

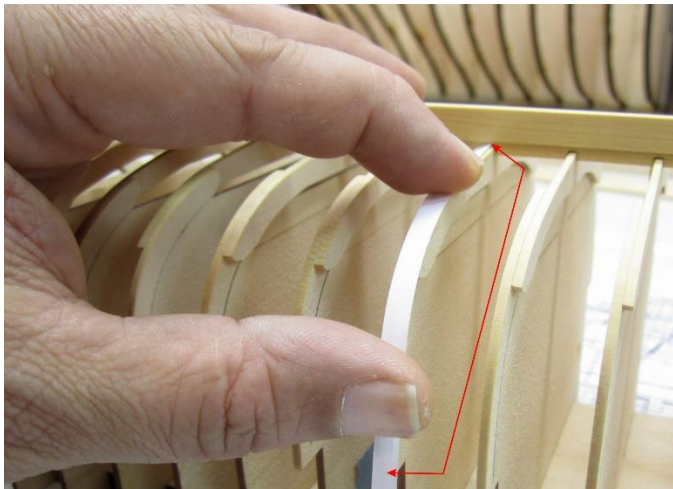
Part 2 – Lining off and planking

Lining off the hull for planking...

Those of you who have built one of my projects in the past probably know how I have always stressed the importance of lining of your hull. “Lining Off” is a process that allows you to measure and mark every strake of planking on your frames before you begin to actually make some sawdust. From my perspective, creating a plan before you begin planking will help prevent so many mishaps and mistakes along the way.

Even though I have supplied pre-spiled planking for this kit which is already laser cut for you, this project is probably the perfect size and opportunity to learn how to line off your hull anyway. You will still be able to see if you are slowly planking yourself into a problem as you complete each new strake.

Step one - is the easy part, after doing some research to determine the correct width for your planking you must decide how many strakes will fit at mid ship (dead flat). This will be different depending on the subject you are modeling but once you figure this out....you can make that determination. For the longboat, I have decided that it will have 9 strakes. This is typical for these long boat. Some have 8.....and some have 10. But our model will have 9 strakes per side.

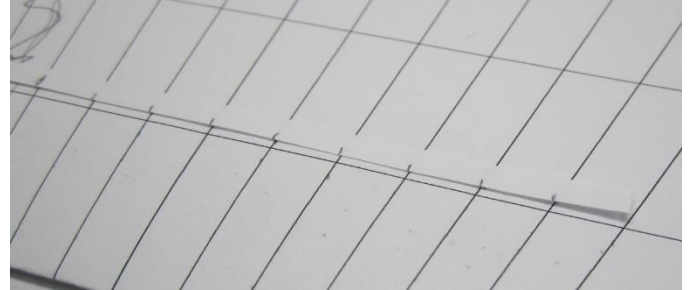


Step 2...(above)

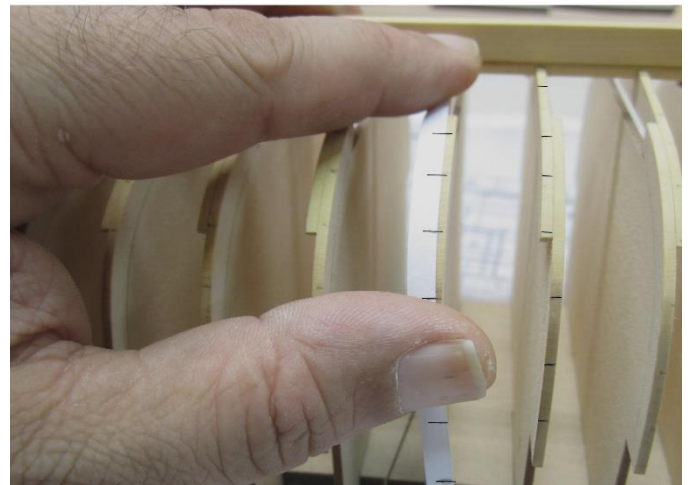
Cut some thin tick strips from paper. Hold them along the edge of the frames. You will need to mark the overall length of the frame edge from the keel rabbet to the sheer. It's very easy to do.

Step 3...Take that tick strip and lay it on top of your planking fan. Print your planking fan which is posted at

the end of this chapter. Because we know that this area will need to be split evenly into nine planks, it's just a matter of sliding the strip along the fan until it fills the space up with 9 planks. Then mark the strip with tick marks. The black horizontal lines on the planking fan were just put there so you have some reference to help you keep the strip level rather than angled.

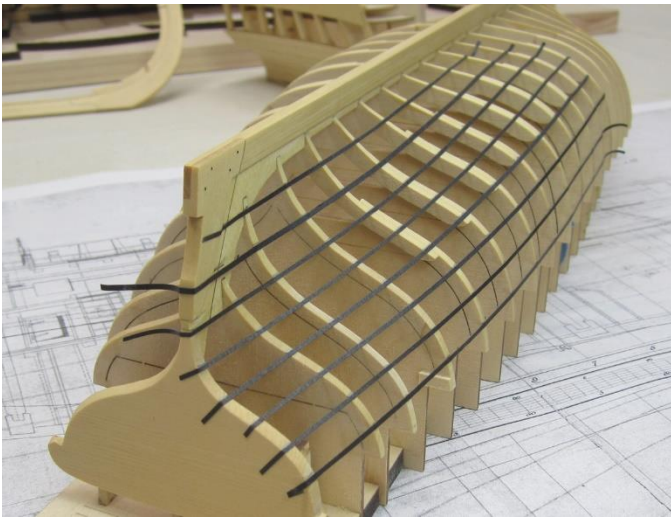


Step 4 ...Take that strip back over to the same frame and transfer all those tick marks onto the frame edge.



Now you shouldn't do this to every frame. You should repeat this exercise for every frame *except for* the last three aft and the first three forward frames. Those three frames on each end of the hull are tricky. There is a much easier and accurate way to determine the run of the planks for these areas. Consider for example that at the bow, each remaining frame may not even contain all 9 strakes. So measuring their length and dividing by nine will NOT work.

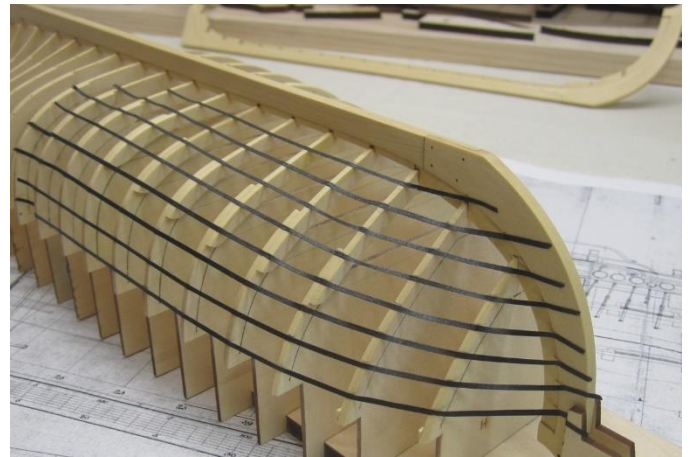
This next step will not only allow you see the run of the planks at the bow and stern, it will also let you double check that the tick marks you just made on all of the other frames are correct. You will soon be able to make adjustments to those as well. This is exactly what I do on every hull before planking. This is true for small open boats like this one and large 100 gun ships of the line.



Then take a sharp pencil and mark the edge of the tape to create the reference lines on those three last frames. Also do that for any corrected marks mid ship.

Aft side...can be seen in the photo above left.

The bow section can be seen below lined off with tape in what I would consider a good and reasonable run for the planking.



Step 5....Use some thin strips of black tape to visually create the run of the nine strakes. I bought some typical black art tape that was very sticky. It's like black masking tape. I cut very thin strips from it about 3/64" wide. These were used on the hull to determine the run of every strake. I do half of the hull at a time. First the aft side. Then from mid-ship to the bow. Make sure there is no dust on the frames so the tape strips stick really well. Some people prefer to use string that is glued to each frame. Use whatever method works best for you. I like the tape method because it is easily re-positioned.

Step 6...Now the last step could be considered very subjective. Each builder will have a different idea of what looks best for the run of the planks at the bow and stern. This is very true. There is absolutely no possible chance that what you have determined at the bow and stern will match exactly what I have settled on for my model. Very True!!!

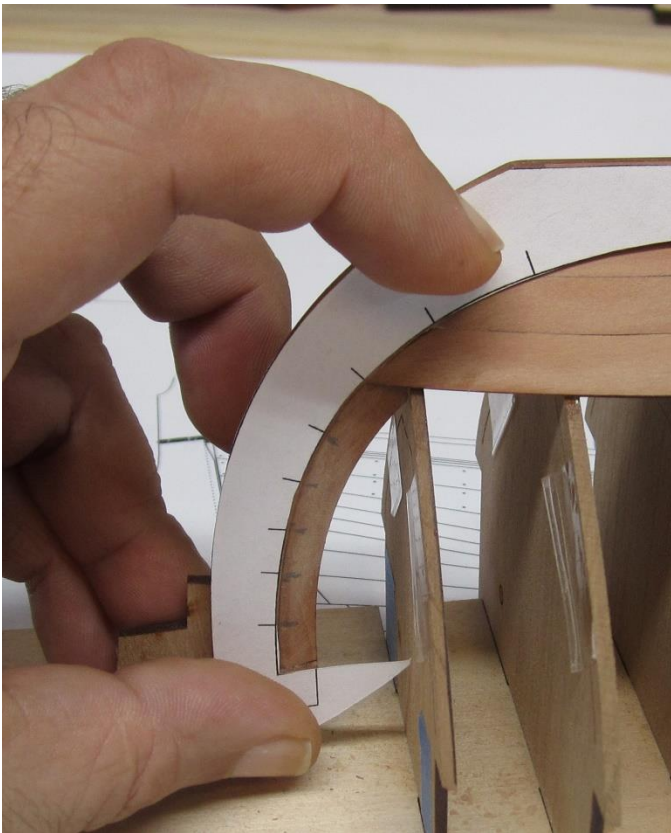
I used the tick marks I just made on each frame to position the thin tape strips. I worked my way aft from mid-ship until I reached those last three frames with no tick marks on them. Basically I "just eyeball it". I just continue running the tape onto each frame in what I think is the natural and correct path for that plank. **DONT WORRY.....REST ASSURED THAT IT WILL BE ALL WRONG.** But after you place the tape for all nine strakes on the hull like this, you will be able to see where its screwed up. You can carefully adjust each tape line until everything looks good. Adjust and tweak until the tape runs smooth and graceful across those last three frames and right off the edge of the model. Take your time with this. Adjust them mid-ship as well because you will be able to see where some of your tick marks were wrong to get the best run of your planking.

But this does not mean that you shouldn't line off the hull. Quite to the contrary. As you use my pre-spilled planks which are laser cut, it is very likely that they will bend and flex differently than those I used even though they started as the exact same shapes. You may sand them narrower to remove any gaps between strakes as you work your way towards the sheer. Using the tick marks on your model as a guide will at least warn you that something is different before you work your way entirely up to the sheer. It will give you ample opportunity to adjust each strake accordingly.

But...to help everyone get a better idea of how I ran my planks at the bow and stern, I have created two templates that should be of assistance. I would not use these until after you have tried using the tape to determine your own run for the planks. This will give you an interesting look at how closely our plans match

up or “how far from my planking run did you stray”. This doesn’t mean that my plan is better than yours. Like I mentioned earlier, it is a very subjective method to determine the run of your planks at the bow and stern. It just means that you have a different idea in your head about what looks good and proper.

It’s up to you whether or not you should change up your plan to more closely reflect mine using these two templates (at the end of this chapter). Just keep in mind that you are using laser cut planks that absolutely will conform to my plan however. See the templates at the bow being used below.



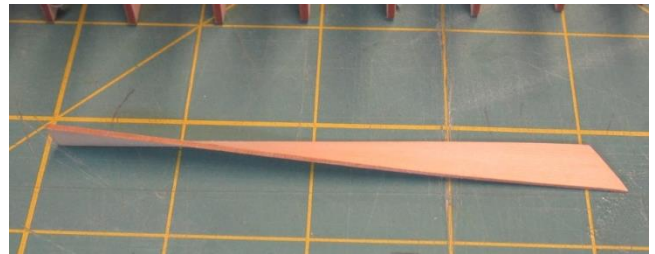
Starting to plank your hull...

For all 9 strakes...Each has two sections. A forward and an aft section of plank. For the first 3 strakes working up from the keel, I started at the stern post and then added the forward section of the strake afterwards. You should do the same for the first 3 strakes working up to the sheer from the keel.

Each section is made a bit longer after adjusting the ends that tuck into the rabbet. You need to cut the other end to length so they fall on a frame. When placing the second plank in each strake, you must cut it to length so it butts into the first cleanly and tightly.

Below is an image for setting the garboard strake in position. This is the first strake we will tackle. The garboard and all of the other planks are laser cut. They will already be spiled to shape. Even though this is the case, they will still need to be pre-bent to fit without forcing them into position. If pre-bent properly you will not even have to clamp them into position. This is the preferred method.

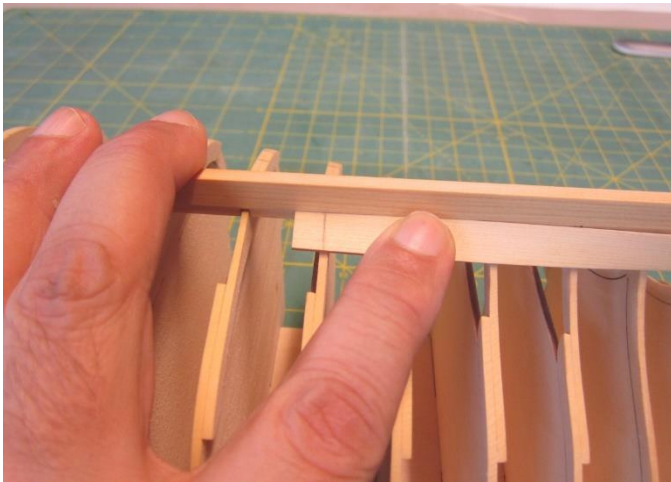
The garboard strake is made up of two sections as described earlier. It is important to start with the aft section first. Below you can see the aft section of the garboard strake with quite a bend in it. This is needed and it’s important to do so before gluing.



The plank is 1/32" thick and was bent using the same method I always employ. I used a hair dryer to heat it up while I twisted it to shape. Here is an image from another project but it’s the same technique used on our longboat. If it’s not twisted and bent enough....then just clamp it up again and continue to shape it. The one difference this time however, was that I used a sacrificial piece of scrap wood on top of the plank when I clamped it to the table. The Cedar is very soft and the clamp would dent it easily. So placing a piece of wood on top of the plank and then clamping it to the table prevents it from being dented.



Before gluing the aft section of the garboard in position, you must test it on the model for a proper fit. Tweak it if needed but it shouldn't need much work. First, you should test how the aft end fits along the sternpost and keel. Make any needed adjustments. Then...you will need to cut the forward end to length. Because each model might vary slightly, I made each plank section extra-long so it hangs over the frame as shown mid-ship. Just mark the plank on the center of the last frame and cut it to length. Do this AFTER twisting it to shape. Then glue it into position.



But before we get ahead of ourselves....let me make a general statement about these pre-spiled planks. You may be tempted to sand the char off the edges of each plank as soon as you remove it from the sheet. DON'T DO THIS. I know you guys have been conditioned to remove all the char from the edges of all laser cut parts. In this case however, it would be a mistake. The planks are pre-spiled and the widths are pre-determined. If you remove too much from the edges they will become too narrow as you work up towards the sheer. The plank edges really won't be an issue with the char left on them. In fact, in most cases you will still get a super tight fit against the strake already on the model.

I have darkened each edge with a pencil to simulate the caulking between planks anyway. So it's ok to leave the char. While testing each plank you want to only remove or sand a plank edge if you find a gap between planks. You can strategically remove just a little bit at a time until you get a tight fit. It is inevitable that gaps will be present because you will always flex a plank differently when gluing it onto your model. So despite having pre-spiled planks, you will still have to bevel and tweak the plank edges to get a tight fit. But keep this edge

sanding to an absolute minimum so as you proceed up to the sheer, each strake follows the tick marks from your "lining off".

The same can be said for the laser char on each face of your planking. I would recommend that you do lightly sand the char from the side of each plank that will show on the interior of the open boat. This will be difficult to clean up after the fact. BUT, there is no need to clean up the exterior surfaces ahead of time. The 1/32" thick planks are pretty thin. So why not just wait until after you have two or three strakes completed before you start sanding the outboard side. This will ensure that you have more meat on the bones when you do sand it for the final time.

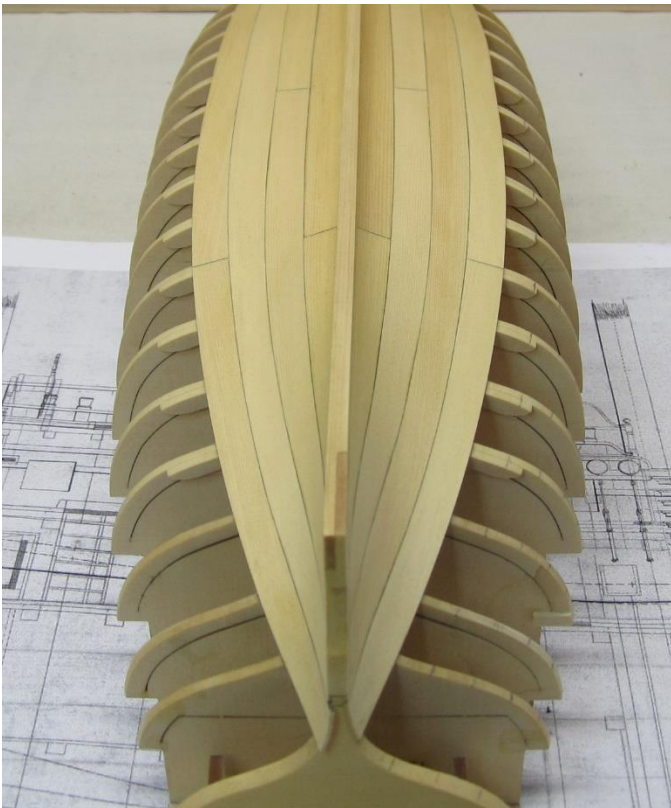
Let us return to the garboard strake...Now that the aft section is glued into position, the second forward section of the garboard is unique to the project. This section of planking is not laser cut extra-long. Just sand the aft edge a little bit to get a tight seam between the other half of the garboard plank. The length has been pre-determined to fall correctly at the bow. Having said this, this section should still be pre-bent and twisted before you glue it into position. It is worth noting that you should bevel the edge of the garboard along the first 5 frames where it sits against the keel at the bow. This makes for a tighter and cleaner fit in the rabbet. But don't remove too much!!! Remember to test it before you glue it on the model after you bend it. You should be able to see where the bevel is needed. You should try really hard to line it up with your tick marks on the frames. If you make it too narrow then you will see how you are a bit off when examining your tick marks. Here is a photo of the board completed with both sections glued onto the model. The butt seam between the sections was darkened with a pencil on one side. Also how it looks at the bow. Note where the garboard ends at the bow in relation to the bolts.



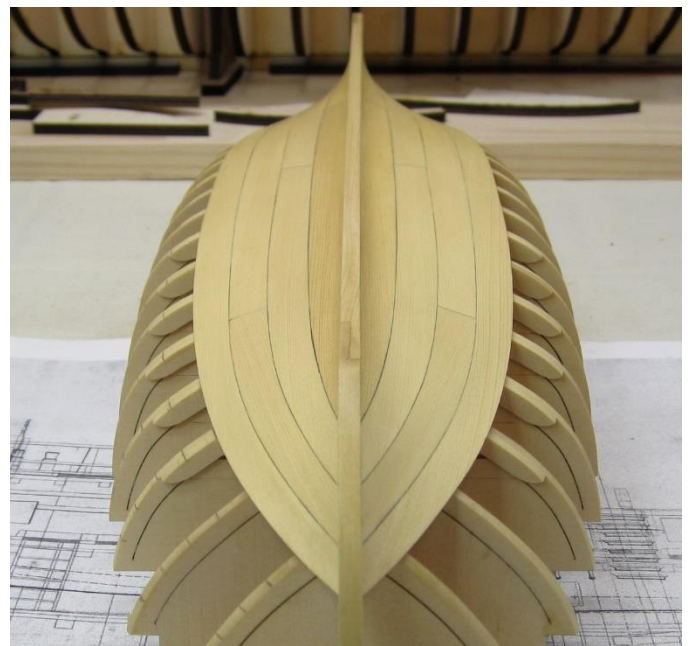


Remember that there are only 9 strakes per side. So only eight more to go!!! The garboard is the trickiest though because it sets the run for all of the remaining planks above it. But if I wander slightly from my tick marks, I can correct those little issues as I move forward. It is worth mentioning that you guys won't have any tick marks to rely on....unless you go through the exercise of lining out the hull as well. I absolutely recommend it. Your tick marks may not line up with mine exactly but if you wanted to give it a try with only nine strakes vs. 25 for a frigate.....its good practice.

Here is what the model looks like after four strakes have been completed. Note in the one photo provided where I have listed the reference numbers for each section of plank. These match those on your laser cut sheets.

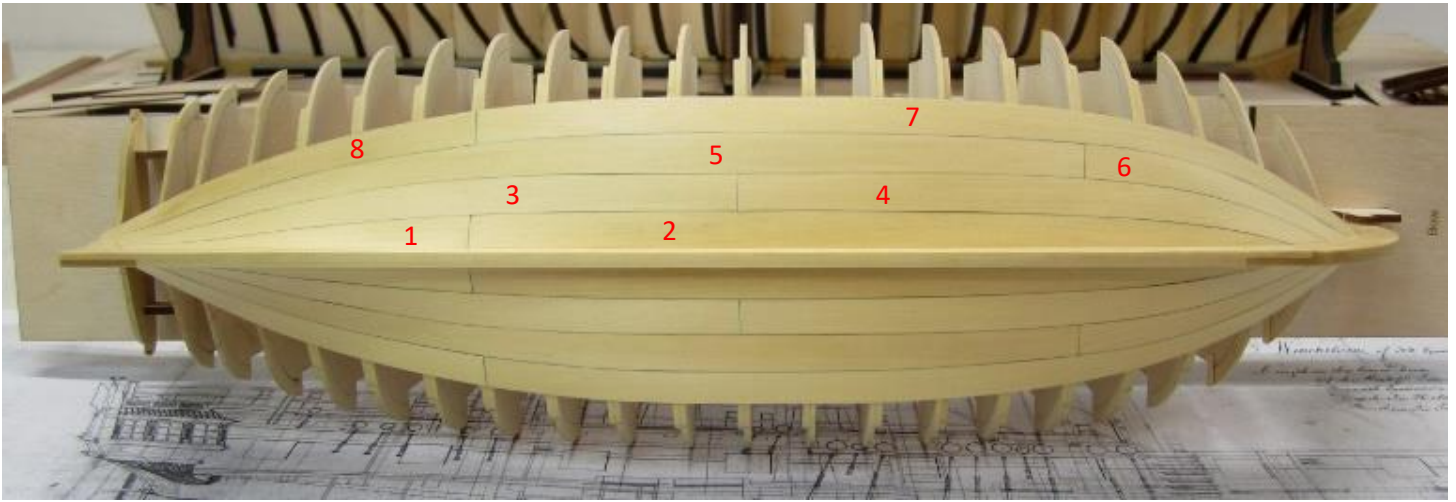


I have darkened the seams between each strake and at the butt joints with a number pencil to simulate caulking. As you work your way towards the sheer, remember to check that your spacing is the same on both the port and starboard sides.

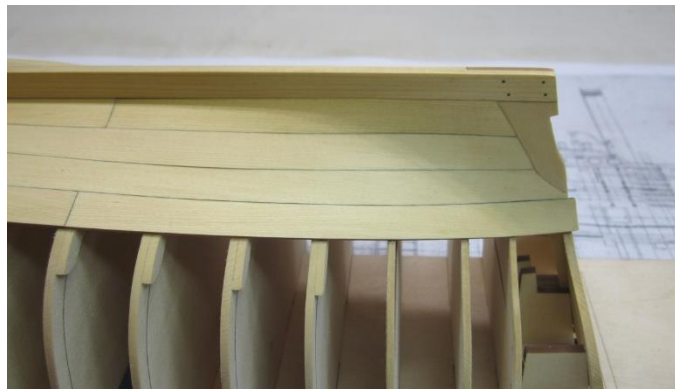
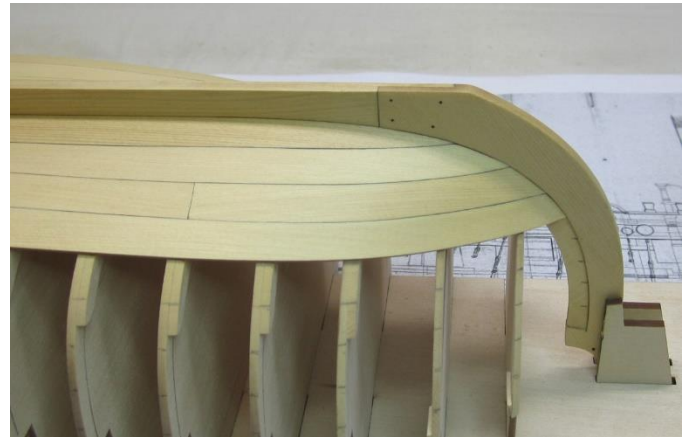


It is also a good time to mention that if you start to wander from your tick marks and need to make a new plank with some adjustments, just cut a new one. I have intentionally left plenty of blank space on each 1/32" thick sheet so you can trace your planks and make new ones. Maybe you over sanded your plank or it split by accident. Just cut a new one.

Also note that on the photo with the reference numbers on them, you can see how I switched directions with the fourth strake. I am no longer starting with the aft portion of the strake.



Since we are no longer constrained by the stern post, I found it easier to begin each strake from this point at the bow. So plank number 7 now begins at the bow. You will still need to cut this bow section to length after you shape the forward end. But when adding section 8 it becomes easier. Just adjust the end so you get a tight butt joint against plank 7. Then let the other end run off the stern and transom. Once its glued into position, just sand it flush with the transom.



This is the way we will proceed all the way up to the sheer with the remaining planks. Fit the bow end so it fits tightly in the rabbet. Then mark and cut the aft end so it falls on the center of the frame mid-ship. Follow this up with the aft section of the strake by getting a tight butt joint. Let the plank run off the stern. Then sand it flush with the transom. You can see in the photo above that I haven't sanded plank 8 flush with the transom yet.

I realize that this may be a bit confusing and you have probably read this section over several times. But hopefully as you are planking your longboat it will all start to make sense.

One thing I would like to point out that concerns me....

Even though I am providing laser cut, pre-spiled planking, there is still a chance that your planking will not go as well as you might like it to. As you can see in the photo above, I have the luxury and safety of having my tick marks on each frame. This is a very welcome thing to have as a reference. As you plank the hull and work your way towards the sheer, you will still need to bevel and tweak the edges of each plank so they fit tightly against the previous strake. This needs to be done only in various areas of each strake as the hull curves.

You need to match the angle on the edge of the plank already on the model. Should you over-bevel.....or under-bevel, you will be slowly changing the runs of your planks so they aren't necessarily the same as mine. Therefore, as you get to the seventh strake there may be compounding very slight differences which create gaps (probably minor) which will require more beveling or more sanding for a tight fit.

Having those tick marks present as a guide will help you keep on track, you can make minor tweaks as needed to keep each strake running along your tick marks. So having pre-spiled planks creates a disadvantage because

you won't have this road-map. So I recommend that you do in fact line off your hull as I described so you will have some sort of plan to follow. You may in the end not create an identical lined off hull and your tick marks may not match exactly the way I have them on my model. BUT even so, having these tick marks as a guide are in my opinion Invaluable. You guys should take the time to do so.

So let's recap on those first four strakes....the remaining five will be the same and by then you should be familiar with the pattern.

Plank 1 – sand the aft edge so you get a tight fit in the stern post and along the keel. Pre twist and bend. Test and cut the plank to length. Then glue it in position.

Plank 2 – Sand the aft end to get a tight fit for the butt joint with plank 1. Pre twist and bend. Test fit on your model. Bevel where you need it. The length should be OK against the bow. Follow your tick marks.

Plank 3 - sand the aft edge so you get a tight fit in the stern post. Pre twist and bend. Test and cut the plank to length. Adjust the edge to get a tight fit against the first strake. But don't sand too much. Darken the seams with pencil to simulate caulking. Then glue it in position.

Plank 4 – Adjust the forward end at the bow for a tight fit in the stem rabbet. Then pre bend and twist. Adjust the edge for a tight seam against the garboard. Test fit and mark the length to get a tight butt joint with plank 3. Glue it into position.

Plank 5 – same as plank 3...but it gets tricky because this is where the stern post curves. So adjust that curve carefully while getting a tight fit against plank 3.

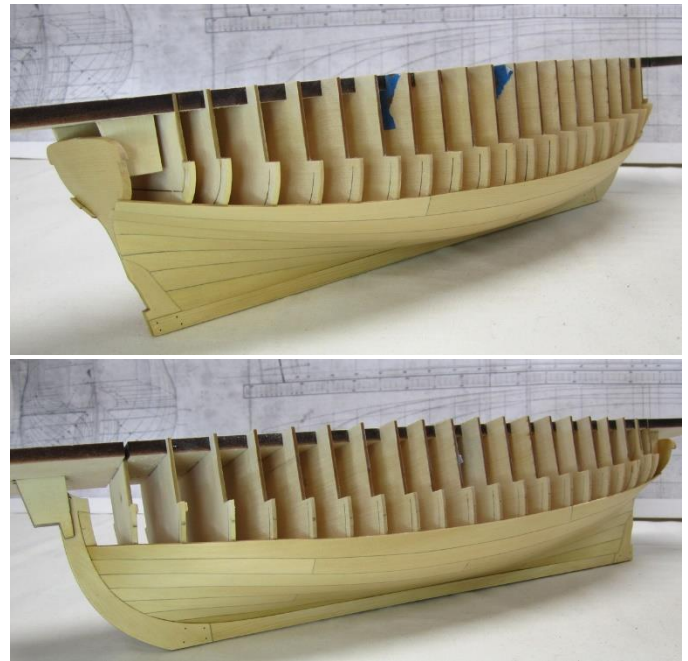
Plank 6- same as plank 4.

Plank 7 – we are switching by starting at the bow....adjust to fit in the bow rabbet. Pre bend and twist. Then test for a tight fit as usual against the third strake. Mark and cut the length to fall on the center of the mid-ship frame. Glue it in position.

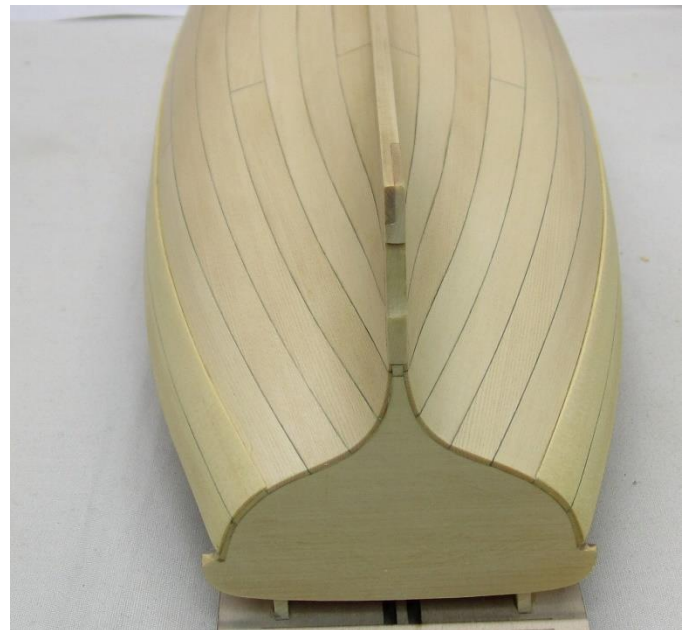
Plank 8 - Just adjust the end so you get a tight butt joint against plank 7. Then let the other end run off the stern and transom. Once it's glued into position, just sand it flush with the transom.

Plank 9 and up...repeat.

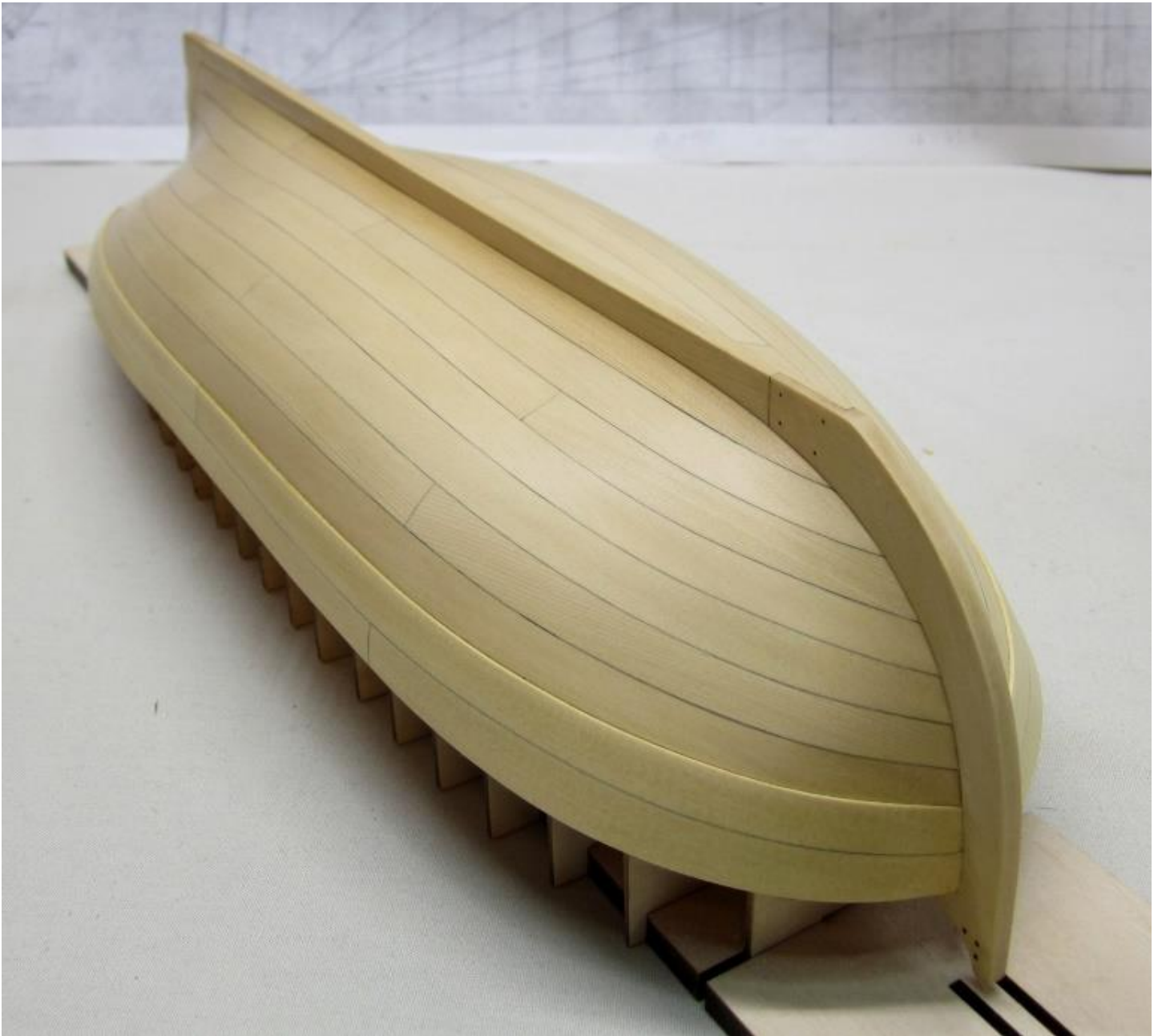
Here are some additional photos showing the planking progress on the prototype. I hope they are helpful to you as you continue planking your longboat.



All nine strakes completed. Second layer for strakes 8 and 9.



When you finally reach the sheer with your planking and complete the first layer you should feel very good. Planking an open boat is a challenge at any scale. Hopefully it wasn't too awful.



The two upper strakes will need another layer though so you are not completely finished yet. That is why you have two sets of planks for those in the kit.

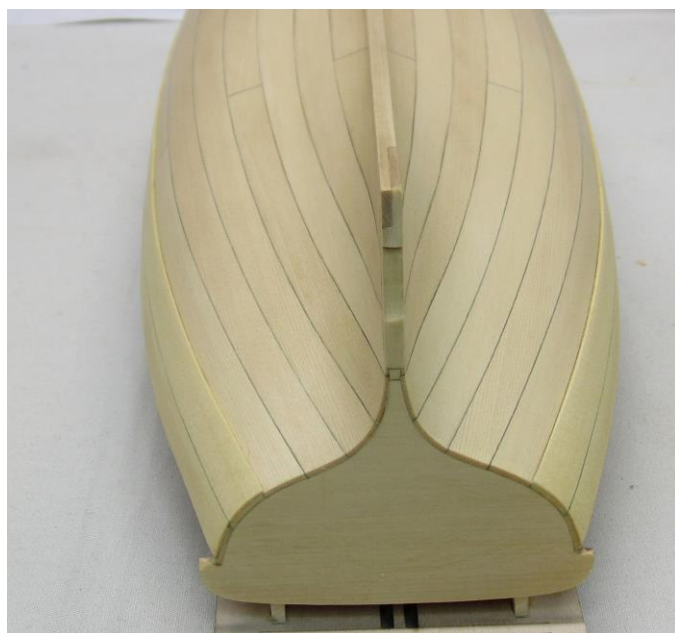
These are thicker planks than those on the strakes below them. The second strake being the wales. I contemplated doing these two last strakes several ways. At first I thought about just using thicker planks in one layer. This is a good solution but I kept thinking about some of the guys I know who have trouble bending and twisting heavier planks. The hull is pretty sturdy at this point but being forceful with a heavy plank could be problematic for some, especially if they don't take the time to properly pre-bend and twist them to shape.

So in the end I opted for a modeler's convention of simplification. Just as I add the wales on my other builds like larger frigates, I decided to use two layers. The 1/32" thick planks bend and twist very easily. This is especially true with the yellow cedar. A second layer of 1/32" planking will be laid right on top of the last two strakes and nobody will be the wiser.

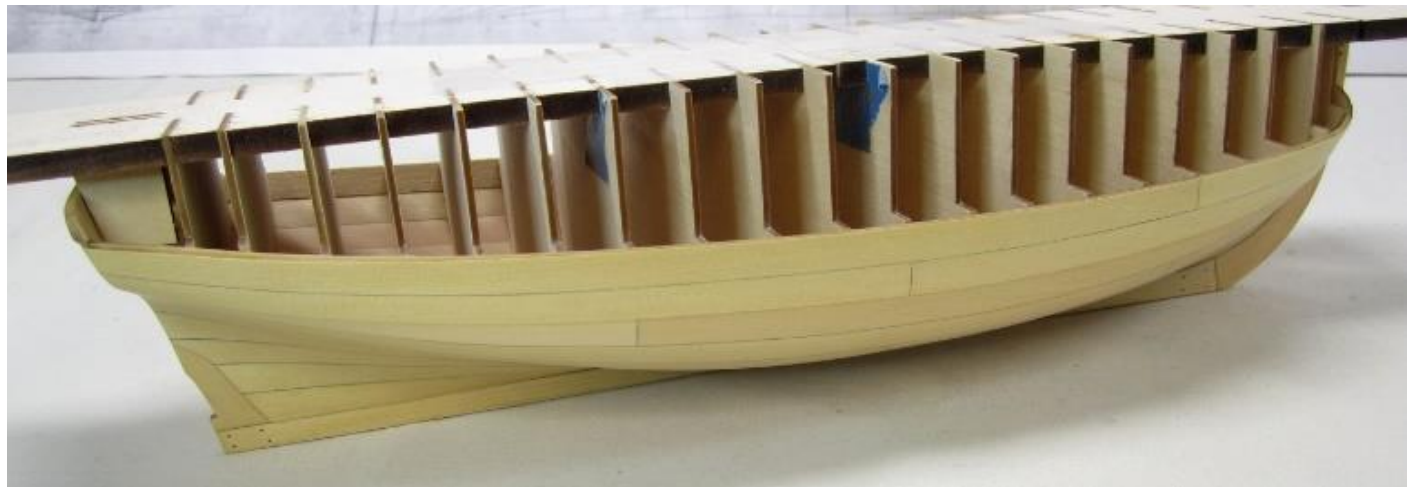
I was quite happy with the results for my first layer of planking. Once both sides were done I could see that the port side was less than 1/64" lower at mid ship than the starboard. Nothing that can't be adjusted with the second layer. This is one of the benefits of using a second layer. You can make small adjustments to correct any issues with the run of your planking at the shear.

The second layer is also 1/32" thick. But this is actually slightly thicker than I would like. It is better to sand them down slightly afterwards so they are a bit thinner and not standing so proud of the planks below it.

On addition note. At the bow and stern, the planks are actually not thicker. They should gradually reduce in thickness so they are the flush with the planking below them. This is easy enough to do after both of the second layer strakes are completed. At the stern, I just sanded the last 1/2" of planking so it gradually reduced in thickness and matched the other strakes when viewing the transom head on. Yu don't have to be perfectly flush with the first layer but get really close along the rabbet at the bow and along the transom



At the bow, I found it easier to use a sharp flat chisel along the rabbet to reduce the thickness of the second layer so it was almost flush. Then I sanded it gradually as those two strakes ran aft. I only did this for about a half of an inch along both strakes until they were



visually correct to my eyes. See the large photo on the previous page.



The photo above shows the thicker planks for those top two strakes quite well on the contemporary model. These are the wales. The bow can be seen below.



