

Scratchbuilding a PRR Class F24 Flat Car

By David J. Vinci



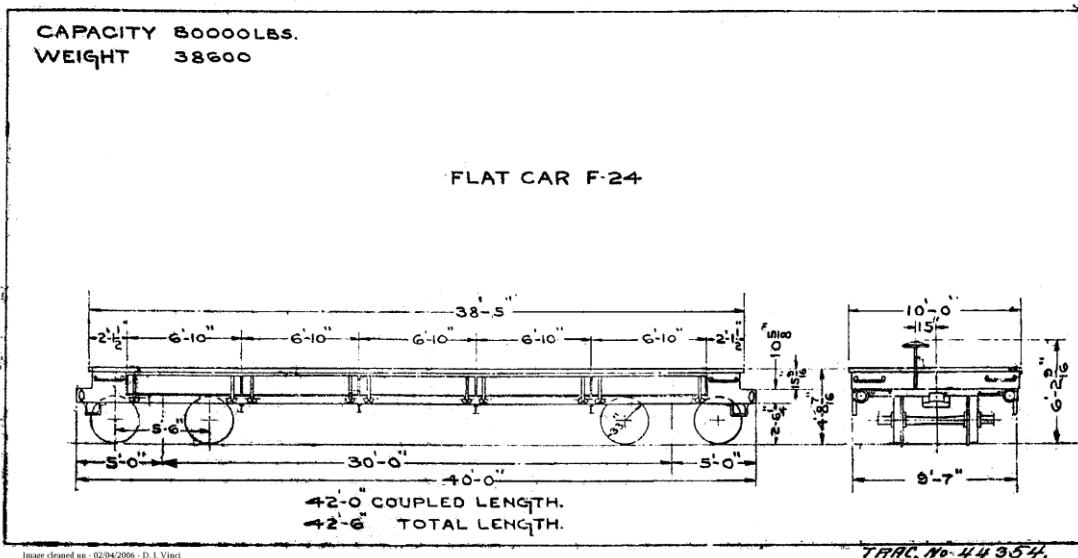
<Figure 1>

The PRR Class F24 Flat car is really a MOW car and not a revenue piece of rolling stock. These were specifically designed in 1913 to accompany lines East wreck cranes. In some places these cars are referred to as Tool and Block cars. Evidently, there were only 5 of these cars built which is an incredibly small class as Pennsy equipment goes. It is a really unique car, though, and therefore I find it appealing. Then, after seeing the photos on page 110 of the [Pennsylvania Railroad Flat Cars](#) book recently published by the PRRT&HS, I just had to build one of these to go with my Wreck crane. So, I started on a quest for information to scratchbuild one for my HO layout.



<Figure 2>

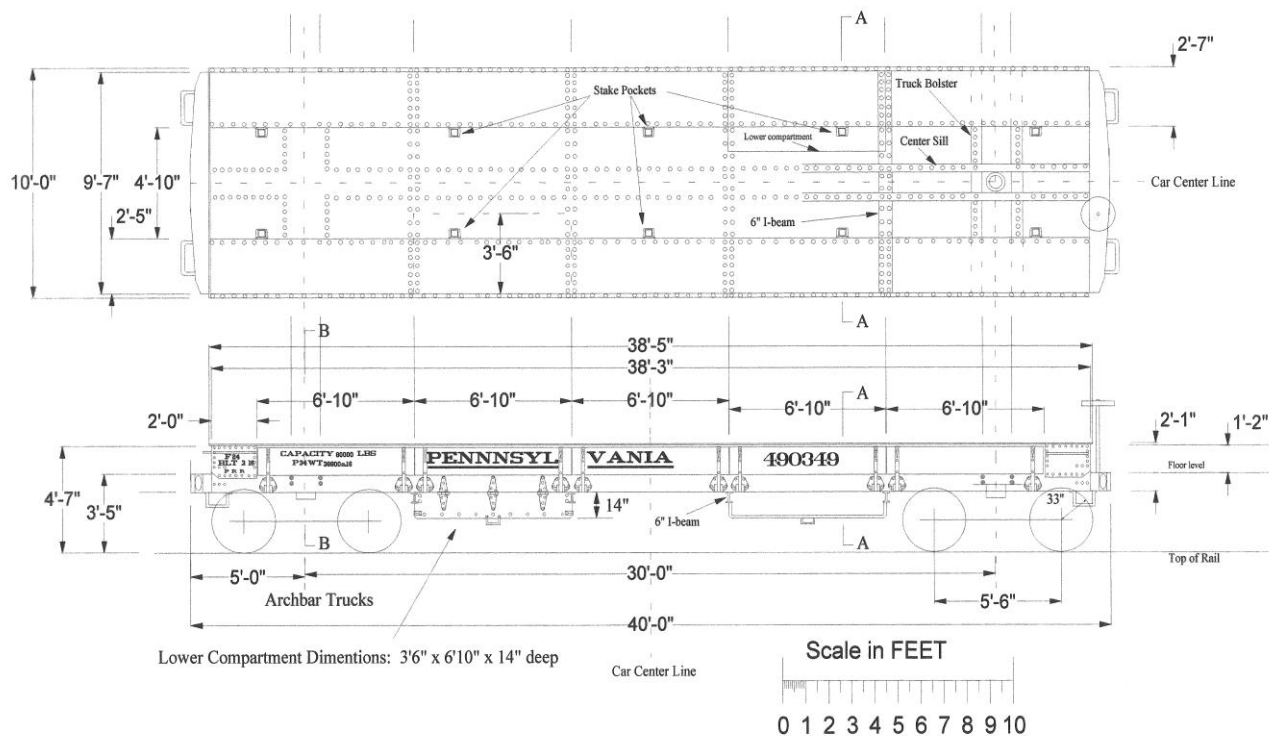
The photo above and the drawing below that are from Robert Schoenberg's Website: <http://pr.railfan.net/diagrams/PRRdiagrams.html?diag=F24.gif&sel=flat&sz=sm&fr=>



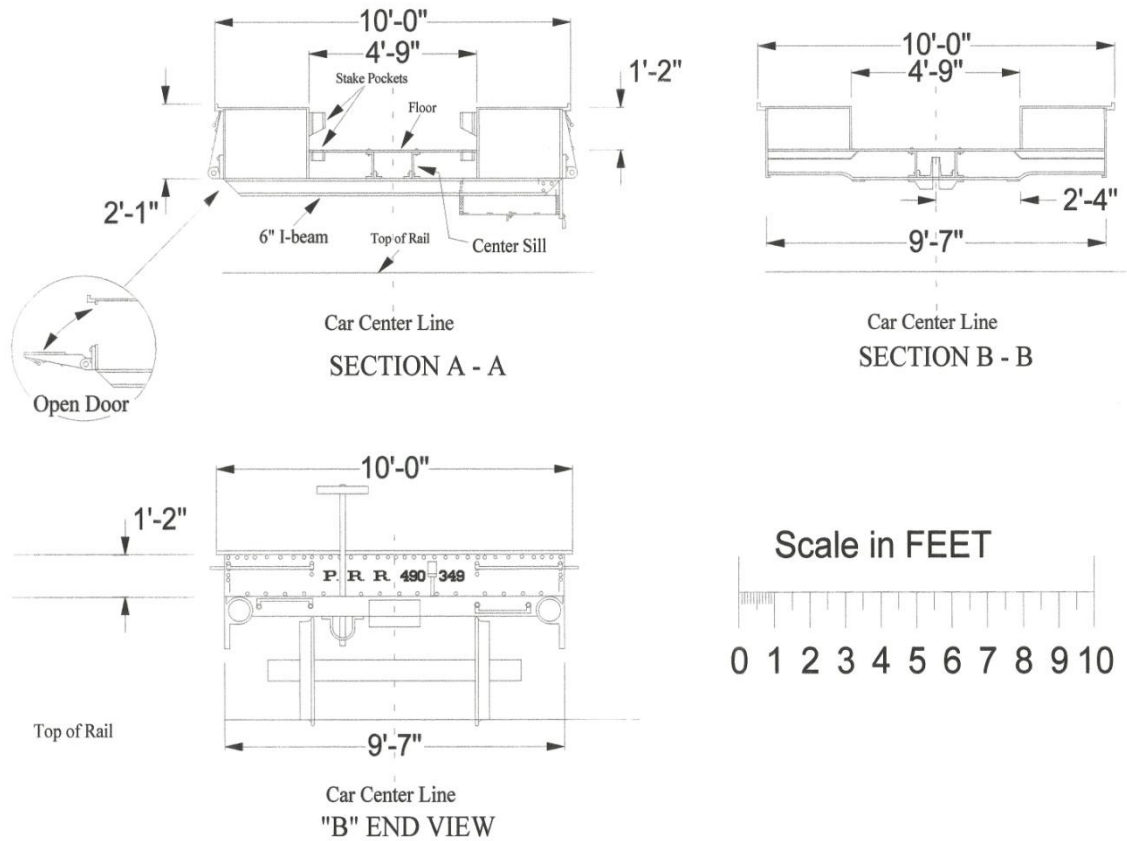
<Figure 3>

This was the information I started with but it doesn't tell the whole story.

I ordered drawing C-44785 from PRRT&HS Microfilm and as usual, Richard Price got them right out to me (Thanks again, Richard). This drawing spread over 4 large sheets has all the details I needed to make up drawings of my own to build the model. Which is what I did next, and here they are:



<Figure 4>



<Figure 5>

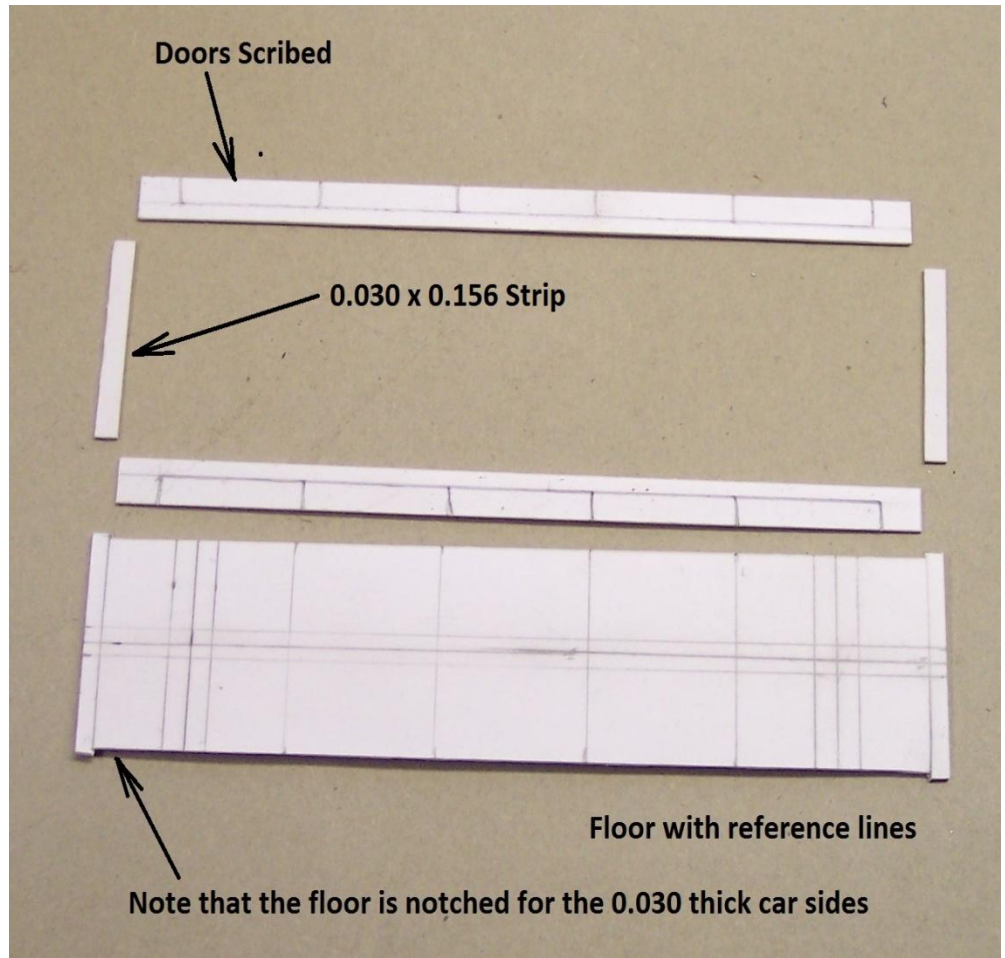
As you can see from figures 4 and 5 above, this is a real interesting car with a lot of detail, more in fact that I thought it was going to have. This car also has a bunch of rivets, so that was going to make things more interesting, for me at least. More about that later.

Notice that the car has a sort of well in the center of the car that is wide enough (4' 9") to support trucks for a wrecked car that has had its own damaged. There are also stake pockets inside the well to allow blocking to be installed to keep equipment in place.

The sides of the car have a series of 5 compartments, each 6' 10" long by 2' 6" deep and the two end compartments (see Section B-B) are shallower than the center three (see Section A-A) to allow clearance for the trucks. You can see this in the cross section drawings of the car in Figure 5 above. Section A-A also shows how the compartments open. These compartments turned out to be a good place to hide some car weights. Also there are 2 additional compartments that hang below the car that have doors that open upwards.

Now for construction:

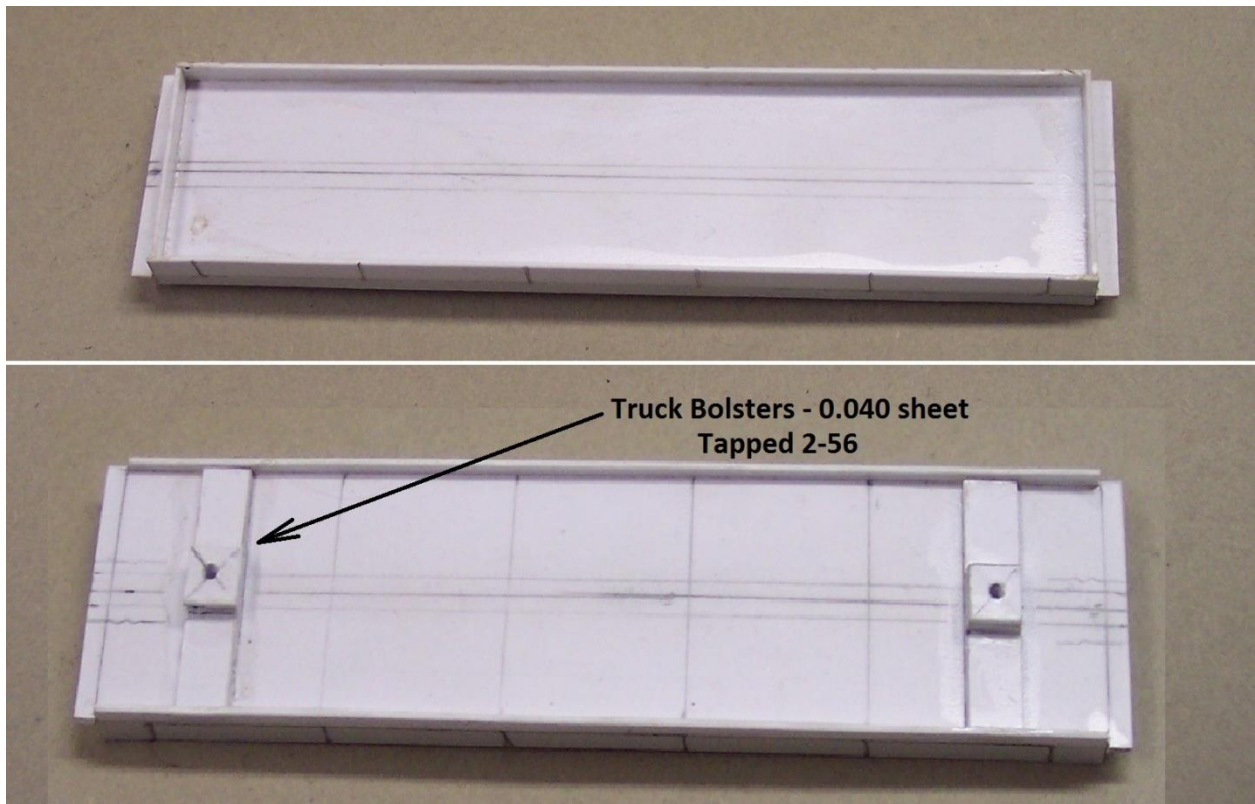
Since this is a steel car, I built it from styrene although you could build it in brass I suppose. In any case, I like working with plastic as it is pretty easy to work with and it's fairly inexpensive which is a nice bonus. I started by cutting out the floor from 0.040" thick plastic and the basic sides from 0.030" plastic as shown in figure 6 at right. I made a copy of the drawing at full size for HO scale so I could transfer the reference marks directly from the drawing to the plastic parts. I mark the car centerline, the location of the truck bolsters, etc. in pencil so I can erase any that end up being placed in error. In this case I marked the location of the compartment doors on the



<Figure 6>

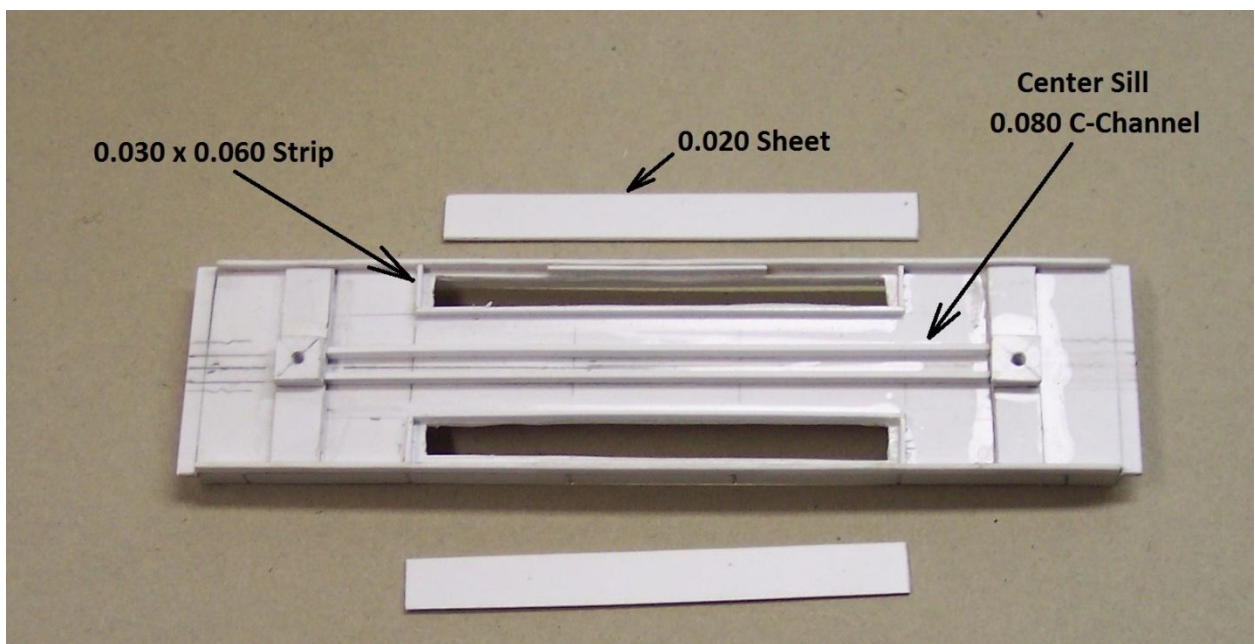
car sides and then scribed them into the surface with a scribing tool I got from Micro Mark. It works very well as it removes the plastic producing a trough in the surface unlike using a No. 11 knife blade for scribing, that leaves a furrow with raised material on each side like in a farmers field. The tool looks like a dentist's probe.

Assemble the sides and ends upside down on a flat surface and be sure to keep everything square. Once all 4 pieces are joined, turn the assembly over and set it on the floor making sure that you have the end platforms of equal size and that the sides extend below the floor. Use a scrap of 0.030 x 0.156 strip to make sure that the spacing along the sides is the same as the end height. The side spacing on the bottom side should be 0.080". You could draw a reference line on the inside of the car sides to help align the floor and sides, too. Maybe it would be good to do both the reference line and the strips to make sure the floor is level and the body is square. I also use a small metal square to check the alignment as well.



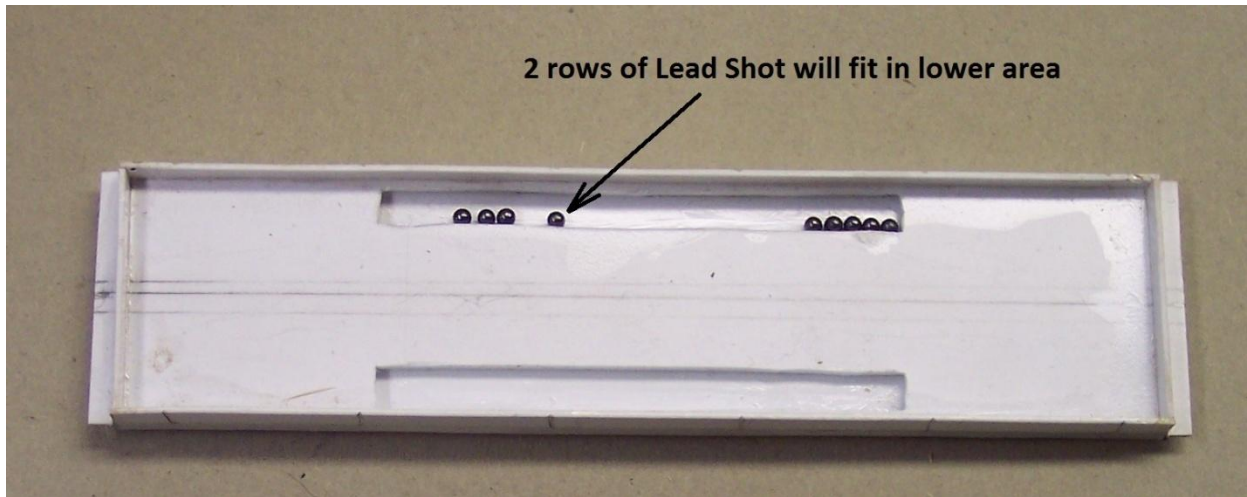
<Figure 7>

In Figure 7, above, are two views of the assembly, one of the top and one from the bottom. At this point I made the truck bolsters of a lamination of 0.040 plastic. I cut 2 square pieces and glued them on top of a full width strip of 0.040 strip. Once the 3 pieces are dry, drill and tap a hole for 2-56 truck screws. Then you can glue the completed truck bolster in place. Using this method will allow the truck screws to bottom out against the floor.



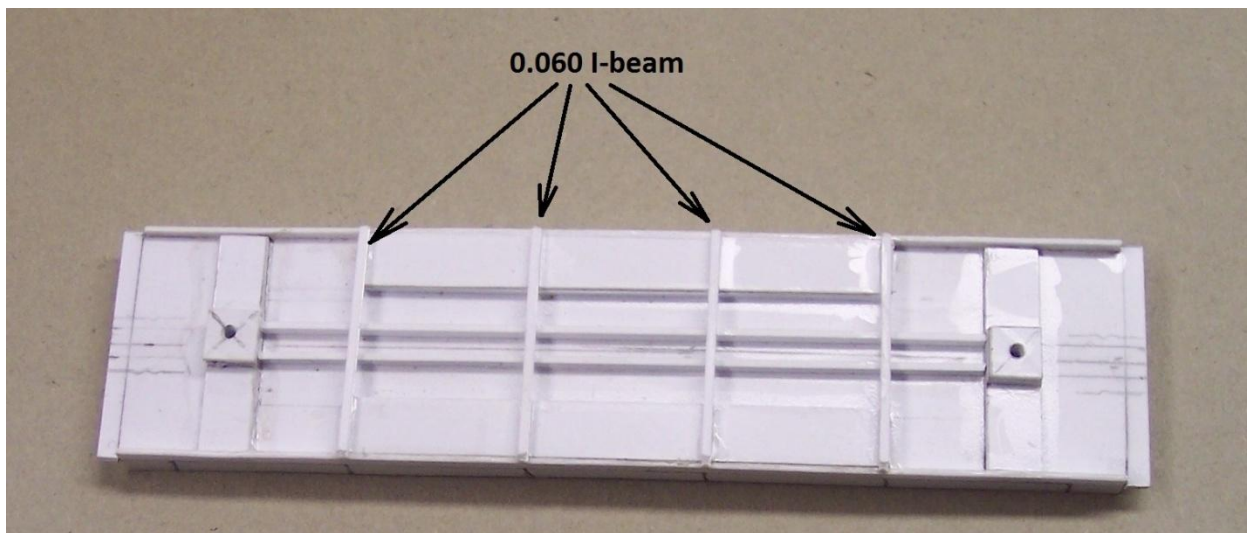
<Figure 8>

I used 0.080 C-channel for the 2 center sills as shown above. The next step is to build the bottom of the 3 center compartments which are deeper than the ones over the trucks. As shown in Figure 8, I made a box of 0.030 x 0.060 strip and covered it with a sheet of 0.020 plastic. After I built the perimeter of the compartment, I realized that the bottom clearance on the compartments wasn't deep enough for the lead shot I was going to use. The solution was to cut away the floor which gave me a depth of $0.060 + 0.040$ which was just the diameter of the shot I have. I calculated that if I filled the tool compartments with lead shot, that would solve the "where do we hide the weights?" question. Just to be on the safe side, I wanted to fill the bottom part of the center compartments too. You could avoid the rather tedious task of cutting a hole in the floor by stuffing the compartments with lead ribbon. Well, I used what I had and so that's why I cut the holes.



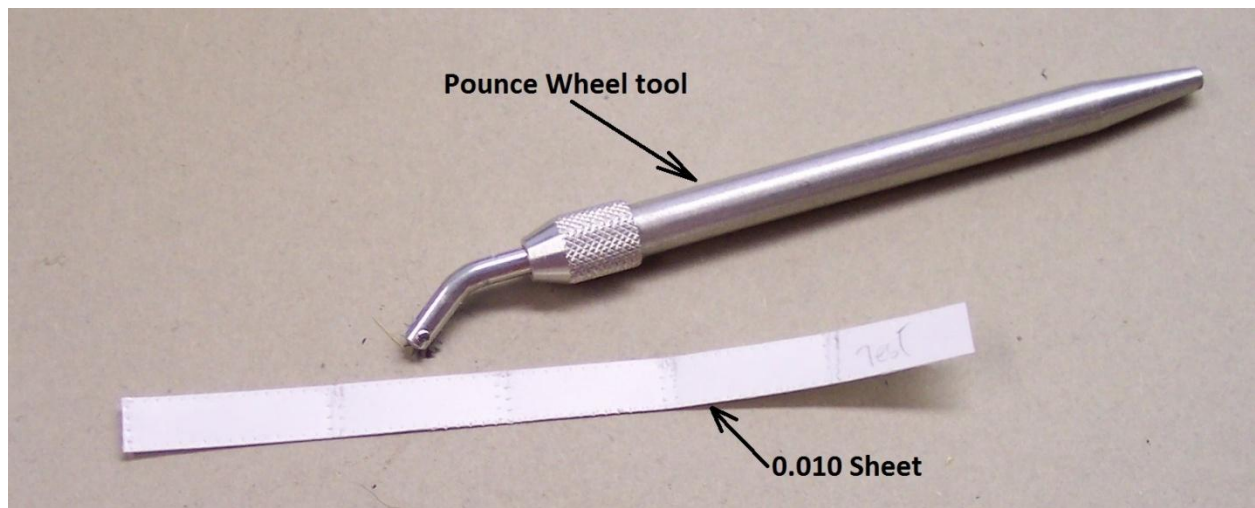
<Figure 9>

As you can see in figure 9, the pockets will hold two rows of lead shot.



<Figure 10>

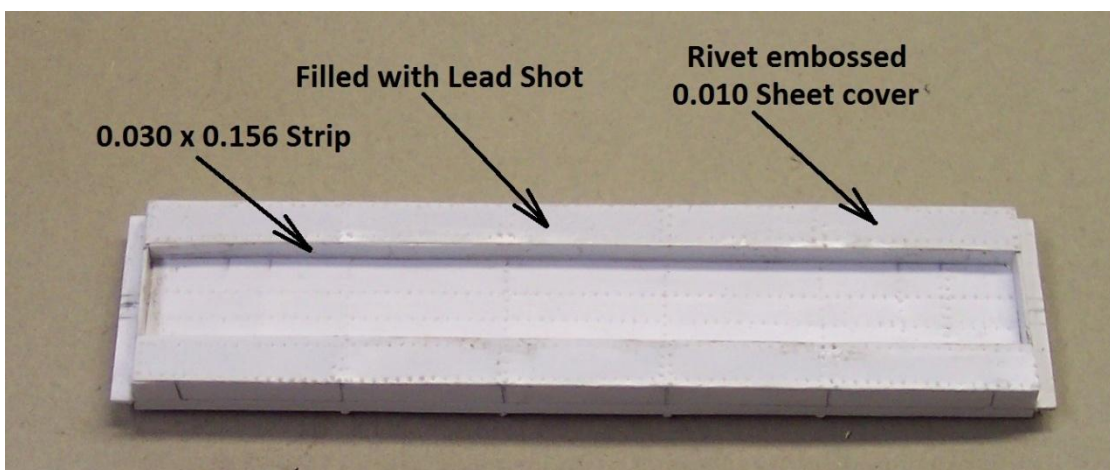
Flipping the assembly over, I next installed the scale 6" I-beams (0.060") as shown in figure 10.



<Figure 11>

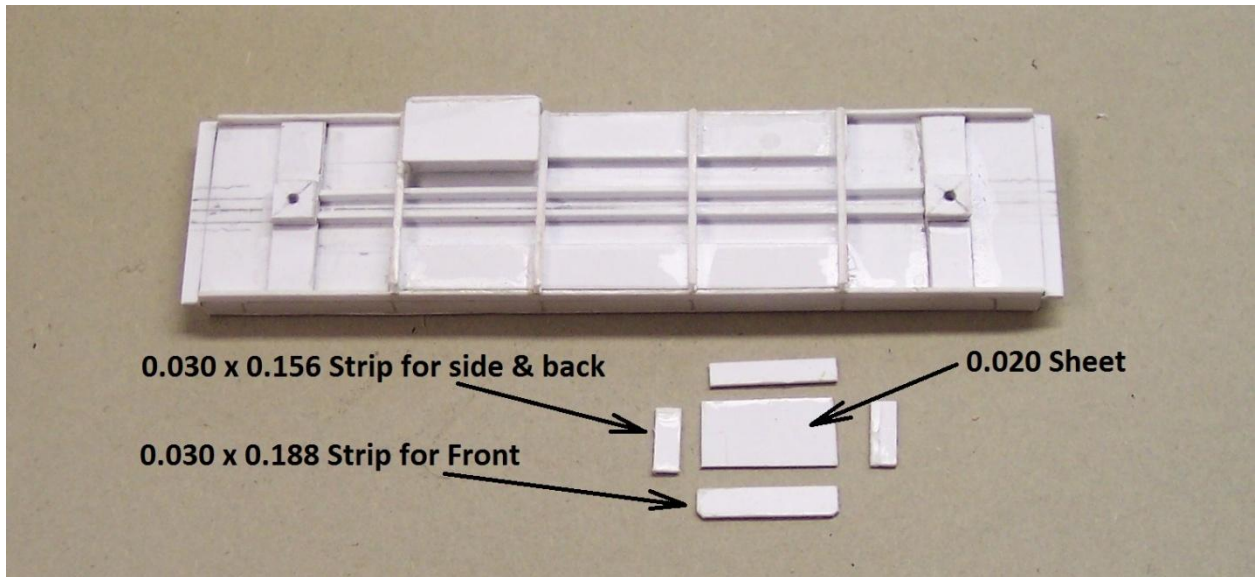
Now comes the challenging part, for me at least. This car has a lot of rivet detail and so I bought a pounce wheel to make them with. You can find these at your local hobby shop or order a set from Micro Mark. Basically, you run the wheel along a steel ruler and emboss the rivets. It is recommended that the stock be no thicker than 0.010". I used a piece of soft pine as the backing, under the plastic. To my surprise, it works pretty well, certainly much better than my previous efforts at making rivets. I was worried that after the car was painted, the rivets would disappear but they didn't. This process will take more practice but it's a step in the right direction. That's what I really like about scratchbuilding, it's a constant learning curve.

I cut the inner walls of the well from 0.030 x 0.156 strip and cemented them in place, making sure that the space between them matched the 4' 9" scale clearance. I used my NMRA track gauge to insure this. Once the walls were in, I filled the cavities with lead shot with just enough white glue to secure it. Next I made up the top covers of 0.010 sheet, embossed the rivets, and then cemented them in place as shown below.



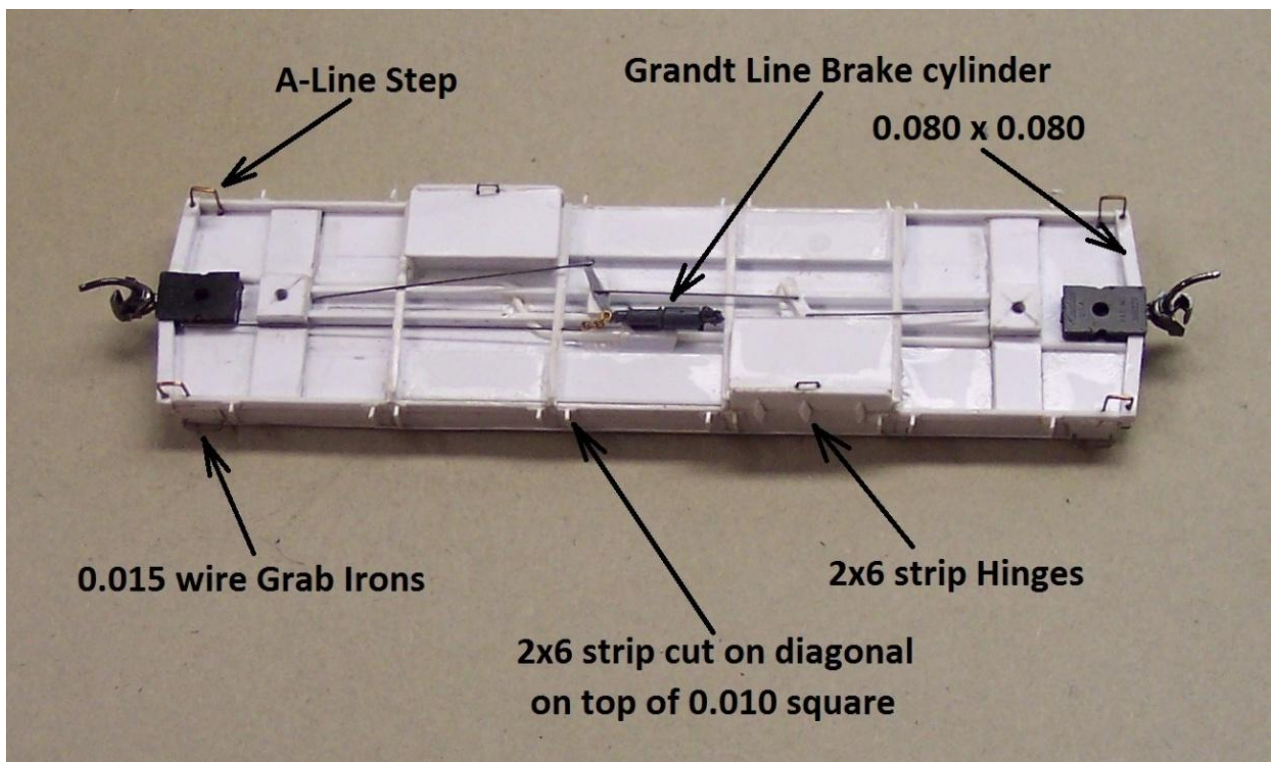
<Figure 12>

Use an emery board or sanding stick and make sure the edges of top are flush with the car sides, ends and well walls. In figure 12, you can also see that I embossed another sheet of 0.010 plastic with the rivet pattern for the well floor and cemented it in place.



<Figure 13>

Back on the underside, I made the 2 compartments that hang below the I-beams. Figure 13 shows the parts and locations. They fit up between the I-beams and the front door is flush with the car side. They are also deeper than the compartments above.



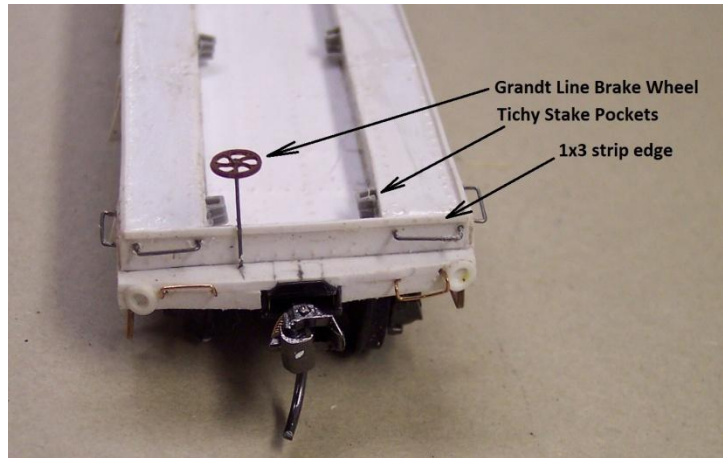
The end sills were trimmed to shape and then brought up to thickness on either side of the coupler pocket with 0.080 x 0.080 strip. Next, I installed the brake parts, the train air line, corner steps, grab irons, and side door hinge assemblies as shown above. I used 0.015 wire for the grab irons.

The hinges are pretty small so I simplified them a bit, for which my eyes are still thanking me. I made a small square of 0.010 plastic, clipped off the top 2 corners and we have the base plate. This should have several rivets like in the drawing but, I passed. Then cut a piece of HO scale 2x6 strip 2 feet long and cut it diagonally. This gave me 2 triangular pieces to use for the hinges. See Figure 15 at right. The hinges for the underhanging compartment I made by trimming the same 2x6 strip 18" long and then cut them to a diamond shape. (I think 0.010 or 0.005 plastic would have been a better choice for these.)



<Figure 15>

I cemented a strip of scale 1x2 along the top of the car sides and ends to produce the raised edge of the prototype. See the cross section drawings as that's where it shows up best. I made the poling pockets by slicing a thin section of plastic tubing and gluing them on the end sill corners.



The last assembly steps involved adding a brake wheel & staff and the stake pockets on the well walls as shown in Figure 16 at right.

Painting and Lettering

I brush painted the car with my usual version of PRR freight car red which is Poly S Special red oxide with a little reefer orange added. I painted the Kaydee No. 501 Archbar trucks Poly S Rail Brown. The lettering is mostly from a Westerfield No. 1301 decal sheet which is for the XL boxcar, but I had to raid my decal collection for a few odds and ends. After lettering, the car got

a blast of Dullcoat the seal the lettering and kill the shine. The weathering is a mixture of dry powders and a little Poly S rust here and there. Not too much weathering as this car is supposed to be less than 10 years old as I'm modeling the 1920s. By the way, there are 158 parts to this model, plus the



<Figure 17>

items in the load it carries.

At this point I found some plastic trucks in my scrap box and weathered them a bit as well as a shovel and some scraps of steel and wood to throw in the well. I'm sure more stuff will accumulate in there as things go along. So



<Figure 18>

here is the finished car in service.



<Figure 19>

Parts List:

Evergreen Plastic Shapes:

Plain sheet 0.040"

Plain sheet 0.030"

Plain sheet 0.020"

Plain sheet 0.010"

Strip 0.030 x 0.156

Strip 0.030 x 0.188

Strip 0.080 x 0.080

Strip HO scale 2x6

Strip HO scale 1x2

Rod 0.035

I-beam 0.060

C-channel 0.080

Kaydee No. 5 couplers (or No. 58)

Kaydee No. 501 Archbar Trucks

Grandt Line Part# 5040 Brake Set

Tichy Train Group part# 3006 Stake Pockets

Tichy Train Group part#3015 Grab Irons

A-Line Part# 29000 Stirrup Steps (Style A)

0.015 music wire