Scratchbuilding an F25 Well Flat Car

By David J. Vinci

(Flat Figure 1)

Well flats are a pretty rare car type generally, but the Pennsy seems to have had the lion's share of variety. Most of these cars were few in number from one-of-a-kind to less than 50. I think the F25 is a neat car for a couple of reasons, first, because the car sides aren't vertical, and second because it sits only 8 inches off the rails. There were only 27 cars in the F25 class (including the sub-classes) so, for an outfit like the Pennsy, with over a quarter of a million cars on the rails, that makes these flats pretty rare indeed. I chose the as-built variation since I model the 1920s and 30s. The F25 class cars were built in the 1916-1918 time period and had a 70 ton capacity. The cars were later upgraded to 85 ton and then 95-ton versions as the F25a.

This car has been modeled as the F25a in brass but I've never been able to justify the expense of a brass model of a freight car to myself. Maybe I'm just too cheap. I can sit still for the expense of a brass cabin or possibly a passenger car (maybe) and locomotives of course, but not freight cars! As a result I either do without, scratchbuild, or kitbash those cars I wanted. I've been content to put up with the detail compromises that my modeling ability enforces and this car is one of those.

One of the skills I have yet to master is that of making rivets. I think I've trashed acres of styrene trying to make acceptable rivet patterns but they just never look right to me. I keep trying though and this kit was no exception. And after trashing another bunch of car sides, I gave up and built the car without them. I think I'll keep practicing and searching for better ways

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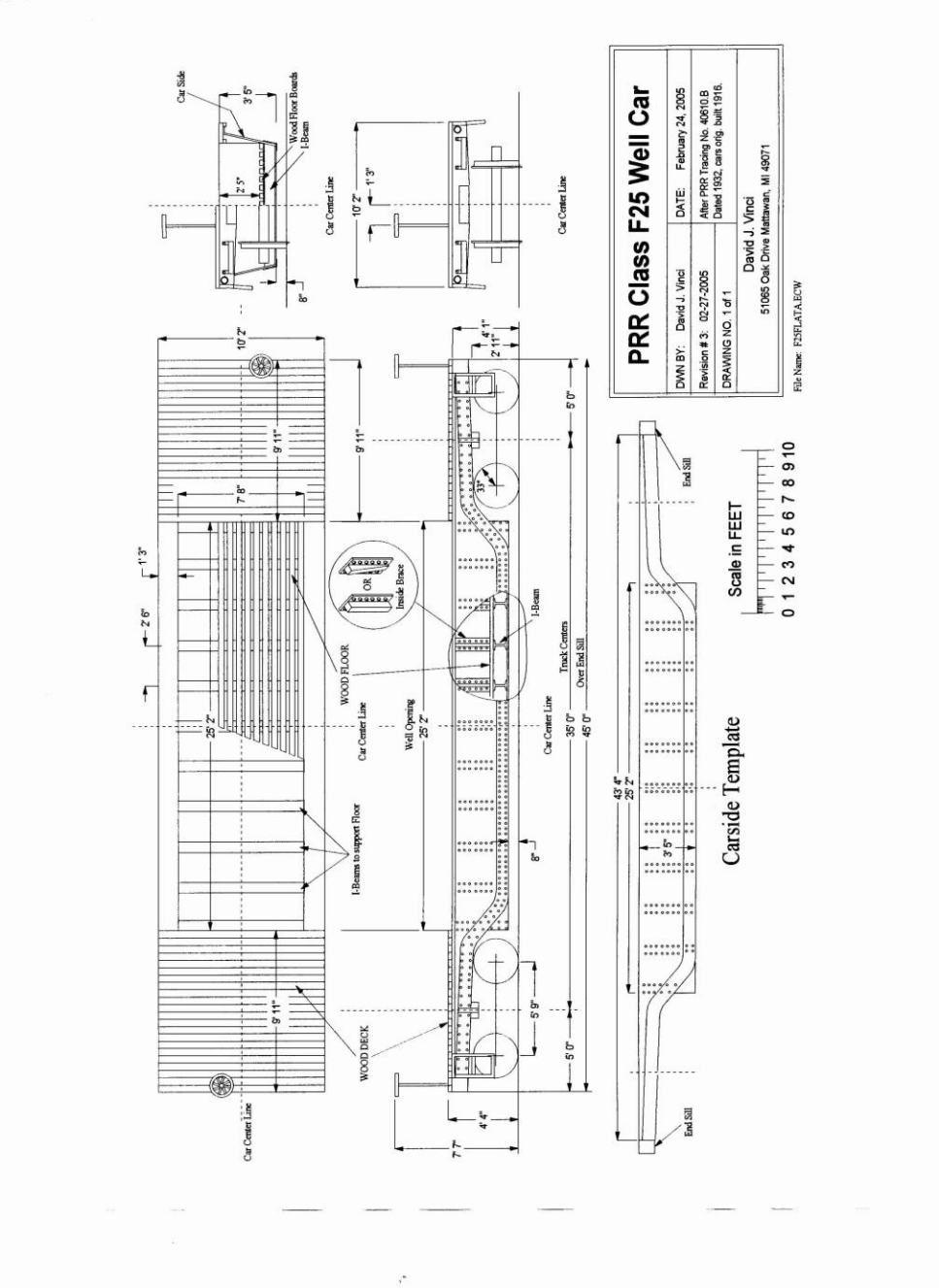
to make rivets than using a pin or a nail. In the meantime, this will have to do as a stand-in until my rivet skill improves (if ever). You know the car kind of loses something without the sea of rivets the prototype has but I think it didn't come out too badly and it's a much more economical alternative than a brass model.

(Flat Figure 2)



As is my usual practice, I started by making a drawing of the car. I used PRR tracings as the basis for this drawing. This process also helps me to plan the build. Then I print out the drawing in HO scale and can use it to transfer the dimensions directly to the plastic. In this case the car side is a laminate of 2 pieces to get the right profile so I made up a full side template to produce those parts. I used 0.040" thick styrene sheet to make the main floor of the car and then cut out the well hole. This is really as easy to do, just draw the opening on the part using a pencil and your scale rule and then score the outline with a sharp No. 11 blade in your hobby knife. Gently

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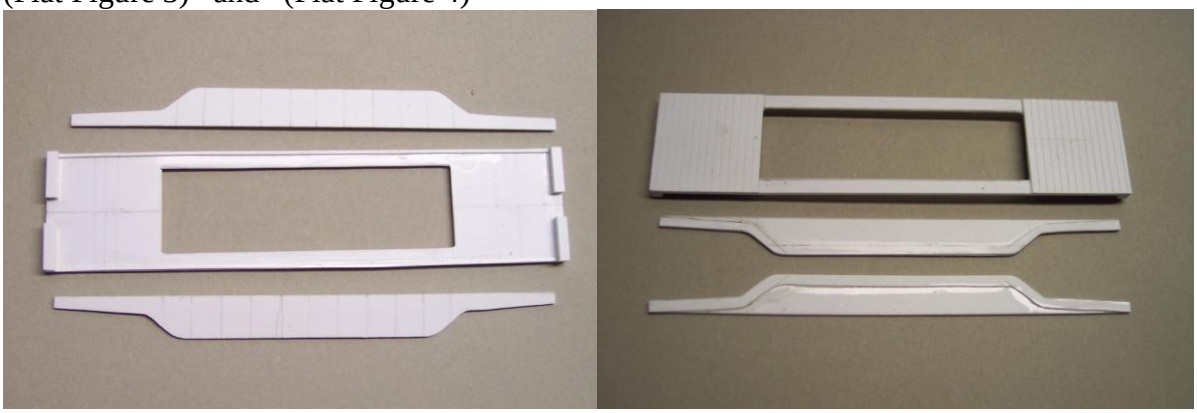
bend along the score lines and the plastic will break along the score lines. Go slowly at the corners so you don't break the plastic past the score lines. While the floor is flat, using the drawing, your scale rule and a pencil draw the lines to indicate the car centerline and the location of the truck centers.

If you can make rivets, make them while the pieces are flat and before you start laminating stuff together.

I used 0.125" square stock on the bottom ends of the car floor to make the end sills. I use a Kaydee coupler pocket to get the gap correct for the couplers that are added later. Once these 4 parts have been added to the floor, I cemented a strip of 0.030"x 0.040" styrene along the bottom outside edge of the floor. See the car cross-section in the upper right hand corner of the scale drawing. A piece of 0.040" v-groove siding was then laminated at each end of the top of the floor to make the wood decks on the car ends.

I then used 0.030" sheet stock for the car sides and 0.020" thick styrene for the reinforcement at the bottom of the car side. Add pencil lines to show the position of the well floor braces to the inside of the car sides then laminate the 2 pieces together. Your car should look like this:

(Flat Figure 3) and (Flat Figure 4)



Now cut the 11 well floor supports from 0.125" I-beam stock such as Evergreen # 274 exactly the width of the well floor, or as close as you can to the scale 7' 8" length. Tack glue the car sides to the floor bottom up against the strip along the edge of the floor bottom and use 3 of the I-beams to space the car side bottoms. I use a fast-setting liquid cement for this. The sides should slant inward and once you have the angle of the 2 sides equal, go ahead and cement the sides along the whole length of the side-floor junction. Now you can install the rest of the well floor I-beams except for the 2 end ones. Cut an end panel from 0.015 or 0.020" stock to fill the trapezoidal space at each end of the well. Cement an I-beam to the bottom inside edge of each end panel and then cement them in place. These end panels are to be vertical. Now cut the boards for the well floor from 0.060" x 0.100" stock and cement them in place.

(Flat Figure 5) and (Flat Figure 6)

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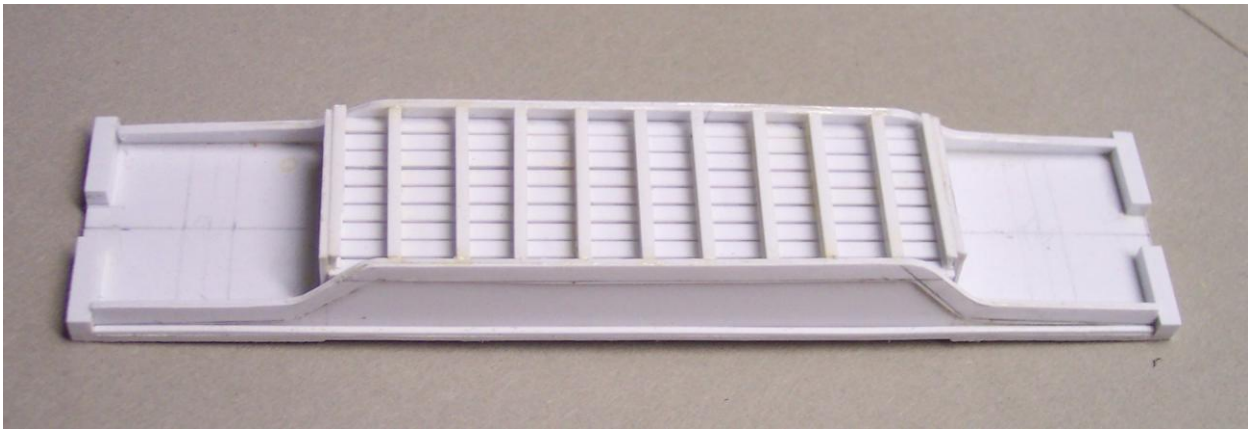
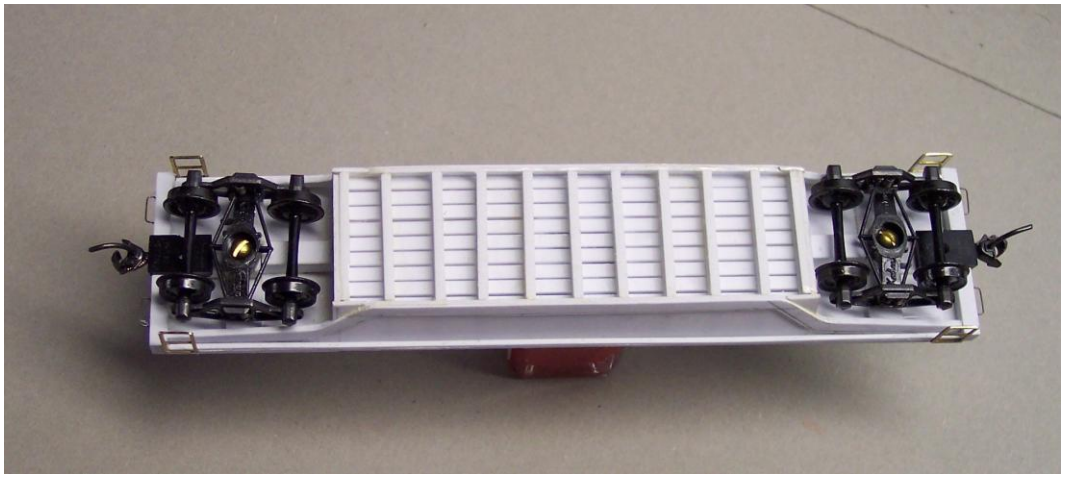


Next make the truck bolsters from 0.040" thick sheet. I make these by making a base plate a scale 2 feet wide and as long as the car floor is wide. Then I mark the center and stack three squares of the same stock 2 ft. x 2 ft. on top to get the final height. I test fit these on the car and set the car on it's trucks and check the clearances to make sure I have the ride height correct. Once I'm sure I have the height of the bolster correct, I drill and tap a hole in the center for a 2-56 screw to attach the truck. Make sure when you drill the hole that you get it as perfectly vertical as you can so the trucks sit straight. Cement the completed truck bolsters in place on the car floor. I scrounged in my scrap box to find some stock to fill the space between the bolster and the well end panel to represent the center sill. You can see it in figure 7 below.



(Flat Figure 7)

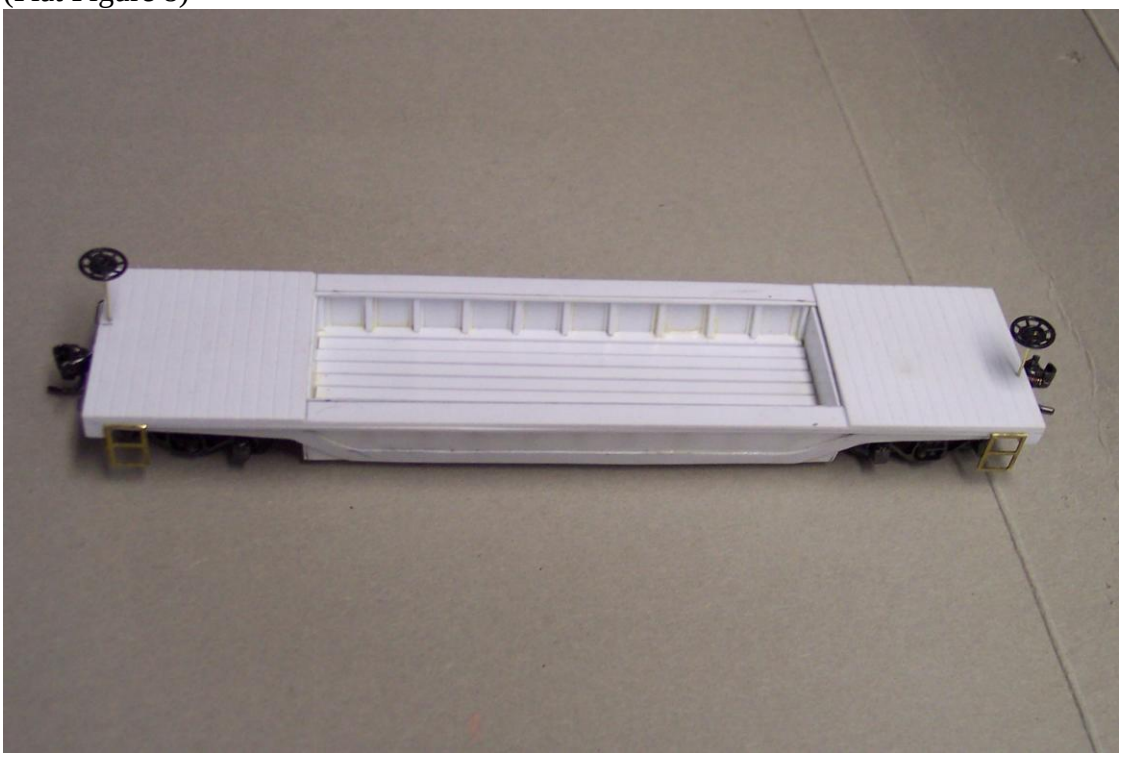
Next I drilled some depressions in the car end sills to represent the poling pockets and added some grab irons to the end sills. For this car, I used some brass ladder stock to make the corner steps. I usually use ACC to attach the metalwork to plastic cars, as it seems to work best for me. I assembled Kaydee No. 5 couplers and attached them with shims as needed to achieve the correct coupler height. It is best to verify the coupler height with a standard gauge to get the best performance.

There were no references I found as to the placement of the brake cylinders but they don't show on the only prototype photo that I found either. Maybe they are tucked up under one of the ends but I can't imagine where. I suppose that it's possible that they were built with only a pass-through airline and mechanical brakes at each end of the car. That might be plausible for 1916 but I don't know for sure. In any case, since none of this stuff shows, I didn't model any of it except for the brake wheels.

The last bit of construction involves the ribs along the internal sides of the well. For these I used a piece of 0.040 x 0.060" strip cemented to a strip of 0.015"x 0.100". If you're really ambitious, you can taper these so that the inner edge of the rib is perfectly vertical like the prototype. And if you're really nuts about details, you could put the rivets along both sides of the rib. See the inset circle in the center of the car drawing (figure 2) between the side view and the top view.

The last construction step is to add a shaft to the brake wheels and install them on each end of the car. The car is now ready for paint.

(Flat Figure 8)



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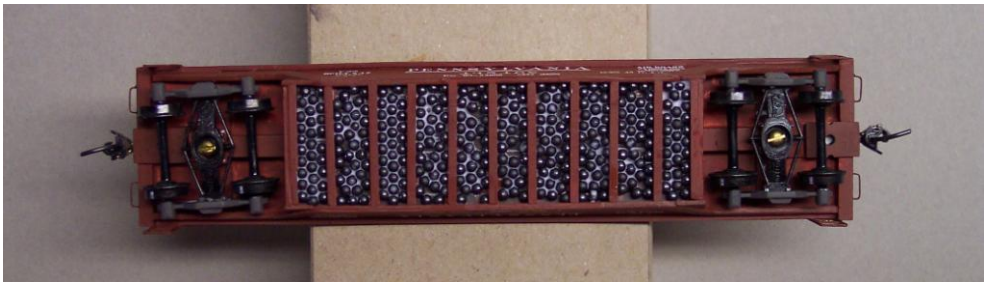
For paint, I decided to use…. Yep, my version of PRR Freight Car Color which is a blend of Poly S® Special Red Oxide, Reefer Orange and Caboose Red. I brush painted this car. The end decks and the well floor are wood which would weather pretty quickly so these got a coat of grey with some stains of Poly S® Tarnished Black, Grimey Black and Rail Brown. The trucks I painted rail brown with a few rust stains.

For lettering, I used Westerfield decals and bits and pieces from other used decal sets to get close to that which appeared on the only as-built F25 photo I could find (PRR #435475). I applied the decals and used solvaset to get them to settle down. Then when thaey were dry, I gave the car a light spray of Dullcoat to seal the lettering in. I added some rust stains along the metal seams and joints with diluted Poly S® Rust. Finally, the car was dry brushed with rail brown and a light grey.

The car was too light to track reliably, so I cemented some lead shot in the spaces between the well floor ribs as shown below.



(Flat Figure 9) and (Flat Figure 10)

The figure above shows the completed car PRR 435468 sitting in my yard. I think it came out Ok even though I omitted the rivets. Well, maybe there are some advantages to aging eyesight. Still, the car looks better to me than spending a bunch of loot on a brass freightcar.

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PRR Class F25 Well Flat No 435475

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