literally unbuildable but they are still selling them to unsuspecting builders. I am always disappointed by how many of my fellow ship modelers actually decide to buy and build them.

So I reached out to David Antscherl and Greg Herbert and asked them if I could develop the Speedwell from their book series before a really bad pirated version is released (and one is actually on



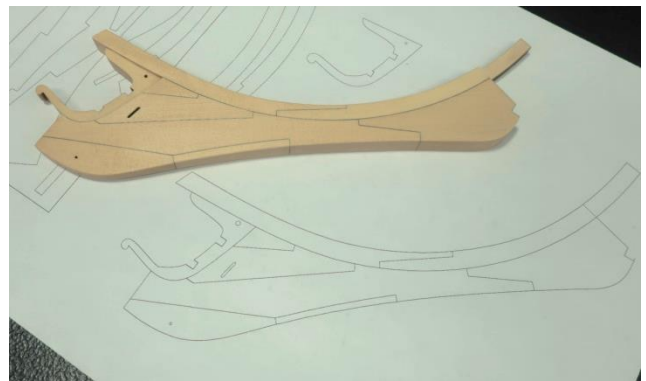
the way-surprised?) They agreed and are as excited about it as I am. I just don't want to see a crappy unbuildable version of Speedwell being sold to builders. Hopefully they will wait until this one is released.

**My goal...**to design a kit based on the books where the parts actually do fit. One that would encourage POF building for folks who want to give it a try. To also write a set of English instructions that are in depth and easy to understand. In short, I am hoping what follows will make a legitimate kit of from a Seawatch book under license and permission from the author; with the authors help and guidance. Will this stop folks from building the knock-off version when it comes out.....probably not? But at least you will now have a choice. The pirated version of Speedwell is currently almost ready and being done by the same company who pirated the Hayling. Coincidence again?? I think not.

There will be differences between my Speedwell and David's design of course. I will be modifying it for simplicity so you don't have to be a master builder with every expensive tool in shop. The design concept for this POF model will be unique if it goes according to plan, allow a novice and intermediate builder to tackle it. It will also be built at 3/8" scale which should also make it much easier to build.

The model will be planked from the wales upward so there is no reason to over complicate the project with bent and shifted frames....If you compared the framing plan for this model to David's plan in the book it is completely different.

I would like to thank David and to Greg who will no doubt think I am pain in biscuit by the time this is completed. I thank them both for giving me the opportunity to develop this kit.



## **Let us dive right in...and get started**

**Chapter One and Two will contain all of the laser cut parts to complete all of the framing.**

Don't forget that if you eventually build this kit, the two volume set from Seawatch Books will be a must have. Yes you will spot the differences easy enough, but the books along with my instructions absolutely complement each other and you will want to have them at your side.

I always like to begin by building the stem assembly. As was true with Cheerful and the Winnie, all of the parts are laser cut. In this case yellow cedar was used. But there is one major difference. On the Winnie, you could just punch out the pieces and glue them together with little or no tweaking. But this model is being built at 3/8" scale. That means the parts are much thicker than with Winnie.



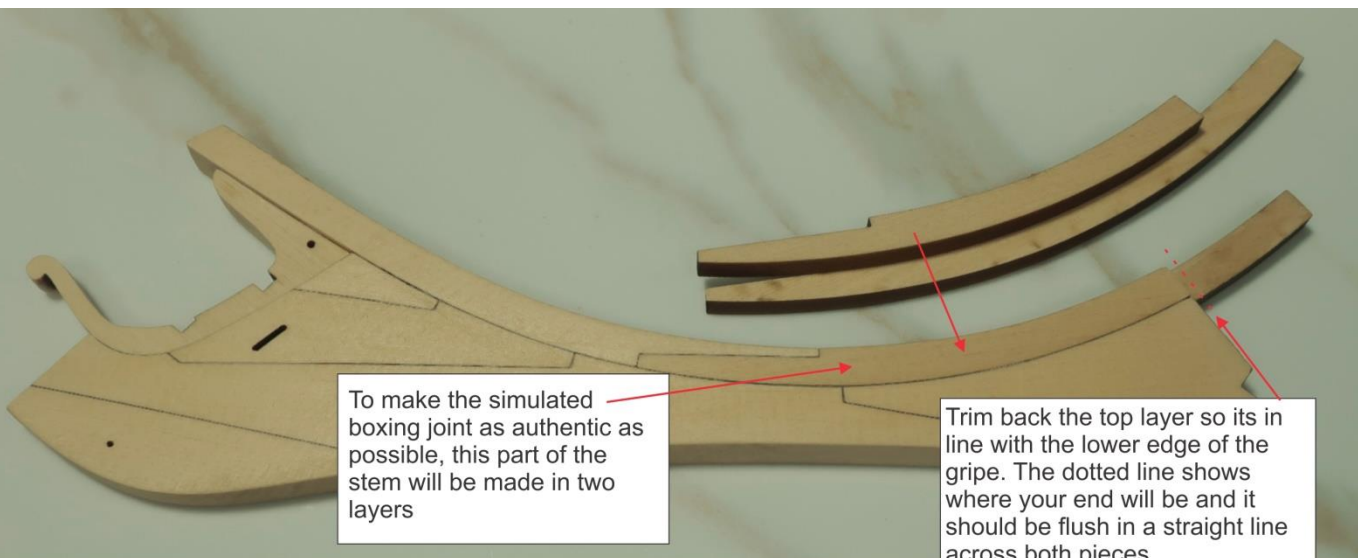
The laser cutter as you might know will not cut with the edges at a perfect right angle. Normally I would just flip some parts and that would do the trick so everyone would get a perfect fit with the edges fitting nice and tight. These parts however are so thick that even with the best of laser cutter settings, more than just an exaggerated bevel is produced. When using wood as thick as 5/16" or 3/8" thick, the laser starts to introduce a slight curve as well. Most of this can be compensated for by doing my usual flipping of parts.

But where the edge is narrower, for example at the end of scarf joint...the flipping of parts on the laser cutter isn't enough. So each part has been strategically made a fraction longer on one end only so you can make adjustments for the tightest fit possible.

This is super important for you know before you start gluing any pieces together!!!

In fact...most edges still don't need to be touched or sanded free of laser char and I recommend that you don't touch almost all of the edges. I have taken the liberty of circling every edge in the stem knee assembly that you should tweak and sand for the tightest fit. I am talking about knocking off the char and sanding the edge very slightly to get a really nice fit. Just a few swipes with a sanding stick along these narrower edges and you will have a perfect fit. Not too much though. Test by doing a dry fit regularly and flip the parts over to look at the joint on both sides.

Just a quick *hitting* with a sanding stick on the edges marked with red circles will make these parts fit nice and tight.

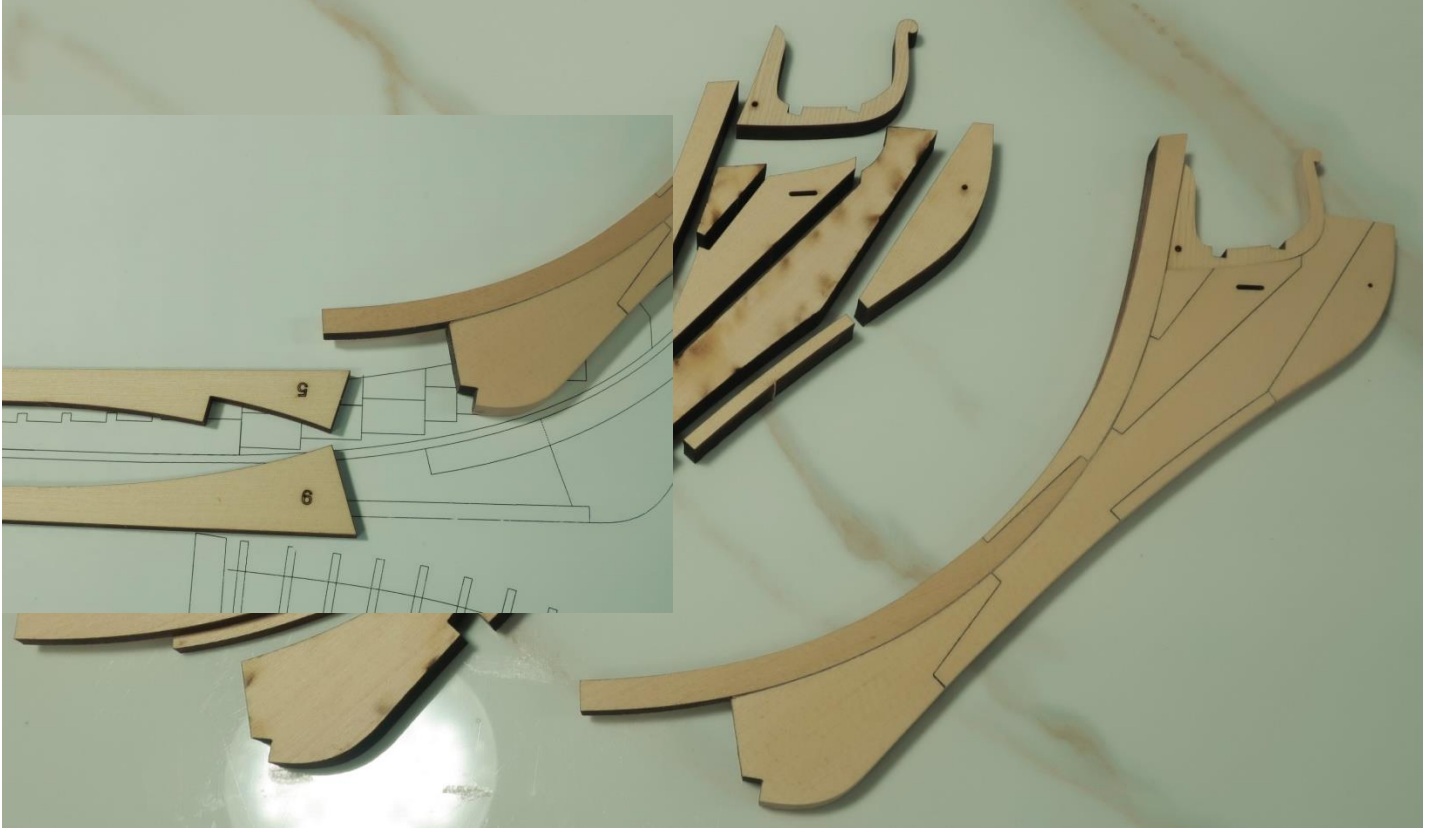


To make the simulated boxing joint as authentic as possible, this part of the stem will be made in two layers

Trim back the top layer so its in line with the lower edge of the gripe. The dotted line shows where your end will be and it should be flush in a straight line across both pieces

**Also Note (below)**

The lower end of



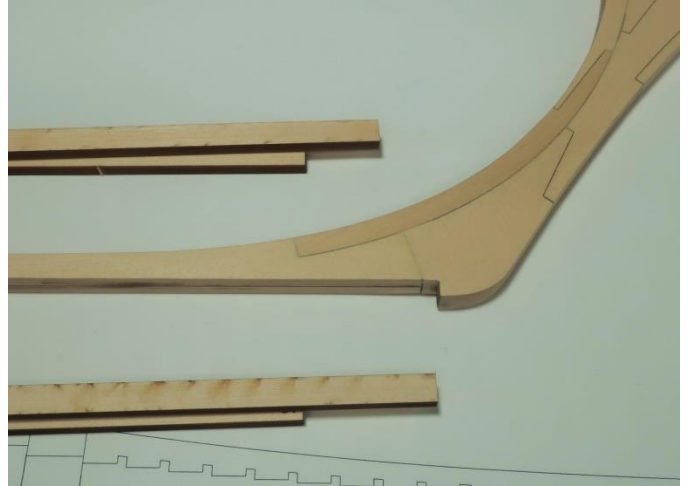
the stem will form an actual and true boxing joint. But to simplify the building process this segment of the stem needs to be built in two layers. I will do this a lot on this project which you will soon see. Make sure you assemble the two layers carefully and have the longer piece on the correct side. The two halves were glued together first and then that segment was glued onto the completed head/stem assembly after tweaking the scarph joint for a tight fit. Hope that makes sense.

Also note in that same photo the dashed red line where the boxing joint will be. The top layer of the stem was left a bit longer than needed to assure it could be trimmed back flush with the end of the gripe. I used a sharp #11 blade to slice it back so it was flush and neat. You can see this was done on my assembly already but once you glue that segment of the stem on your assembly you will see its just a hair too long....that was done intentionally so you could get a great fit on your model and the boxing joint will have nice tight seams.

Once completed the thinner knee of the head was also sanded and installed...note how that is pre notched to receive head timbers much later in the project. Just center it port to starboard. Don't sand any laser char off at all until you test it on your assembly. It will fit almost perfect from the get go so only the edges that are visible after gluing it in position should be sanded free of char. This piece can be delicate so more than one laser cut piece is provided just in case.

Now it was time to thin down and taper the entire head assembly to receive the figurehead. The fore edge of the stem was sanded so a graceful bevel was introduced. Just like on the Winnie. The forward edge was reduced to 4mm so the space between the legs of the figure will actually fit. Otherwise the figurehead will not fit...I won't go nutty with the instructions here because so much of this is repeated from the Winnie and other Syren projects I have documented. But this completes the first part of the project which means you are well underway with this plank on frame model.

**Moving along....to finish the boxing joint.** The first segment of the keel is also laser cut in two layers. See above. There are laser etched numbers on them. Glue these two layers together with the numbers facing each other on the INSIDE of the joint.



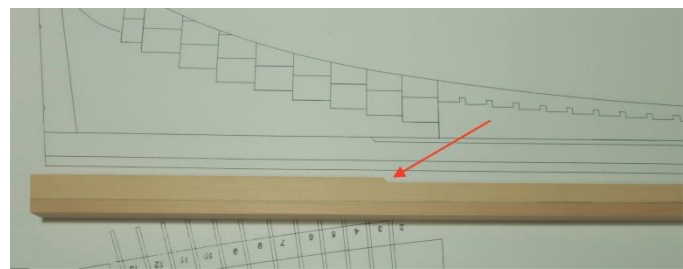
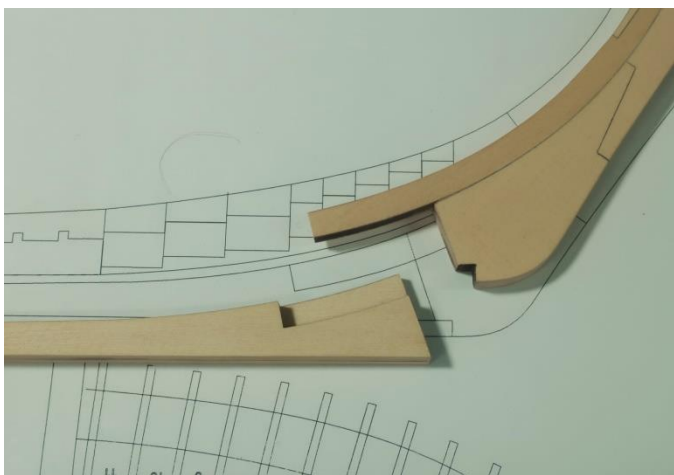
This does a respectable job of simulating the box joint. Below...

Then tweak these parts as needed to get a tight fit with the stem assembly. The seams will darken of course when I apply a finish. But it has all been sanded. After tweaking the ends of the box joint just a bit to get really tight seams, I went over them in pencil again to make sure the joints would be visible once I apply some wipe on Poly. You will also note how the remaining two segments of the keel are also done in two layers. It will be impossible to tell that these are done in layers once the rabbet strip and the false keel are added shortly after. It was a good solution to making what could have been a very complex and challenging box joint. Bolts will be added later. See below.

These remaining sections of keel were added working my way aft. The keel is actually two layers. I added one layer at a time. Each segment is numbered. The numbers face inward so when the two layers are glued up you can't see them.

I also added the false keel. This is the thin strip on the bottom. This was done with 1/8" wide strips the same depth as the keel. I simulated the seams with a pencil. There is still no finish on these parts so it will really look great once I add some wipe on poly. Photo on the top of the next page.

On the aft section you will see a small step where the rabbet strip will end. You will probably need to adjust where this is. I made the parts so this was a bit forward of where it should be. Just lay the keel assembly as it stands on top of the plan and mark the exact location for this slanted step. Then use a sharp chisel or #11 blade to cut this step in the exact location.



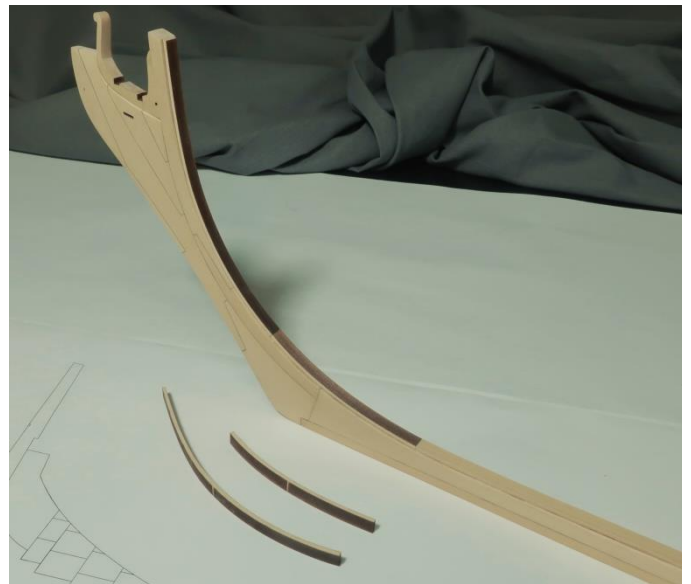


Also note that the false keel may seem a bit wide top to bottom. I have done this intentionally. It is about  $1/32$ " larger than needed. I have found that the false keel when made of cedar will take a beating throughout the project. It will get dented etc. even if you cover it with tape to protect it from getting scuffed. So I made it slightly taller so I can sand the bottom of the keel down smooth much later in the project. It's deeper just so I can smooth out any creases and dents later on.

### **The Rabbet...**

The rabbet is done as I typically do on all of my projects. I realize the rabbet is a complex organism of sorts. It should have a "V" shape width and ever changing profile depending on how the hull planking enters it. I usually make a mess of that if carved with a chisel. Those of you who have the Speedwell books from Seawatch can see how Greg did this. He is much handier with a chisel than I am.

So this will be simplified and should you choose to add the garboard hull plank will mostly be covered anyway. Using a simple strip here is neat and clean.



The one thing I have done differently this time is I laser cut the curved sections at the bow in two lengths. See the photo below. The two lengths are already glued on the stem assembly but I also show some extras on the table for clarity. They are  $1/16$ " thick. The longer segment goes on first and is centered port to starboard. This will leave a nice lip on both sides. Then the shorter laser cut rabbet strip is added. There is no need to sand the laser char off these.

The remaining rabbet strip that works itself aft is just made using a  $7/32$ " x  $1/16$ " cedar strip. It ends at that slanted step you so carefully chiseled just a moment ago.

### **The Upper and Lower Aprons...**

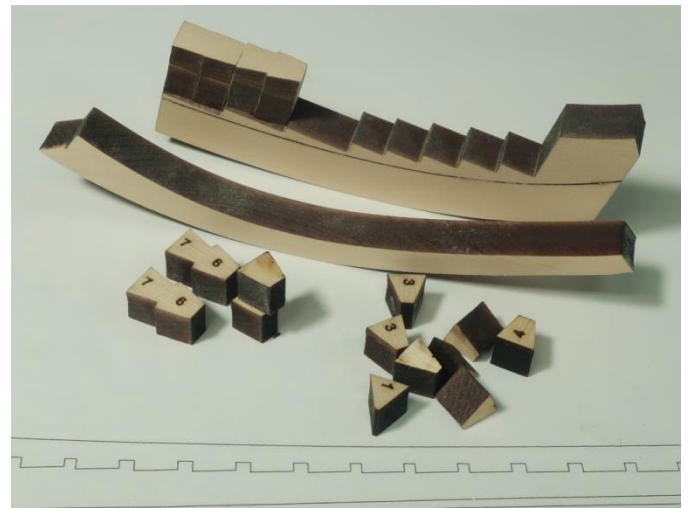
Now these pieces you have no doubt seen being made on many POF models. The upper apron is nothing special. Its a plain segment that is 3/8" thick. Simple enough. The LOWER apron is a different story all together. It is much more complex. You have probably seen folks hand chiseling tiny steps into both sides of the lower apron...once again take a look at Volume one of the Speedwell books.

I wanted to simplify this however. Not because it could be difficult to do but because I know that most folks dont have vertical mill, or disc sanders or all the gadgets you often see when folks make the lower apron.

I have decided to make the lower apron using many separate parts instead. Looking ahead to adding the forward cant frames, each set of cant frames has a different angle sanded into the heel of it. This is so it can be "canted" forward. This is simply not going to work to easily if you dont have a disc sander. So I created small wedges with the angles already pre-set on them to accept the straight right angled heels on the cant frames.

I hope that makes sense. One note...these pieces are laser cut on some really thick wood. The laser is being pushed to its limit on such thick material. So please check and see if the laser cut through the piece entirely before you remove it. It is very likely that you might need to use a sharp #11 blade to cut through any areas that did not get laser cut entirely through the thickness. This is going to be true of many of the thick pieces on this project and is normal. Carefully cut these areas all the through before you remove the items from the laser cut sheets.

See photo next column. The upper apron is in front...easy peasy. Set that one aside for now. The lower apron is laser cut with a series of steps. On these steps we will glue the pre-angled wedges. But using this approach leaves the bottom of the lower apron very thin even at this scale. It can easily break



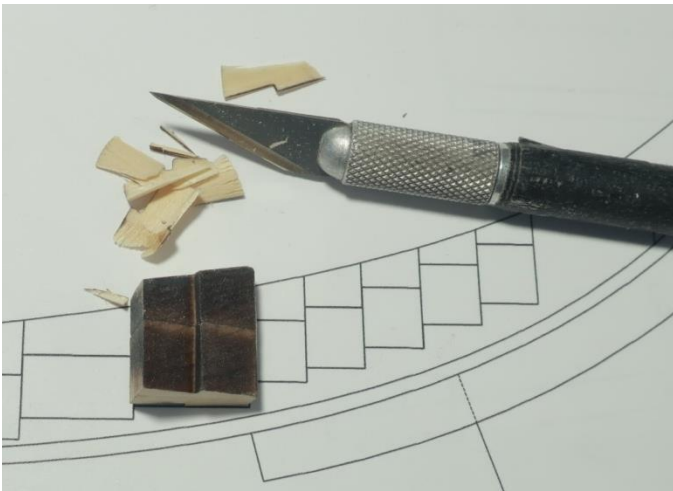
or get misshapen. So I have laser cut the "stepped" lower apron attached to a sacrificial piece of wood. You can use it as a handle. DO NOT remove the lower apron from this "handle" until all of the little angled wedges are glued to it. Those will give it enough strength...a remarkable amount of strength actually. In the photo below I have already added two of the laser cut wedges which show the angles for the cant frames. Check your plans as these are prominently shown. Work from the aft side forward.

Each angled wedge is made on two layers. They have laser etched numbers on them and correspond to the plan. Glue the two layers together with the numbers facing each other. This is important. Glue the two halves together "number facing number". The next to be done for me are the parts marked "7 & 6" in that photo. I will glue them together now.

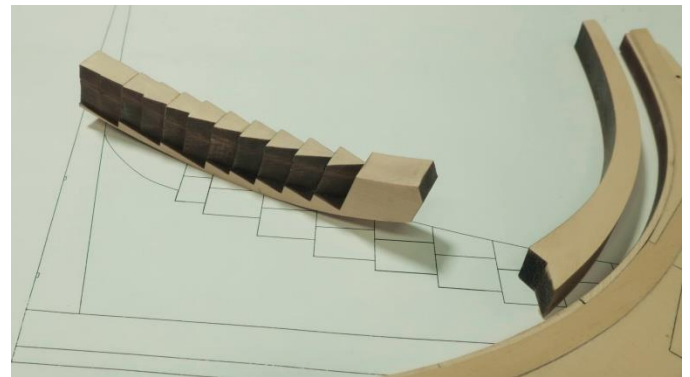


Once they are glued together with the numbers facing each other, you could make life easier for yourself later by cutting them down a bit. Once the two pieces are glued together they are sometimes too tall. This doesn't matter at all but if you trim them to match the plans it will be so much easier to fair the inside of the hull when the time comes. Just follow the curved shape along the top of the apron on the plans. The Keelson will fit so much nicer on top of this when the time comes.

Below you can see me doing just that. With a sharp blade I am trimming the top to match the plans. Make sure you have the piece facing the correct way. Place it on the plan and draw a line where the top portion can be shaved away. Do this for every piece...I know it's a pain. But you will thank me when it comes time to add the cant frames later.



When all of the segments

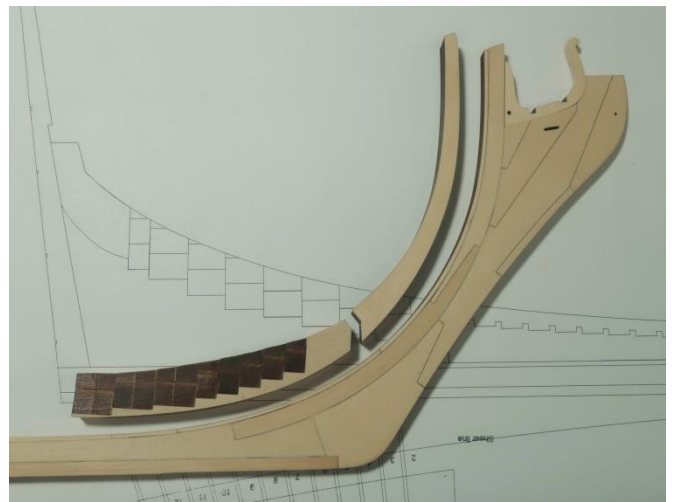


are glued onto each step of the lower apron base, you can finally cut away the bottom handle. It was held on by just a few connectors which are easily cut with a sharp

blade. Hopefully you glued those wedges onto each step securely and didn't skimp on the glue. Glue each onto its step and also glue each to the wedge preceding it. Nice and secure. Center them down the top of each step. Don't mix up the numbers either. That would be bad because the angles match each individual cant frame. I also sanded the top of all those wedges so it looks nice and neat. It also matched the shape for the lower apron shown on the plans.

Note that you should not remove any of the laser char on the angled sides of these wedges. Not only would that screw up the angles laser cut into each of them, but it would also reduce their size. That should be avoided.

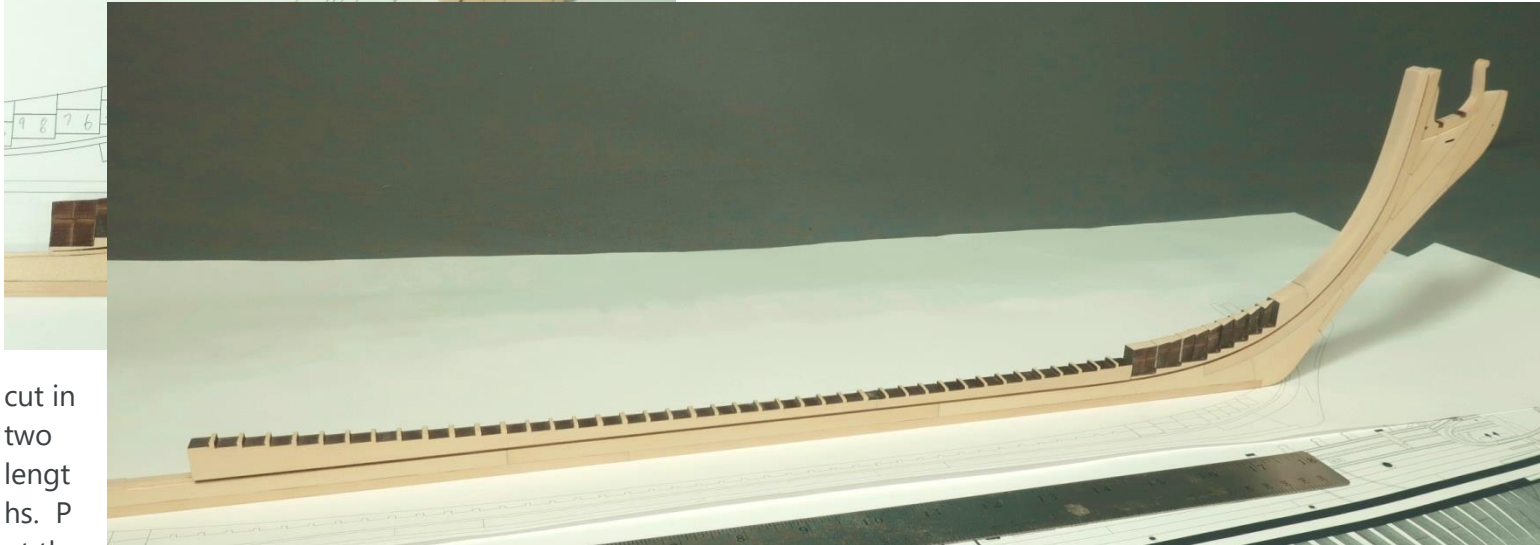
A dry test fit of the upper and lower aprons on the keel assembly below. I am trying my best to match the curve. Use the plan to find the exact location for the aft edge of the lower apron along the keel. You don't want it too forward or even too far aft. Place the keel assembly on the plan and mark where the exact locations are for the upper and lower aprons. Note how the upper apron extends above the rabbet strip.



Note how the aprons are wider than the keel. The aprons should be centered on the rabbet strip leaving a nice over hang on both sides.

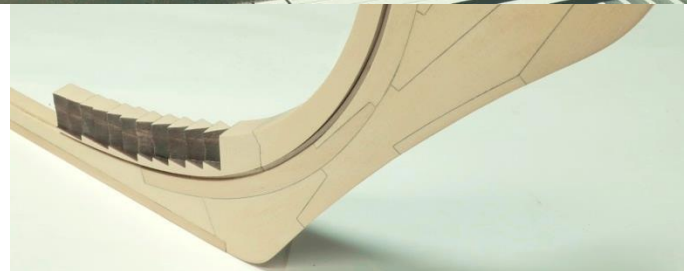
### The Rising wood...

This is the long notched piece that sits on top of the rabbet strip. This was added next. It has notches cut out of it to accept the floors of each square frame. This is

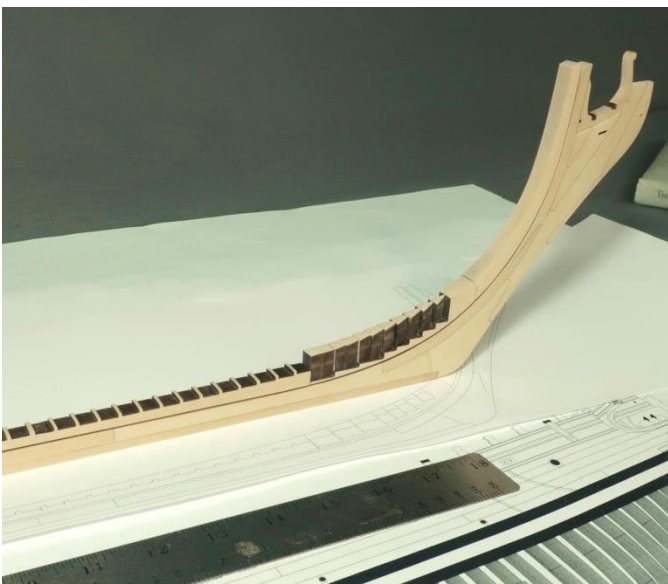


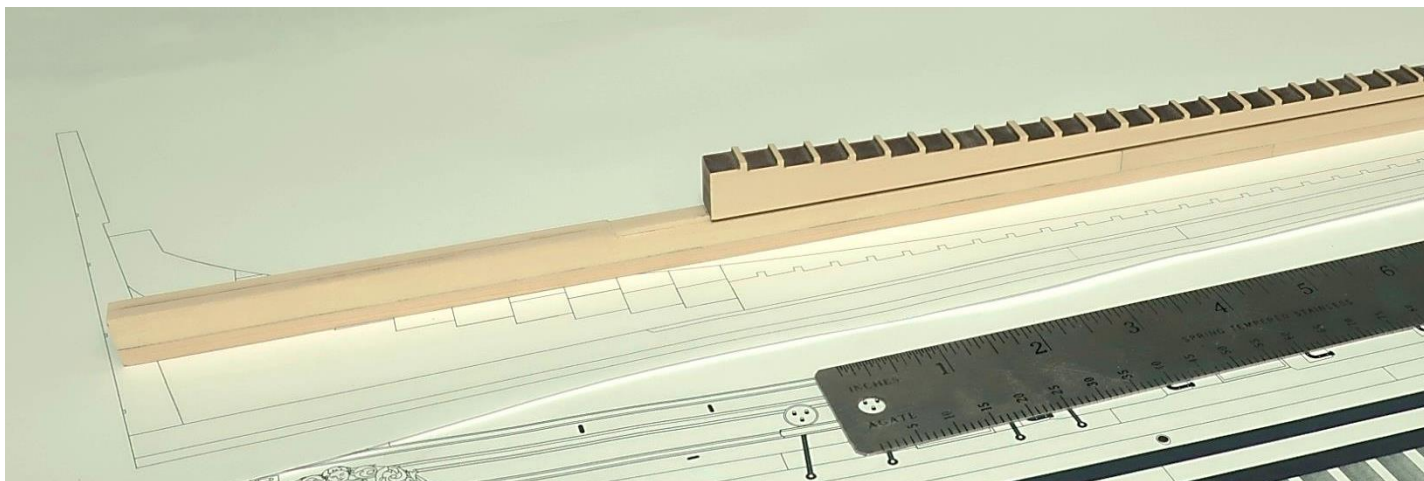
cut in two lengths. Put the shorter length ...

the forward length in place first. I would not sand anything off as far as laser char. Only sand the small connector that held it into the sheet. This is a thick piece. It is 3/8" thick. The laser may not have cut through in some places like the corners. So before you try and just push this piece out of the sheet, look at both sides to see if you need to use a sharp blade to cut some corners all thru etc.



If you want to sand anything you might want to touch up the end that will be the seam between both lengths. Try and squared it up a little. But don't sand too much. You don't want to make it any shorter than it should be. They were left a bit longer at this joint so you can clean it up and get a tight fit.





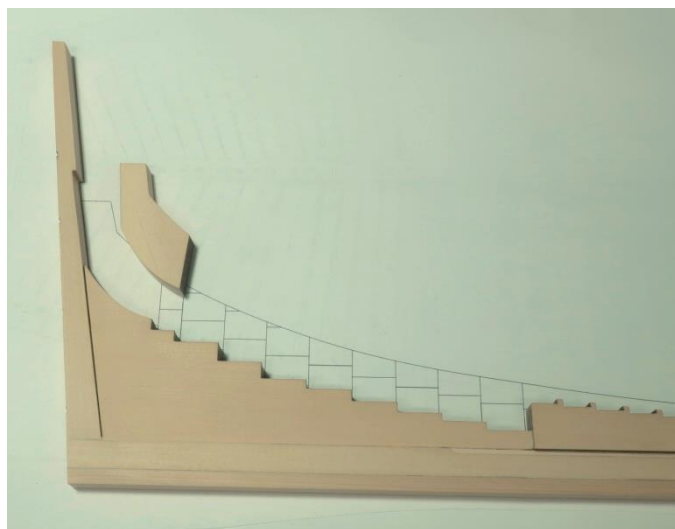
Make sure you dry fit both pieces on top of the actual plan sheet. You want the length overall to match pretty darn close. After you get the forward section on first...dry fit the last aft length while it's on top of the plan. This way you can see if you must shorten the forward end a bit at the joint between the two pieces. It should match the plans very closely. As you can see I didn't touch the inside of the notches. But I did sand the char off the top and the sides once it was glued on the keel assembly. Photo Above.

The rising wood, like the aprons are wider than the keel. So make sure you center these on both sides when you glue them in position. You want an equal over-hang of the keel on both sides.

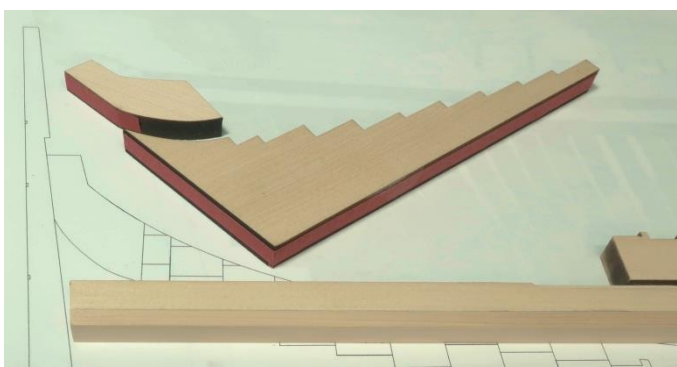
Next up is the stern deadwood...still no finish applied to these pieces. I will do that after the entire assembly is completed.

### **The Deadwood..**

The deadwood is laser cut in two pieces. These two pieces need to be tapered to  $7/32$ " thick along the edges that sit against the keel and sternpost. To make this easier, I cut some masking tape to a  $7/32$ " wide strip. In this case it was red tape. I then centered it down the edges that needed to be tapered. Then I proceeded to taper them gradually from the other side to the edges of the tape.

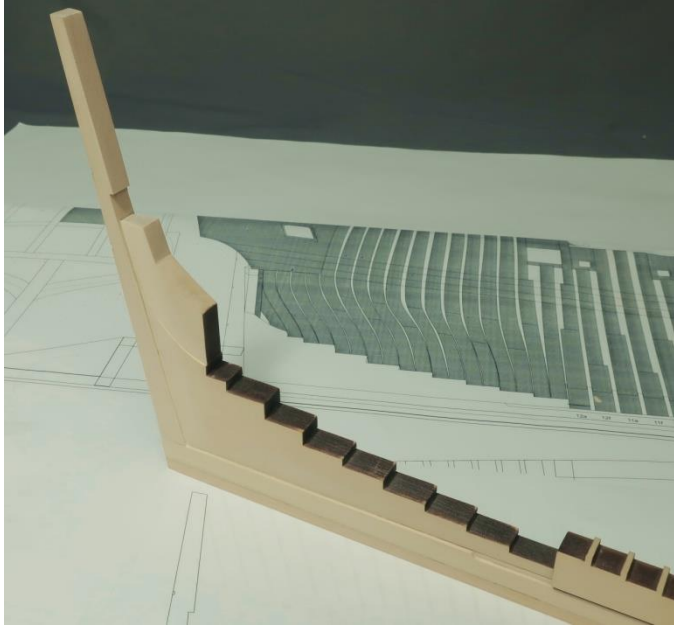
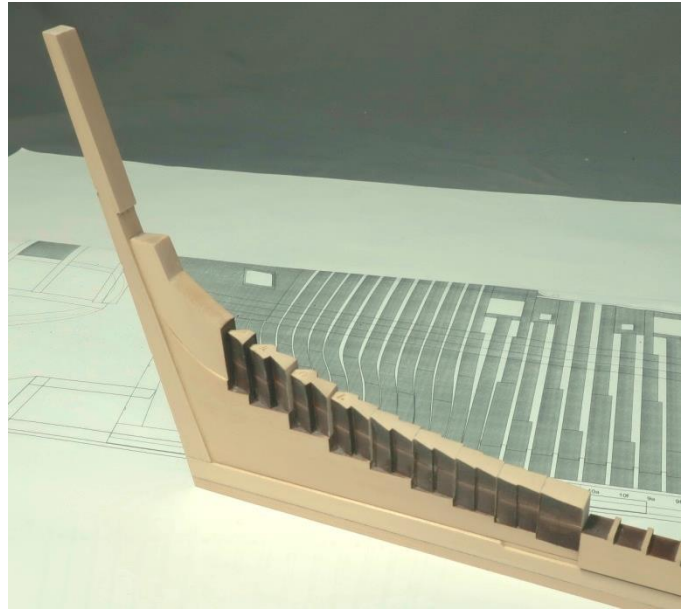


Once that was finished I glued the larger, lower deadwood piece into position first on the keel. This was followed by the stern post which had its laser char removed. You must be careful when gluing both of these. They must be centered on the keel to leave a consistent ledge all around and the sternpost needs to be



perfectly vertical port to starboard. You want it vertical and in line with the stem at the forward end.

This only left the smaller section to be added which was then glued into position. The aft end of the keel was intentionally left a bit longer and this was sanded flush with the aft edge of the sternpost.



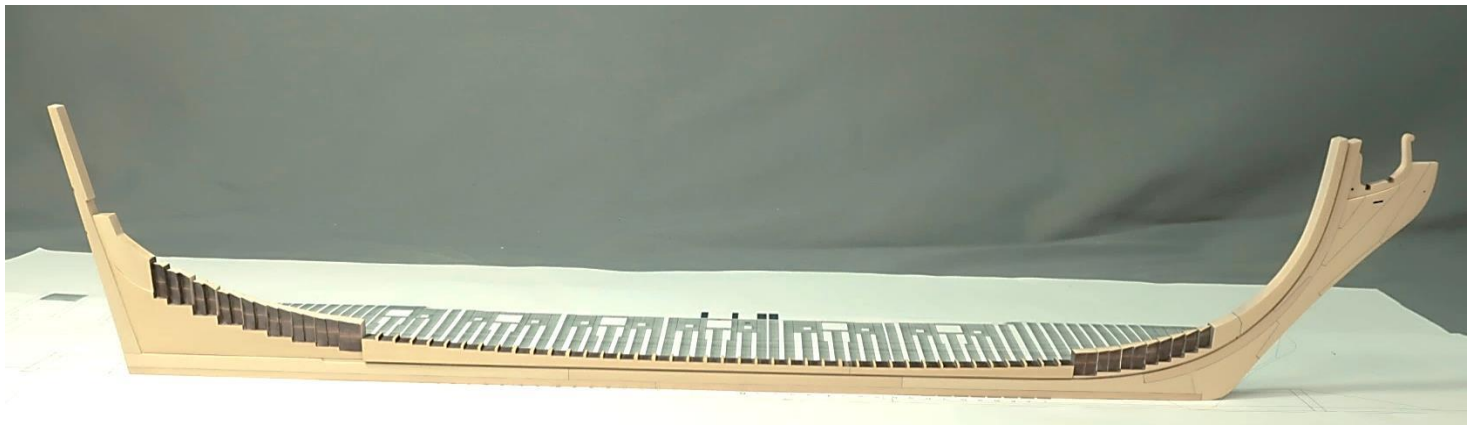
The only parts still remaining were the many wedges for the aft cant frames. These are done exactly like those on the lower apron at the bow. They are laser cut from thicker pieces of cedar so check that they were cut all the way through the sheet before removing them. They were also cut slightly longer than needed. Because they

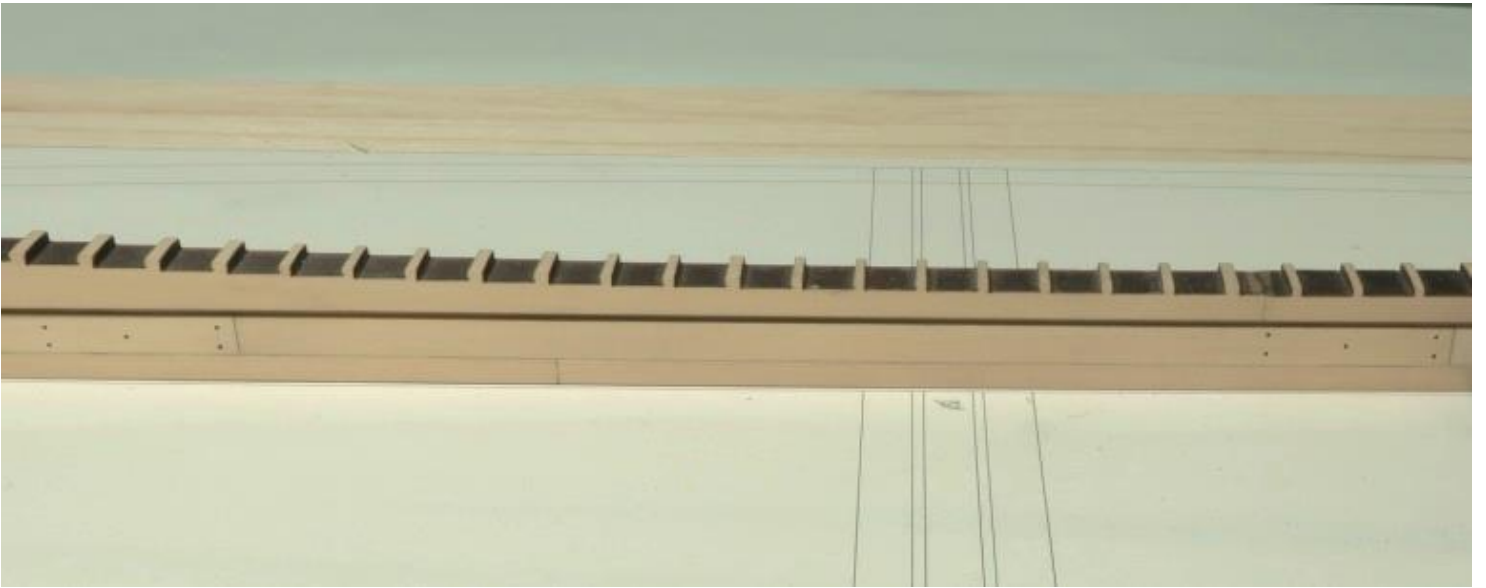
are so thick, you will notice the irregular cut on the forward and aft edges of each wedge after you glue the two layers together. You must sand them flat and straight evenly on the forward and aft edges before fitting them on top of the deadwood steps. Don't sand too much...only a bit of cleaning on both sides is needed. Don't sand the char off of the angled sides to preserve the correct angles. Center them atop the deadwood slots so you have a consistent notch on both sides of the deadwood for the aft cant frames.

That finished up the keel/stem assembly. I only need to add the bolts along the keel scarf joints. Then it will be time to construct the build board and start making frames.

### ***The completed assembly is shown below***

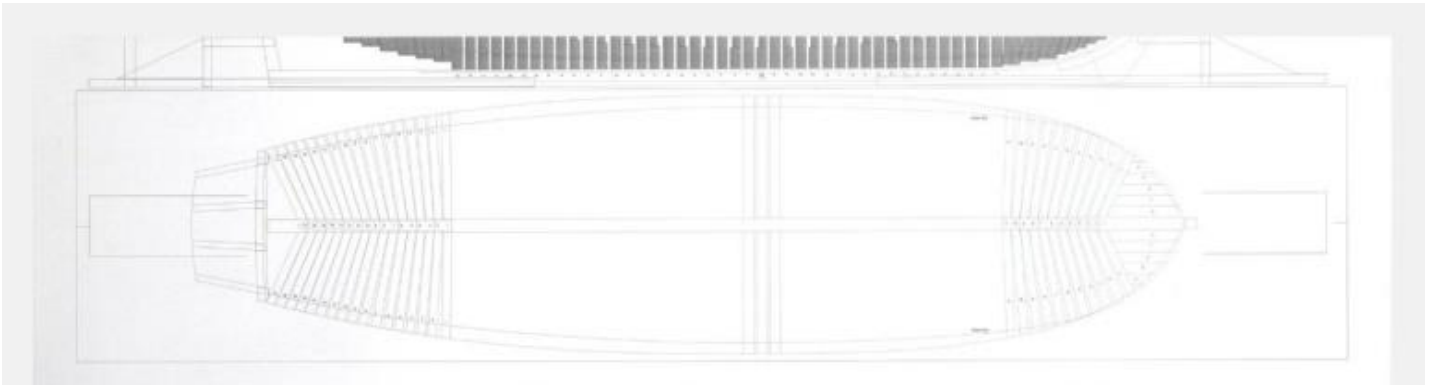
I added the keel bolts. These were 30 pound black fishing line. I drilled with a 71 drill bit and inserted the line. Then I cut it flush with a sharp razor blade.





Bolts were added in the same way at the boxing joint.





### **The Buildboard...**

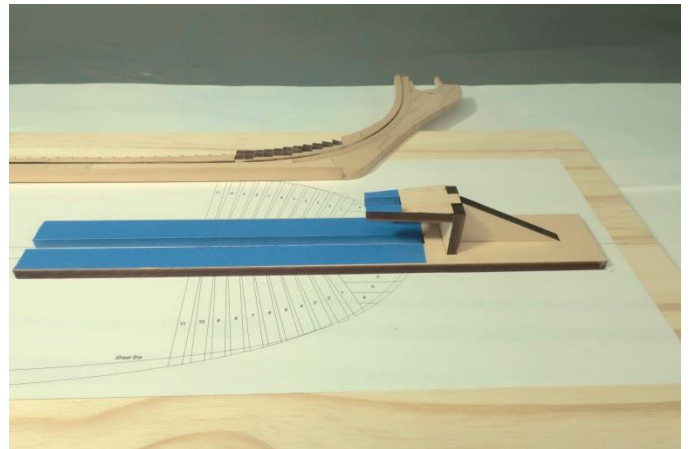
I bought a 48" x 12" flat board that didn't have any cupping or warps. I picked the flattest board available. At 48" it was a bit too long so I cut it to 42" long.

I cut the plan sheet which had lines for the frames and build board pieces. I used spray mount to glue it on top of the board. I centered it and kept it straight. No wrinkles!!!

Once I established the positioning I placed some blue low tack tape on the board to aid in the alignment of the sheet. I placed a centering tic mark on both the tape and plan sheet. I used Scotch Repositionable Spray Adhesive to adhere the plan to the build board.

The aft keel and stern post support jig was completed first.

The keel was then slid into the slot in the jigs base. I clamped the open end of the slot against the keel which held everything together while aligning. After everything was aligned on the drawing, I drilled the holes in the jigs base for the bolts that would hold it down. The bolt size doesn't really matter though the holes were drilled larger into the build board allowing for some shifting of the base sideways, if needed.



The upright for the stern post was added after the jig was locked down. I added some tape here as well in order to close the gap in the slot. The upright has a laser cut tab that fits into a wider slot in the base. This allows for the upright to be shifted sideways in order to get the stern post vertical.

The forward keel and knee support jig was done basically the same way. Note the blue painters tape which I added to make the keel fit snug and keep the char from making the keel dirty over time.

Yet there is enough flexibility to slide the keel fore and aft so you can line up the notches on the keel with the template on the build board.

The important thing is to line up the center three frames on the template with those that correspond to the actual keel. It's nice and tight. The slot is initially laser cut wider than needed. The tape not only protects the wood of

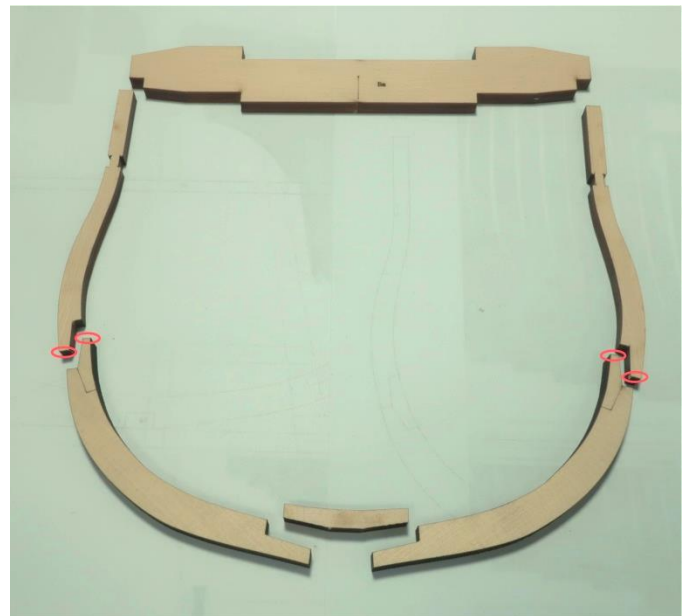


the keel but it creates a nice snug fit. The same thing was done with the two forks that engage the stern post and stem.

I also prefer a lower profile to these forks that hold the stem and stern post vertical. Otherwise it keeps getting in my way. But you guys can easily create your own if you prefer to go the "screwed in keel" route. Same is true if you rather prefer taller forked pieces for the stem and stern post supports

### Time to start making frames...

There will be for lack of better terminology, two styles of frames. There will be "TALL", full height frames, and "Short" frames. The taller frames extend up to the sheer line and beyond, terminating at the top with the cross jig piece. The cross jig piece is crucial to the entire build concept. It assures the frame is the correct width and shape when you build it. There is no need to build these on top of a plan of the frame. They will all come out the same size when finished, if you don't over sand any scarf joints. The joints between the frame sections are precision laser cut. BUT I left them slightly longer. Most



of the frames we will be building are of the tall variety and all need to be made first and placed onto the keel. They need to be on the keel so the "short" frames can be added in the remaining open spots between them. More on those later.

But let's build our first TALL full length square frame. We will be building them in groups. The first group of square frames will contain about 6 or 7 frames.

Here is a look at the first full length frame unbuilt.

I highly recommend that you remove the laser char from the outside edges and inside edges before assembling each frame. In this case it is frame "Ba". But don't touch or remove the char from any of the scarf joints that connect each section. They are precision laser cut and won't be the correct shape if you monkey around with the char on those. They will almost glue up perfectly as is. But I show circled in red the two sides on each scarf joint you will need to sand. These were intentionally left a bit longer. You need to test fit each segment together first and then sand a bit from one end of the scarf joint. Test it again. If needed tweak the circled ends only to close up the scarf joint so it fits tightly.



A few NOTES...

The floors and futtocks are different thicknesses. See the Seawatch books for details. This creates a stepped edge on the frames. MAKE SURE...you check the framing plan to see which side of the frame should have that stepped edge. It could be on the fore or on the aft side. In some cases where you have three thicknesses you might actually have two steps in thickness. Each frame is different and some frames could even show this stepped joint on both sides of the frames vs. all being on the fore and aft side. So carefully examine the framing plan.

On all the square frames the floors and floor chocks are always 5/16" thick. The square frames will always alternate with one solid floor that spans across the keel in one piece, followed by the next frame which will have the 5/16" thick floor built up with a "floor chock" in the center. You will see this detail in the Seawatch books clearly and this proper framing structure is followed for the kit.

The futtocks and top timbers are 1/4" thick in most cases. But in order to simplify the building process it was sometimes necessary to use a third thickness for the top timbers that fall next to a gun port or sweep port. In some cases these were made using 3/16" and 5/32" thick Cedar. Whenever this happens I have made note of it on the framing plan so you can better find those parts on the appropriate laser cut sheet.

Remember that no drawings of each frame are provided as built or as individual parts because we must do our very best to prevent unscrupulous Chinese manufacturers among others from copying the kit illegally. So check the framing plan for the number of parts for each frame and their thicknesses.

You should only work on one frame at a time and only remove those parts from the laser cut sheets for that frame you are working on to avoid mixing them up. They are all labelled.



So working one frame at a time, first check the plans for the number of parts in that frame. Then look for them on the laser cut sheets.

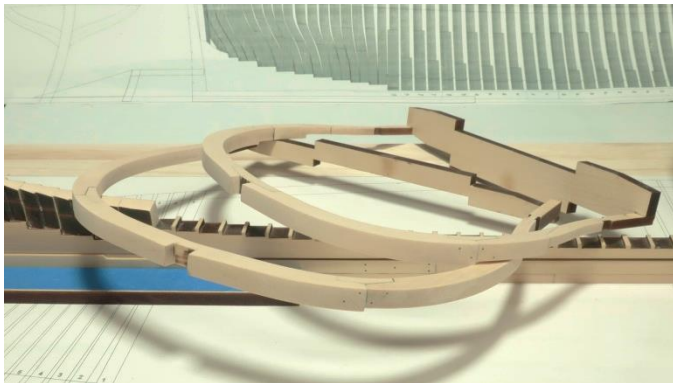
### The Finished frame assembled...

Note the top cross piece which acts as a jig. Each frame added to the keel extends the jig and keeps the whole hull its proper shape and perfectly aligned as you progress.

Make sure you have the cross piece facing in the correct direction. There is a laser etched arrow down the center of the cross piece which always points forward. Double and triple check that your frame and cross piece are facing the right way before you glue this cross piece in position. The cross piece should always be the very last segment you glue in position. Don't sand any char from this cross piece at all. Measurements are precise and very important. None of it will show anyway and these jig tops will be cut free once we plank the hull. They are basically going to end up in the trash so no need to clean up the cross pieces of any char.

When sanding the char off the other frame pieces inboard and out you will notice that I left the char above the tiny notches on each frame. Those notches indicate the sheer of the hull. Any surface above the notches and sheer line do not have to have any char removed at all.

More finished tall frames with the cross jig piece.



### The Frame Chocks...

These are just simulated. We don't have to mess



around with actual tiny chocks. The joints between frame segments are actually simple scarf joints. There is a laser etched line to help simulate the full chock on one side of the frame. You can if you like, scribe the same on the other side or even just use a pencil. But truthfully these frames are so close together you won't actually see the lines anyway. I am not going to simulate the chock lines on the unetched side.

*BUT...you will notice after you glue up your frame that the chocks look off...*

The step in the frame should actually be straight across the center of the chock. I have strategically made the chock full thickness on all of the laser cut parts. This needs to be addressed on all frames.

It will initially look like this. It has a full thickness chock and half of it needs to be thinned down to complete the step.

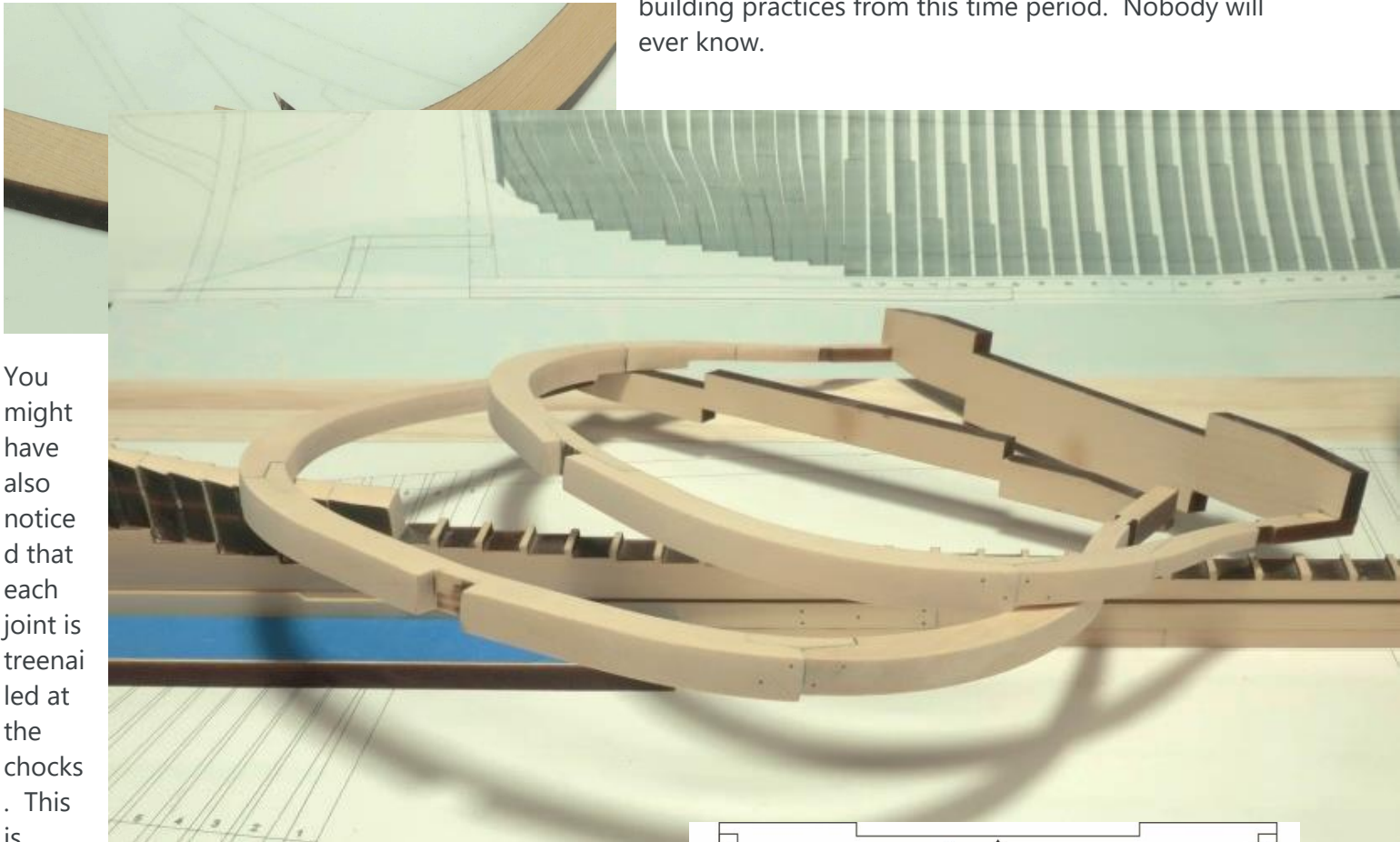


Use a sharp #11 blade to place a stop cut down the center of the chock as if it extends across the entire frame. Then slowly and carefully shave that thicker half of the chock down flush with the next segment (the futtock) of the frame. See below.

Until it looks like this....nice and cleaned up.

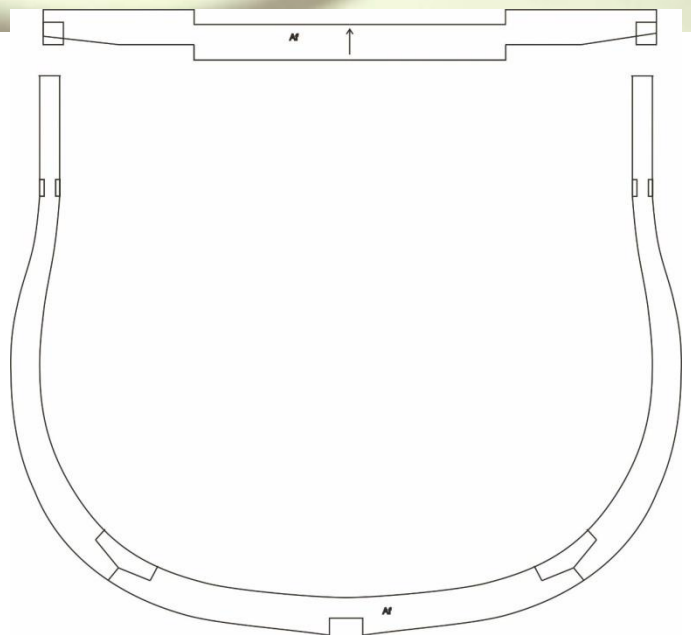
Then the char can be removed from the inside and outside edges of the frame if you haven't done so already. Or better yet clean those before you even glue up all the frame segments.

This needs to be done to every joint and really does look like it should with proper chocks used in actual ship building practices from this time period. Nobody will ever know.



You might have also noticed that each joint is treenailed at the chocks. This is

optional. You can follow the framing plan for the placement of those. This is finicky to say the least. If they aren't all uniform in distance within a group from frame to frame it won't look good at all. I have seen wooden treenails used here. I decided to show them but I am not using wooden treenails. If not done properly and all of the same size, again they would look really bad. Better to leave these off the model than risk that. So I am just using more black fishing line. They are always the same size. I am using 25 pound line for these. Wooden treenails turn black anyway because of the end grain. We shall see later after the hull is all framed up if this was a mistake. You will have to make a decision about this for your model.

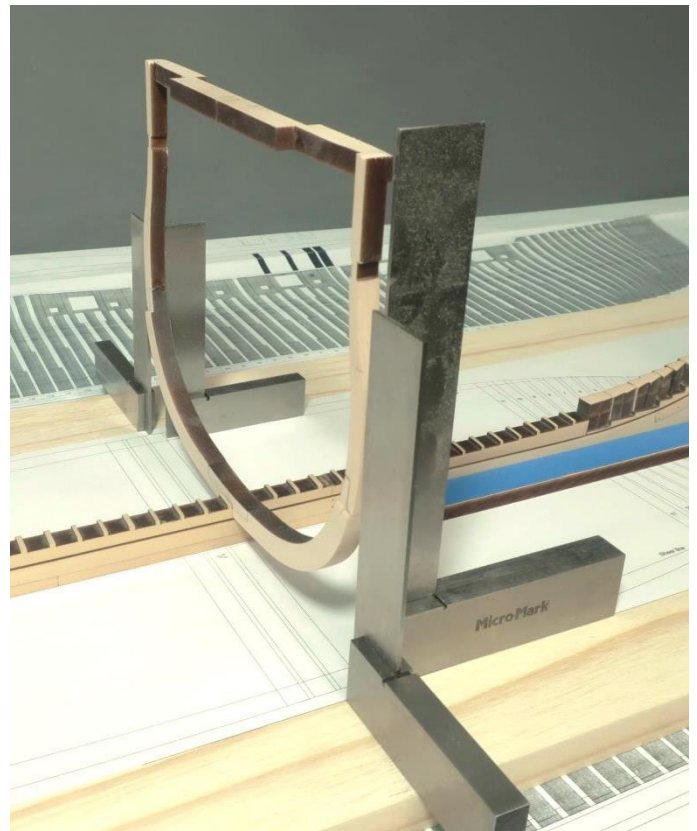
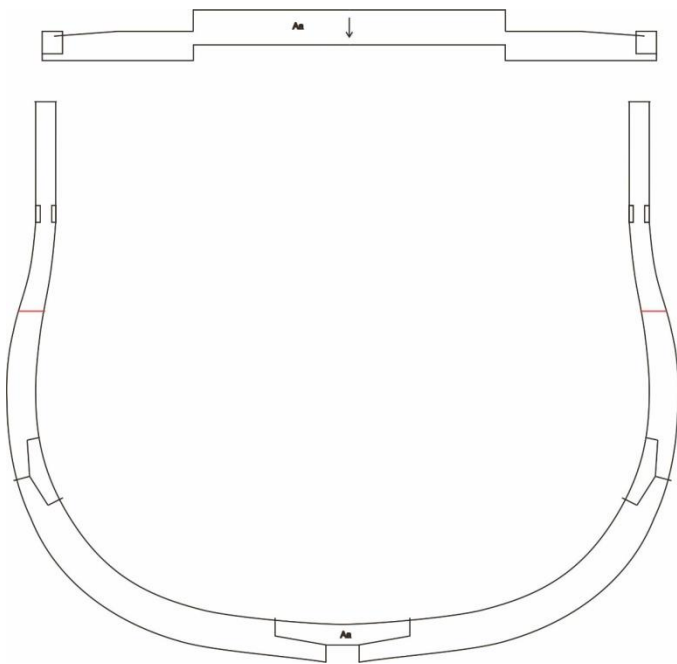


**Some additional frame notes...**

I had previously made a bunch of frames as a test that can now be placed on the keel. But before I do that, let me show you the plan for two "Tall" full height frames. I just want to show you guys the differences you will encounter between some of these. Primarily the fact that some of the frames will have a full floor section across the keel with futtocks on either side. Like the one right...

Frame AF...

Others will have a FLOOR chock that sits on the keel with the futtocks following on either side up to the sheer. This is typical so when you are searching for the parts on the frames you are building, beware of the two variations. This type of square frame construction will alternate every other frame on the keel.



Frame AA with floor chock

With this in mind, it is time to place the very first "TALL" frame on your model. I strongly urge you to start with frame "Aa". This frame is shown on the build board template so you will be able to ensure that it is centered and perfectly vertical. This is so crucial. This first frame you place on the keel is crucial that you glue it on perfectly vertical and centered port and starboard. The reason is that all subsequent frames will "Lock" into each other across the jig cross bar.

Before you begin...Make sure the three center keel notches line up with those shown on the build board template. Adjust your keel on the build board before gluing in the first frame.

So a few notes:

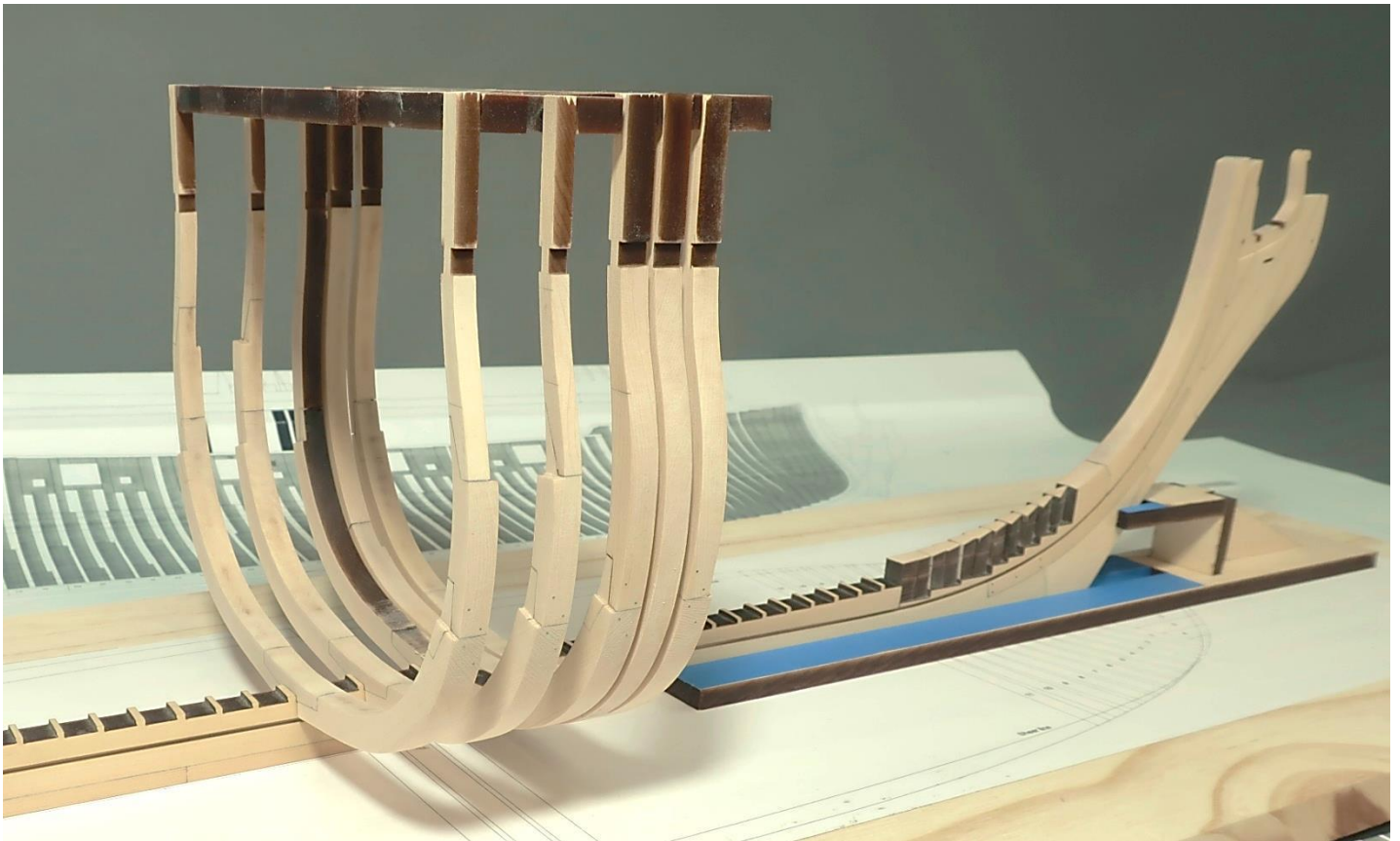
You will absolutely need many good quality metal squares. I have about 7 of these in various sizes. They are heavy steel squares.

I used four of them to align this first frame "Aa" on the keel. Remember to have it facing the right direction. The arrow on the jig cross piece always faces forward.

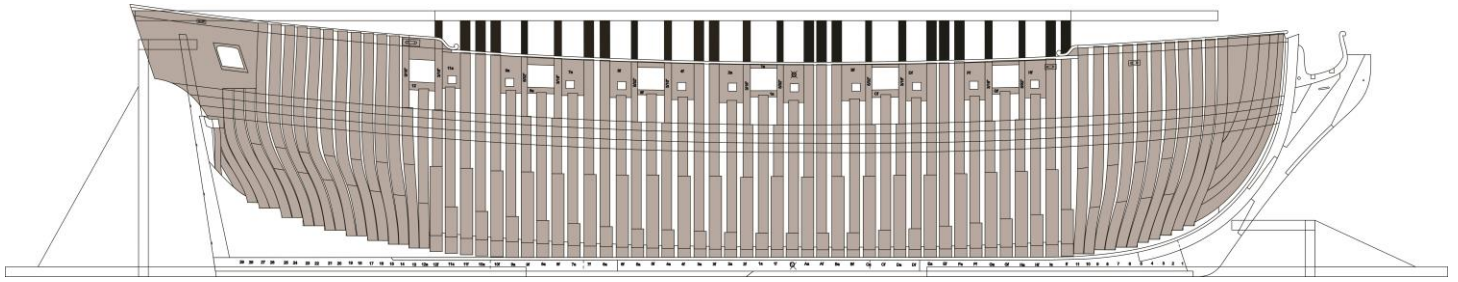
*First frame AA shown above...*

In the photo above you can see a square placed against the outside of the frame on both sides. It is basically at the frames widest part or maximum unfaired width. This should line up with the outside hull line on the build board template. This marks the Maximum breadth or width of the hull. Now it may not fall exactly on the line because you haven't faired the hull frames yet, but it will be very close. I left a lot of meat on those frames for fairing. The important thing to remember is to make sure that it is equal distance from the "maximum breadth line" port and starboard.

In addition you can see one more square on each side of the frame. These are used to ensure that the frame is perfectly vertical fore and aft. They sit against the fore side of the frame. The metal squares are quite heavy with a flat block on the bottom. So they stay where you place them. I applied some yellow glue to the notch and seated it in the keel slot.



Moving the heavy squares before the glue set, the frame was adjusted so it was in the correct position. I left the squares where they were until the glue fully dried.



From this point on you can start adding the remaining "Tall" full height frames next to it on either side. They should fit perfectly needing only minor adjustment as the cross bar jig on each frame act like puzzle pieces. Concentrate on building and installing several tall, full height frames first. See above. I have installed 5 of them.

The frames are glued directly to the keel...**BUT**, I have yet to glue the cross jig bars together. I am not really sure you need to do so. I have simply used a length of tape to secure them to one another. This will be advantageous when we cut them free after planking. We will be able to remove one jig cross bar at a time rather than the whole top which would be more cumbersome to do.

See the tops of the cross jigs all fit together like a puzzle piece (right). The tape holds them tightly together and it is quite sturdy.

ALSO...note the spaces left between these full height frames. These spaces are for the "Short" frames I mentioned. With the spaces for them now defined, we can start adding those. The "short" frames fall where there are gunports and sweep ports. They have a port sill or sweep port designed into the tops of the frames. We will cover there construction and mounting next.

DRAT...notice that one frame where I forgot to sand the laser char from the inside edge...That will leave a dirty mess of dust when I fair the interior. I will try and clean that up ahead of time. It's important to try and get the majority of laser char off of the inside and outside edges before you make up each frame. That dirt char dust will get everywhere and make your frames look dirty later when you fair the hull.

If you examine the framing plan (above) you will notice that above the wales...the framing gets interesting and unique. Since this will be covered with planking it does NOT follow actual framing practices. It was designed with ease of construction in mind.

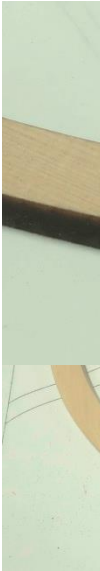
It will help put into perspective what I am describing moving forward.

### The "SHORT SQUARE FRAMES" .....

Basically these are built the same way as the taller square frames. They just don't extend all the way to the "cross jig" top that helps position the tall frames. These are the frames that fall where a gun port or sweep port are located. The "short frame" 2a is shown below. It does have a cross beam of sorts. This is used to help stabilize it and give it the correct shape. Notice how it is glued onto the bottom of little square protrusions on the inboard side of the frame. All of the short frames will



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the exterior of the hull much later in the project. You can build these as shown just like the other frames. Just make sure the stepped futtocks appear on the correct side of the frame when you glue them onto the keel. These frame parts are also stepped in thickness.

NOTE the blocks for the sweep port labelled 2a. These are made by gluing two laser cut layers together. Glue them together so the etched reference letters face each other. Don't glue these onto the frames yet. Just keep them ready to go once you glue the short frame onto the keel first.

Don't forget to finalize the chocks by shaving off half of it....and when you glue them onto the keel make sure the "step" is facing the correct way....either fore or aft based on the plans.

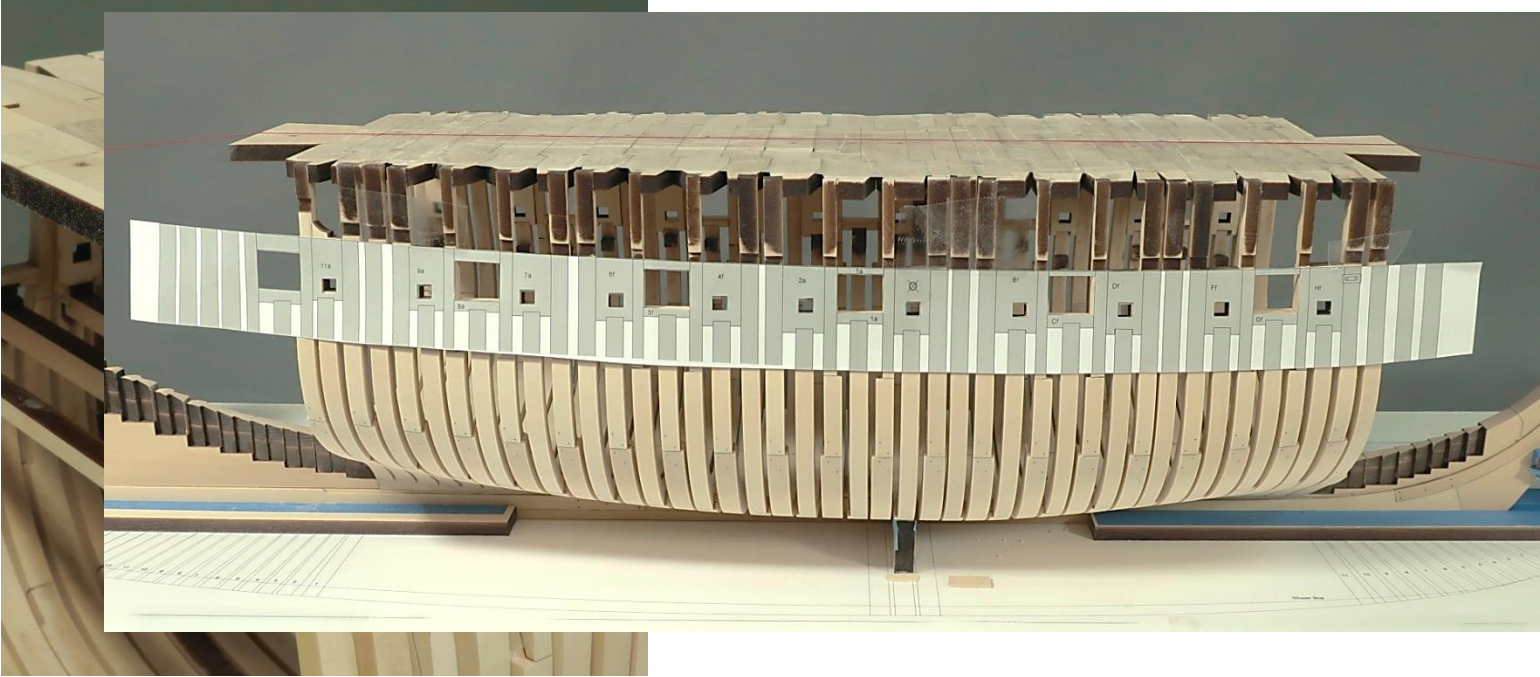
If you recall, we installed a bunch of the tall frames on the keel earlier. This left a bunch of open spots where the shorter frames will be installed. See the previous page.

In this photo (above) you can see a couple of short frames I completed on the forward side so far. One has a sweep port and another has the lower gun port sill. There is another short frame which has been glued into position. It is frame 2a shown earlier. It was glued into the final spot I had ready for it between the two tall frames. Sitting on the top of the model you can see the two sweep port pieces which I will add next. I have

already dry fit them in position. I had to sand a little off both sides to make it fit really nice without spreading the two frames apart on either side of it.

You will notice some pencil lines that I drew on both sides of the sweep port blanks. While they were being test fit, I traced the shape of the frames on both sides of it so I have a reference.

It makes sense to remove your test fitting of these and sand those close to the lines now before you glue them in position. It will save a lot of sanding when it comes time to fair the hull later. You don't have to get it perfect but try and chisel or sand these close to their finished shapes. You can see my pre shaped sweep port block for the starboard side below.



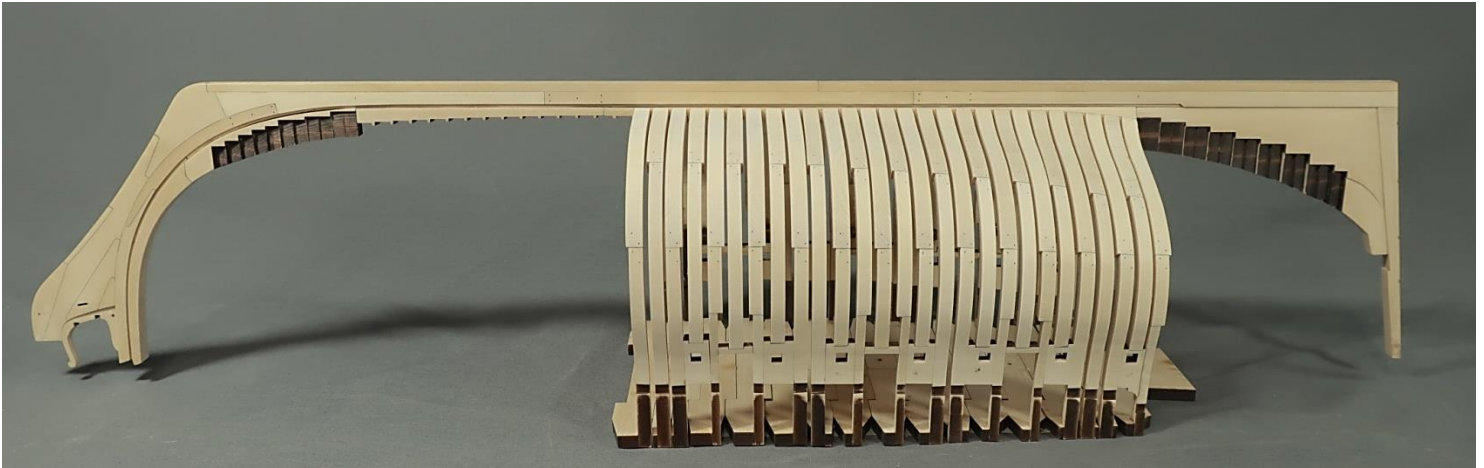
Once sanded...I glued them in position permanently. Be careful to check your framing plan. Make sure you have these oriented correctly and don't flip them. You want your sweep ports in the correct position after all. Use the provided templates to make sure all of the gun ports and sweep ports are in the correct position...at the correct height and spaced properly.

These templates are provided on the plans. This in combination with other means of measurement will really help ensure that your ports all end up where they are supposed to. The top of the template aligns with the sheer. The bottom of the template actually aligns with the top edge of the wales. The heights are most important for the ports and don't go nuts if your openings are a 1/64" to the left or right. It will all work out in the end. You can always fix slight issues before you start planking if you have to do some shifting. But I highly recommend that you use this template from the start of your framing to check the port positions as you progress. If you do this before you glue the actual sweep port fillers into position permanently (and the gun port sills), you can adjust them at that time to ensure the opening are in the correct spots. Then after you get them to match the template, glue them in permanently. Using the template is really the key to successfully and easily taking the guess-work out of positioning the ports.

NOTE: With any POF project there is a lot going on and a lot of parts. It is inevitable that some frames may not end up where you want them exactly. That's OK and certainly it happened to me. You may get a slight bend in your frame etc. Your wood thickness might be a little over or under with your frames. Maybe a frame isn't perfectly perpendicular to the keel after it settles once glued in. Creep can be an issue after 20 frames etc. But regardless of where you frames end up you can easily manipulate the sweep port fillers and sills using the

templates to get them exactly where you want them. As you can see the framing looks perfect to the naked eye but I can assure you they are not...the template is your salvation!!! The photo below shows all of the square frames complete with a template I used to ensure all of the ports are positioned correctly.

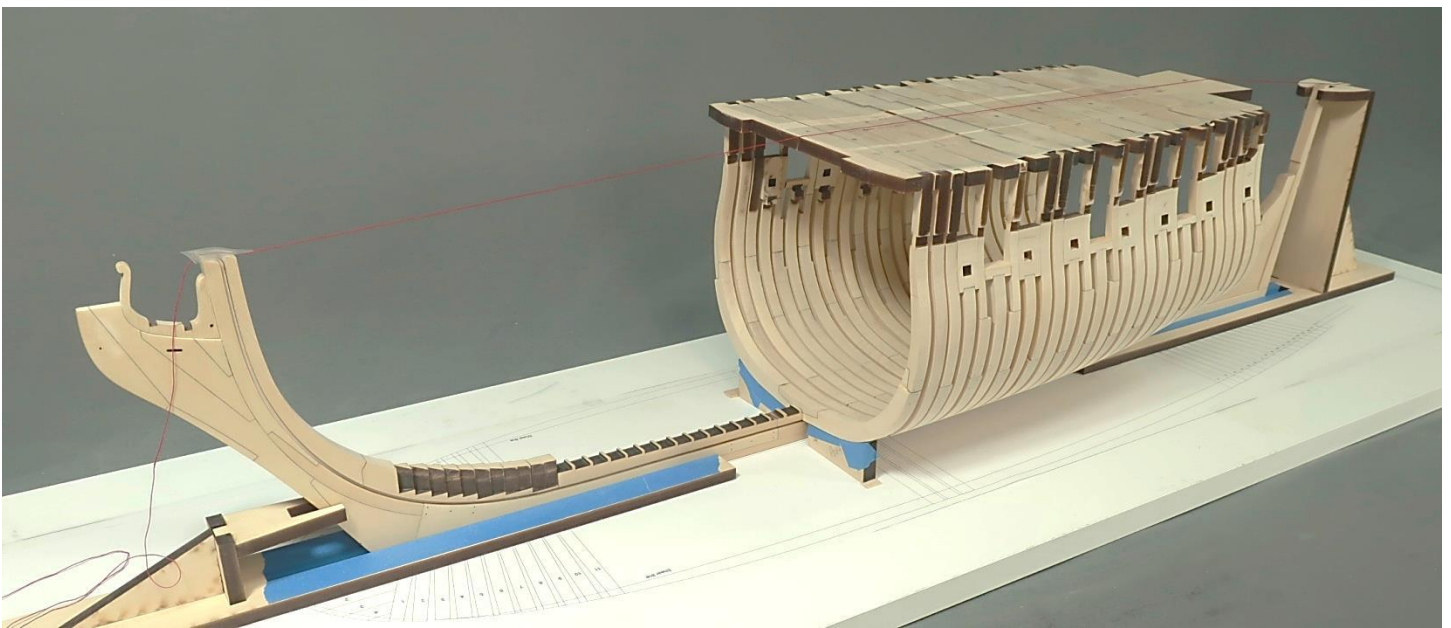
I did use my steel squares to line all of this stuff up as well. I used the square as a height gauge to make sure the sweep port was the correct height from the surface of the build board. I have yet to do the port side and this will be done soon. This is where the model stands at the moment. Things will slow down now as I (you) try and repeat these processes until all of the square frames have been completed. There are over 40 square frames.



Resist the urge to incrementally fair the hull until you have quite a few frames glued into position. In fact it is best to wait until they are all in position but I do realize it is hard to resist. I have lightly sanded the exterior a bit but I am careful not to overdo it. I don't want to screw up the correct shape for the hull which is tough to see with only a few frames on the keel like this.

When there is a lower gun port sill instead of a sweep port block, they are handled in the exact same way. They come in two layers as well....follow the same procedure.

Work continues on the square frames for me. As you can see above, I worked my way aft and have all of those completed. I am about two thirds completed with all of the square frames. It's all been uneventful. But here are a few pictures and some notes for folks I would like to mention. It is so nice to be able to remove the model with this "jigged concept" from the build board. The cross bars that space the frames properly create a





fantastic base so you can flip the hull over and do some progressive fairing. I designed it so the stem and stern post will be in the clear when it's flipped. It's nice and sturdy to fair the hull.

The build board I was using cupped terribly so I had to make a new one. It is important to have a perfectly flat build board. This is a pressboard shelf that has white laminate on it. It was perfectly flat and sturdy. We shall see.

I also decided when I made the new build board to swap the aft support for the taller one provided. This is the support that holds the sternpost straight up and vertical and centered. There was nothing wrong with the shorter one but I had a thought to make raising the frames even easier. I glued a string to the top of the taller stern post support. Then I ran it down to the center of the stem post and secured it in the center with some tape. This will be a great reference for finding the center down the length of the hull. I hope you can see the red string in the photos.

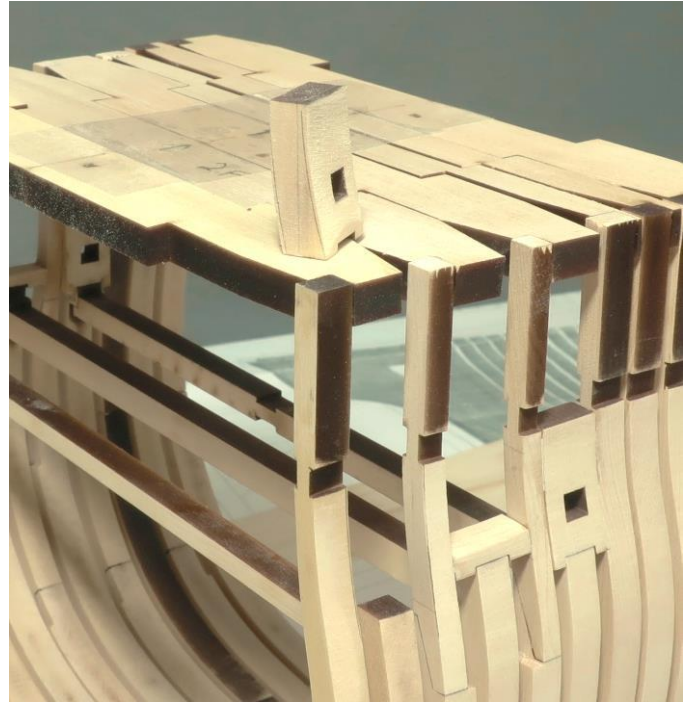
I laser etched an arrow down the center of each top jig cross piece as you know....it always faces forward. But because it's in the center, you can use the string to help you position each frame properly and quicker. They must be centered port to starboard....this makes it very easy to do when you raise each square frame on the keel.

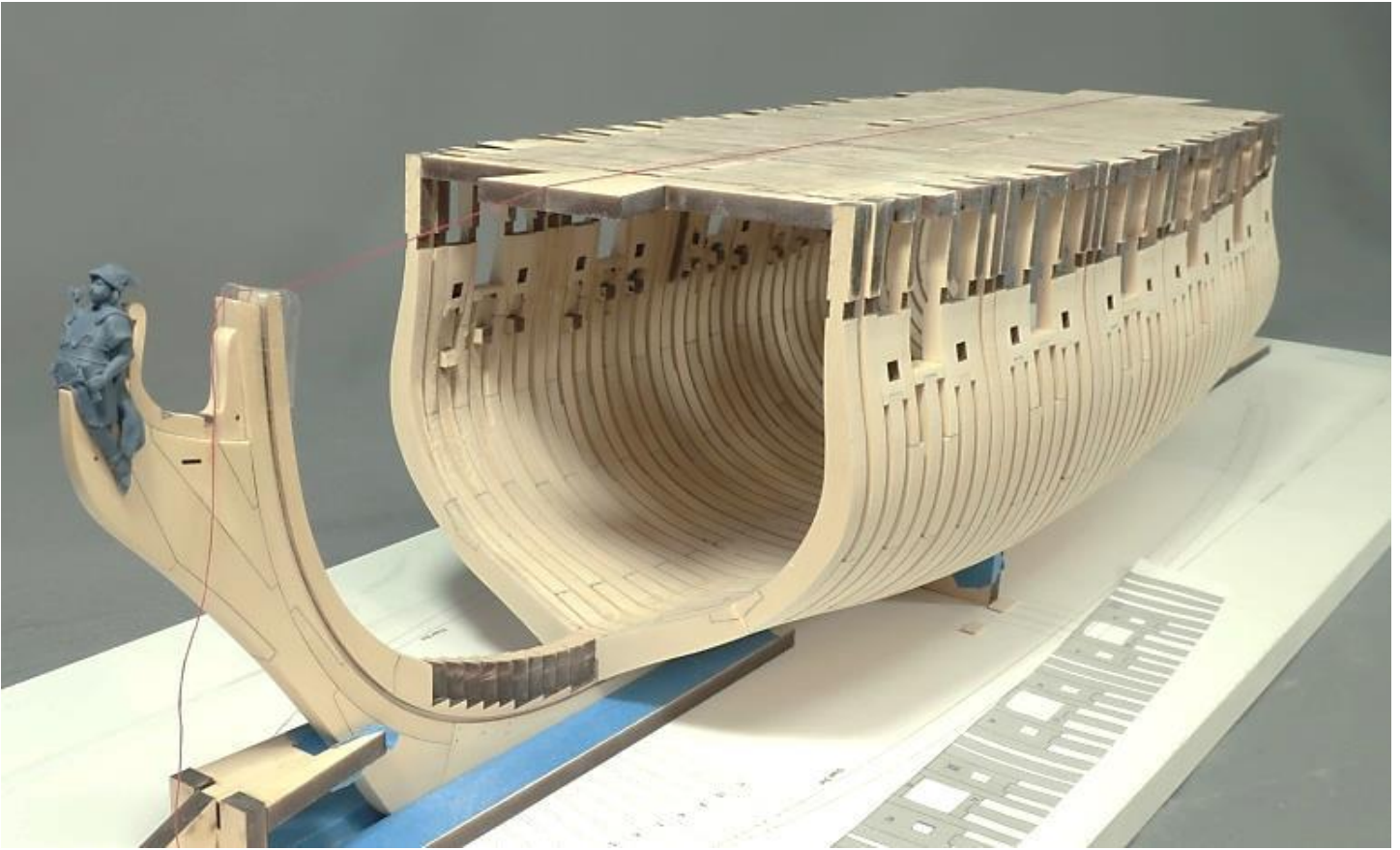
One other thing I wanted to point out are the small wedges or "cradle parts" placed under the first square frame (mid ship) in the photo above. Once I had about six frames all done, these laser cut cradle pieces were placed under the frame on both sides for extra support. They are laser cut to be a perfect fit under the center frames. They will be included in the kit as well. So look for them on your laser cut parts sheets.

In addition, you might notice in that same photo on the previous page that those cross pieces for each shorter frame are no longer needed once you have the sweep port and gun port parts glued on top of them. The frames are grouped together and glued pretty solid. You can see them in this earlier photo.

So they can be removed once you have those sweep port and gun port pieces glued in.

This will give you access to the inboard frames....well somewhat. But I did do some progressive fairing of these frames inboard and out. Outboard was easy enough. Inboard is always a challenge. But you can see that I have at least got the heavy stuff off inboard. I use various chisels and my #11 blade to slice off the heavy stuff. A rough fairing....then switch to some rifler files. Then I switch to sandpaper. It is best to get a start on this because it will be a real chore if you don't at least get the heavy stuff off. I do this after every 5 or 6 square frames are raised.





Out board was easier but the same tools were used.

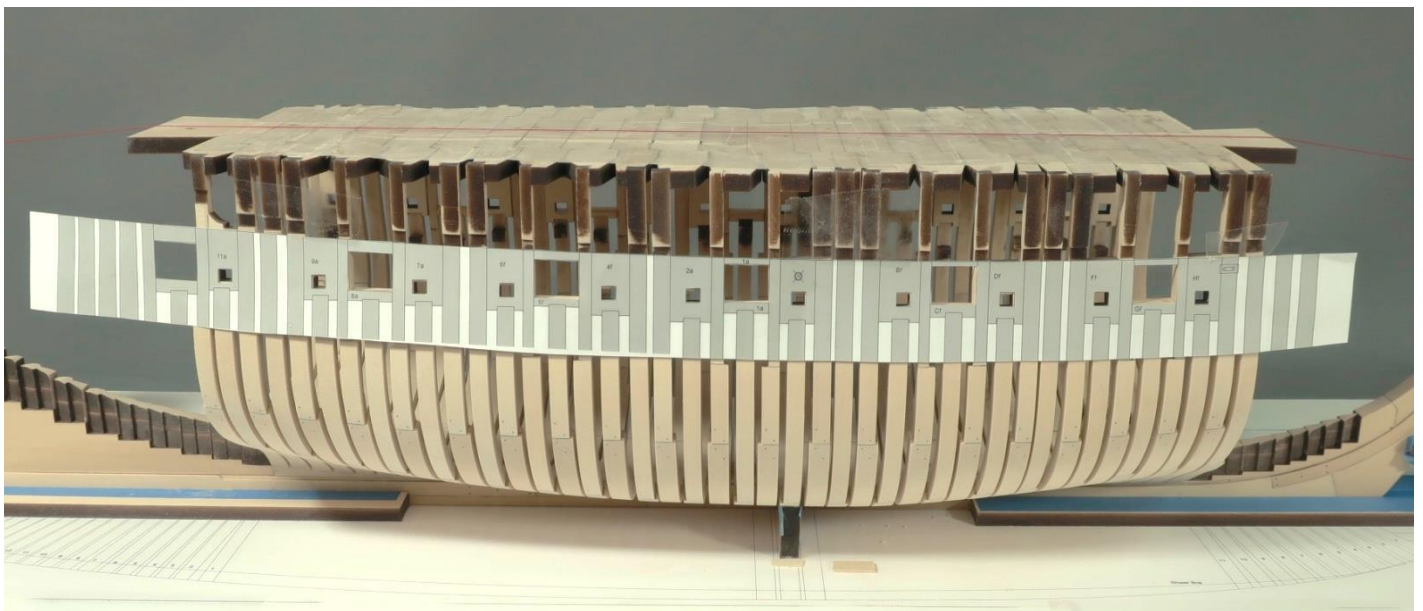
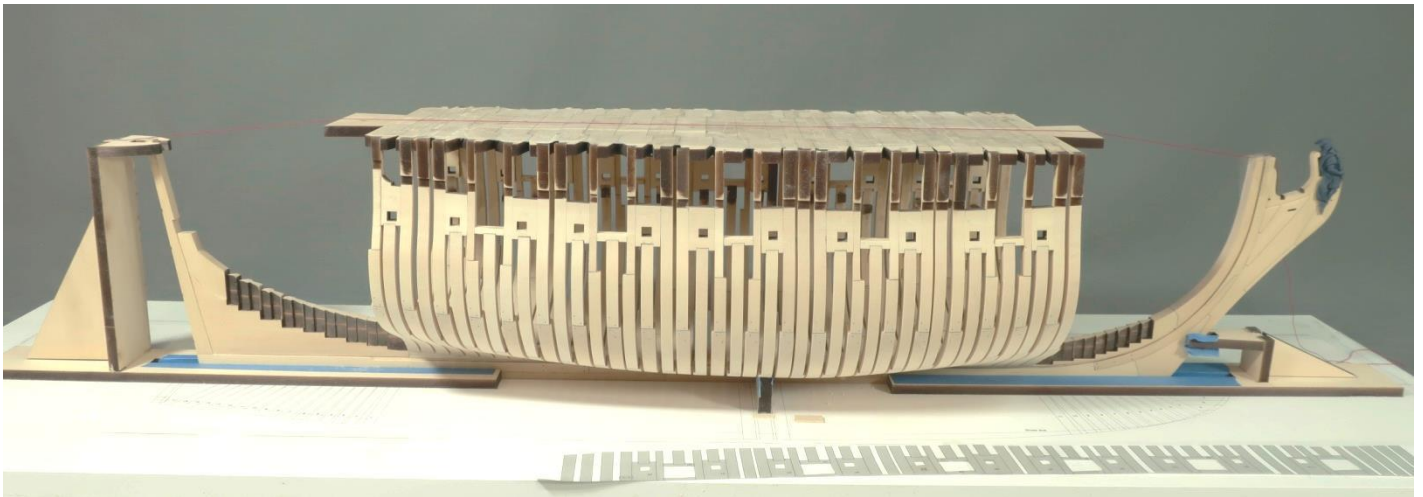
You can really start to see her lines start forming and the nice elegant shape into the stern....remember that the hull will be planked on both sides from the wales up to the sheer. Care is taken to line up the sweep ports and gun port sills. I use a height gauge or my square to transfer the heights from the framing plan to the model. As well as using my templates which by now have probably become essential for you up to this point.

Here is a somewhat close up photo of the fairing into the rising wood. These are the last several square frames before the cant frames are started at stern. You can see how the rising wood was faired nicely into the run of the square frames. This will make more sense to you if you are building it...when you get to this point. I have finally finished all of the square frames. I hope you are making good progress as well!! This was a good day and a pleasant milestone. I have faired the outside of the hull pretty good but stopped short of the outermost frames because I didn't want to over fair. Those will be done as I work on the cant frames next. The forwards cant frames are next. I also did some preliminary fairing inboard where I could reach. Just a little inboard fairing to make my life easier when the time comes to do that later seems like a good idea.

I basically just repeated the instructions I already mentioned until all the square frames were completed. It is really important to check the heights and positions of the sweep ports and gun ports as you progress. I have provided the laser cut parts to simplify that and yes you can measure up from the baseboard to check their heights. But I was also obsessively using the template I created. This will be provided on the plans. This in combination with those other means of measurement will really help ensure that your ports all end up where they are supposed to. The top of the template aligns with the sheer. The bottom of the template actually aligns with the top edge of the wales. I hope after completing the square frames you can see how using the template really helped you along the way. This is important because there will be many more similar templates used in subsequent chapters.

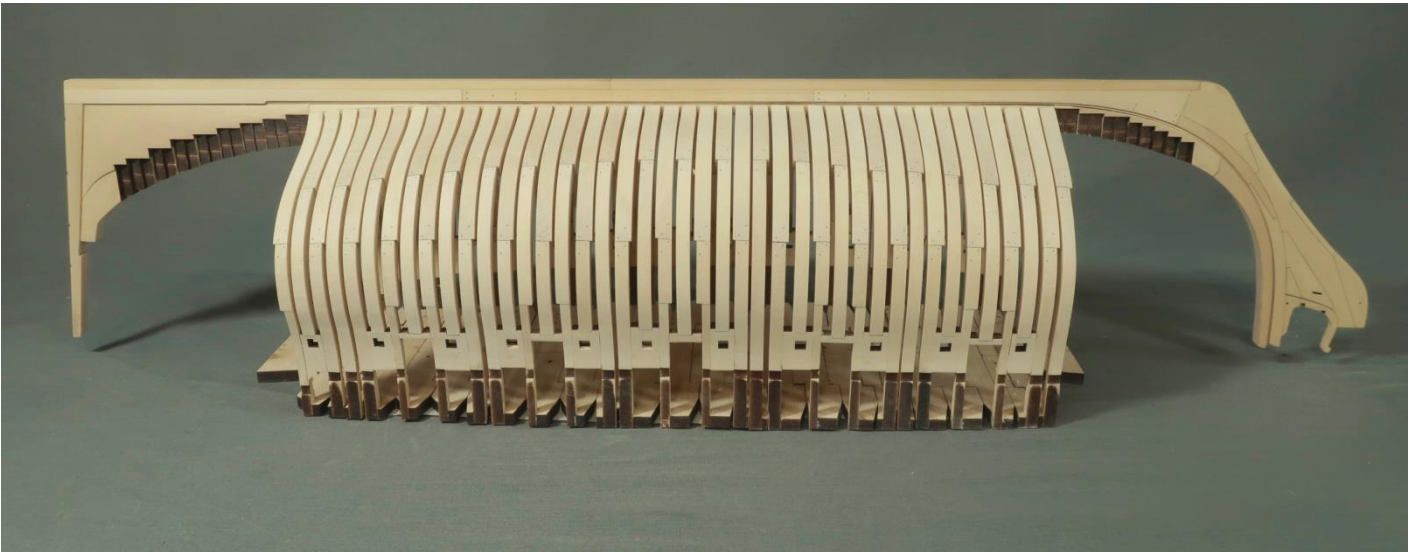
The hull is really shaping up after doing some fairing.

This completes chapter one!! Congratulations. I have provided some additional photos on the next page. Chapter two will complete the balance of remaining hull framing so you can begin planking the hull. Take a deep breath and take in your model at this point because it is quite the accomplishment. Onward we go to the cant frames!!!



## Ketch Rigged Sloop Speedwell

### Laser Cut Parts for Chapter One



A/B - Buildboard Parts - ply or cedar

C - Stem Parts - 5/16"

D - Stem Parts - 5/32"

E - Apron - 3/8"

F - Keel Parts - 3/8"

G - Deadwood - 3/8"

H - Stem Parts - 7/32"

I - Square Frame parts - 3/16"

J - Frame Cross Jigs - 1/4" - Ply or Cedar

K/L - Frame Cross Jigs - 1/4" - Ply or Cedar

M - Square Frame Parts - 1/4"

N - Square Frame Parts - 1/4"

O - Square Frame Parts - 1/4"

P - Square Frame Parts - 5/16"

Q - Square Frame Parts - 5/16"

R - Square Frame Parts - 5/16"

S - Square Frame Parts - 5/16"

### **Wood Strips Included**

5/16 x 5/32 - Cedar (3)

7/32 x 1/16 - Cedar (3)

### **Plans Included**

Speedwell plan sheets 1 & 2

You will also need to buy a build board that is perfectly flat. The prototype uses a 12"x40" board that is 1" thick