

Lehigh Valley “Wrong way” door boxcar

A distinctive car with a left hand opening door made up the majority of the Lehigh Valley railroads box car fleet for many years. Originally built as door and a half automobile cars in 1916-1917 they were rebuilt in 1934-1935 into the 78000-79499 series with a sheet steel end with three vertical braces. More cars were rebuilt in 1935 into the 75000-76349 series with reverse Murphy ends. Although listed as being rebuilt they were almost completely new cars with a new Duryea cushioned under frame. New steel truss Z bar sides similar to the 1923 ARA double sheathed car were applied. Most cars were equipped with a Zenith roof which was a licensed version of the Hutchins Dry Lading roof with an unknown number of cars in the 78000 series equipped with a Viking roof. About the only recognizable parts from the original cars were the ends and the Vulcan style trucks. The cars all had wooden doors with Camel or Superior door hardware. All of the cars were lettered with a simple railroad roman LEHIGH VALLEY to the right of the door with no diamond emblem. During 1944-1945 some of the 78000 series cars were repainted with the slogan; THE ROUTE OF THE BLACK DIAMOND under the road name and some received the black diamond emblem under the slogan. Starting in 1946 the lettering for the road name was changed to Sans Serif and the slogan was deleted, only the black diamond logo was retained. A minor rebuilding of these rebuilds was started post 1946 with the replacement of the KC schedule air brake system with AB schedule brakes and replacement of the Vulcan trucks with various models of Bettendorf style trucks. Doors were also replaced with Superior 5 panel doors or Youngstown doors with Camel hardware. Most of the 75000 series cars received this rebuild but only a portion of the earlier 78000 series cars were upgraded causing their earlier retirement, especially the 78000 series cars that retained the KC schedule brakes that were outlawed from interchange by 1954.



78776
CART 9000
LEHIGH VALLEY RAILROAD



LEHIGH VALLEY
ROUTE OF THE BLACK DIAMOND

EST. 1825
INCORPORATED IN PA.

CART 910
SB 223
TL 406
TW 82
LH 83
CUT 2860

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LEHIGH VALLEY RAILROAD

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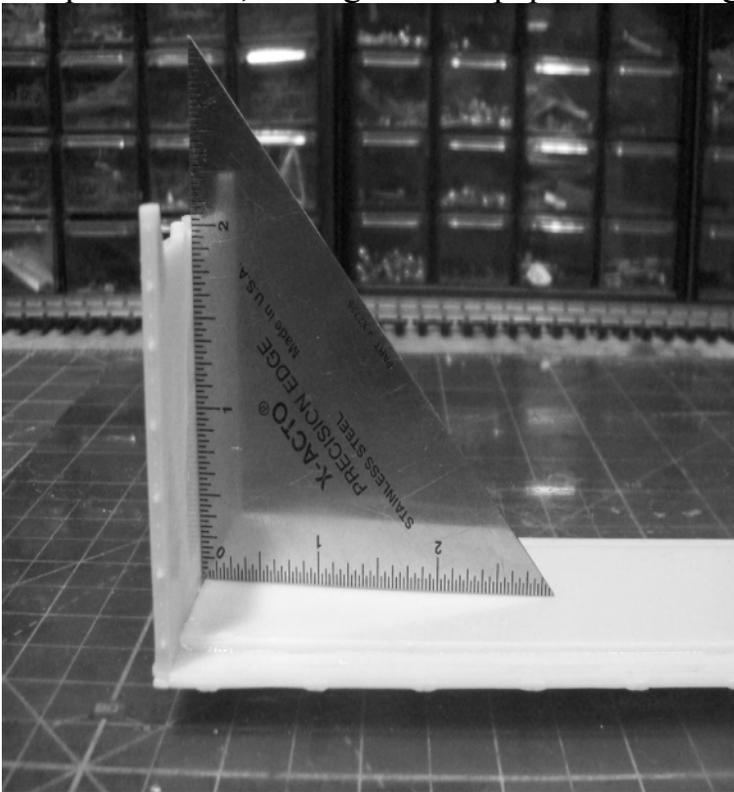
Wrong Way door cars by yearly totals

YEAR	75000-76349	78000-79499
1933	0	70
1934	0	1242
1935	80	1242
1936	1350	1241
1937	1349	1241
1938	1348	1241
1939	1348	1241
1940	1348	1241
1941	1347	1240
1942	1347	1240
1943	1347	1240
1944	1346	1239
1945	1345	1238
1946	NO DATA	NO DATA
1947	1340	1231
1948	1336	1231
1949	1336	1224
1950	1336	1234
1951	1331	256
1952	1327	184
1953	1321	42
1954	1300	29
1955	1287	12
1956	1074	5
1957	820	5
1958	402	0
1959	237	0
1960	224	0
1961	170	0
1962	63	0
1964	29	0
1965	17	0
1966	11	0

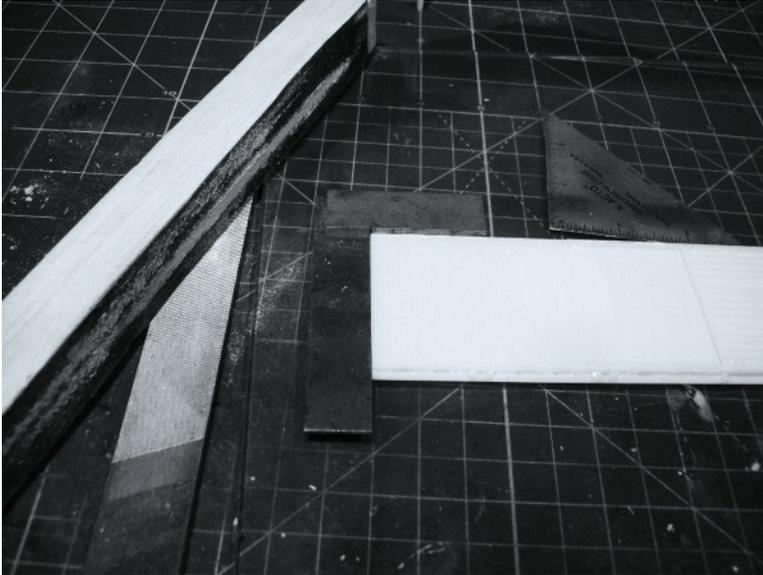
This kit is a complex array of parts and is geared toward the advanced modeler. It is expected that you have the usual collection of modeling tools, adhesives and detail bits and pieces. The parts list is a suggestion only and you may substitute as you wish. The parts as listed are felt to be the best suited for this application.

With patience and careful fitting of the parts that comprise the under frame you will have built the first commercially produced model in O scale with a Duryea cushioned under frame with all of its complexity.

Begin by cleaning up the major castings, a large flat piece of glass works well with a sheet of 220 grit wet or dry sandpaper. Use a generous amount of water to keep the dust down and sand the back of all major body components flat, rinsing the sandpaper of sanding sludge as needed.

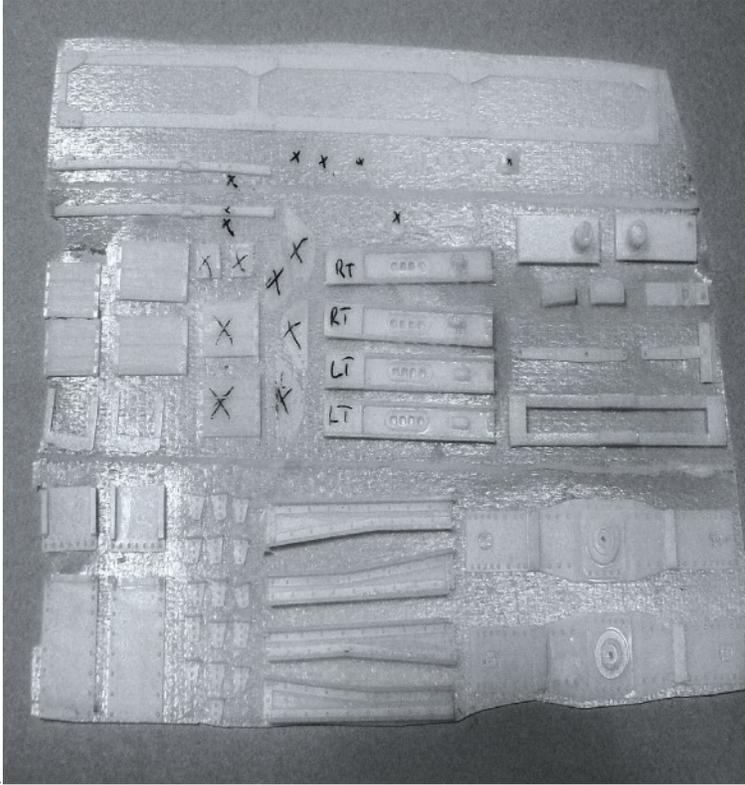


Using a large flat file and a square sanding block true up the ends of the roof casting. Glue the ends to the roof with a few small dots of gap filling ACC making sure the ends are centered, level with the roof sheets and square. When satisfied with the fit fill the seam between the roof and ends with gap filling super glue and spray with accelerator. File and sand the seam between end and roof until the seam is invisible.



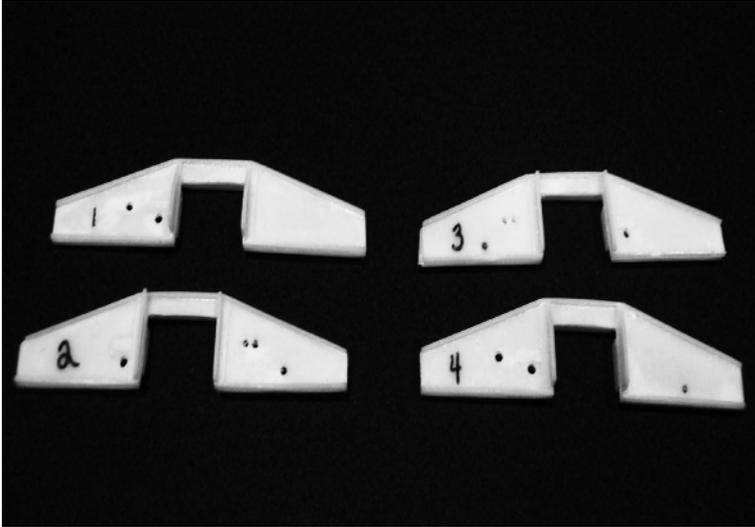
Start test fitting the sides by sanding the right side of the end flat and square by removing as little material as possible. Moving to the left edge of the side remove additional material until the side is a very tight fit between the ends. A slight bevel on the upper corners of the sides will help with a tight fit at the intersection of roof, end and side. Tack the side in place with just a few drops of ACC until satisfied with the fit. Repeat for the opposite side. Check over the assembled body carefully. The top edge of the sides should be approximately .010" inset from the edge of the roof. Check the body to make sure it is square and not distorted in any way and then run a thick bead of gap filling ACC along all of the seams on the inside.

Test fit and sand the floor casting removing material evenly from all sides until you have a tight friction fit within the body assembly. Do not cement in place at this time. Mark the "A" and "B" ends at this time to keep everything in proper orientation. The "B" end is always the end with the hand brake assembly. Refer to the photo

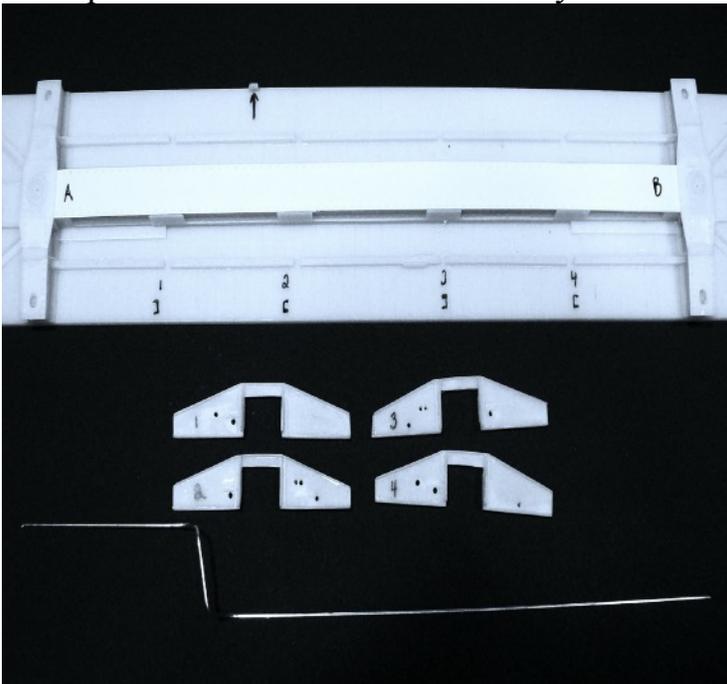


Start the under frame assembly by drilling the train line holes in both bolsters with a #51 bit, on the “B” end drill the retainer valve line with a #75 bit. The locations are marked with dimples for proper alignment.

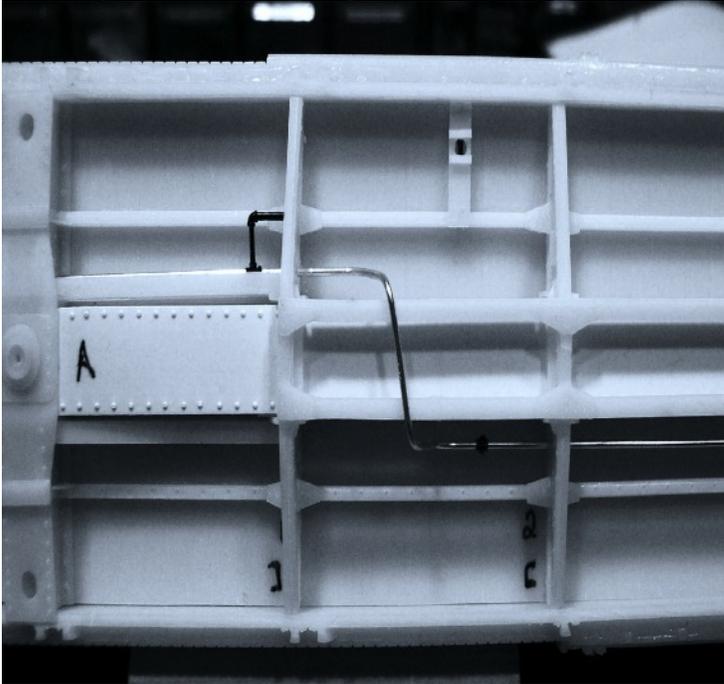
Add the cover plate over the center sill from bolster to bolster making sure is centered on the sill. Trim all eight cross bearers from the sheet and drill out the dimpled holes in each. A #51 bit is for the train line, a #70 bit for the piping from the reservoir to the AB valve and a #75 bit for the retainer valve pipe. Sort the cross bearer halves with four with an outside flange around the outside and four with a riveted edge around the outside. Carefully match up the holes on the flanged sides and riveted sides, they will only correctly line up one way. After making certain you have the flanged and non flanged cross bearer halves lined up correctly glue them together, a tip is to use appropriate sized wire in the holes to act as a guide for proper alignment.



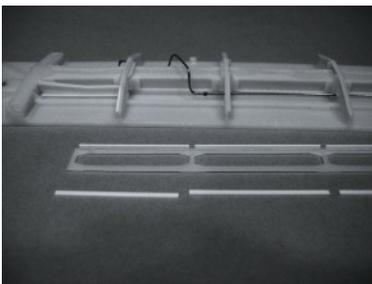
Using the photos label the cross bearers from one to four and test fit them to the under frame making sure they will fit flat against the floor. Cross bearer #1 will be first from the “A” end with the rest in consecutive order to the “B” end. The two outboard cross bearers (#1 and #4) the flanges face the end of the car, the two center crossbearer flanges (#2 and 3#) point to the center of the car. Fabricate a train line out of .033 brass wire crossing over the center sill between cross bearer #1 and #2, there must be sufficient clearance between the crossbearer brace that ties the cross bearers together for the pipe to loop over the under frame assembly as shown in the photos.



Add a Grandt Line pipe “T” and elbow to the section of train line between the “A” bolster and crossmember #1. On the longer (B) end of the train line place a Grandt Line pipe union between #1 & #2 cross bearers. Thread the cross members onto the train line making sure they are properly oriented with the flanges and glue the cross members in place on the under frame making sure they are square and perpendicular.



Trim the cross bearer support that fits across the top of the cross bearers from the sheet. Add strips of Evergreen styrene .030x.060 to the bottom of the cross bearer support flush with the outside edges as shown in the photo below.



Glue the cross bearer support to the top of the cross bearers, trimming the styrene strips as necessary for proper fit. Glue the four bolster to cross bearer braces from the lip on the bolster at the center sill to the large gussets on cross bearers #1 and #4 with the wider end at the bolster as shown in the photo above. The braces run parallel to the center sill and on the prototype

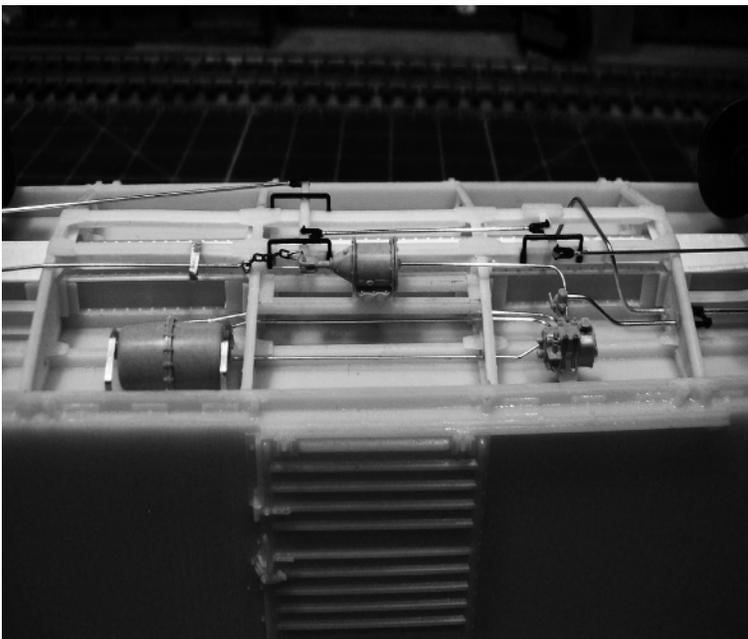
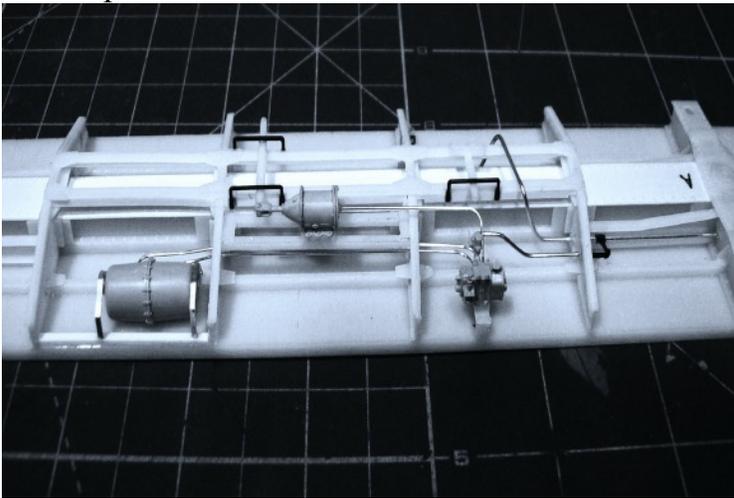
tie the bolsters to the cross bearers. Sand the ends of the cross bearers flush with the edge of the sides. Trim the bolster cover plates and crease them to fit over the bolsters cast onto the under frame. Drill a #70 hole through the center of the cover plate and into the dimple on the center of the bolsters on the under frame. Using a small piece of .028 brass wire in the bolster will assure proper location of the cover plates. Remove the wire after gluing and the truck mounting holes have a pilot hole. Do not sand off the overhang of the bolster cover plates as they set the depth of the under frame and floor. On the prototype the bolster cover plates were riveted to the bottom of the side sills.

The sixteen small gussets on the parts sheet are glued with the triangular portion on the floor stringers and the small tab butting up against the cross bearers with four gussets per cross bearer.

Trim and apply the AB valve bracket from the floor stringer to the small tab molded to the under frame casting. Assemble and pre-drill all the holes in the brake reservoir, AB valve and brake cylinder. The brake cylinder bracket needs to be carefully fitted between cross bearer #2 & #3 making sure that the brake lever from the casting sheet has clearance over the top of the cross bearer support. The air reservoir is mounted between cross bearers #3 & #4 on the same side as the AB valve and cylinder. Mount the reservoir to the floor with the end with the double bracket facing the center of the under frame. Use pads of .040 styrene strip under the reservoir to mount it to the floor and fabricate and install the mounting braces of .015x.042 brass strip.

The brake system should be plumbed with .028 wire from the Grandt Line elbow to the AB valve dirt collector. The brake reservoir should be plumbed with .019 wire to the AB valve with the wire passing through the two side by side holes in cross bearers #2 & #3. The line to the brake cylinder is plumbed with .019 wire from the AB valve to the rear of the cylinder passing over cross bearer #2. The retainer valve pipe is made from .015 wire from the center hole in the AB valve running through the small single hole near the floor in cross bearer #2 & #3 and terminating under the reservoir. The retainer valve pipe will be completed after the body and under frame are joined.

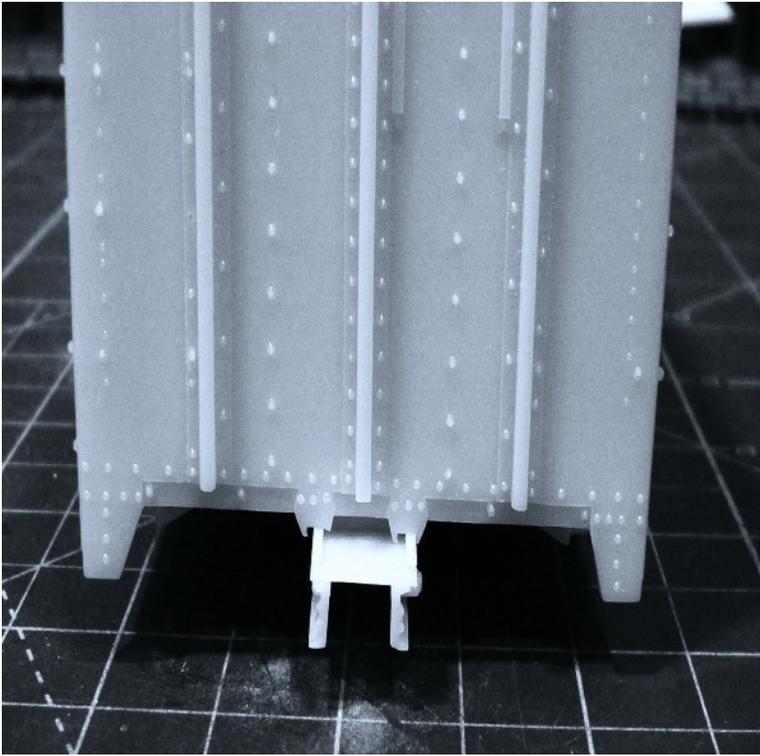
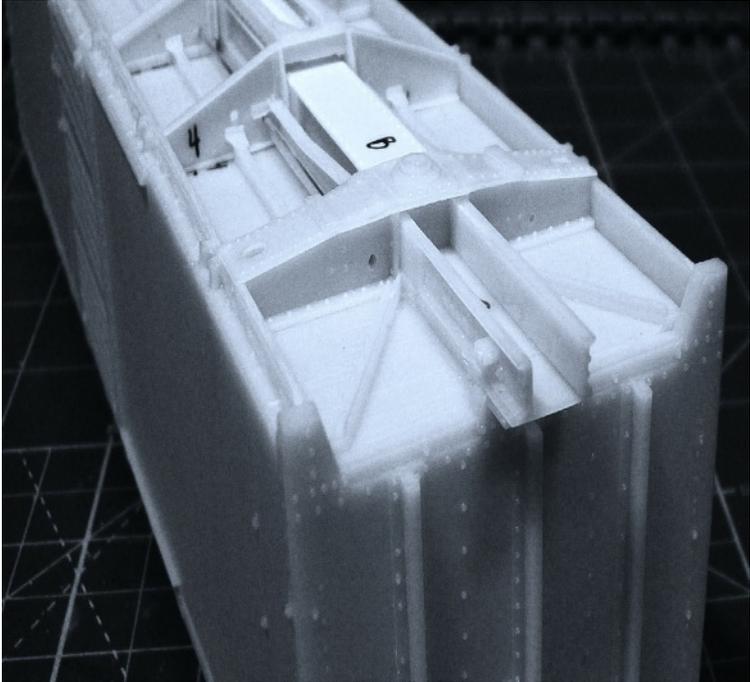
The brake rigging is formed of .019 wire and Grandt Line or San Juan clevises. The live lever is attached to the clevis on the brake cylinder and the dead lever with the bracket attached is mounted to the cross bearer support 15 scale inches from cross bearer #2 with the open end of the lever pointing towards the AB valve. The hangers for the brake rigging can be bent of brass wire or substitute Grandt Line brake lever hangers as shown in the photos. A short length of scale chain is attached to the live lever at the brake cylinder clevis with the other end of the chain attached to the hand brake rod made of .019 wire with a loop at either end which joins the chain at the brake cylinder to another small length of chain which in turn attaches to the hand brake quadrant on the "B" end. Refer to the under frame photos.

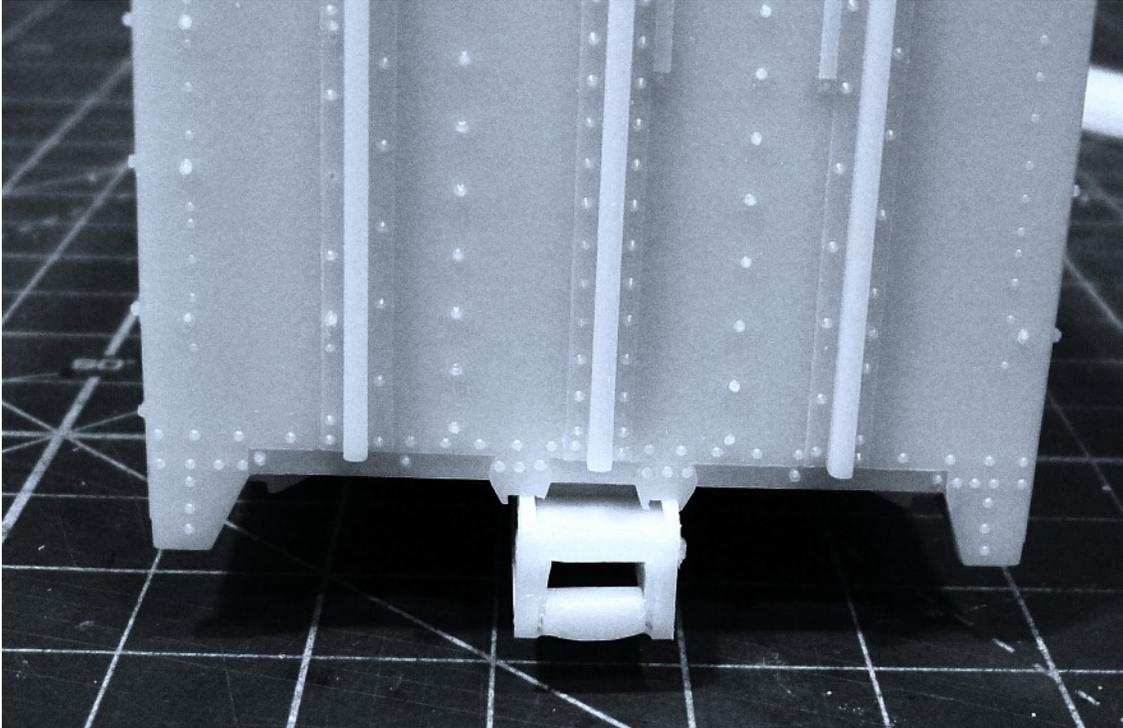


This model was set up to use the new generation Kadee scale sized couplers in a scale draft gear. You may make substitutions as you see fit, keeping in mind that the striker of the draft gear used should protrude 12 scale inches beyond the end of the car. The couplers are modified by filling in the slot in the shank with .125 x .125 styrene as shown and the filing down the shank as seen in the images. Drill the shank with a 1/8" drill bit.



Mount the center sill extensions from the bolster lining them up with the pad cast into the under frame casting. The horseshoe shape on the ends of the extensions go to the ends of the car and the extensions with the bracket holding the draft bar in place go to the side with the train line. The center sill extension top cover is mounted to the top of the extensions with the bolted edge facing the ends and flush with the end of the floor. Sand the end of the extensions and apply the striker plate and lower draft gear support as shown in the pictures.

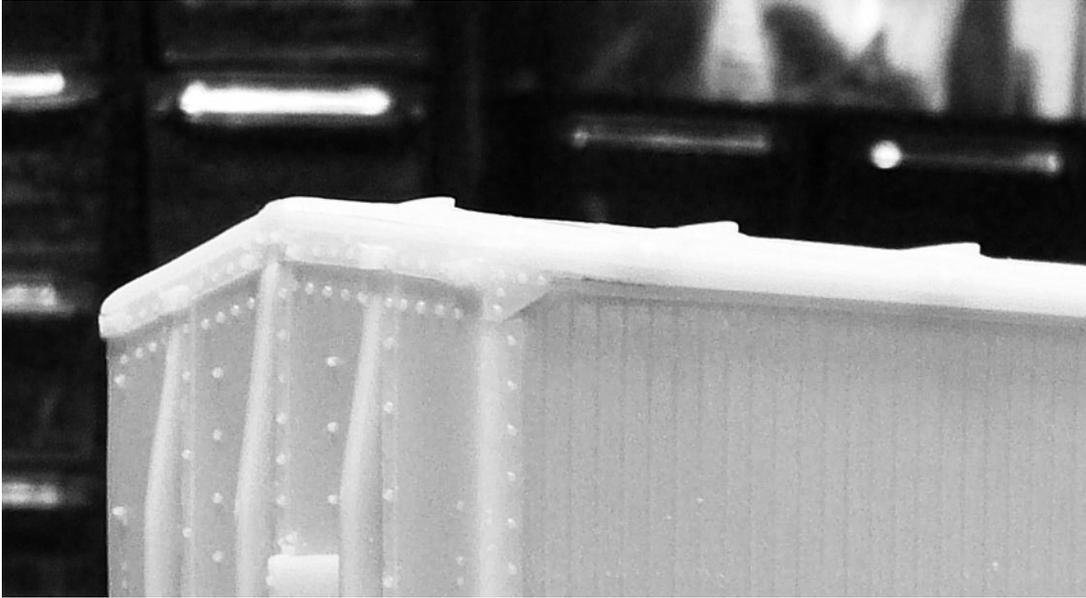




The couplers are slipped on to the post on the coupler carrier and the coupler carrier is mounted to the hole in the under frame with the top of the carrier flush with the sill extensions. If more strength in the coupler mounting is desired drill through the post on the coupler carrier and tap for a 1-72 flat head screw into the floor. The draft gear cover plate covers the coupler carrier with the bolted end facing the end of the car and can be tacked in place with white or carpenters glue to allow it to be pried off later for coupler maintenance.

With couplers mounted drill and tap the bolsters for the trucks of your choice. Check the under frame for proper coupler height and adjust as necessary. Add weight to the top of the floor with self adhesive automotive wheel weights to bring the car up to the desired weight. Glue the completed floor into the body with the cross bearers even with the side sills, the bolster cover plates resting on the side sill and the draft gear top plate guides fitting into the guides on the car body ends. The floor boards should be even with the ends at both ends.

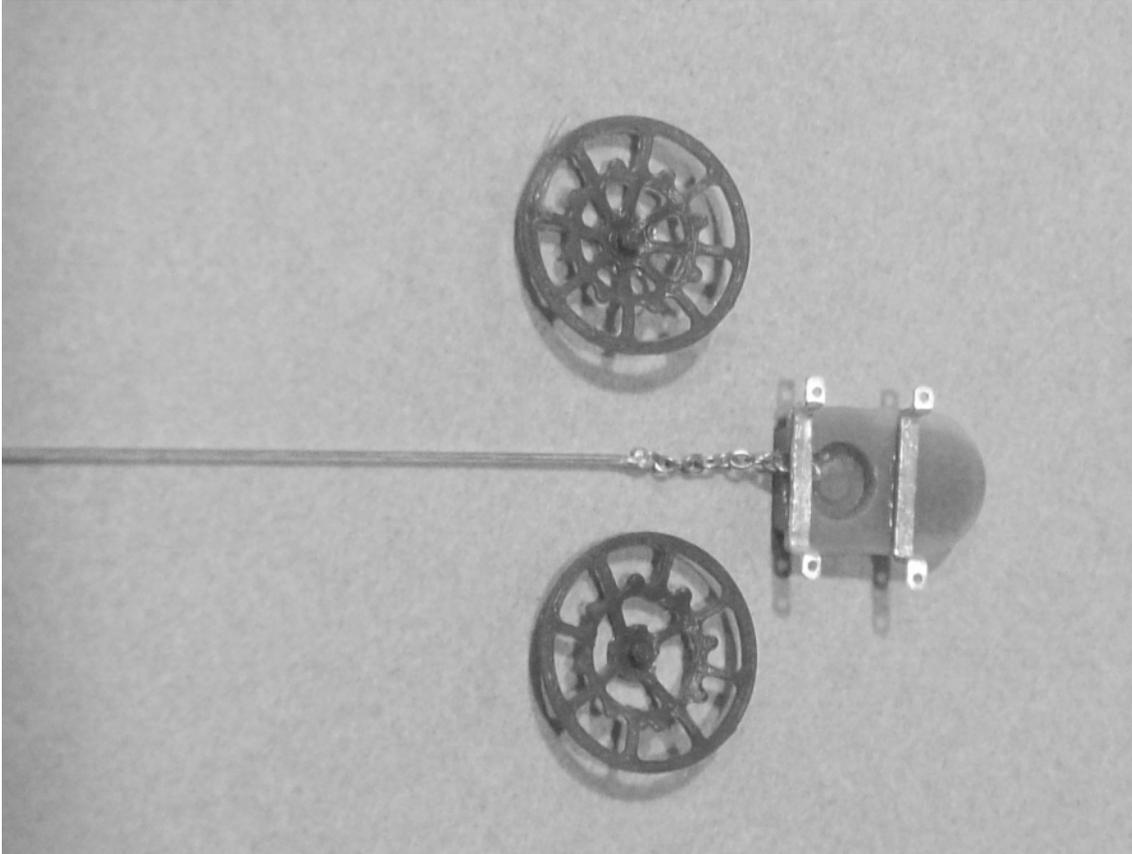
Add the four corner gussets to the upper corners of the using the four corner gussets with the notch in them. After installation slightly round off the top corners of the gussets where they meet the ends.



Drill all the dimpled grab iron locations on the sides and ends and fabricate the grabs from .015 wire. All grab irons are straight except for the bottom right grab iron on each side, this should be a drop grab iron with uneven legs. Use a scrap strip of .040 styrene to space the grab irons from the side while gluing.

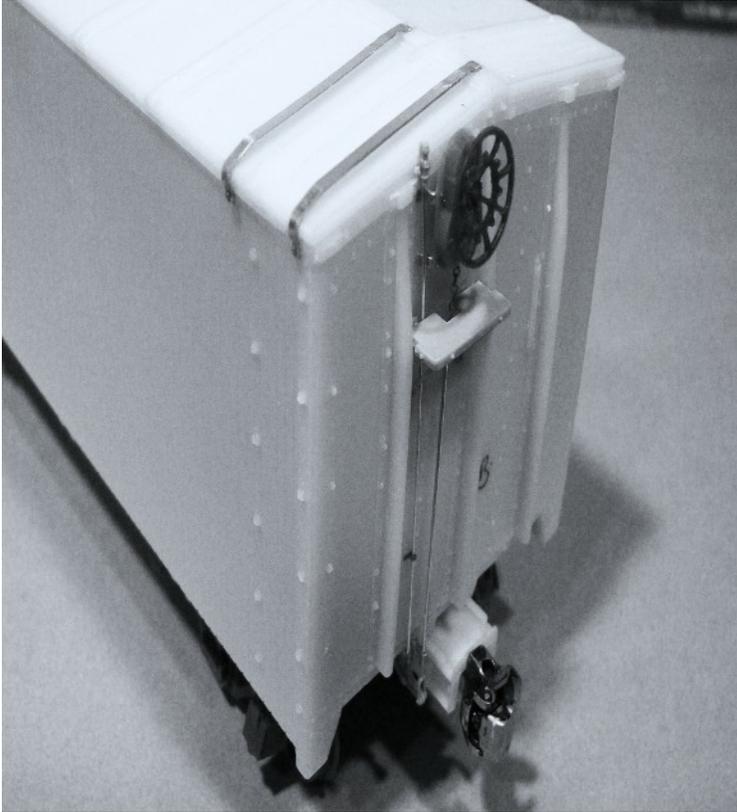
The tack boards are added with the larger tack boards centered on the bottom three ribs of the upper section of the door. The smaller tack boards for the ends are the ones without the tabs and attach to the cast on brackets on the ends. The starter lever is glued to the mounts on both right edges of the doors.

The hand brake is added to the "B" end of the car by fabricating two brackets of .015x.042 brass strip standing .030 out from the end. The hand brake wheel can be backdated to an earlier model Ajax wheel as used on this car by trimming four spokes out of the inner ring of the wheel as shown in the photos. A small length of chain is glued to the bottom of the hand brake housing and attached to a .019 wire with a loop formed in the end. The completed hand brake assembly is glued to the end and for strength drill the brackets #76 and install Tichy .025 rivets or NBWs into the car end. Mount the brake fulcrum from the Chooch Ultra Scale #211 to the bottom of the car end and either using the Chooch fulcrum clevis or a brass clevis attach the hand brake rod to the fulcrum.



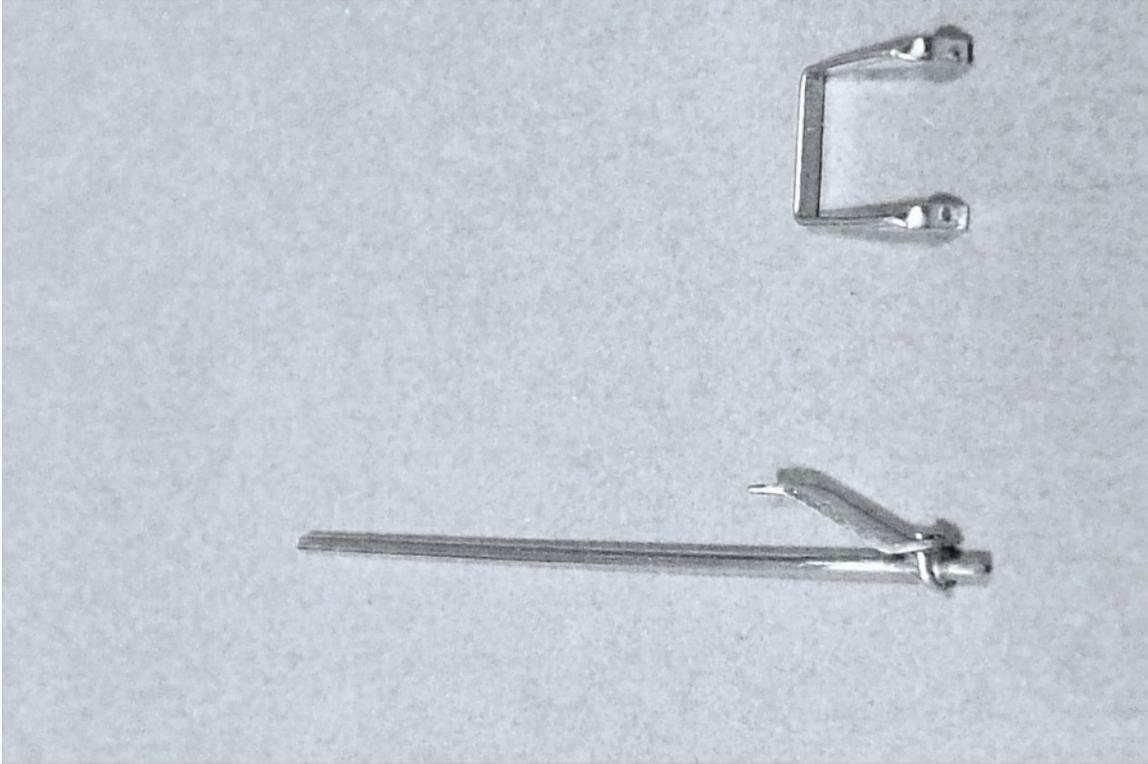
Pre-drill the retainer valve #77 and attach to a length of .015 wire. Drill a hole on the end casting for the retainer valve pin and measure the length to the bottom of the end, put a 90 degree bend in the .015 wire and feed the wire through the bolster and cross bearer #4 terminating the retainer valve line under the air reservoir where the end is invisible.

Using the wood brake step from the Chooch set trim and fit between the two left ribs on the end, glue the step in place with a small amount of ACC. Carefully measure and add the Chooch brake step brackets.

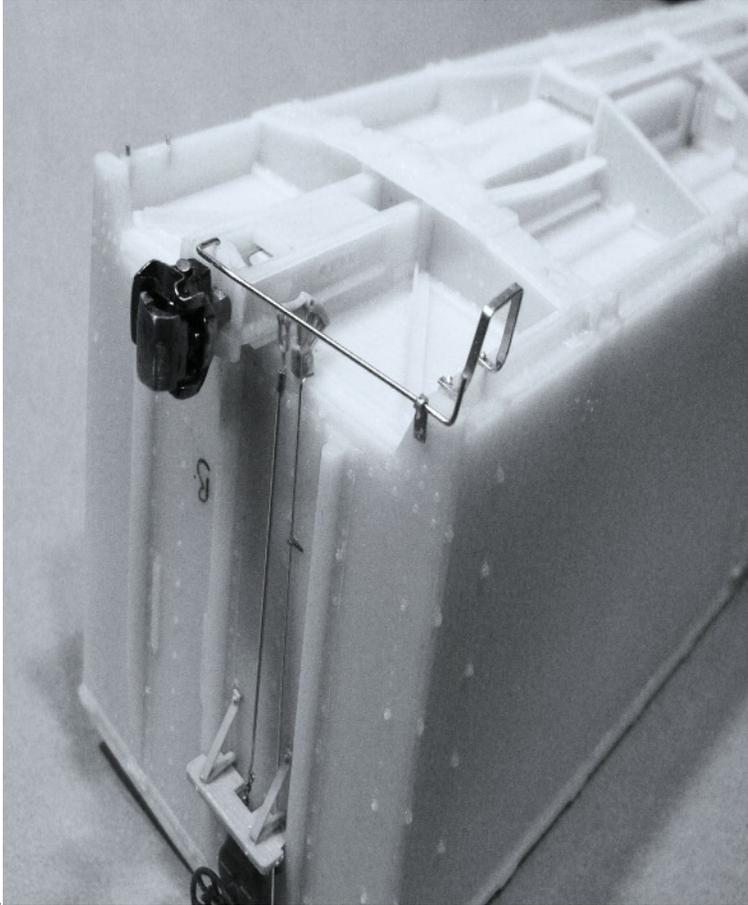


The corner steps are fabricated from .015x.042 brass strip and can either be bent in a staple shape with the bottom side 12" scale inches wide and pressed into holes drilled in the side sill or you can twist the ends, fold them over and pin the ends of the steps to the bottom sill for a more prototypical appearance. For pins to hold the vulnerable steps use .028 wire in #70 holes for strength. The steps should be 14 scale inches below the side sill.

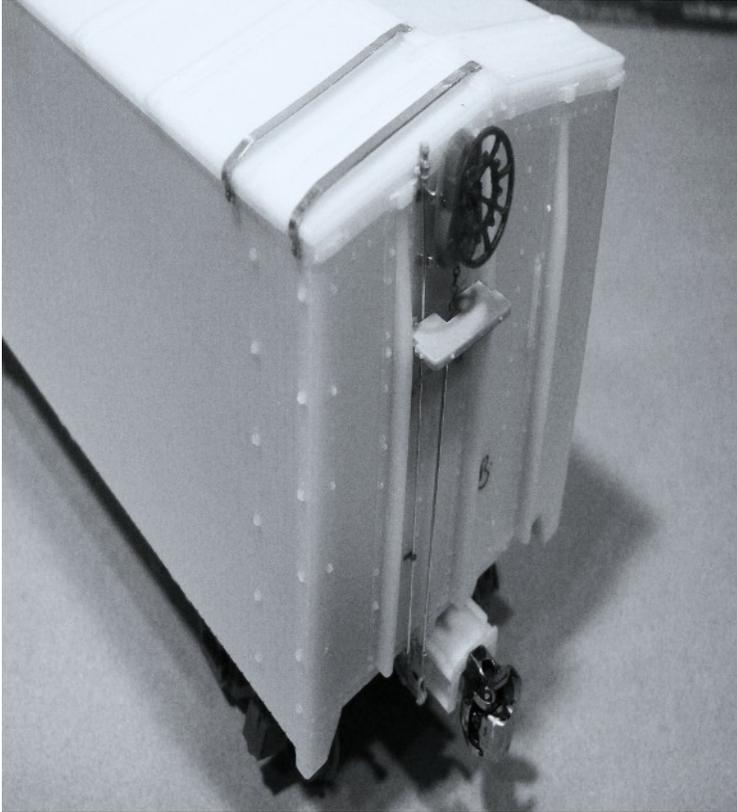
Fabricate brake hose brackets from .033 wire and .015x.100 brass strip soldered together. The brackets should extend 12 scale inches beyond the end of the car. Pin the brackets to the end of the car with .028 wire. The end of the brake pipe can be finished off with a True Details or San Juan rubber air hose with a dab of Walther's Goo to hold it in place.



Cut levers can be bent from .019 wire and attached with a loop of brass strip at the corner and bending back under the draft gear terminating in a hole in the lower striker casting



On the prototype the running boards were wood and were never updated to steel open grid walks. Add grain to either .030x.125 styrene or strip wood and add to the cast in running board saddles on the roof ridge extending 12 scale inches beyond the ends. A piece of .030x.060 is glued under the ends of the running boards and supports are formed from brass strip. For the lateral boards bend .015x.060 brass strip for supports 18 scale inches apart. The ends of the supports should wrap over the edges of the roof and be pinned to the fascia at the top of the sides. Lateral boards are cut to 28" long and 7 are glued each support spaced .015 apart.



This completes the assembly of this car . Wash the car in warm water with a mild detergent and let dry for at least 24 hours.

Finishing will make or break the appearance of this car so invest the same amount of effort into the finish as you have in the construction.

The roofs on these cars were either never painted or the paint just would not stick to the galvanized roof panels. An existing car in Coplay Pa shows the roof to be in sound condition with little rust after almost eighty years of exposure to the elements. The wood sides on these cars faded to almost a shade of pink with the steel doors and ends becoming slightly darker due to exposure.

The suggested finishing begins with painting the under frame a shade of brownish grey about a 50/50 mix of earth and dark brown color. Adding more dark rusty brown to the same mixture paint the trucks and go back over the steel portions of the under frame. Spray a light coat on the cars ends and steel doors, this will show through a couple of light coats of the body color and make the steel portions of the car body appear a shade or two darker than the wood. The red oxide carbody color is sprayed on the sides and ends

being careful not to get too much overspray on the underbody. During this stage of the finishing keep the car mounted on a pair of “shop” trucks, old trucks that are used while painting and can be swapped out for the painted and weathered trucks at the end. Mask the sides, ends and running boards and spray the roof with Testors Acryl steel. Before decaling, proceed with weathering the car body, this may seem strange but the material called stencil paint used to letter prototype cars had a very high content of titanium dioxide and lead which caused the lettering to continuously oxidize at the surface keeping the lettering much cleaner than the painted sides of the car. Using a 70/30 mix of Testors Acryl burnt umber and rust thin the mix to almost a wash with Isopropyl alcohol. Dial your air brush to the smallest setting where you can get just a “dot” when you push the button at close range. Go over the entire car highlighting all rivets, grab iron ends and other miscellaneous hardware. This is slow and tedious and requires constant fiddling to maintain the proper amount of color but makes for a stunning finish. Using a file card as a quick mask darken the eaves, edges of the doors, corners of the ends and the side sills. Go back over the carbody with the same shade of color and a small 5/0 spotter paint brush and highlight all details as you did with the airbrush to darken the details even more, and the contrast brings the details out and makes them visible. Now using the same paint mix as a wash take a 10/0 liner brush and highlight the roof ribs and individual seams in the car siding. To clean up any excess weathering clip a folded wad of paper towel into a pair of hemostats, dip it in Mean Green cleaner and remove the excess using a vertical stroke which if any streaks are left behind will appear as rain streaked dirt and grime. Dry brush the under frame, trucks and lowest portions of the carbody with an earth tone acrylic. Go over the car as much as you like until you’re happy with the results removing any weathering and redoing it if it doesn’t look “right”.

Now you can spray the areas that will have decals applied with Future brand acrylic floor polish which will give a glossy finish excellent for decaling. Future floor polish for those of you that haven’t heard of its use in modeling is a mainstay of the military modelers and can be sprayed direct from the bottle

Apply decals as you normally would using setting solution and making sure the decals set into all cracks and crevices. The decal set for this car includes frame numbers. The frame numbers are applied to the sides of the cross bearer support under the doorway. Both the frame numbers should be weathered pretty heavily and add a subtle touch to the under frame.

Addendum to LVRR wrong way door boxcar with Superior panel door and reverse Murphy ends.

1. The add on gussets at the top corners of the sides are the small gussets without the notch in them for this car



2. There are four larger gussets on the lower corners of the sides with the gussets on the right lower corner of the sides having a cast in grab iron end for the lowest grab iron on the side



3. The lower door tracks for the Superior panel door are separate parts and fit on the cast on posts on the car side. The section of lower door track underneath the door is cast into the side and the separate track extends to the left of the door.



4. The opening and door latch lever must be added to the right side of the door.

