"Building with Styrene"

Easy, fast and professional looking structures"

By Tom Guglielmo

Intro:

Ever get frustrated with all the effort in cutting, gluing, filing and sanding required to make a nice wooden pilothouse or superstructure for your vessel? Well here's a better method that is not only easier but typically gives better results and requires less effort to prep for painting with the icing on the cake being you can really add a lot of detail tat you could not accomplish with wood.

Tools:

Required	Optional
1) Metal straight edge 2) Xacto knife 3) Sanding block 4) Small square 5) Styrene cement	1) Small clamps 2) Dividers

Styrene:

1) Plain sheet 6" x 11" ~$2.50
   Medium size structures 7" x 5" 0.40
   Small size structures 4" x 3" 0.30
2) Angled stock 90* 3/16 x 3/16 x 14" ~ $2.00
3) Various shapes (Strips, tubing, rectangle etc) used for detaining ~$1.00 - $2.00

Process:

1) The "Plan"

a) As with all aspects of model making in order to make it happen you need to have a plan. The first step is to use your scale plans to draft up a top, front, rear and side working plan drawing. You'll use this plan to transfer a pattern onto the styrene. To accomplish this you can either a) Trace/transfer the pattern of each side to the styrene sheet or you can cut out paper templates and using contact or rubber cement you can paste this to the styrene. One trick that I use is to align one edge of the template to an edge of the styrene and using an awl, ice pick or some other sharp pointed object make a small mark at each corner of the pattern that is to be cut out. By using your straight edge draw a line using a pencil from hole to hole so you'll know what to cut out. When tracing out your patterns be sure you have a left and right side. A good tip is to label the inside as to what it is

2) Cutting

This is the best feature that I like about styrene. To make a straight cut mark your cut line with a pencil and align your metal straight edge with the cut line. Using your Xacto scribe the styrene making sure you have a good hold on your straight edge as it could slip if you're not holding it tight against the styrene. Note you do not have to cut thought the styrene you just need to scribe it once.

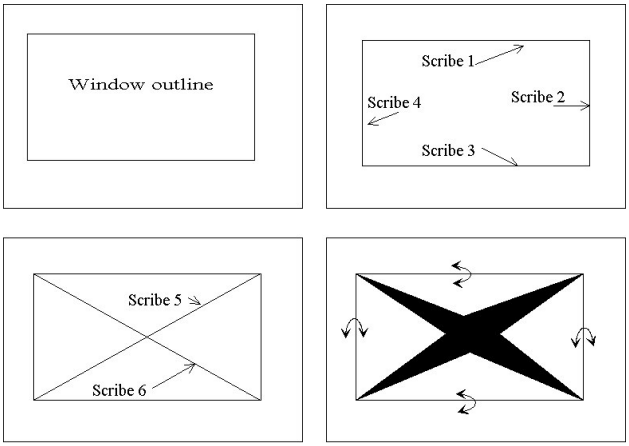
3) Breaking

Once you've scribe it you hold the scribe edge over an edge (Scribe edge up) such as a table and by applying a slight downward pressure bend you'll snap or break the styrene which will result in a straight clean break.

4) Cutting windows & door

This is probably the most challenging part of building the pilot house. To cut inside openings is a little bit harder but still doable. There are three was that seem to work for me

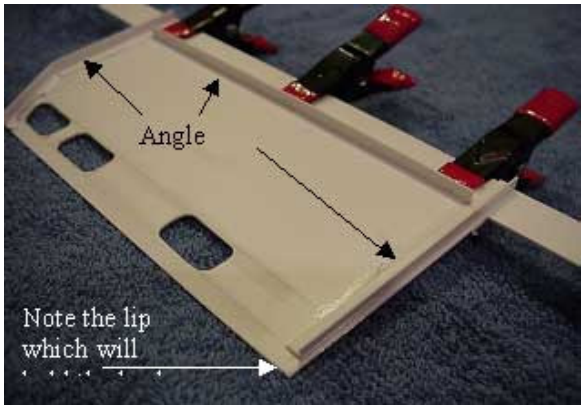
1) Using sheet metal nibbler.
   Drill hole in center of window, using nibble, nibble away using line as a guide.
2) Using Xacto knife
   Using diagram at right scribe all 4 edges of window, then scribe an "X" from corner to corner for all 4 corners. You'll need to scribe the "X" several times. Using your fingers flex the center of the "X" back and forth which will cause the scribe to crack. You'll need to make the break go from corner to corner at which point you can then flex the remaining triangular pieces causing the break to happen along the window edges.



3) Using Dremel tool: Great for windows with rounded corners. To do this layout your window or door openings. Place a metal straight edge along one side of your window opening and if possible clamp this straight edge to the styrene to keep it from moving. With a square edged metal cutter blade and with the Dremel tool set at its slowest speed carve out a hole in the middle of your window opening. The using the straight edge as a guide cut the styrene one edge at a time using the metal edges to cut straight edges.

5) Assembling

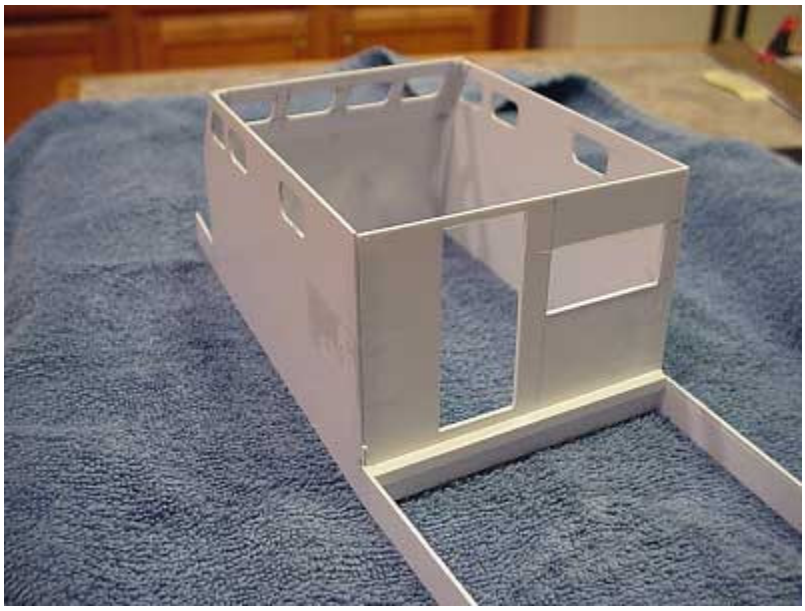
Once you have your 4 main pieces cut out you need to glue 90* 3/16 angled styrene to these pieces wherever you're going to attach another styrene piece to it... This will provide a good brace for the corners and will provide more surface in which the glue will bond for strength. The steps to do this are first cut angled pieces a little bit shorter than the length of the edge. Measure in from the outer edge the thickness of the piece you're attaching. This lip guarantees that your corners will be flush after you glue them.



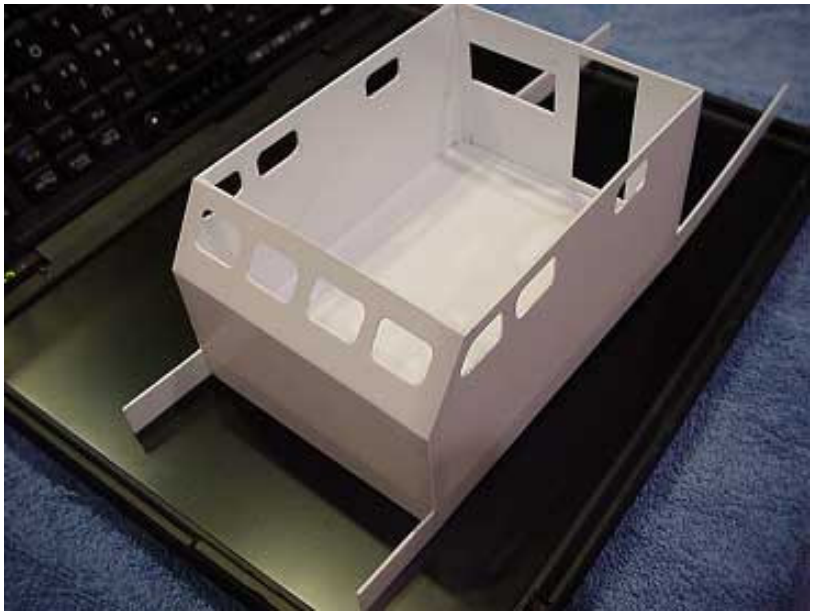
Here are some pictures of how I applied the angle pieces to the pilot house sides.

Notice how I'm using tape to temporarily hold everything together. This is a little trick to make sure everything fits properly and holds everything in place while you glue it all up.

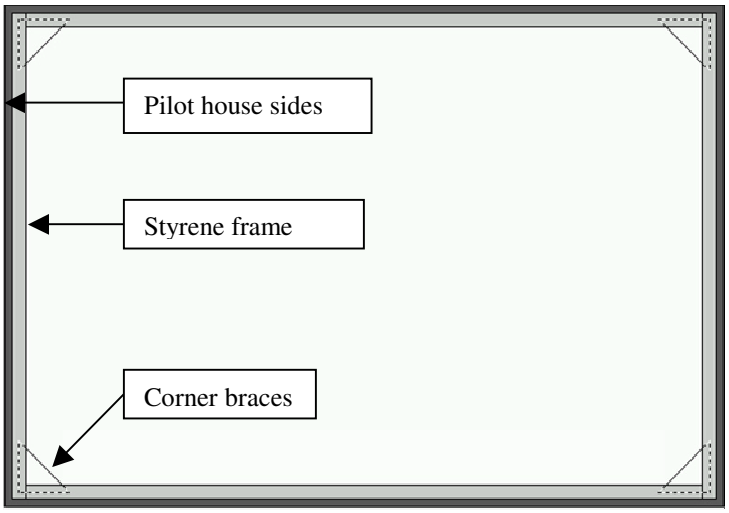
Trial fit your sides together using tape (Be sure and fold at least one edge of the tape over so you can easily remove it. Once your happy with the alignment go ahead and glue the assembly. Use the glue sparingly. When you apply it using the brush provided the glue would get sucked into a fairly lengthy piece. Too much glue will soften the plastic and maybe even warp it permanently.



If you notice the picture on the right, I used angle pieces at each corner and I ran the angle piece the entire length. This not only provided me a guide to keep the edges aligned but also provided a very strong support bracket to glue to.
In addition to this you'll also notice that I glued on a floor piece. This also has angle support brackets on the bottom. This gave me the lateral strength that I needed to prevent the pilothouse from moving sideways.

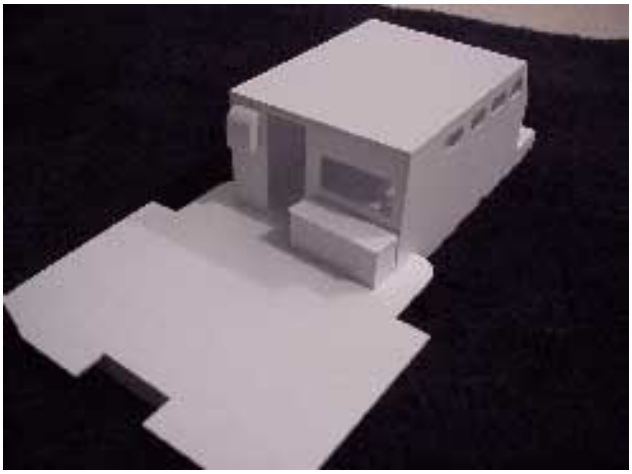


The next step in this pilot house construction was the roof. I wanted this piece to be removable so I decided to frame it so there would be a lip that would slide down on top of the pilot house sides and would be tight enough so it would not be loose. To accomplish this I clamped square to the pilot house on all four side take care to notch the corners where I had angle stock used to align to the pilot house side. Once all four sides were clamped and fitting I cut corner braces and placed these under the angle stock and then glued the frame all up making sure that I was not gluing the frame to the pilot house sides. Once the frame & corner braces were glued I unclamped the frame and carefully removed the frame. Using the frame as a guide I then placed the frame over a sheet of styrene 0.40 and marked ~1/8" outside the frame edge and then cut my roof out. This was then carefully positioned back on the frame aligning all four corners and then glued.



You need to be careful when gluing the frame up as you want to make sure your frame is glued and strengthened by the corner braces before you remove it from the pilot house as if there is any misalignment the roof will not sit properly on the pilot house. If you do not intend to have your roof removable then you can just glue 90* styrene angle stock all the way around the pilot house edge and just glue your roof on.

Here are some pictures of what the roof looks like on the pilot house. Nice snug fit and yet removable. You can also see that I have cut out the rear deck platform along with a storage locker and have also made the vent hood on the rear pilot house wall just next to the door.



To get the top part of the hood vent to curve I used .020 styrene and build up the sides first then heated the styrene with a hair blow dryer and bent the styrene around a small glass bottle. When the styrene cooled the bend was permanent and then all I did was glue it and sand the lip flush with the sides.

Here's what it will eventually end up looking like. It's a Sub-chaser