B&O M55A 465013, Bob Charles Collection, Kalmbach Memorial Library

# Series	Class	Quantity Built-YR	Duryea Underframe Type	Car Builder End Style	Builder
384000-384499	M55	500 (1940)	Ship Channel	4-5 Pressed Steel Sq Corner	Pressed Steel Car
465000 - 465899	M55-A	900 (1941)	Ship Channel	4-5 Pullman Round Corner	Pullman Standard
465900 - 465999	M55-B	100 (1942)	Z26 Center Sill	4-5 Pullman Round Corner	Pullman Standard

History

Between 1940 and 1942, The Baltimore and Ohio took delivery of 1500 40' boxcars from orders split between Pressed Steel Car (M55 series), and Pullman Standard (M55A and M55B series). The orders specified a 10’ interior height and 6’ doors built to the AAR standard but with a few distinguishing features. Both builders used their own proprietary ‘Car Builder’s Ends’. The Pressed Steel Cars had unique 4-5 square corner ends with a stepped flat style rib while the Pullman Standard Cars had 4-5 round corner ends with a tapered rib that wrapped around the round corner end. All cars were equipped with Duryea cushioned under frames. Two styles of Duryea under frame construction were fitted. The M55’s and M55A’s used centre sills built up from ship channels while the M55B had a centre sill utilizing a Z26 rolled and welded steel member. All cars were equipped with a flat panel roof with interior car lines that featured a lower flat panel used on the panels closest to the car ends. Both builders supplied Youngstown doors with Camel fixtures.

These cars wore many different lettering arrangements though out their service lives. Refer to prototype photos. This kit includes decals to model the as-built through 1957 lettering arrangements and heralds.

These instructions are for the M55B.. The instructions are different for the M55 and M55A

Three parts lists are included. ***Parts Included in This Kit*** needs no explanation. ***Parts supplied by the modeller*** are parts which are not included in the kit but are required.

The level of detail you choose for your model will affect the construction time. A model built with the parts included with the Intermountain kit will yield a fine model, but substituting from the third list of ***Suggested Optional Parts*** will yield a more accurate car. Of course, the savvy model builder might find ways to enhance their model beyond what's outlined in these instructions, and we'd love to see your work.

Parts Included in This Kit

Pressed Steel or Pullman 4-5 Ends
Resin under frame parts
Flat panel Roof and Laser cut Trusses
Tack Boards
Slack Adjuster
Etched details (Duryea)
Decals

Parts Sourced by the Modeller

InterMountain (40799), Red Caboose or IMWX 40' Boxcar with 10" IH and 6' Doors. The Red Caboose/IMWX kit will need the ends removed.

Couplers
0.125" Styrene rod or tube.
0.010" Styrene sheet.
0.010"x 0.06" styrene strip & 0.010" x 0.040" strip
0.030" x 0.040" styrene strip
40 links per inch chain

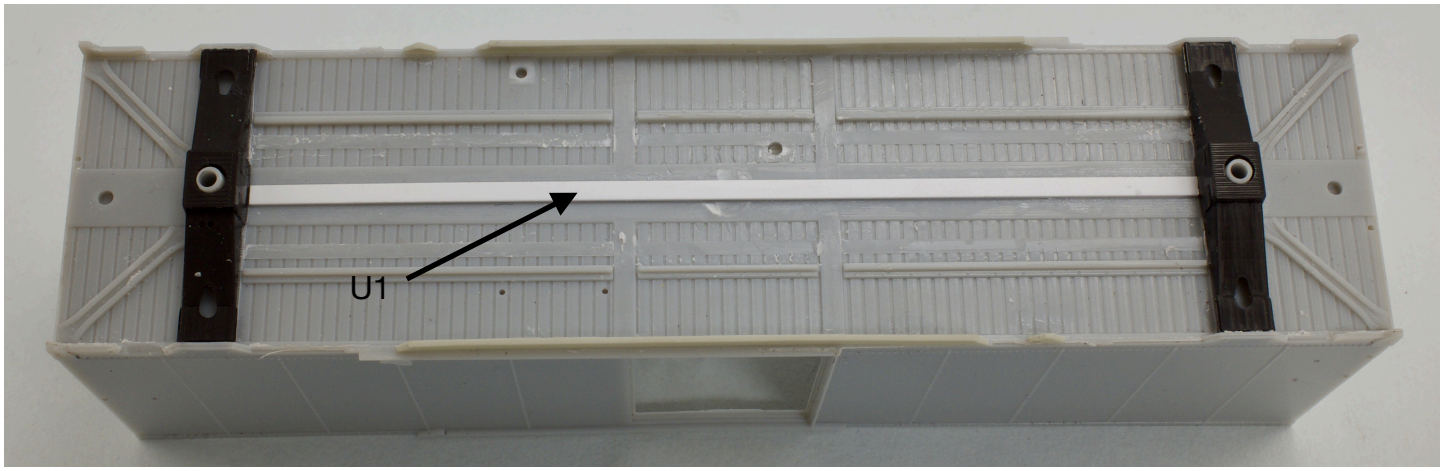
Suggested Optional Parts

AB brake set
Phosphor bronze wire (0.008", 0.010", 0.012", 0.015", 0.020")
Tichy Turn buckles
Tahoe model works Barber Trucks (50 Ton) #109/209
Yarmouth Model Works Eye bolts, Cut Lever Brackets
Yarmouth 18" Spacing 7 Rung ladder styles & 18" Rungs
Yarmouth Model Works Laser Cut Running Board
Kadee Bracket Grabs
Athearn Harvested or Archer Rivets

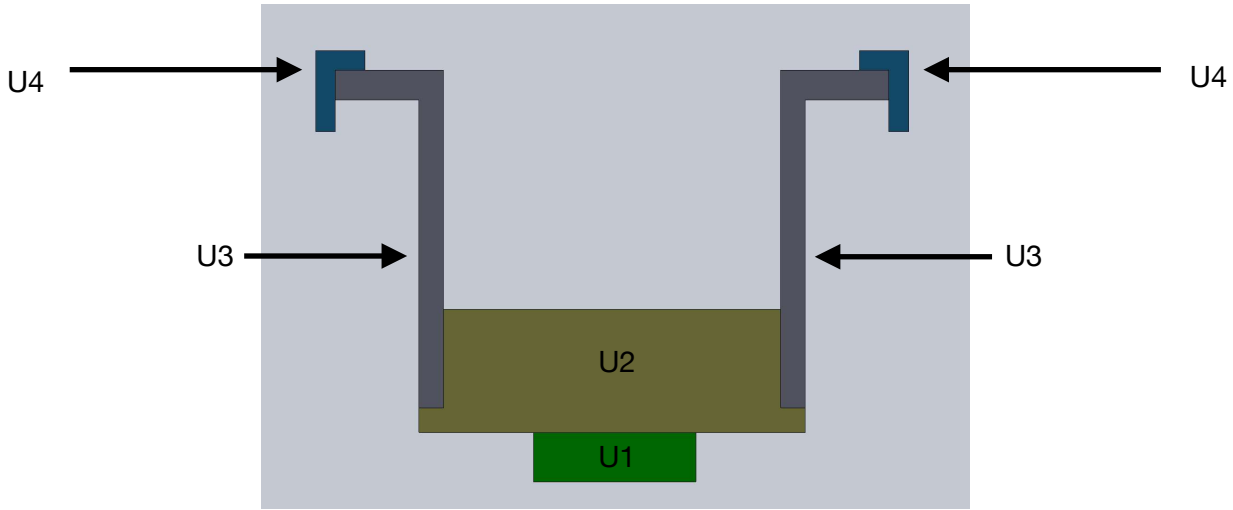
Construction

Start off by cleaning the resin parts of any remaining mold release. Cleaning with 'Shout', orange type degreaser or dish soap and water will all give satisfactory results. Remove flash from the resin ends and details by sanding on a flat surface such as plate glass or a bench top. 200-grit sandpaper works well for this. Take your time and make sure to sand the parts to an even thickness. Rotate the part as you go to ensure you don't sand any one area more than the rest of the part. To remove flash from the long thin under frame parts, first cut them free of the sheet. Then flip them over and support them on a piece of wood. Using a razor blade scrape the back side of the part to thin the flash until it separates from the part. See the picture demonstrating this technique. If the castings have any small pin holes, they can be filled with auto body glazing compound or Squadron filler for plastic models.

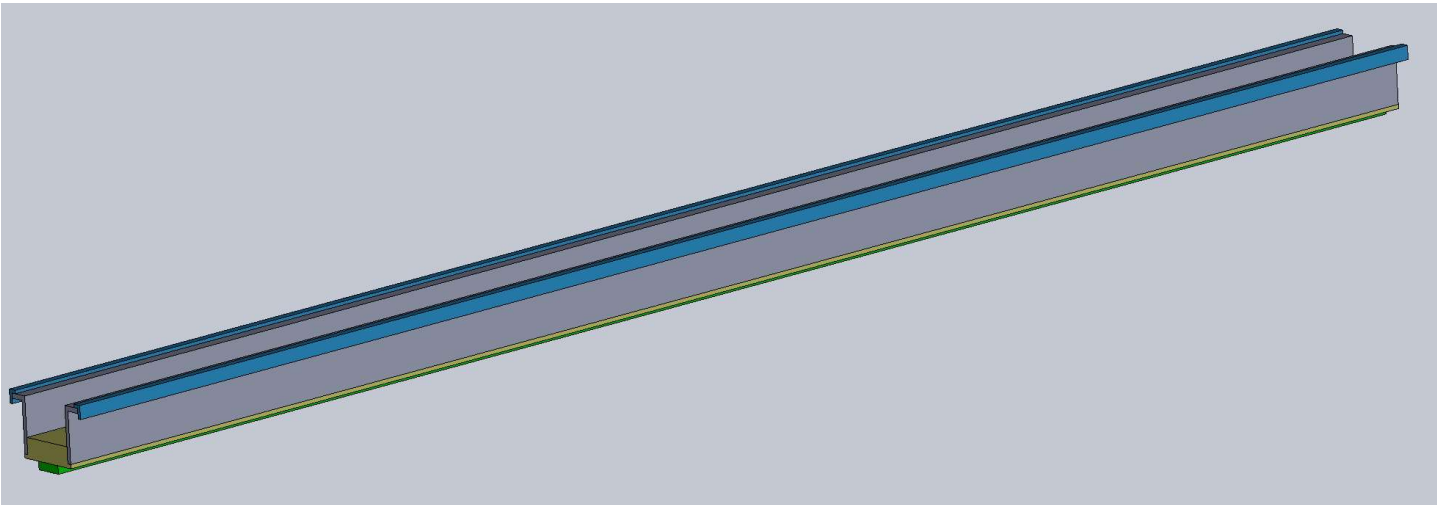
Remove any remains of the injection sprue from the bottom of the car-body along with the cast on mounts for the cylinder and reservoir. Carve off the side sills under the door and the cross tie tabs. Glue the replacement side sills and cross bearer tabs to the body. Refer to the prototype photos and the image below for locations. Do not remove the two inner stingers from the floor as is shown on the photo below. Cut the bolsters free from the rest of the under frame and glue in place. Glue under frame part U1 between the bolsters. It will need to be trimmed to length. A piece of styrene of the same cross section can also be substituted.



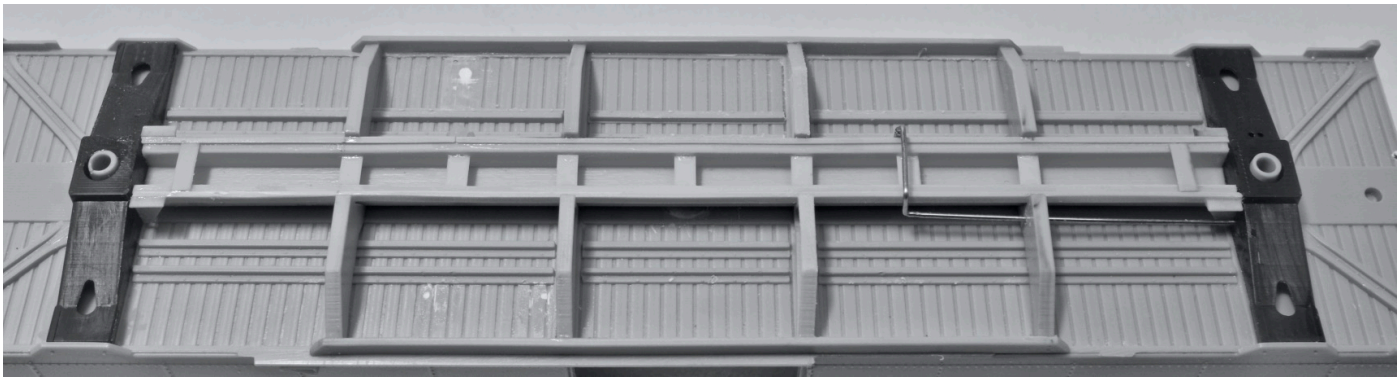
Next glue under frame part U2 on top of U1 making sure to keep it centred between the side sills. Glue two of the parts labeled U3 to either side of part U2 to form the sides of the centre sill. A small rabbet has been moulded into part U2 to help facilitate alignment. The flanges of U3 should face outward to the side sills. Glue the cross bearer connector angles onto parts U3. See cross section, 3D images of under frame for clarity.



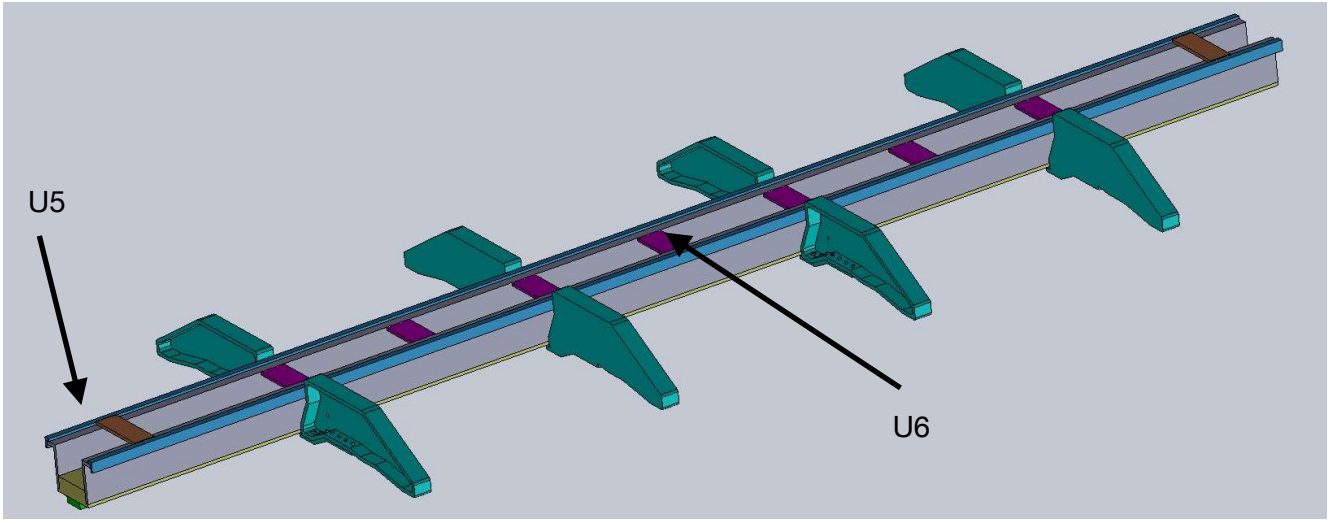
The centre sill of the under frame is now complete and should resemble the following 3D image on the next page.



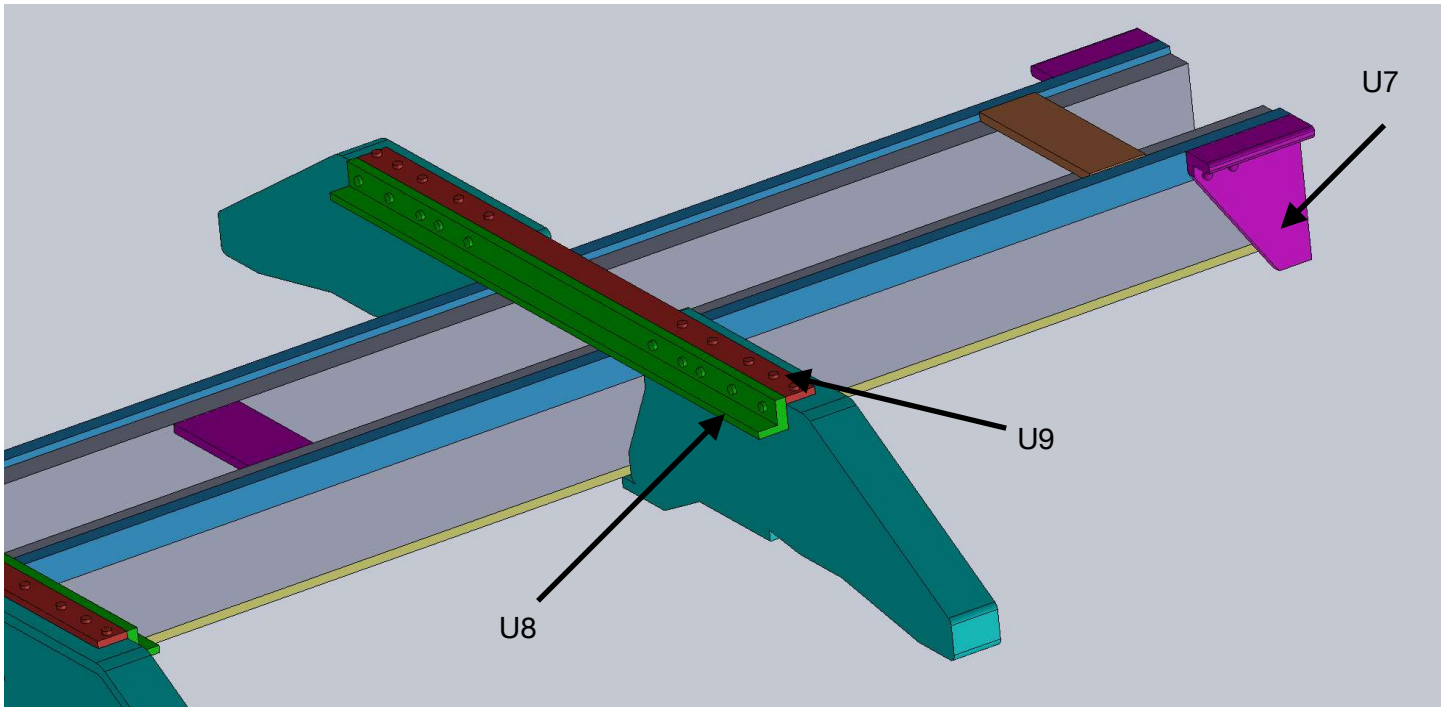
Next, clean up the four cross bearers and trial fit them in place. They may need to be sanded to length to fit, as the under frame has been designed to fit different boxcar bodies of varying widths. Do not glue at this time. Mark the cross bearers for holes for the train line should you wish to add one to your model. Form a train line from 0.020" wire. It should wrap up and over the centre sill, not through it as it would on a non-cushioned car. Thread the train line through the cross bearers and glue the cross bearers in place. Note which way the cross bearers face. A 3D printed 'T' fitting was also added to the pilot model. Add the two long cross car straps U5 and the seven short cross cars straps U6.

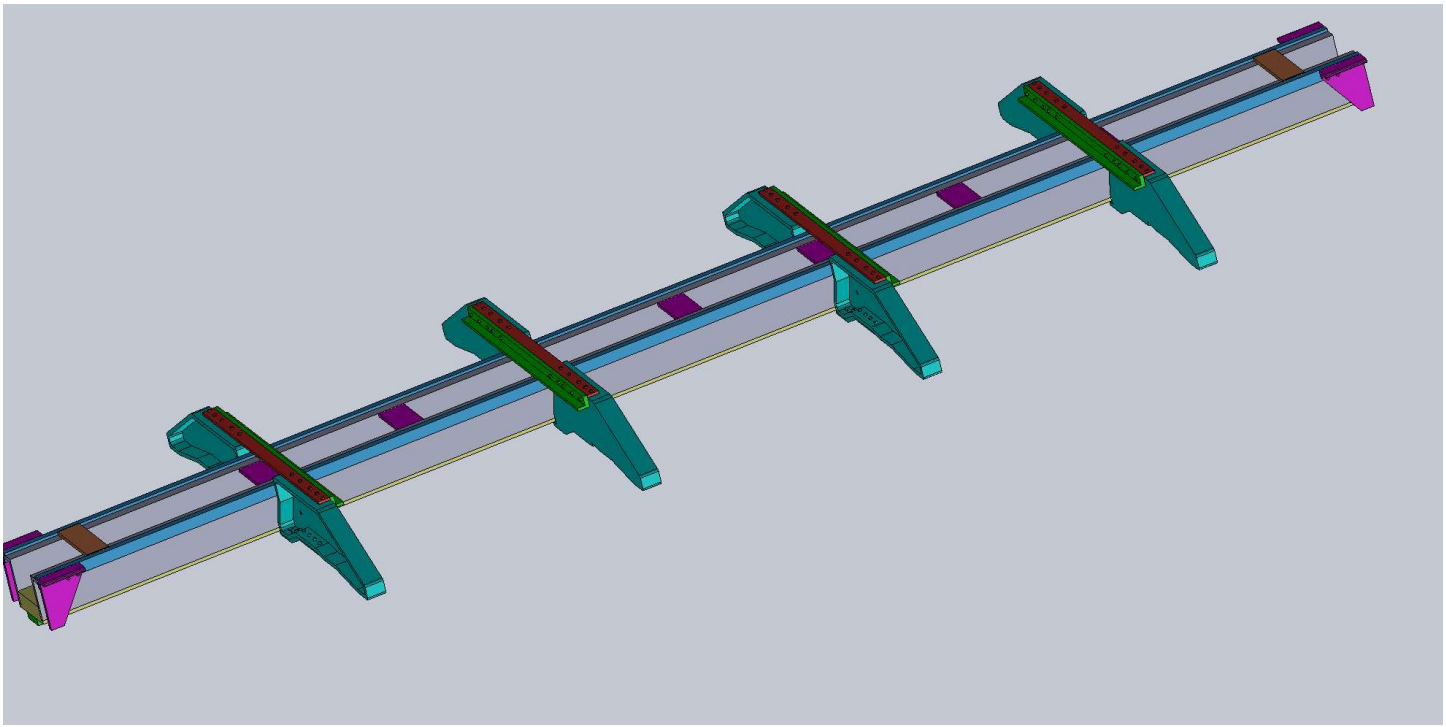


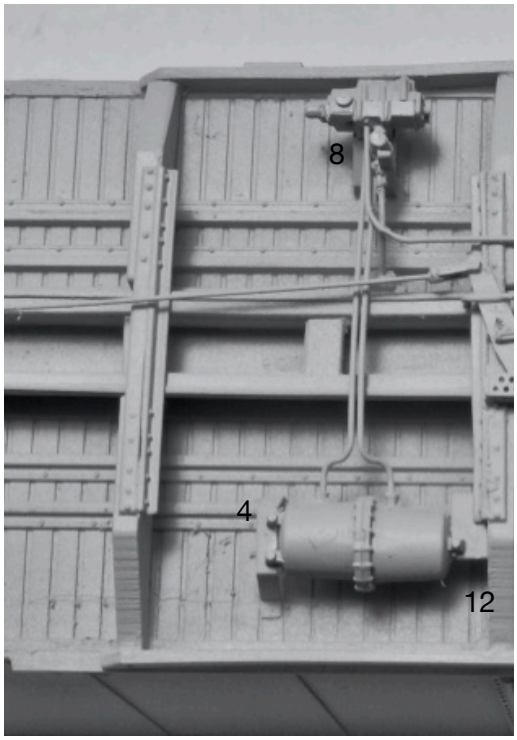
The under frame should now resemble the following 3D image.



Add the torsion plates U7 up against the bolsters and centre sill. Next, add the cross bearer connection angles U8 and bottom plates U9 to the cross bearers. The angles should be glued to the flat face of the cross bearers. See the following 3D image.







The etched detail sheet has numbers etched next to the parts to help in their identification. *Note there are extra parts on the etched sheet which are for different versions of the Duryea underframe.*

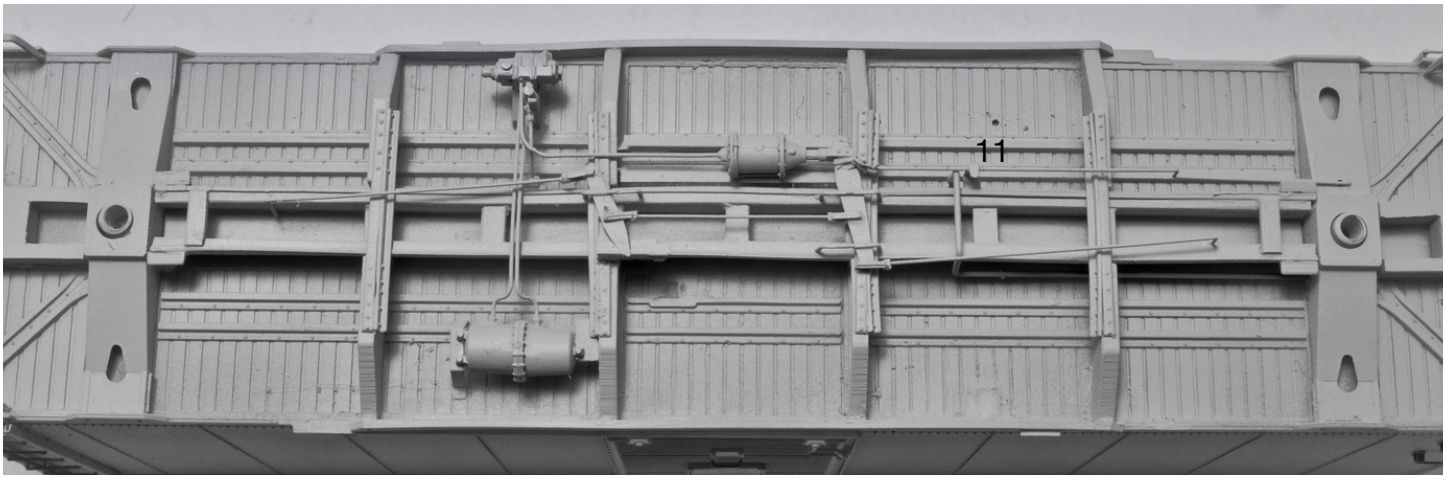
Add the reservoir to the floor using the etched mounting strap (4) on the end with two mounting lugs and plate (12) up against the cross the cross bearer under the door.

Fold the AB valve mounting bracket (8) and glue in place as shown. Add the AB valve to the bracket.

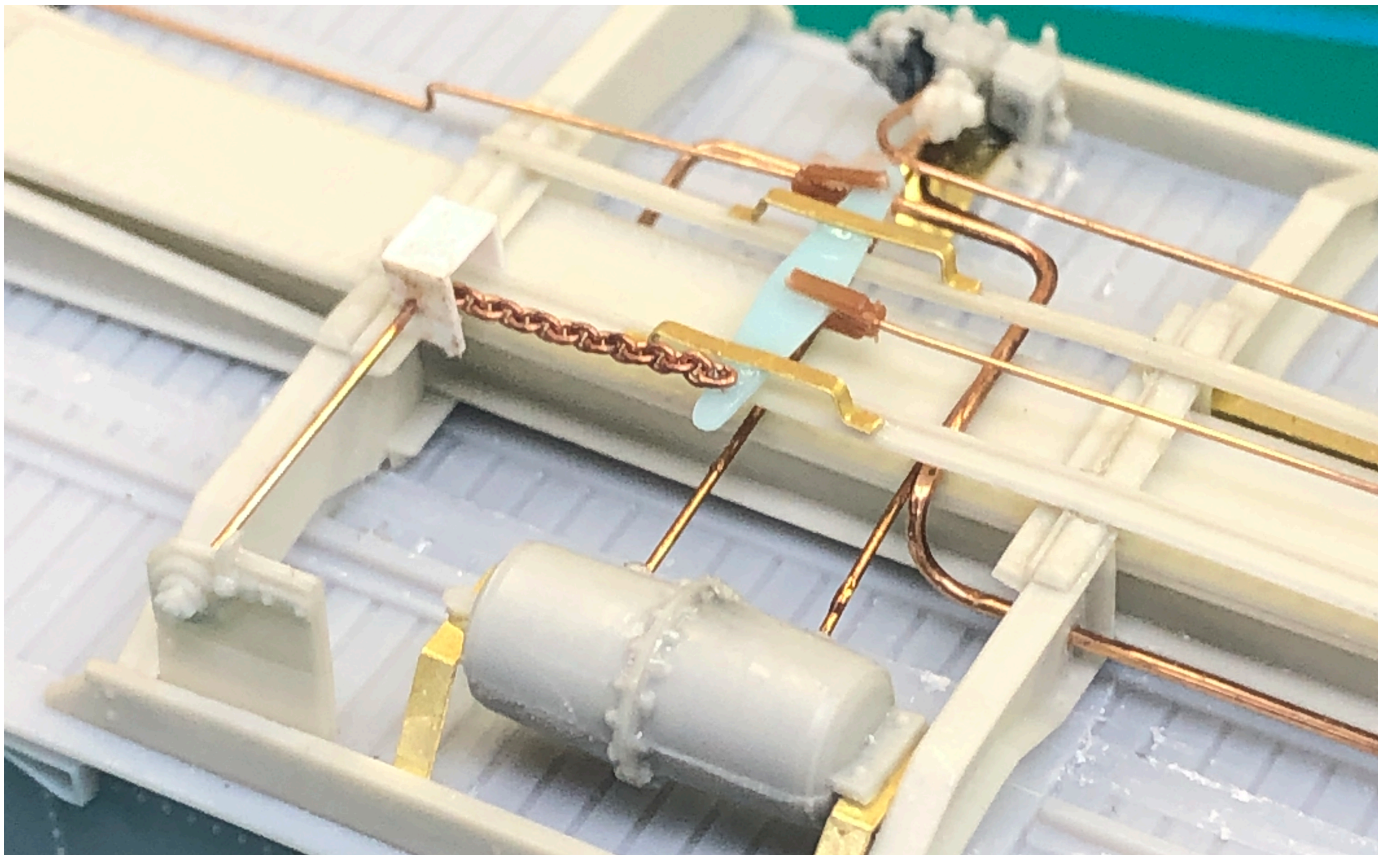
Fold both etchings (1) into Z-bars. Tim to fit between the two centre cross bearers if necessary.

Fold two etched mounting brackets (10). Glue to the inside of the cross bearers and the ends of the Z-bars. Add the cylinder mounting plate (2) as shown.

Continue by adding the brake cylinder. Use 0.012” wire to form the brake piping. Add brake lever hangers using straight grab irons. Glue brake levers into place and add brake rods constructed with 0.010” wire using Tichy turnbuckles for attachment. Fold and add the hand brake rod hanger (11) as depicted in the photo. Using a short piece of 40 links per inch chain, connect the hand brake rod to the cylinder side lever.

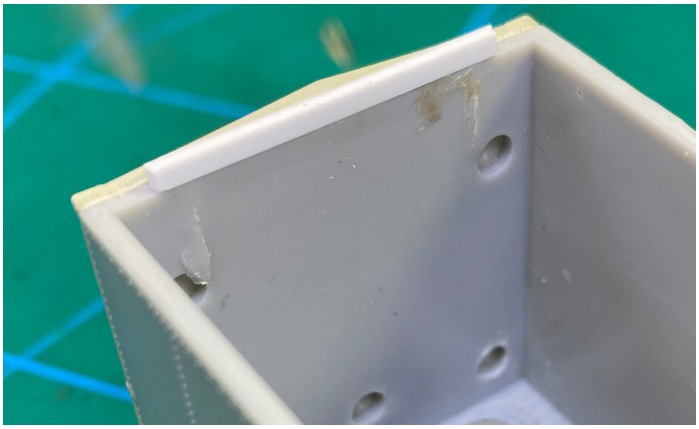


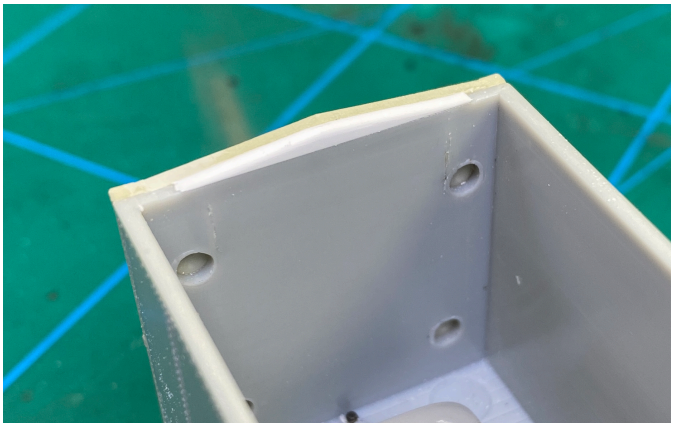
Drill a 0.020” blind hole into the back of the Tatum slack adjuster behind the square nut. Install the Slack adjuster ratchet plate and construct a ‘U’ shaped part from three pieces of 0.010” x 0.080” styrene and drill a hole through it for the chain take up rod. Use a short piece of 40 links per inch chain and a piece of 0.020” wire for the take up rod. Glue in place as shown in the following photo. Example Photo is from the M55A kit but the installation is the same.
Attach the slack adjuster chain to the dead lever using a short piece of wire to pin it.



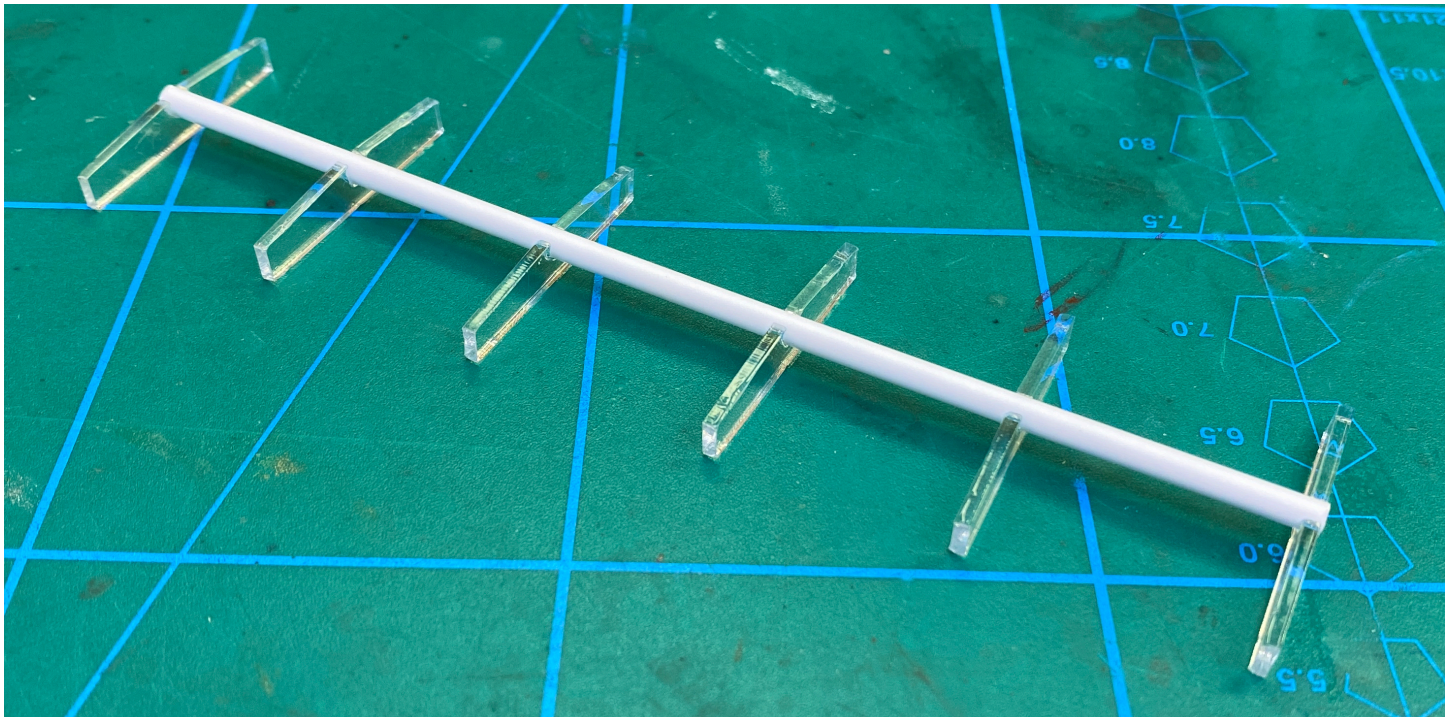
Next, add weights to your to car and make sure the glue is dry before proceeding. Fit the resin ends onto the false ends of the body shell. When you're satisfied with the fit, glue in place. Adding CA from the inside through the holes in the false end is effective and leaves no chance of glue at the joint to the side of the body. The M55B is on the left and the M55 is shown on the right.

Add a small piece of styrene strip to fill the gap between the false end and the top of the resin end. File or sand it to conform with the incline on the ends. It should also be flush with the inner wall.

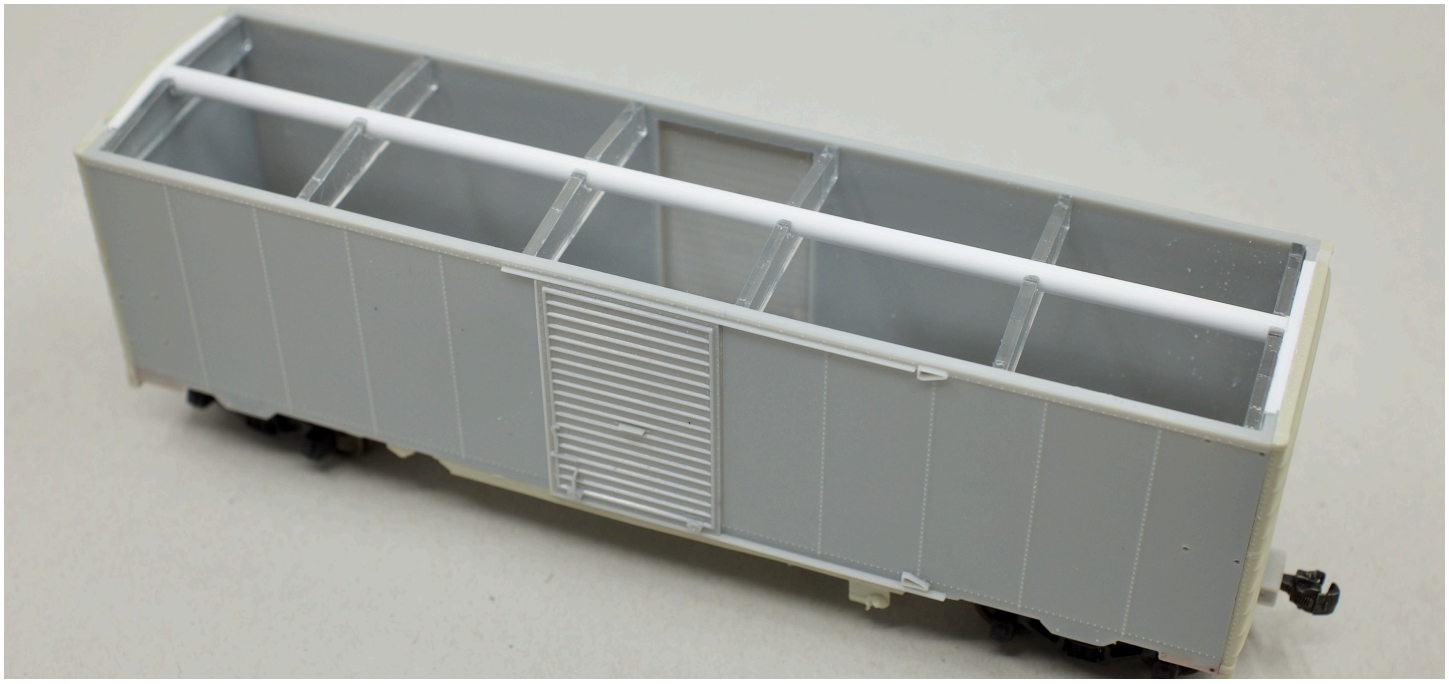




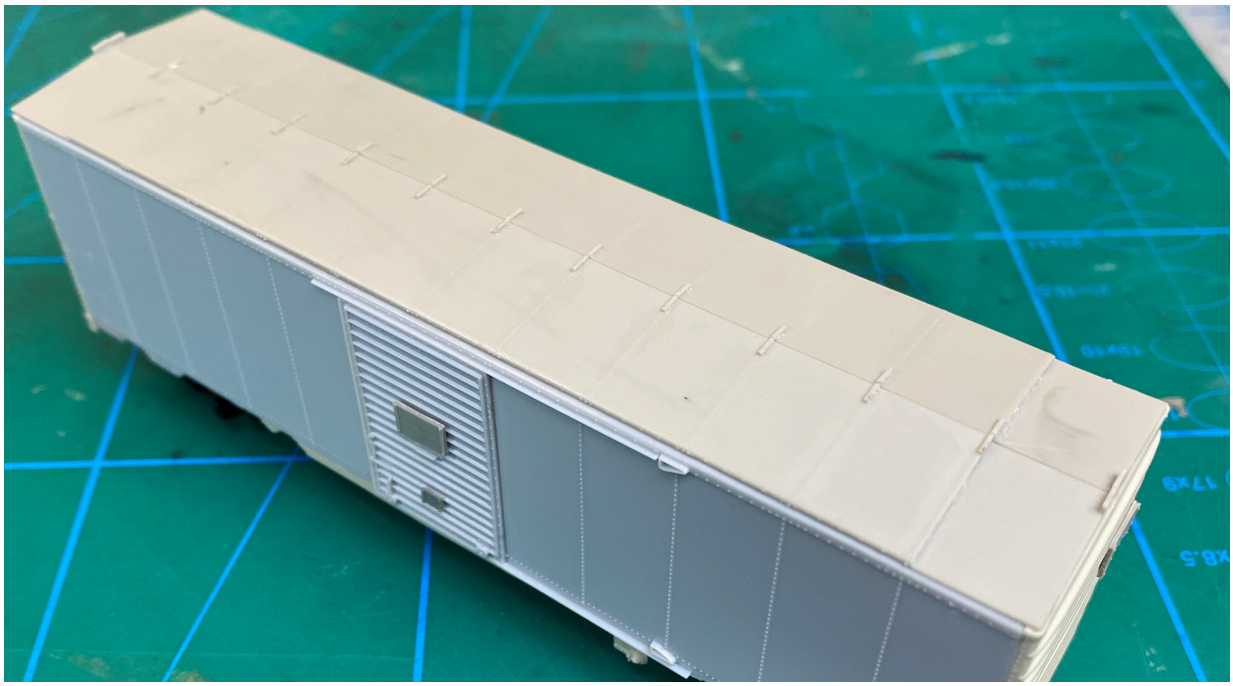
Cut a piece of 0.125” styrene rod or tube to fit between the false ends of the car body. Slide the laser cut roof supports onto the rod, do not glue to the rod at this time. The roof supports may need a bit of filing to fit over the rod using a small round file. They should be filed such that they slide easily with no binding.



Fit the roof support assembly into the car body. Position the laser cut roof supports as shown in the following photo. Make sure they are flush with the eave of the car body and glue to the car body and rod with styrene cement. Let dry thoroughly before proceeding.

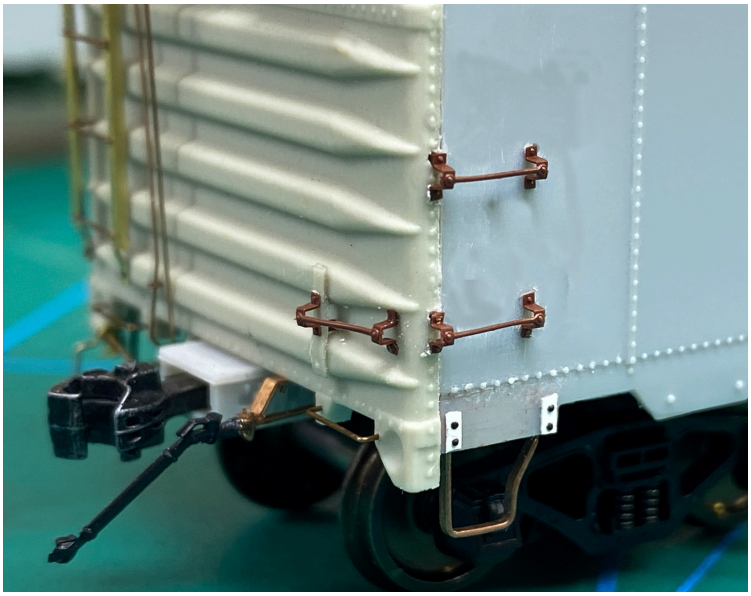


Fit one half of the roof to the car body and hold in place with masking tape. Sand the end panels of each roof panel if it hangs over the ends. Sand even amounts from each end. The roof was made slightly long to account for varying body lengths and mold shrinkage. Once satisfied with the fit, tack it along the styrene rod in a couple of places with CA. Remove the masking tape and fit the other roof half to the car body and hold in place with masking tape. Tack in place along the centre joint. When happy with the roof fit, remove the remaining masking tape and glue along the top seam, ends and eaves with CA.



Glue the doors into the door pocket. Add the tack boards to the doors and ends. Install the route card holders. Refer the prototype photos for placement. Drill two holes in the door and glue a handle made from 0.010” wire.

To follow our lead with upgrades to the Intermountain kit, continue following these instructions. If you plan to use the Intermountain kit parts, follow the Intermountain kit instructions for the remainder of the build and then proceed to the section on painting and finishing.

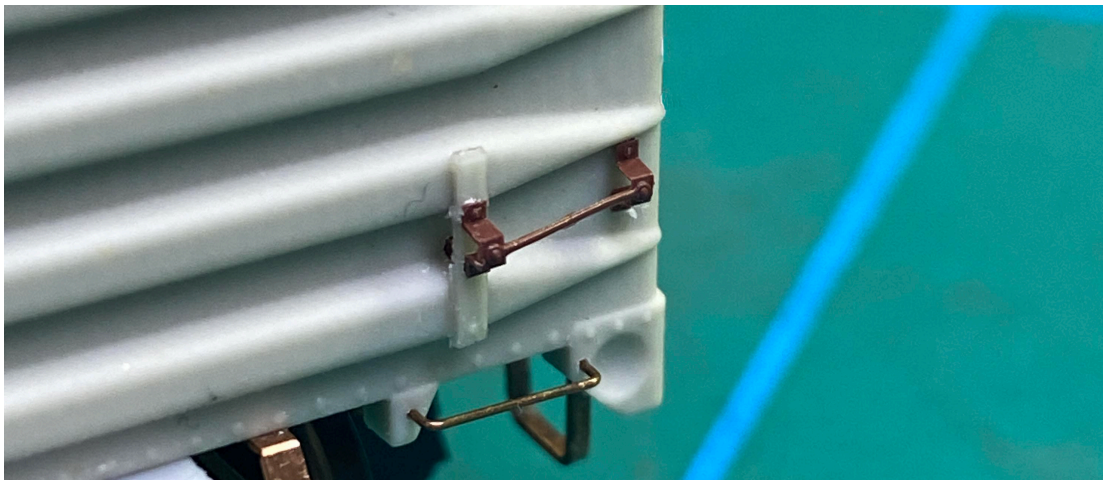


Plug the grab iron holes in the car body with styrene rod and sand flush. Install the side bracket grabs (Kadee recommended) on the sides. Refer to the above photos for placement.

M55 B Grab Iron

Install the rung mounting strap on the lower two ribs of the end. The rivet on the strap should be on the lower rib. Drill 0.019” holes and press a Kadee bracket grab into place.

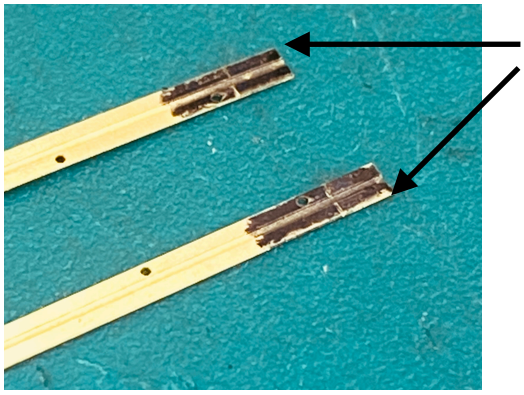
Drill and install 4 lower end straight grabs made from 0.010” wire.

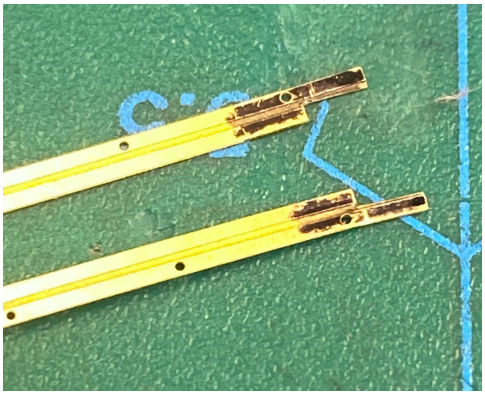


Ladders

The B&O favoured attaching ladders to the car body by hanging them on a grab iron at the top - while riveting them directly to the side at the bottom. To model this, Yarmouth Model Works 18" spacing 7 rung ladders can easily be modified to suit. Plug the car body ladder mounting holes with styrene rod and sand flush before proceeding.

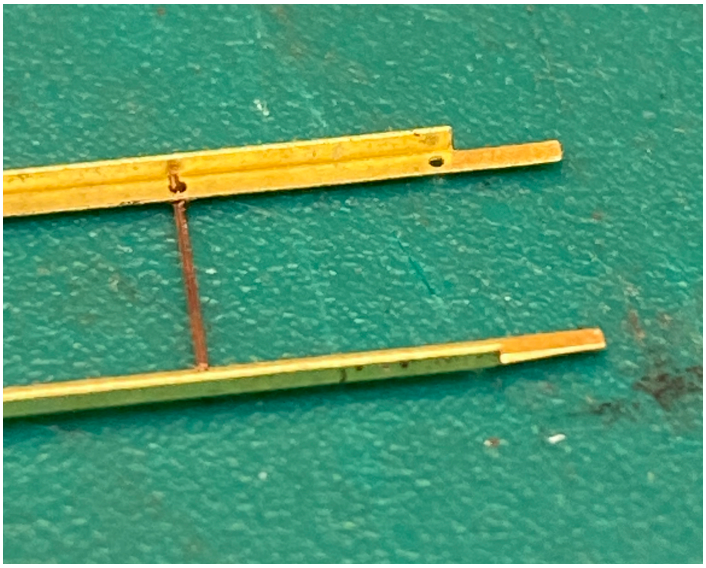
Start with the side ladders by removing the outboard portion of the style (the edge with no holes) to a point 0.080" from the end of the style. The material should be removed from the end where the hole is further inset. Xuron photo etch shears work well for cutting the etched styles. Colouring the style with a sharpie and scribing a line will assist. Cut along the fold line and the scribed line. Clean up the cut with a fine tool maker stone or diamond file.

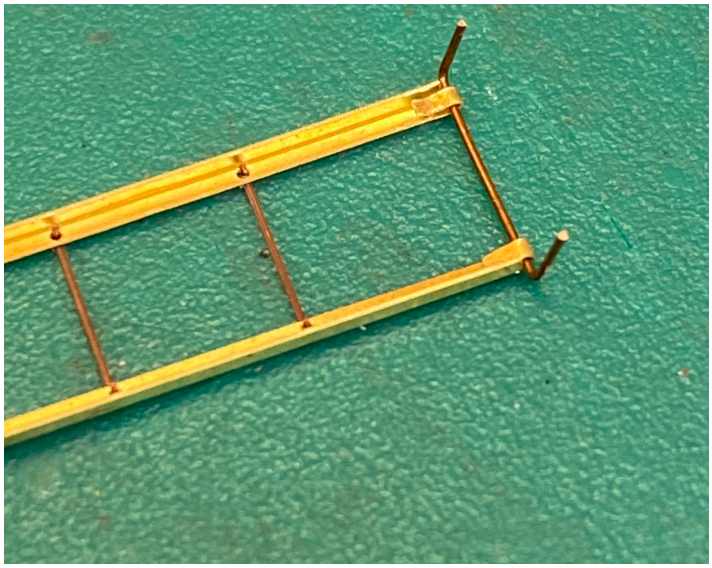




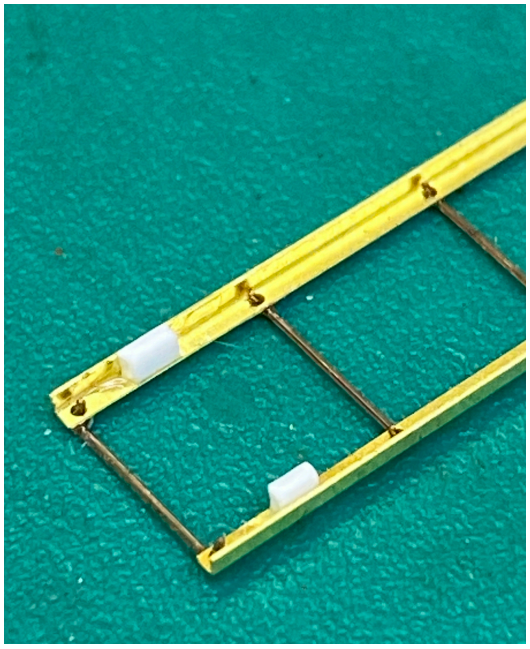
Note styles have been swapped in position compared to previous photo.

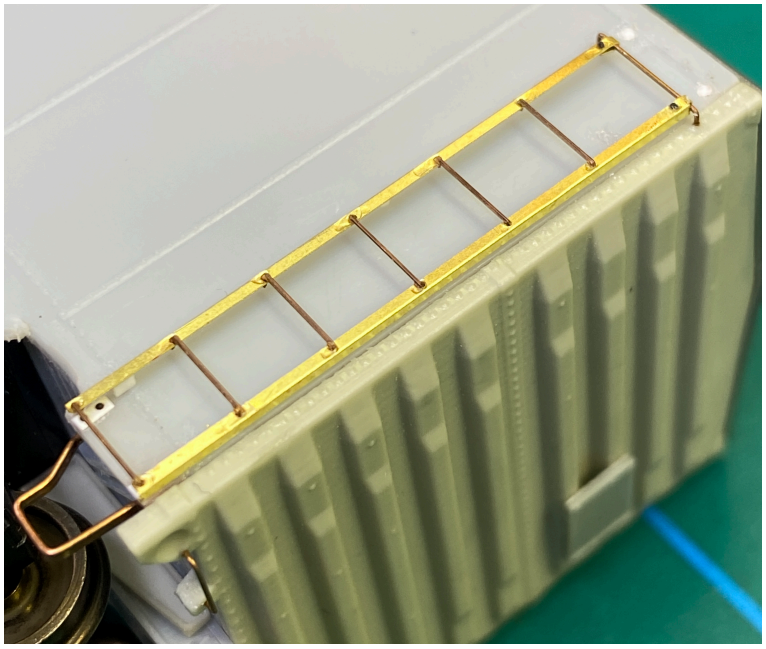
Fold the styles and assemble the ladders using 18" wide rungs. Do not glue a rung into the top hole of the ladder. The top rung of the ladder uses the grab iron installed on the car body instead. Bend a straight grab iron, 20" long from 0.010" wire. Place across the top of the styles and bend the top flat portion of the style, over the grab.

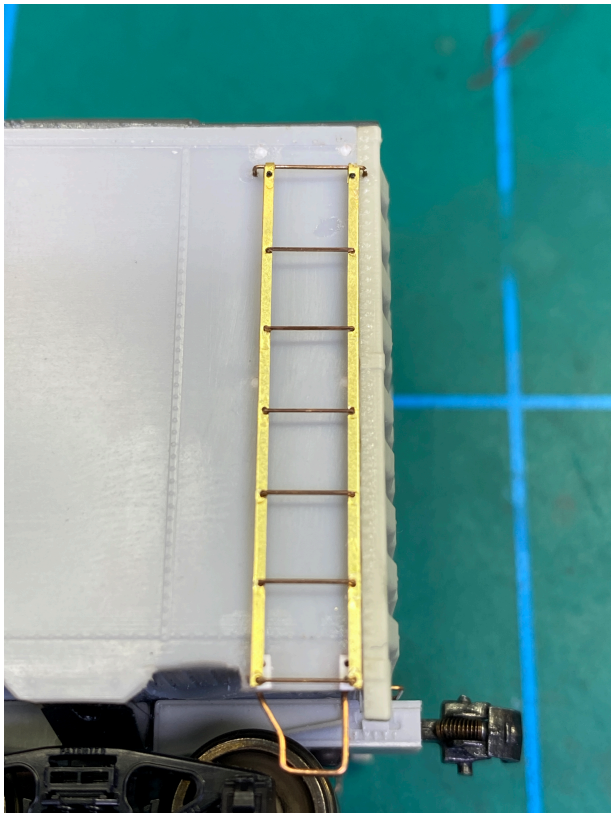




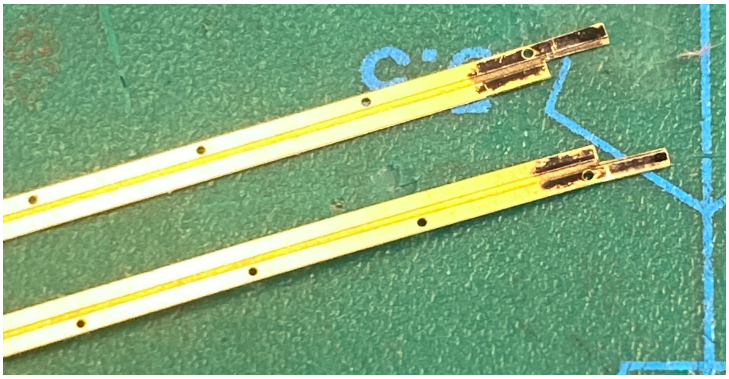
Cut small pieces of 0.030” x 0.040” styrene strip and glue to the styes with CA between the two lower rungs as shown. Drill holes into the car body to mount the ladder using the grab iron at the top. A pair of dividers can be used to measure the grab iron width and mark both holes at the same time. Secure the grab to the car-body with CA. Using styrene cement, glue the ladder to the car body at the bottom, as shown.





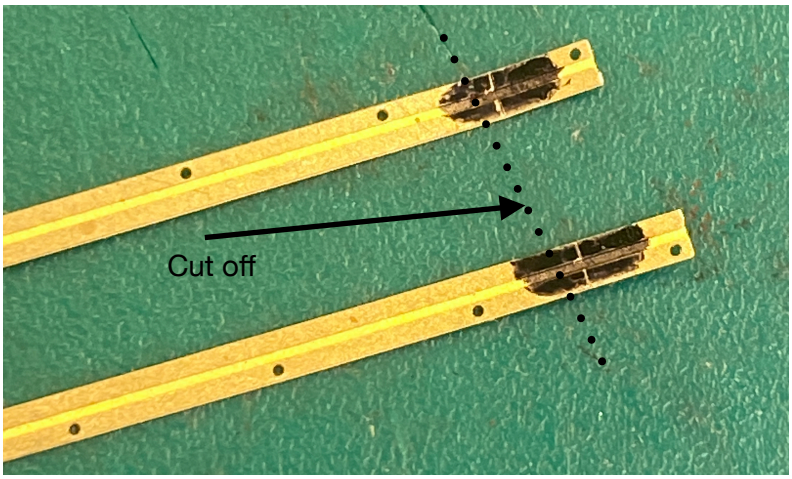


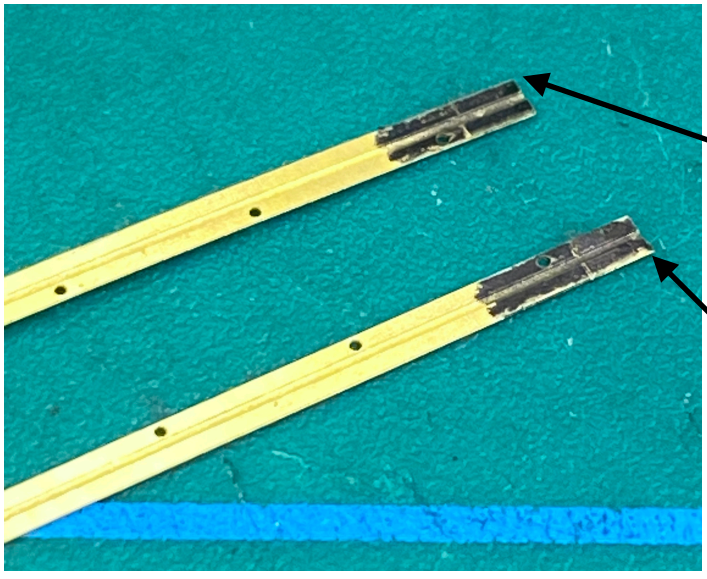
The end ladders are done in a similar manner as the side ladders. Start by removing the outboard portion of the style to a point 0.080” from the end of the style. The material should be removed from the end where the hole is further inset - just as was done on the side ladders. Next shorten the styles by cutting the opposite side between the hole closest to the end and the next hole at a point 0.110” from the end. Continue modifying the shortened end of styles by cutting away the outboard portion of the style up to a point 0.090” from the previous cut point. Follow the sequence below.



Remove the outboard portion of style by cutting along the fold line and a point 0.080” in from the end. Mark this end in a manner such that it can be identified as the **top** later in the assembly sequence.

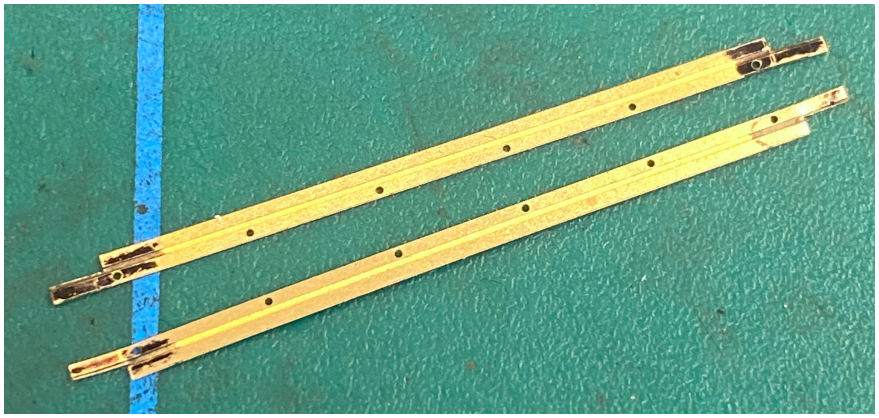
Shorten the opposite end of the style at a point 0.110” from the end.

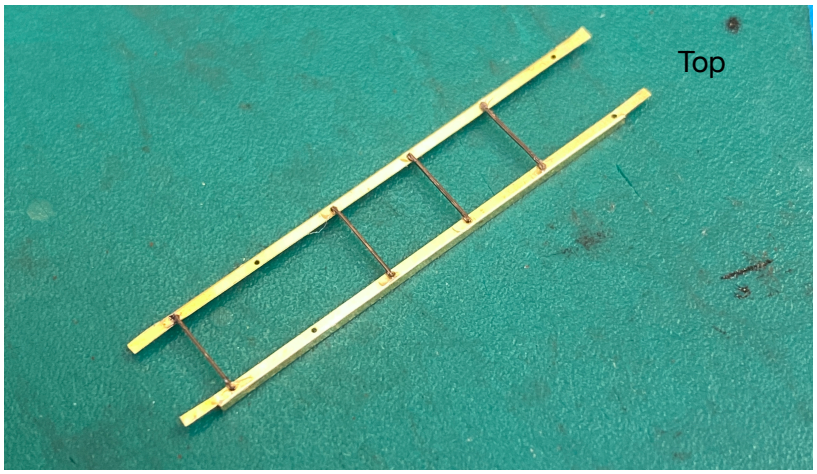




Remove outboard portion of style by cutting along the fold line and a point 0.090” from the new shortened end. This is the bottom of the ladder.

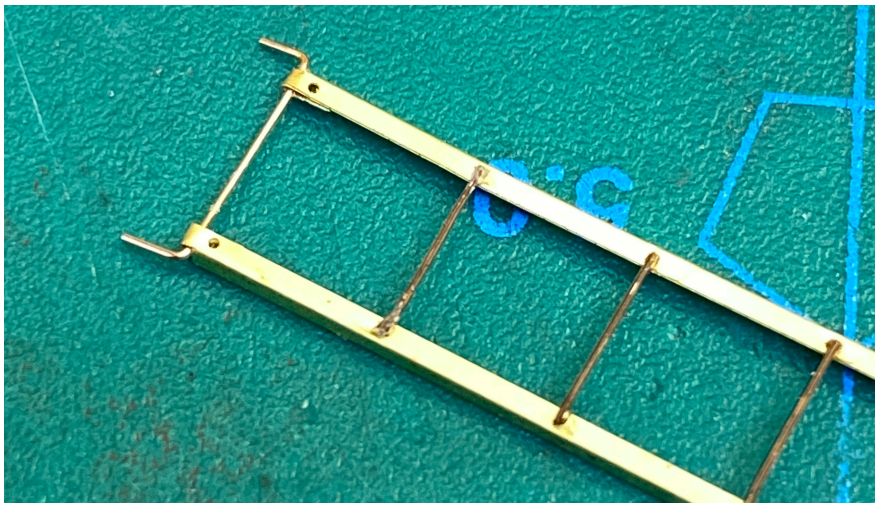
The styles should now look like this and have only 6 rung holes.





Fold the styles and install 4 rungs. Omit installing the top rung and the second rung up from the bottom.

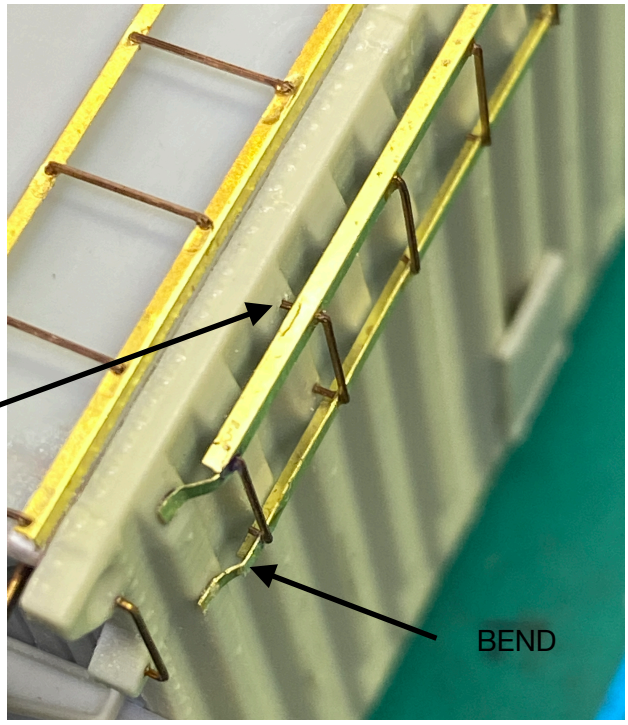
Bend a straight grab iron, 20” long using 0.010” wire. Place across the top of the styles and bend the top flat portion of the style over the grab.



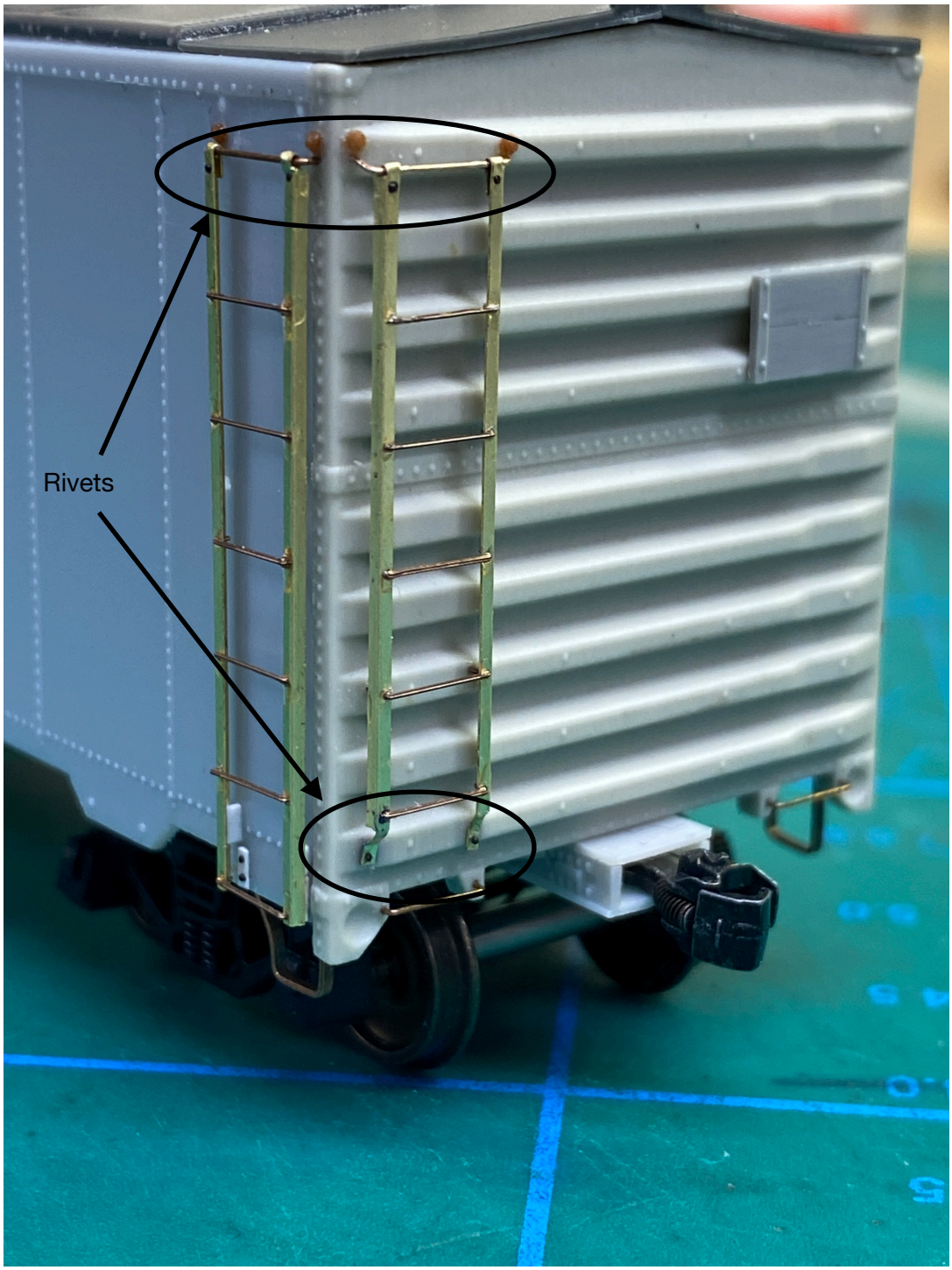
Drill holes into the car body to mount the ladder using the grab iron at the top. A pair of dividers can be used to measure the grab iron width and mark both holes at the same time. Secure the grab to the car body with CA. The grab iron should be bent down at an approximately a 30 degree angle to match the prototype installation. Tichy standard HO size NBW's were installed on both the side and end ladders just above the grab irons to simulate their attachment.

Bend the styles as shown in the photo and glue the bottom of the ladder styles to the end using CA. Drill through the holes in the style where the second rung from the bottom was omitted and secure to the side with one of the extra long rungs provided in the Yarmouth Model Works rung sets.

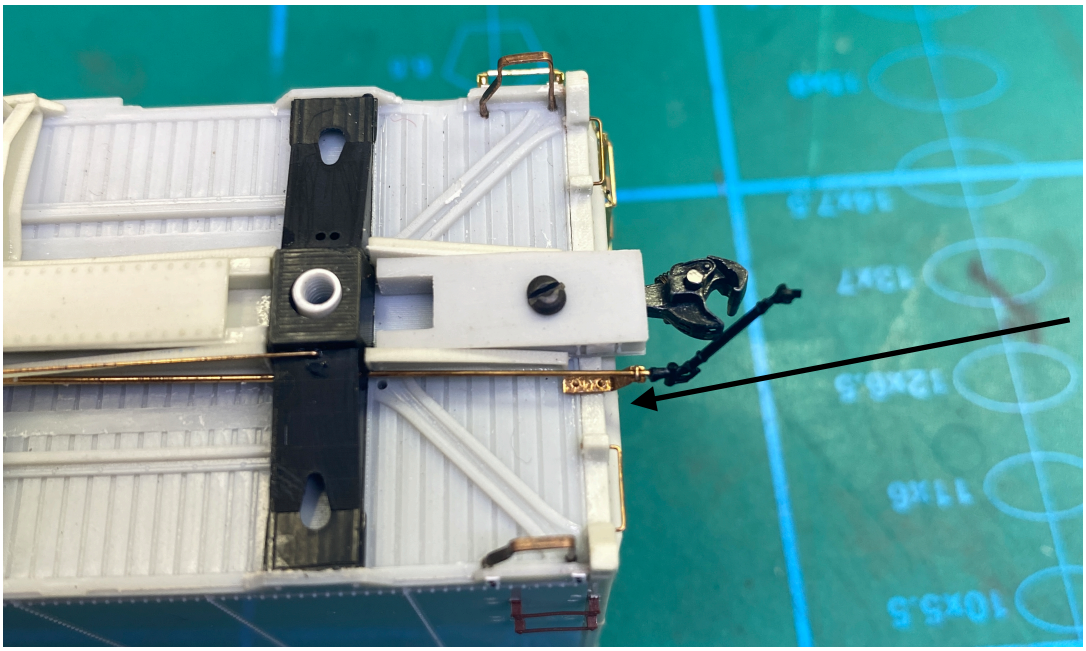
Extra long rung



Add harvested rivets to the top and bottom of the ladders styles. Use styrene cement to first place them and then follow up with a small drop of CA. The ladders are now complete. Archer rivets can also be used.

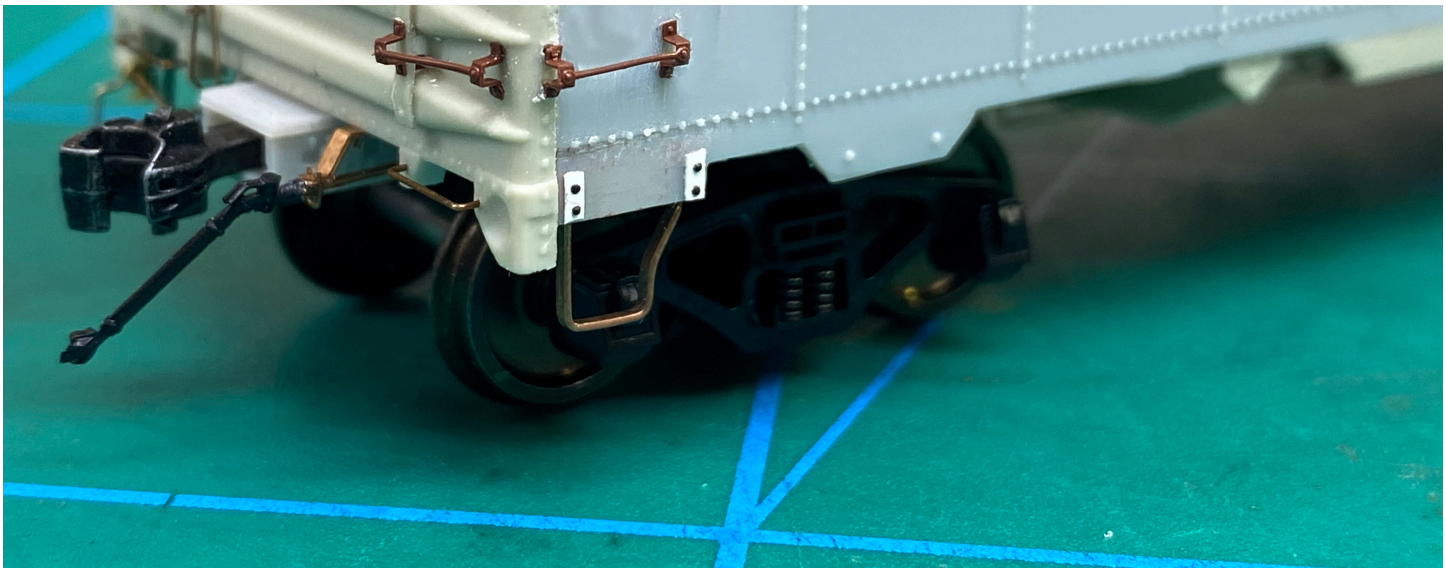


Install air hoses using your preferred method. The pilot model uses Yarmouth model Works etched air hose brackets and Cal-Scale air hoses. Secure the air hose to the bracket with a U shaped piece of 0.008” wire. To simulate the train line, 0.015” wire was used between the air hose and bolster.



Pin the air hose bracket to the floor with 0.010” dia wire.

Install A-Line (Style C) sill steps to the car by drilling holes into the floor just behind the side sill tabs. 0.005” styrene and harvested rivets were used to simulate the prototype mounting of the sill steps.

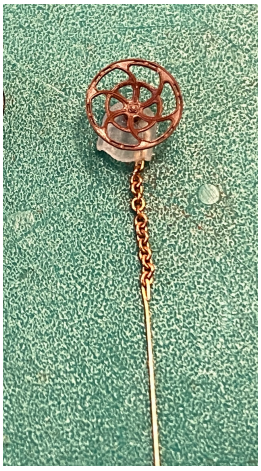


Fold the Tatum brake step along the fold lines using and etched part bender. All bends are towards the fold lines. Install the brake step mounting straps. The M55B uses two short straps. Glue the step to the straps and pin place using 0.010” wire.

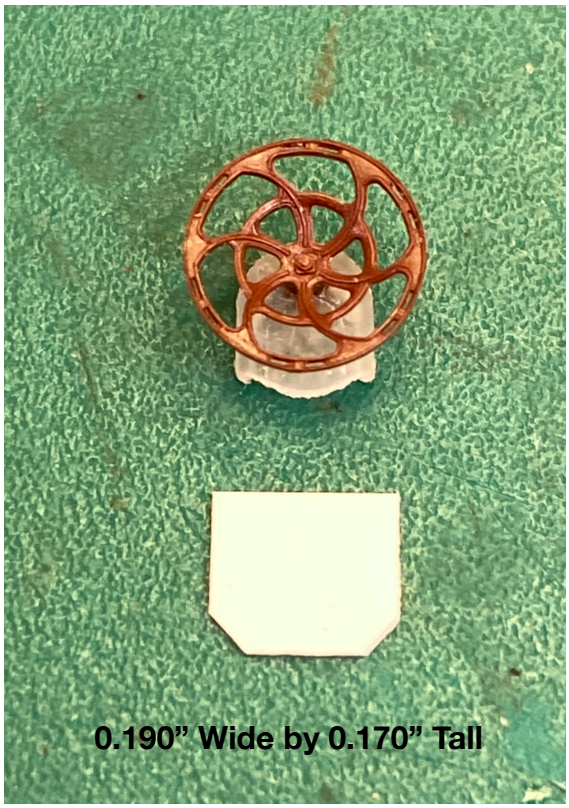
Mount the brake wheel into the brake housing. Kadee Brake Wheels were used on the pilot models. The M55B uses used Equipco Power handbrakes. The Equipco Housing is from Resin Car Works Shapeways Store. Here is a link to the Equipco Housing.

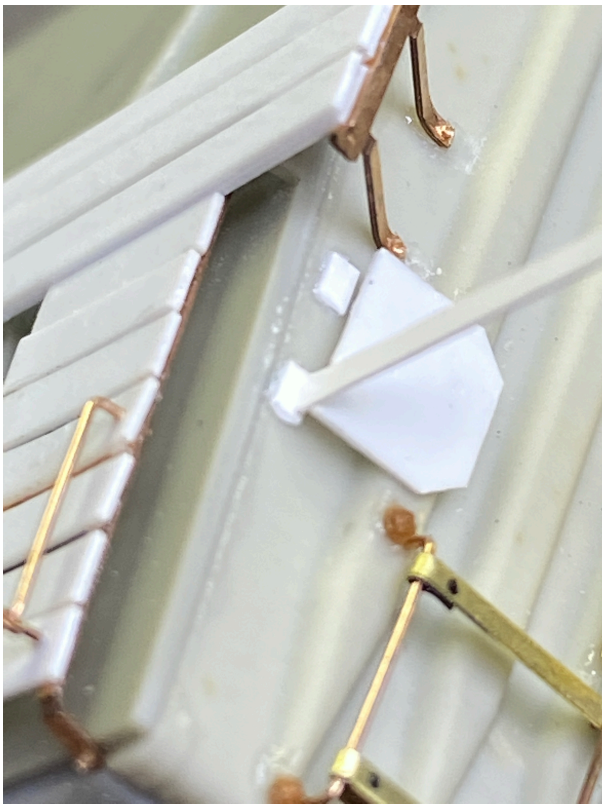
https://www.shapeways.com/product/2SX3VPF94/equipco-wheelandhousing-30?optionId=104023743&li=shops

Add a short length of 40 links per inch chain and spice of 0.010” wire. Offset the chain to the right of the housing as if looking at it from the end of the car.

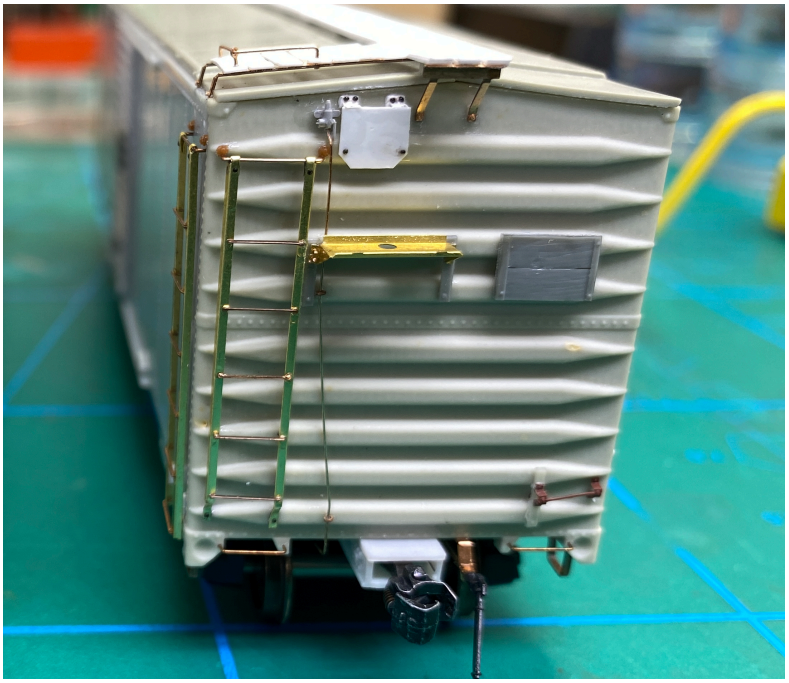


Construct brake hosing mounting platforms from 0.010” sheet styrene. They are 0.190” wide and 0.170” tall with the bottom corners cut at a 45 degree angle. Glue to the end and make upper mounting brackets with small 0.040” wide pieces of 0.010” thick styrene. Add harvested rivets to detail the attachment points.

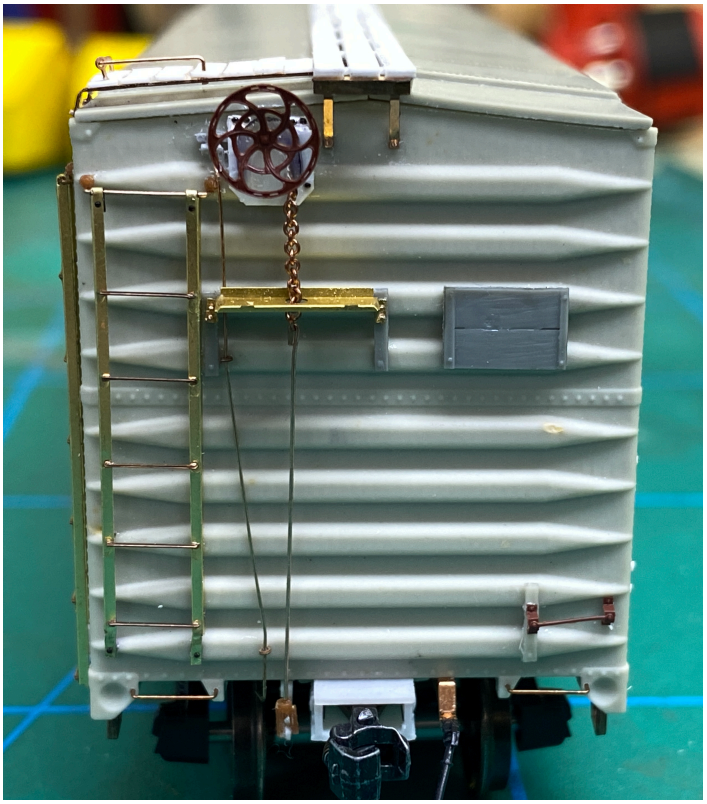




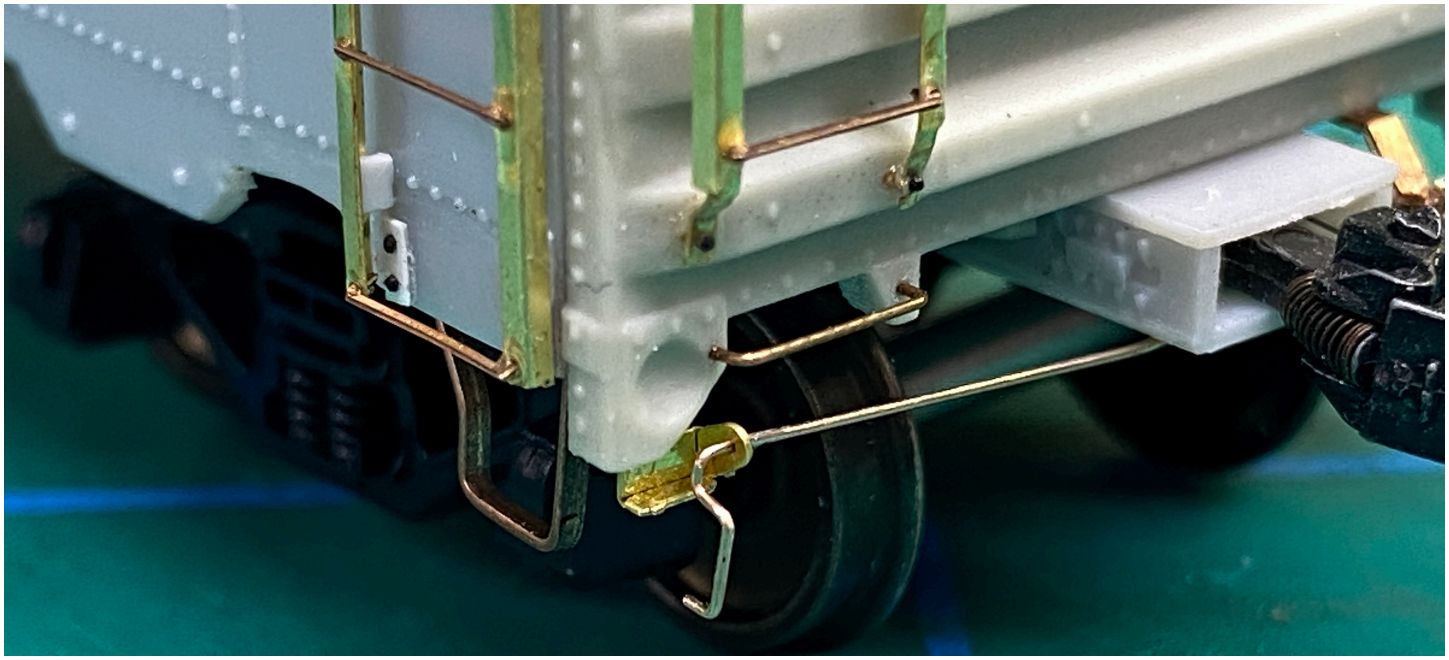
Install retainer valve (Precision Scale) and retainer valve line using 0.008” wire and eye bolts.



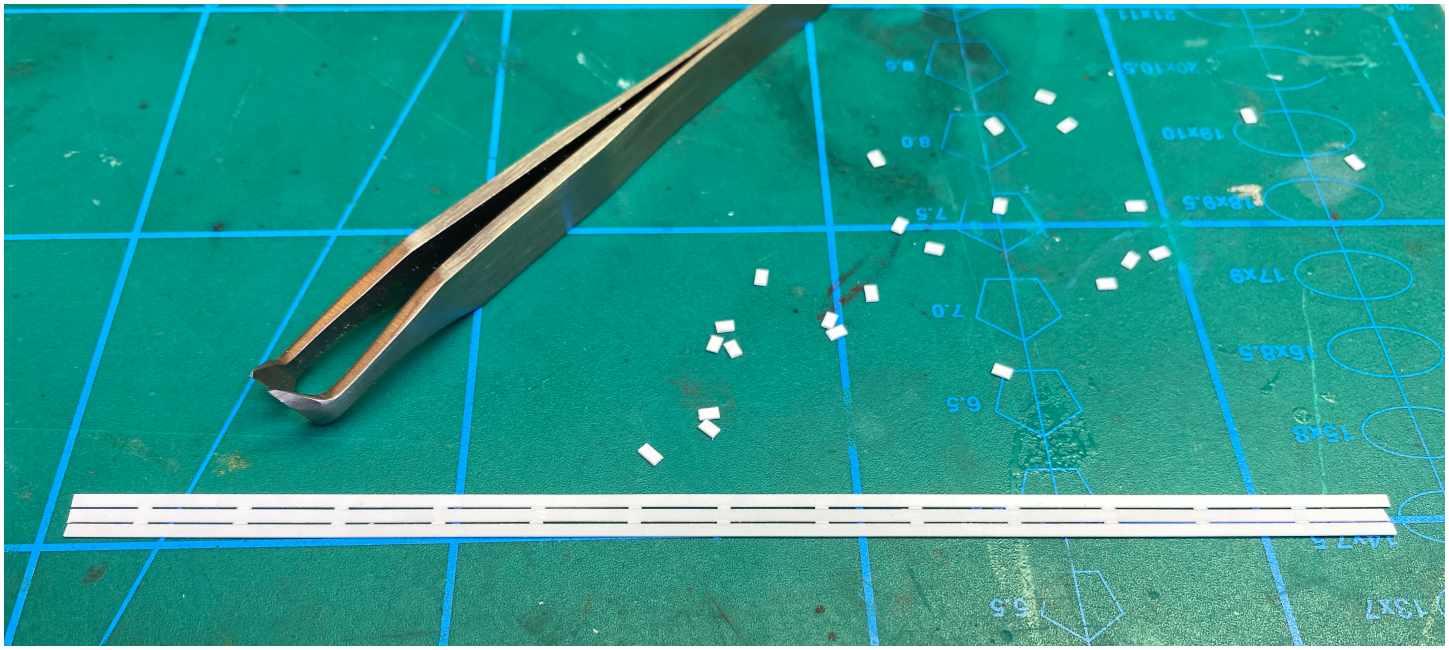
Glue the Brake assemblies to the mounting plates. Complete the brake install by attaching the trunnion for the hand brake at the bottom of the end. Affix the brake rod to the trunnion with a turnbuckle.

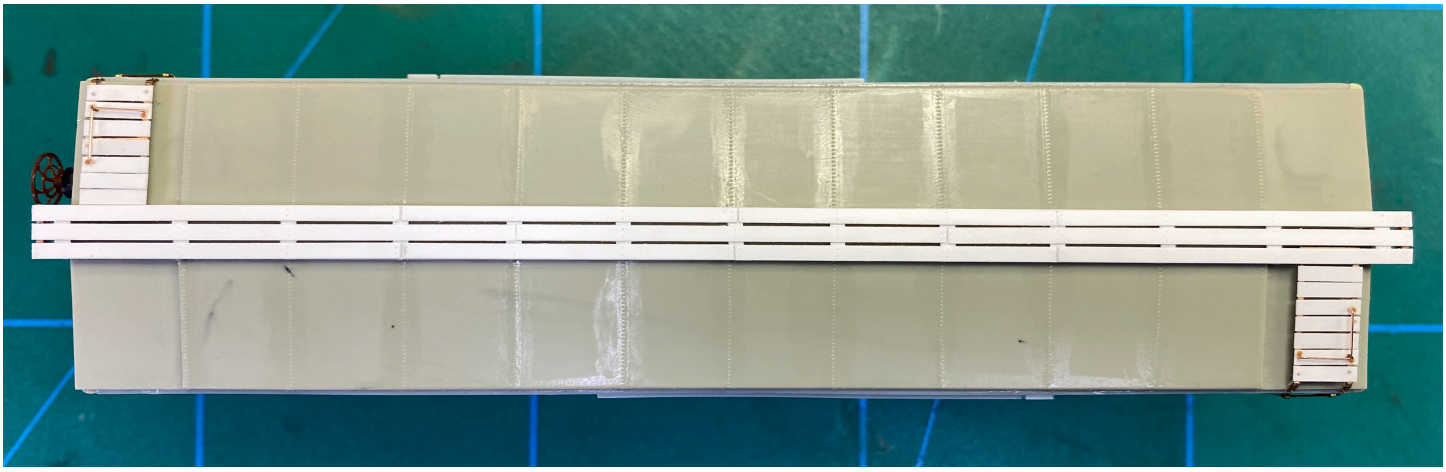


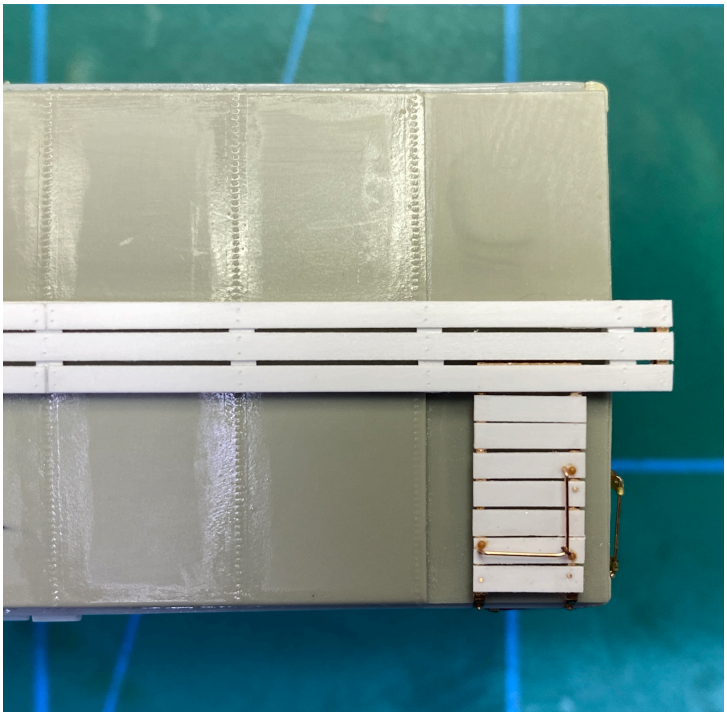
Uncoupling levers were made from 0.010” wire held on with Yarmouth Model Works etched coupler cut lever brackets. They brackets were mounted in a slot that was sawn into the bottom of the pole pocket tab, using a razor saw.



Install your favourite running board or try your hand at scratch building one, which was done on the pilot model. Two layers of 1”x 6” HO scale styrene were combined - along with 0.015” x 0.060” spacers placed between the boards at the car lines. The bottom layer extends the full-length of the car and has the spacers. The top layer of 1” x 6” uses shorter pieces to match the pattern and lengths of boards used on the prototype.







The laterals were attached with Yarmouth Model Works etched running board brackets. The etching also includes end braces. The photos show the details of the running board construction and installation. Nail holes were simulated with a needle in the top layer.
Bend running board grab irons from 0.010” wire and drill holes in the laterals to suit. Glue in place with CA using an eye bolt for the corner attachment of the grab iron. Add NBW’s to simulate the grab attachment points.

Painting and Finishing

Before painting be sure to clean the model with mild soap using a soft toothbrush. Let it dry completely. A primer coat will always yield better results in your paint finish. Tamiya Liquid Surface Primer was used on the pilot model.Take this opportunity to spot sand out any imperfections, before applying the top coats of paint. The B&O used a brown freight car colour up until 1945, when they switched to a light oxide red. Scalecoat Freight Car Brown and Oxide Red are good choices. If you use another type of paint, be sure to gloss coat before applying the decals. The under frames were coated with black car cement and the trucks were painted black as built.

Apply the decals using water or Microscale Microset. Allow them to dry completely before applying setting solution such as Microscale Microsol. Just touch the decal edge with your brush and let capillary action pull the setting solution under the decal. Seal the decals with Tamiya XF-84, or your favourite clear flat.

Weather your car using your favourite mediums, and place it in service on your layout. Congratulations, you're done!

Thank you for purchasing this Mini Kit. National Scale Car thanks, in no particular order, Pierre Oliver, Ted Culotta, Bruce Griffin and James Miscke for their support in bringing this kit to market.


BALTIMORE & OHIO
465885
CAPY 100000
LD LMT 119700
LT WT 49300
KY-9-54
B&O
M-55-A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465885
CAPY 100000
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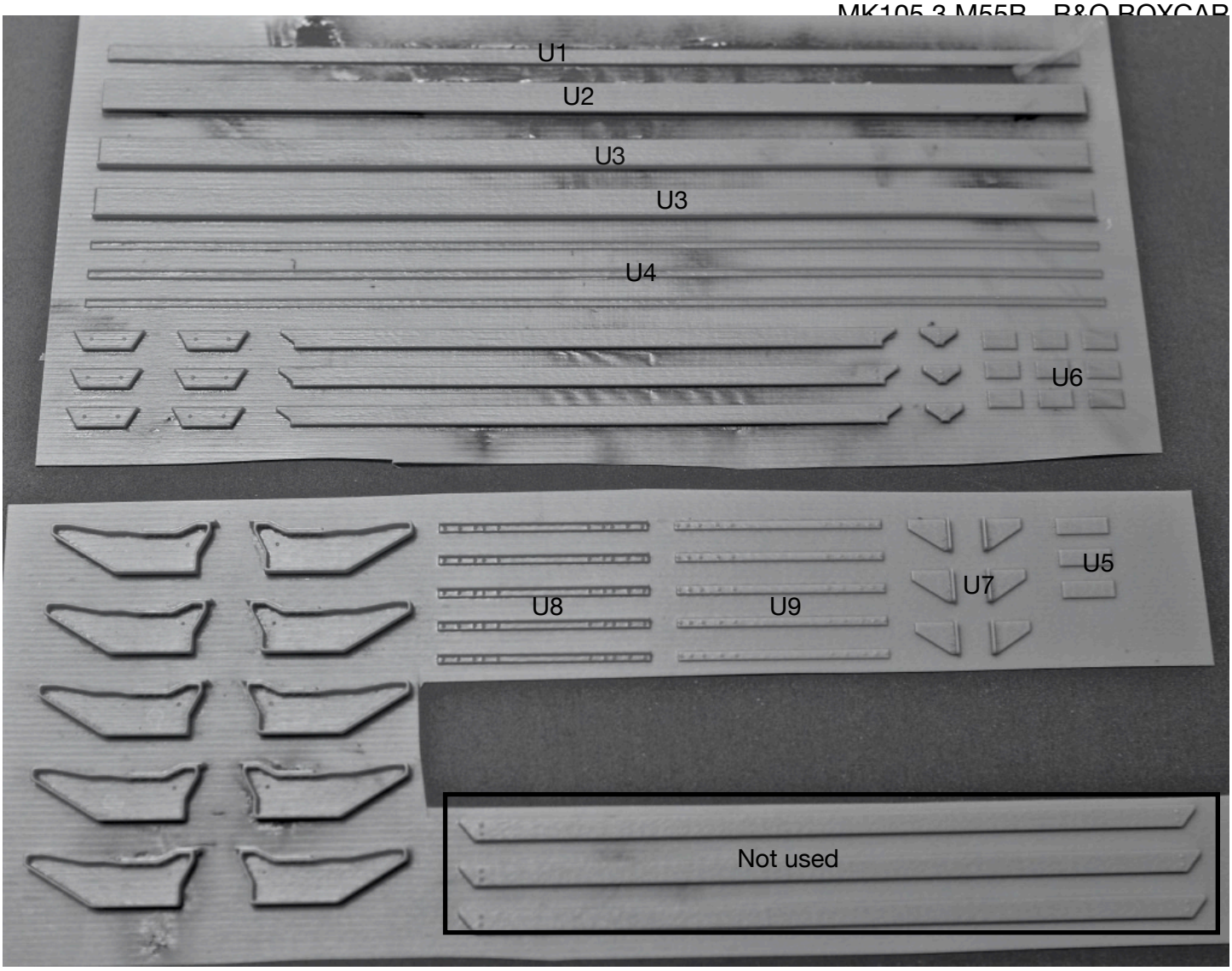
KY-9-54
B&O

B&O 465632, Tacoma, Washington March 2nd 1955. Bob's Photo's.

B&O 465885, San Diego, California Dec 26th 1954. Col. Chet McCoid Bob's Photo's.

B&O 465864, San Diego, California Dec 6th 1956. Col. Chet McCoid Bob's Photo's.


U1
U2
U3
U3
U4
U6
U5
U7
U8
U9
Not used