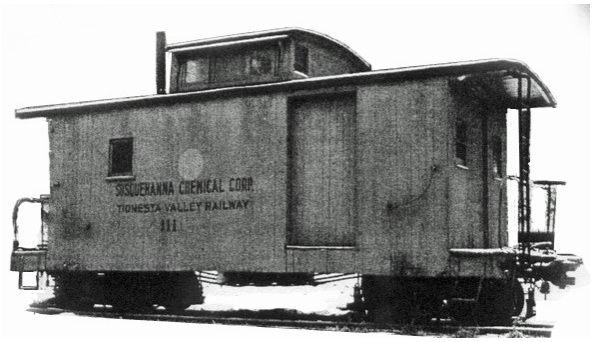
The following information and photographs are what I did to build the kit. Your methods and needs may differ from this which is fine. There is no right or wrong way if you are used to scratch building. The idea is to make a final model that fits your railroad.
You can print these instructions by selecting them and copy and past into MS Word or similar program and print from there.
I do recommend having trucks and couplers on hand so they can be used to determine your final dimensions. Most kits include grab & step irons, truss rod wire & turn buckles and other various items for each particular car. You can add additional items as you desire. Most detail parts are available from Grandt Line, Tichy and others.
You can also modify the wood parts to get a shorter or narrower car, or you may want to add a name board or other detail. The point is, make it your own. Now for my tips.

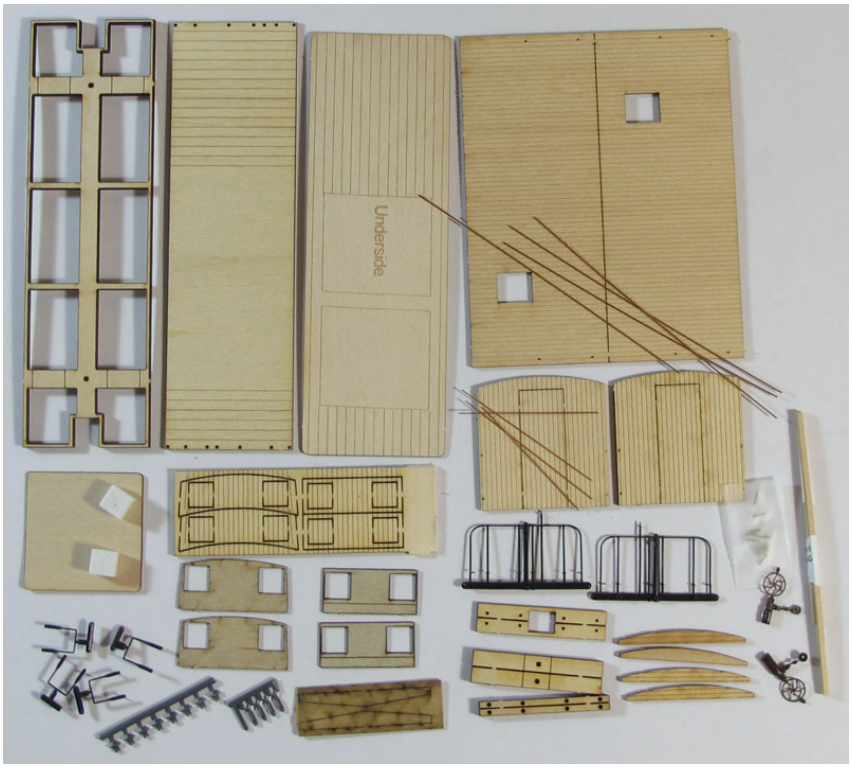
Caboose Assembly

These photos are from my assembly of the 22'6" long x 7' wide caboose. This car is based on the Pennsylvania prototype Tionesta Valley Railway caboose #111 which is currently being restored in Connecticut by CAMA. Photo of the original is below for your reference.
I have tried something new with this kit to make it easier for the modeler to alter and modify the caboose to fit their needs or desires. The cupola cutout in the roof is only scribed on the underside, in two locations, center and aft. You cutout the location that you want for your caboose. The same is true for the side windows and door(s) and the end windows. The original only had one door on the side, the other side had two windows. Or if you set the cupola to the rear, you can cut out the two windows next to each other at the forward location. Or you can cut out what ever combination you want.
You can create a MOW car by shortening the body and make a larger platform on one end which is why I have the flooring scribed longer at one end.

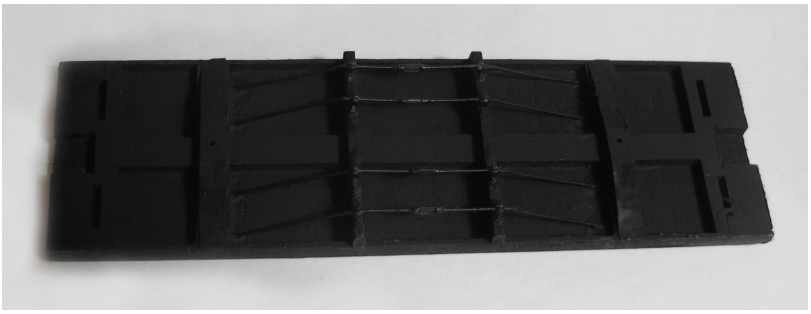
Make sure you have all the parts shown in the photo. Any missing parts will be sent free of cost. Also, have your trucks and couplers on hand so you can complete your assembly to work with them. Some of your parts and modifications will depend on these and on you making them match the other cars on your railroad. The procedures given here is how I built the model. You may find better methods and of course are free to use what works for you. Just try not to get ahead of yourself and get blocked into a corner.



"A End"

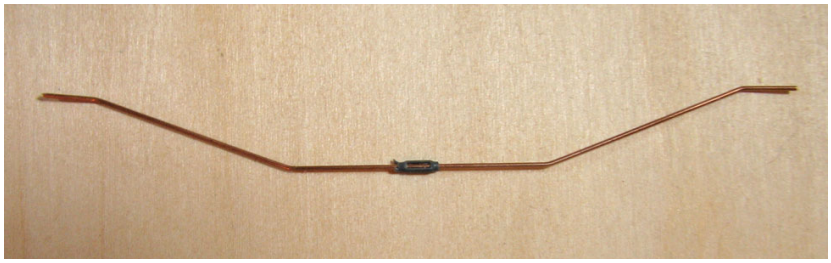


Important Notes: I have found that some frames for the kits may have one of the cross members cut in the wrong location. Do NOT use the cross members to locate the Needle Beams! The Needle Beams should be 4'6" from each bolster edge.
ALSO: The holes for the end railing in the floor, on the "A" end are wrong. The "B" end holes are correct. Use your railings to properly locate the holes for the A end and re-drill them. Or make a template from the "B" end holes. I am having new floors cut and if you would like one to replace yours, let me know.
The first step is to glue the Needle Beams and Bolsters to the bottom of the frame. The scribed lines, above the bolsters, are the top of the frame!
The Needle beams should be located about 1/3rd of the way between the bolsters at 4'6". Make sure these are glued on square to the frame. The needle beams must be drilled to accept the Queen Posts. A #58 (.042) drill should work OK.
Next, cut four shallow grooves into the top of the frame, over the bolsters to line up with the queen posts. The locations are laser scribed on the top of the frame. I use my small hand saw or an Xacto #11 saw blade to cut these. This is to accept the truss rod ends and only need to be .025-.030 deep.
Now you can glue the queenposts into the holes with CA (super glue) and make sure they are properly lined up to accept the truss rods.

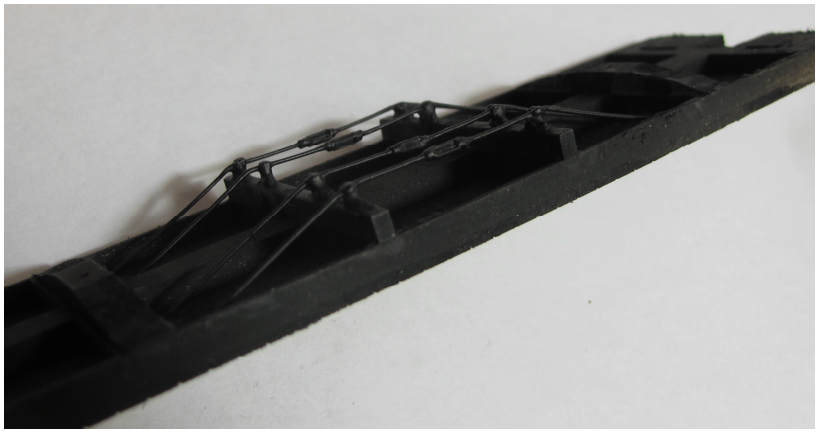


The kit includes both round bolsters or flat. If you choose to use the flat bolster, you need to taper the ends as shown. I simply carve them with my knife and sand as needed. I leave a small flat at the outside ends (not a chisel edge). Then, glue the Bolsters in place.

Now, take the truss rods (4" lengths) and lay them over the queen posts with approximately equal distance on either side. Mark the wire with a marker or sharpie on the outside edge of each queenpost. This is where they will be bent. Now hold the wire in a flat pliers and put a slight bend in each side. Do NOT over bend the wire, less is better. And make sure the bends on each truss wire are in line with the other.



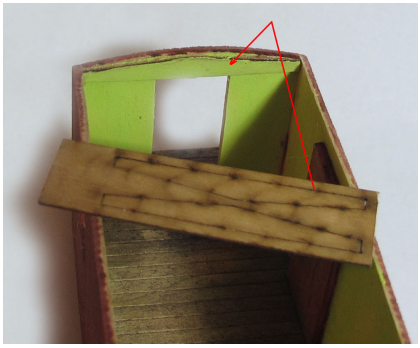
Now lay the truss wire over the queenposts and behind the top bolster and mark each one at the bolster. Now make a slight bend in the opposite direction of the other bend so the ends will lay into the saw grooves you cut earlier. Try fitting the truss rods in place and modify any bends as needed. Slip the turnbuckles over the end of the truss wire and slide to the middle. Secure with a small dab of CA (super glue) at the ends of the turnbuckle. Try not to get any glue in the center of the turnbuckle.



Lay the Truss Rods into the queen posts with the ends over the top of each bolster (with the frame upside down). Use CA to glue the truss rods into the queenposts and let it dry. Support the frame on a stand or block in the center while they dry.
Once dry, turn the frame over and bend the ends down into the saw cut slots and apply CA to each one. You may have to hold the end down while the glue sets or use an accelerator like I did.
And alternative to using the truss rod material is to use either a .025 fishing line or jewelry beading wire and feed it through holes you drill into the end beam and then glued. This kit contains end beams and NBWs which will be installed later.
Now, glue the floor to the frame, making sure the sides and ends are flush to the frame.

Depending on your assembly preferences, you should consider painting the frame now. I use the cheap Wall Mart flat black (or gray) paint. It adheres well, doesn't have a lot of solids to build up and is a good base coat for acrylic paints or weathering.
The flooring should also be stained or painted. I use an A/I mix to give it a used gray color but you may choose something different. Do NOT use a heavy AI wash (most alcohol contains water), it will warp and expand the floor (don't ask how I know this).

Next step is to prepare and assemble the sides and ends. I have included two plywood angled trusses in the kit to add to the backside of the ends, over the doors, for reinforcement. Glue these on the back, keeping them below the curved top of the end. It doesn't matter if the plywood hangs down over the door as this will act as a stop when you put the finished doors in. After the glue dries, cut out the end door openings.

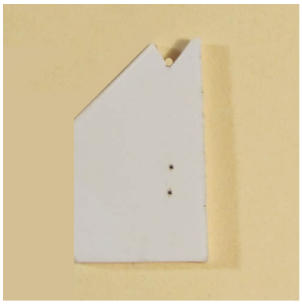
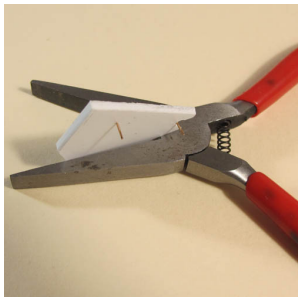
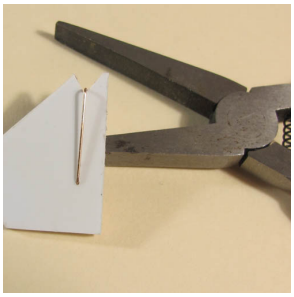


It is better to paint your pieces before adding any details so now might be a good time.

Or you could wait until the "box" assembly is finished, then paint. I'm trying one of the Hunterline stains on this kit. I painted mine before the box assembly and the sides did warp, even with weights on them. You can add reinforcement strips along the top edge if you want. After gluing to the frame along the bottom they seemed to straighten out OK. You can also paint the interior now which may help offset the exterior warping.

You need to decide what window and door arrangement you want before assembling the walls. I have included extra windows in the kit for most any option you choose. You can also shorten your sides if you want more of a maintenance car with a longer exterior deck on one end. If you do shorten them, you should cut out a piece from the center of the wall, this way you won't loose the holes for installing the grab irons.
And if you decide to set your cupola to the rear, you may want the two side windows together towards the front. The back of the sides and ends are scribed with these options, which you must cut out. The original had only one door, which is how I modeled mine. But you can add a door to the other side too, if you want. The ends can have no windows, small windows (like the cupola) or large windows like the side. Mine has the small windows, but just on one end. The other end has none. Make yours to fit your railroad.

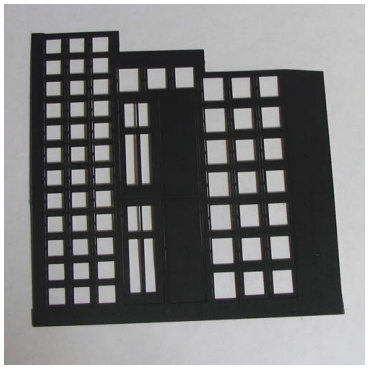
Also, before assembling the sides you need to make a jig to form your grabirons. Using a piece of scrap styrene or hard plastic, use the caboose side to mark and drill #77 (.018"/,46mm) holes for the .015 wire grabiron. Then, using the caboose end and matching up one of the holes already drilled, drill the shorter length hole. Now cut away a notch for the common hole used by both grabirons. (see photos)

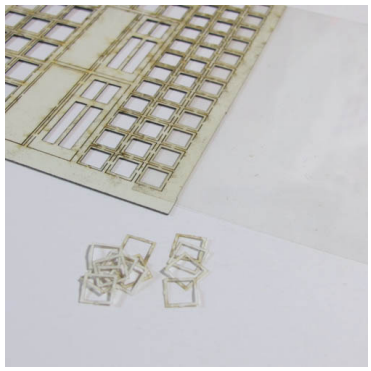




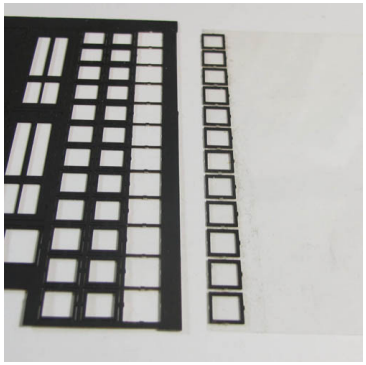
Now, cut lengths of wire for your grabirons. The long grabs will require 1" long wire (4) and the short grabs 7/8" wire. You must allow enough wire for 1/16" off the outside wall plus another 1/16" to go through the wall and a small bit extra to glue to inside the wall. I insert the long wire into the further hole and allow an additional 1/16" (plus a small amount for gluing). My styrene jig is 1/16" thick, the same as the sides so I used a scrap piece of 1/16" wood to use as a measurement for the inside length.
Then bend the wire over at 90º with you finger. Use a flat nose plier to get a good square bend. Now bend the other end of the wire into the notch you cut for the common hole. Again use the pliers to get a good square bend and to remove any twist in the grabiron. Do the same for the short grabirons using the shorter length hole. You will

need 4 of each length.
Although I put my grabirons in at a later step, you will find it easier to do it now. Insert the grab into the holes and then use a piece of scrap 1/16" as a spacer off the wall. Apply a drop of CA to the inside protrusion of the grab. Do all 8 in this manner. Any extra protrusion on the inside can be clipped to avoid interference at the corners when gluing the sides. (Just the top of the grabs may hit, the bottoms are OK)

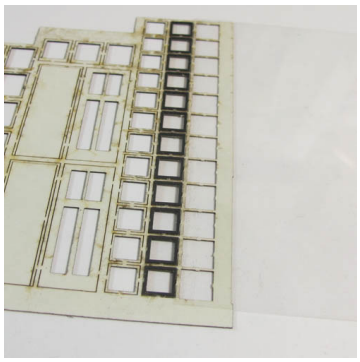
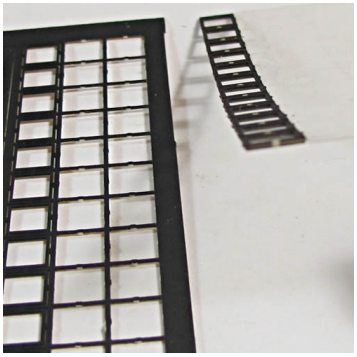
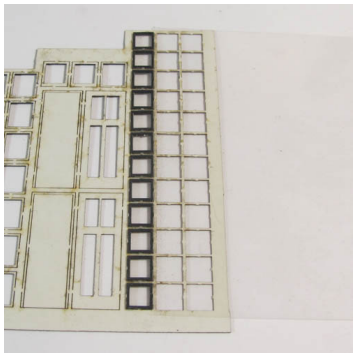
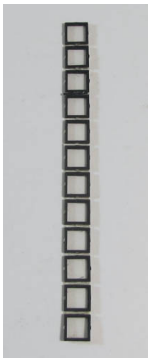
You should consider making the windows and doors next. The kit includes enough extra windows to make any combination I have explained. The windows are cut out of a self adhesive laser board and are meant to be used to make a "sandwich" of the frames and acetate glazing. The windows are cut so that you can do them as a "gang assembly". First, paint the top of the sheet with a primer and/or final color. An airbrush or rattle can is best for this as a paint brush may leave too heavy a build up. Make sure the inside of the cutouts of each window/door frame are also colored the same because the edges will be visible after assembly.







After dry, Turn the sheet over. I made the small cupola windows first (they are square and a bit easier to do). Lightly cut through the adhesive backing at the tabs for each window in the first row and remove the protective backing. Using the acetate provided, align the edge with the edge of the windows, as shown, and press down. Turn the sheet over and press down each window to make sure they are properly stuck down.
Cut through the tabs for each window (not through the acetate) and carefully remove the entire sheet with windows attached. Turn the main sheet over and again cut through the backing tabs and remove the backing. Then with the acetate assembly you made before. Align the acetate and windows to the next row, and press down. You now have a "sandwich" of acetate between the window frames.

Cut the tabs from each window in this row, again leaving the acetate sheet intact. The final step is the exterior window frame, which is slightly smaller than the windows. As before, cut the backing tabs and remove the protective cover from each frame. Position the window assembly over the row, align the windows and press down. Turn the assembly over, press down again on each window, then cut the tabs for each window and remove the assembly. Cut the acetate along the long side of the assembly, keeping the entire strip as an assembly until you are ready to install the windows in the sides.
Now do the same for the larger windows. The difference here is that these windows have a bottom edge that is wider than the other three sides. When assembling your "sandwich" you MUST make sure these are aligned in the same orientation. The third step for the larger windows for the outside frame doesn't need this orientation as the frame has equal sides. Now you should have all your windows done, except for one extra single large window that is above the doors if you need it.

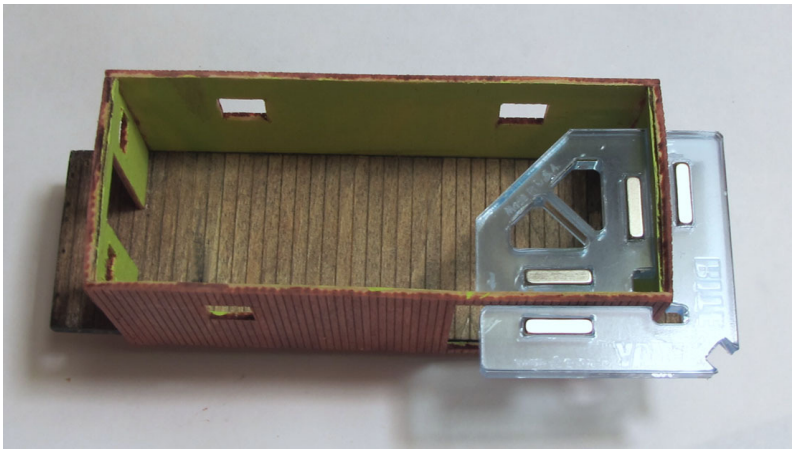
The doors are very easy to do. Cut the solid panel out of the frame in the sheet (do not cut out the thin frame, just the large panel). Cut the doors away from the carrier sheet. Remove the adhesive protective backing and place the solid panel on the back of the door, with the painted side against the adhesive. Center the panel on the door and if you are going to have windows in the door, place it only half way onto the mid cross bar (too share with the acetate). You can also choose to make one or both doors solid (without windows).
After the panel is in place, take the acetate sheet and put it over the window area at the top of the door. Turn the door over and cut the acetate and bottom of the solid panel along the outside edges of the door. On the main sheet, remove the protective back from the thin door frame (where the solid panel was) and position the door assembly over this (painted side down), frame side cutout at the door bottom, and press. Now cut out the entire assembly from the sheet.
A final step is I used some of the carrier sheet edges to make a "gluing stop" on the back of the door. I cut a piece a bit wider than the door opening (see photo) and remove the backing and pressed it onto the back of the door, below the window area. This allows you to put the door in from the inside of the end wall and hold it in place, although I did add extra glue at the "stop" edges after installation.

Put the two end doors into the ends. Then put the windows in the ends and sides at whichever locations you have cut out. Cut the windows from the acetate strip assembly you made earlier (one at a time). Make sure you put the windows in with the large bottom towards the bottom of the wall and the thinner frame facing out. The windows should be flush with the wall outside. I usually place a piece of scrap over the opening and turn the wall over and then apply small dabs of glue at each of the four inside corners of the window. (see the cupola assembly for more photos)

Next is the side door(s). I have included 1/16" x 1/32" stripwood in the kit to frame out the side door(s) Use 1/16" square for the bottom threshold of the side door, and glue it into the opening. Then cut a piece of the 1/32" for the top of the opening and glue in place, flush with the exterior. Now cut two for the sides and glue them into the opening. Now, using the door you cut out for the side opening(s), glue that to the inside of the walls, either closed or in an open position.

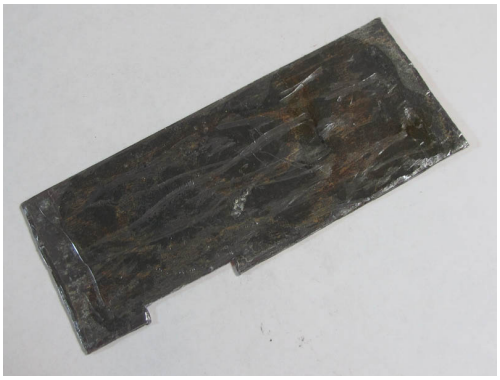
ALTERNATE ASSEMBLY: If you purchased the outside braced kit with plain sides, you can install the bracing now. Cut the 12 vertical braces to length for the sides and then the 10 diagonals to fit between them. Note: The vertical braces MUST be cut from the shorter bundle and the diagonals from the longer bundle of stripwood.
If you have decided to have a side door(s) then adjust your braces accordingly. You can paint the braces now, before assembly. Then, use glue sparingly, applied to the back of the braces and apply them as shown. The braces are a scale 2" x 3" and are meant to have the wide 3" face glued to the sides. You will find it easier to mark the locations with a pencil before gluing. Avoid getting glue anywhere else on the sides except under the braces. Notice that you will have to drill the end braces from the backside, after the glue dries, for the grab irons and install the grabirons as above.

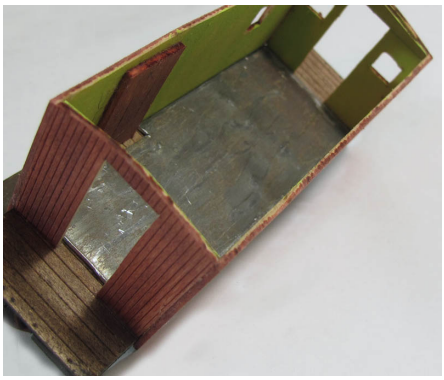
Now you can assemble the walls to the frame.



Glue one side to the edge of the frame, locating it central to the floor length (equal number of boards at each end). Make sure the bottom edge of the side is flush to the bottom of the frame. After that is set up, glue the ends in place with a fine line of glue at the corner joint. Those right angle magnetic clamps from Rite Way are expensive but a great tool.
After both ends are dry, I gently moved them a bit to allow a bead of glue underneath them on the floor interior, to hold them in place. Again, using those square clamps and with a rubber band moderately stretched over the end to hold in place while the glue dries. The Pink Flamingo glue I use sets up pretty fast and has a high tack property.
Now you can glue the other side on with a light bead of glue on the frame edge and ends. And I used the square clamps to hold it all in place.

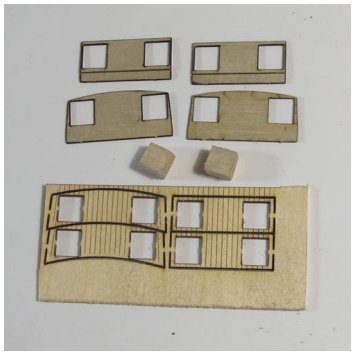
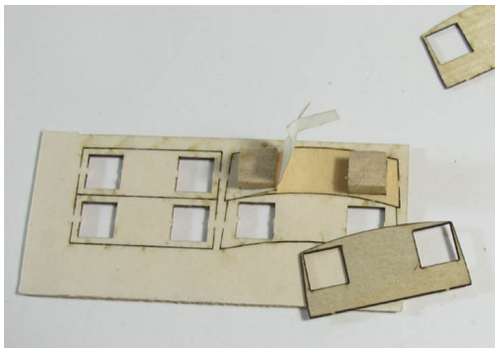
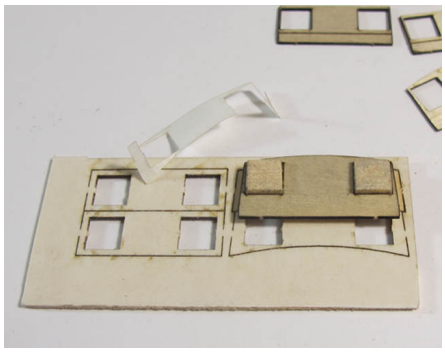
I use lead sheet for weight, cut to fit on the inside of the car. Use the "box" as a template and cut a piece to fit inside. Glue it to the floor to hold in place. You may have other ideas for weight in your car. You can even add weight underneath between the frame cutouts.



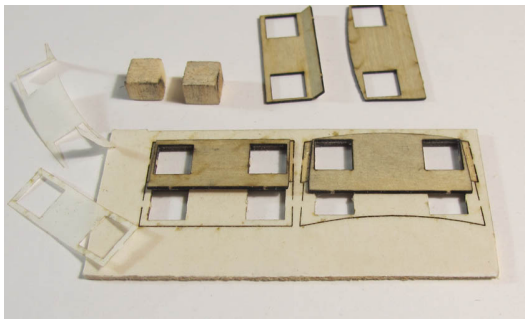
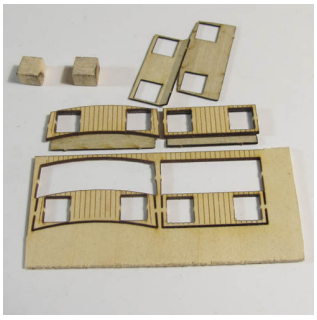
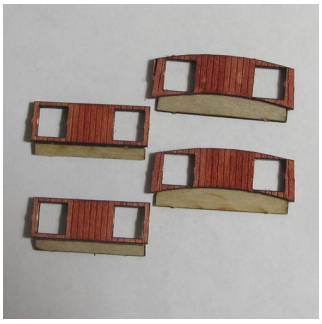


Now to build the cupola. The curved sections of the cupola are quite fragile at the narrow points. You can apply CA glue to the top & bottom edges to strengthen them.
VERY FRAGILE STEP: So very carefully cut out the window openings in the scribed panels,

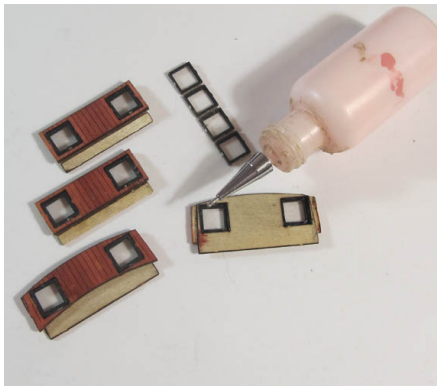
leaving the parts still attached to the carrier sheet. Use a very thin razor or knife blade. A #11 blade is too thick and will cause the cupola ends to split.
Make sure your cupola sides are painted first. Then insert the white square alignment blocks into the window openings. Now peel off the protective backing from that one part and take a matching thin plywood panel and slide it over the alignment blocks, pressing it down firmly onto the panel.

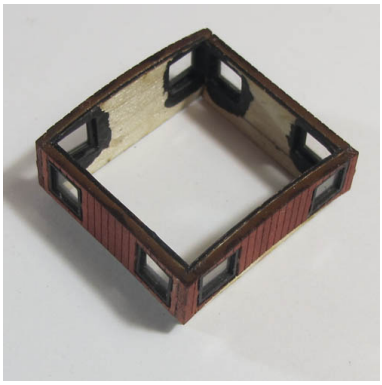




Turn the sheet over and very carefully cut the tabs holding the part in the sheet and remove the assembly. You can apply a light bead of CA glue to the top and bottom edges of the assembly to strengthen the weak points at the windows. Do the same for the cupola side panels., except make sure the scribed mark along the plywood piece is facing towards the outside of the wall. This will need to be cut half way through with your knife so it can be bent inwards when installing the cupola into the main roof (see photo below). After bending, a bead of glue can be applied to the cut to reinforce the bent joint.

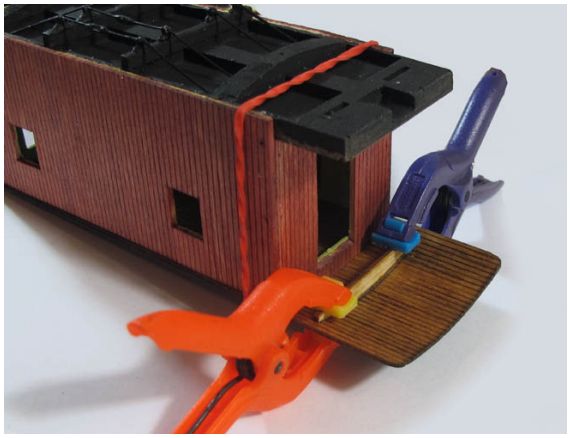
Now take the strip of small windows and cut a window from the assembly (one or two at a time). Place the window into the opening from the inside with the thin window frame facing out and flush with the outside wall surface. A small drop of glue at each inside corner of the window will hold it in place. I noticed a thin gap around the windows after they were installed in the wall and if you are going to light the interior of your caboose this may "leak' some light. So I applied a bead of black paint around the inside edges to block any light. This may not be of a concern to your kit.

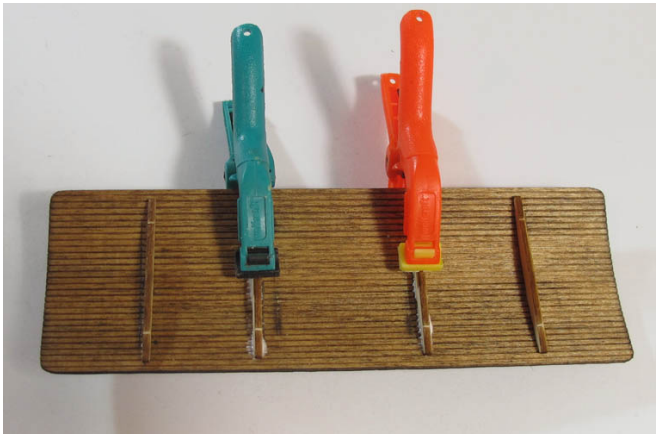




Finally, glue the four sides together at the corners, keeping the assembly square and joints tight. The side panels of the cupola go inside the front and back curved walls. The side walls are also at a slight angle (less than vertical) to match the prototype. Set aside to dry.

Now to work on the roof. The underside is marked at two different locations for the cupola. You can choose one which fits your design idea and cut partially through along the scribed lines. You will finish cutting it after the trusses are installed. Either paint or stain the underside and top sides. Make a pencil line 7/8" in from each end. This will be used to align the roof trusses.
Now, put the roof on top of the car and with rubber bands over it to hold it in place and form the curve, using the end wall assembly as a jig. Extend the roof all the way overhanging one end (like the photo) so you can see the line you drew earlier. Apply a light bead of glue inside of the line and/or to the top of the curved truss and place the truss on the roof, using the scribed board lines to get it the same distance from each edge of the roof. This is very important because these trusses are the exact width of the inside of the caboose side walls and will hold the side walls out and straight, if they are bowed. You can use small clamps to hold the ends tight after positioning. After that truss is dry, slide the roof so it overhangs the opposite ends and attach another truss to the underside in the same manner.





Now, with the curve formed by those two trusses, remove the roof and attach another

two trusses to the roof center, either side of the cupola, but not too close. If you are locating your cupola at the end of the roof, you will have to locate the trusses slightly different to fit your needs. When dry, you can now finish the cut out for the cupola. Test fit the cupola in the opening and file/sand if you need to make any adjustments. This is where you will see why the cupola side walls needed that slight bend in them. I installed a canvas roof on my roof so the cupola will be put on after that is finished and painted. If you are just going to paint your roof, then do that now and you can install the cupola. Then glue the cupola roof onto it.
I used a Deco Art 'Sandstone' paint on my roof. After painting, I glued the cupola roof to the cupola sides (make sure the wood grain runs front to back) and used small rubber bands to hold the curve until dry. Do not get them too tight or else you will warp the entire assembly.

After the cupola was dry, I installed it into the main roof by inserting it into the opening (which may require a small bit of sanding of the opening) and then glued it from the underside with small beads of glue. Do not glue the roof to your car yet.

Next are the end railings. Cut the railings from their sprues. Do NOT trim off the little tab/flashing on top of the brake shaft. This is meant to go in the hole of the brake wheel (Don't ask me how I know this). Now insert the railings into the holes in the deck. You may have to ream out the holes slightly to fit the railing. Insert the railing leaving it slightly above the deck and apply CA to each shaft and immediately push the railing down and tight to the deck. Do not let the CA set up before doing this. Do each rail section one at a time. An alternate to this is to insert the rail all the way into the hole and apply small dabs of CA to the top at the deck surface to hold them.
Glue the brake wheel to the end of the long shaft in the railing with CA. You may have to ream out the brake wheel hole very carefully to get it to fit the shaft or trim the shaft diameter slightly.

Now glue the 4 NBWs into the two end beams. Trim them flush on the back side and glue the end beam to the end of the car. An alternate method is to glue the end beam to the car and then drill out the frame to accept the NBWs. Next, glue the stirrups to the side of each platform. I used a #70 drill and made a drill template (to match the stirrup pins) to drill the holes in the frame, just under the floor.

At the last minute, when I was ordering detail parts from Grandt Line, I found they had marker lamps available. I have included two of these in the kit for you to attach to the rear of your caboose. In all the photos I checked, they only show two lamps and the caboose was always set up in the train with the lamps to the rear.
You're almost done. Glue the roof assembly to the top of your caboose, centering it so the overhang on each end is the same. I didn't glue mine yet because I plan to add lighting to my caboose later on. If you didn't install the lead pieces earlier, do so now and add your couplers and trucks.

Touch up any paint and weather to suit your tastes. Add your RR logo and lettering and run this at the end of your train. Of if you made a MOW car out of it, put it after the locomotive.

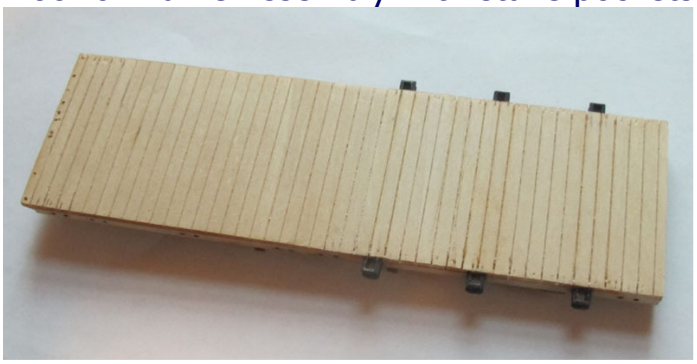
Any problems or missing parts, drop me a line. I am also interested in your feedback on this kit. Do you like the options of cutting out your door and window positions or should the kit be completely cutout on the laser? And what about the outside braced option?

MOW kitbash

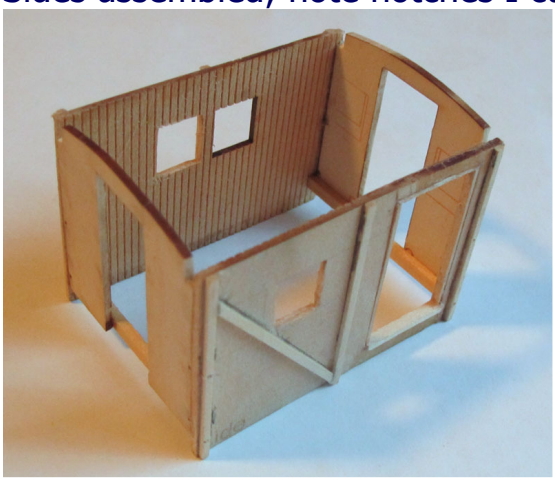
Following are photos I took of my kitbash of the outside braced caboose into a MOW car. You can cut your sides at any location that will make you car look right for your RR. You can leave the full roof or cut it back. Cupola or not, side door, windows, all what you want.

If you want to try this, drop me a note when you order the caboose and I'll include extra parts with the kit at no cost.

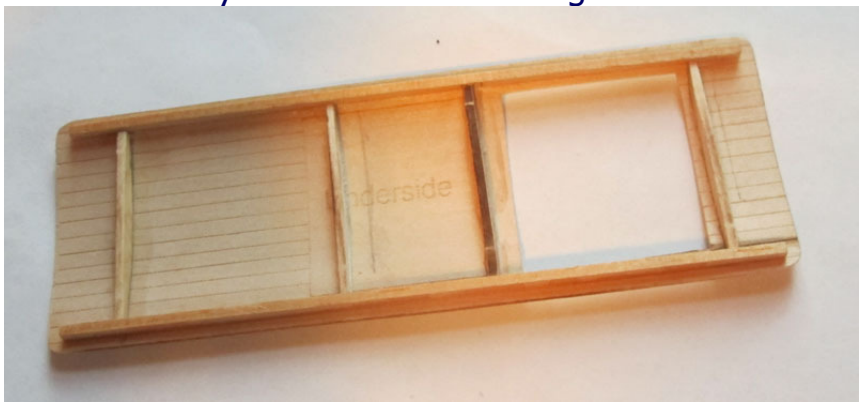
Floor & Frame Assembly with stake pockets added



Sides assembled; note notches I cut in the end tops for a long roof beam on each side.



Roof assembly with trusses and long roof side beams.



Final assembly with side boards

Add door(s) and windows BEFORE you get to this step. Don’t forget the stirrup steps, trucks and couplers. Stain or paint as you like it.