

## How I build my laser kits

Ramblings by D. Scott Peterson

When I design a new kit I usually build it at least twice. The first “alpha” build uses no paint. This is my test of the new kit to make sure everything goes together. I build this directly in front of my computer and keyboard. Any changes that need to be made I do on the spot in the computer file and quickly cut out a new part. When I am through, I have made dozens of changes to the file and the building basically looks good but is almost scratch built.



The second “beta” build double-checks that everything fits perfectly now. I am usually pretty confident that it will go together but anything can happen when many parts are changed. I usually paint and stain this build.

I also look at the sheets of wood and try to optimize the parts on the sheets to minimize waste and use the least amount of wood. I purchase standard size sheets of wood in 3”, 4”, and 6” widths by 24” long. 24” is the length of my laser bed. The 3” sheets are less expensive because the manufacturer can get more of these out of a basswood log, so I try to use this size the most. Anyway, there is always some wood waste so I try and come up with little additions to “plus” the kit and use more of the wood sheet. It is an art to do this.



The kits are made primarily of basswood using thicknesses of 1/32" to 1/4" thick. I also use aircraft plywood in thicknesses of 1/64" to 1/16" thick. I add double stick tape to the back of my windows and trim sheets before cutting them out. I keep my larger wood supply in the back room. I keep a quick supply of wood in the bins to the right of my desk chair so I can quickly grab a stick and feed it to my laser.

Clear plastic sheets are cut for the glazing. Cardstock and paper are for shingles and other components. I try to use very little outside purchased components due to availability. Self reliance seems to work the best.

\*\*\*

At this point in the process the little sprue "nibs" which hold the parts to the wood sheets are added. I wrote a special program to do this. Then I add little notes to the wood to aid in identifying the part if it is not obvious. I do this sparingly as each line in a letter of a word takes time for the laser to engrave.

Note: Please use a sharp hobby knife to remove each kit piece from the carrier sheet, cutting each nib. The wood won't splinter if you do this. Sand the nibs smooth before painting.



All of this work is in one CAD file. Each sheet of wood is in the file, labeled with its type and thickness so my helper can cut the parts without my input. I also add notes to my helper in the file when I think he may need extra instruction. It is his job to create “cut lists” in our database so we can keep track of material used and the printout aids in getting all the parts in a kit. I always quality check his work to make sure the kit is complete. We keep two of every kit in stock for mail orders. It takes about 2 to 4 hours to cut out all the parts of a kit. I require the laser operator to stay in the room in case of any problems. We also have a fire extinguisher handy. Of course snack and potty breaks can be done but safety is paramount. The laser is in my basement so lets not burn the house down, ok?

## Finishes

I usually stain first as the floor is the first thing I work on. I use leather dye thinned with alcohol for my stain. I use mostly brown and black. Because you are wetting the wood and wood warps, I stain both sides at the same time. Then I stand the piece on edge so both sides dry at the same time. I use this mixture because it dries quickly and after ten minutes or so I can continue building.



I then paint the edge of the foundation a concrete color with a small brush. (I have some old Floquil paint for that.) Then I glue the floor to the foundation and weight it while it dries.

I next paint the interior, followed by the exterior. If there is any overspray it will not show on the outside. Then I paint the windows and trim. Then I spray a small amount of the trim color in the spray can cap and with a small brush, paint the edge of the window and door openings in the walls. I usually use rattle can spray paint for all painting. Flat colors and primers work best but satin paint on wood, if sprayed lightly, works also.

Rattle paint cans are quick and easy. I used to use an airbrush but I got sick of

cleaning it. I am painting 20 times a day sometimes while building a kit and I don't want to take the time to clean an airbrush.



Note: I do not use or recommend water based paints. Water will really warp the wood. I don't use an airbrush much and have never tried water based paints in one. I suppose you could try it but use light, very fast drying coats, and cross your fingers.

Where I need to glue to a painted surface, I take the tip of my hobby knife and scratch the paint so the wood shows. Yellow glue needs to "see" the wood so it can soak in and grab it. It will not create a good bond if you do not expose the wood.

Stained parts can be glued. The stain soaks in, unlike paint, and doesn't cover the wood. Paint's main objective is to keep water out, as on your house.

I try to lay out each sheet of wood considering what needs staining, what needs painting and which different paint colors might be used, and group the parts on the sheets with this in mind. But overall wood waste is the biggest factor here.

Because I do this all the time, while the paint is dry to the touch but still curing, I start the assembly of the beta build. Actually I am still cutting out the kit parts and the building is half done. I cut, paint and assemble in an afternoon. Plus I am working on fixes, changes and additions to the kit in the CAD file. All construction is done in the little space in front of the keyboard so I can quickly add my ideas to the CAD file.

## Shingling Kit Roofs

I can't shingle the roof in the basement. I need extremely bright light to see the black shingle cut lines so I can stagger the shingles correctly. The black is hard for my eyes to pick up on so I work at the dining room table which is in a south facing bay window where I get plenty of sun. This is my least favorite part of the building process. It just takes a few hours to do and there is nothing to it, but placing one row of shingles after another is boring. Accidentally make one row line up with the preceding row and it looks like garbage. I've roofed hundreds of roofs and the thrill is gone. Roofing does not feed my creative need like designing a new kit does.



Note: While I can do a roof fairly quickly, I would take more than a “few hours” if I were you, to do the shingling job. Take breaks and think good thoughts. Always remember, “you are smarter than the roof”, or so I tell myself. Sometimes it “talks” back.

Shingles are placed 1/10 of an inch at a time. I run a tiny bead of yellow glue from my 1 ounce glue bottle with small tip on the wood panel, just above the last row of shingles and between the etched shingle lines. Then I place the next row. Once the paper shingles are placed, they tend to expand lengthwise so when I place a row I hold one end and slightly pull the other end like a rubber-band. This tends to stretch the row so don't pull too hard or that will goof up the stagger of the shingle rows. It is all a fine art. No matter what, you will get some “bubbling” of a row. Just keep smoothing it down with a dry, non gluey, finger. The paper will flatten out (stretch back) somewhat after it dries.

Remember, the roof is the first thing you will probably see on the building so do a good job. The roof on some structures will be a challenge if they have valleys. Take your time, do one section at a time, let it dry, and then trim the edges with a sharp blade. The ridges and hips will be covered with the cap strips so that helps hide the little pieces that will fall off. But the valleys have no such caps so be careful there. Don't forget to color the valleys and the first row of wood with a black marker to help hide any imperfections of wood showing.

You have to shingle the more complicated roofs after the roof wood portion of the kit is done. But on a simple two panel roof I shingle the roof panels before building the roof. It is easier to work flat on the table and then flip the roof panel over and trim the shingle edges. I then weight the roof panels with a bunch of railroad books while the glue fully dries. You have to use railroad books and not those darn quilting books my wife reads, LOL The wet glue tends to warp the flat wood using this technique so applying weight helps.

When I trim the shingles on a built up roof, I use a sawing motion with my sharp hobby knife, pushing down on the stroke towards the wood panel and using less pressure on the back stroke. This causes less tear-back on the shingles.

My roof caps have a scribed line as a marker showing where to bend the cap so it follows the angle of the roof. I always find a sharp edge, as on my sanding block, to crease the cap. Then I completely fold it over, with a sharp crease. After double checking where the cap goes, I flatten it out and apply glue to the back side, then carefully place it.

Once the roof is shingled, I take flat black spray paint and dust the roof to hide any glue seepages. Then I use some weathering powders to streak the roof as

many years of wind and rain would do.

I hope this doesn't scare you off. It does for some people. I do offer to build the kits for some people but I do charge 2.5 times the price of the kit. I do need them to select the paint colors listing part numbers. I am not a weathering artist. I am a precise anal engineer type person. So the customer needs to weather his own building when he gets it.

