# The GNRHS
# MODELERS PAGES

GREAT NORTHERN RAILWAY HISTORICAL SOCIETY - FOUNDED 1973

September 2025
No. 112

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## Featuring:

**Modeling WFEX 890-899 Series**
Mechanical Reefers

**Modeling Great Northern's ACF –**
Built 39500-39699 Series 50' Cushion Ride Boxcars – Cannon & Company Kit FC-4034

No. 112
September
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**ON THE COVER: On a warm September day in 1956, X3135E is passing a granite quarry in Waite Park, Minnesota.**

Train 518, the eastbound Willmar to St. Cloud local, is being headed by O-1 3135, the usual motive power assignment for this train at the end of the steam era. The photo was taken on Rich Remiarz's Great Northern Railway Willmar Division layout. This is one of the layouts that convention attendees can visit in September during the layout tours at this year's Hill Lines Convention in St. Paul, MN.

Model Photo: Rich Remiarz

**IN THIS ISSUE:**

Editor's Remarks ..... 3
Modeling WFEX 890-899 Series Mechanical Reefers ..... 4
Modeling Great Northern's ACF-Built 39500-39699 Series 50' Cushion Ride Boxcars – Cannon & Company Kit FC-4034 ..... 13
New Products ..... 19
Concluding Comments ..... 19

# EDITOR'S REMARKS

*by* **RICH REMIARZ**

Greetings fellow Goats! Welcome to the September 2025 Modelers' Pages. We start off this issue with an article by Ted Fandel, Rich Remiarz, and Richard Yaremko on modeling 40' Western Fruit Express 890-899 series mechanical refrigerator cars. These were the first mechanical refrigerator cars owned by Western Fruit Express. This is followed by a Richard Yaremko article on modeling Great Northern 39500-39599 series 50' Cushion Ride boxcars. We also have some New Product listings.

## THE ONLY CONSTANT IS CHANGE

Nothing stays the same. Manufacturers go out of business and new ones take their places. The amount of historical reference materials available is constantly growing. Our modeling skills improve over time. All of this results in better and more accurate models.

This became very apparent to me as I was doing the final review of the June 2025 Modelers' Pages. Having photos of your models blown up to larger than life and putting them in full color on the cover makes every defect, paint chip, and piece of dust in the paint very visible. For me it highlighted the differences between the two cars. While both Westerfield kits were purchased at the same time, GN 28194 was finished in 2009 and GN 9271 was finished in 2024. Much has changed over those years.

First is the amount of prototype information I had available. In 2009 there wasn't much information available on these cars. Reference Sheet 408, GN 40-foot Truss Rod Boxcars, wasn't published until 2018. The earlier model was built based on the information found with the Westerfield kit. I prefer to build my models based on photos of specific cars but didn't have any available of the 28000-28499 series cars. By 2024 there was more information available. Reference Sheet 408 had been published and more photos had been located in the GNRHS Archives. However, even then, I wasn't able to build my model from a specific photo. The few photos I had of the 9000 series cars were not good choices because of their earlier time frame (1930s or 1940s). It wasn't until I was putting together a clinic on modeling Great Northern boxcars that I located additional prototype photos more appropriate for my time frame. With the information I have available now, I would have built a model based on GN 28356, with the ladders instead of grab irons on the sides and the Great Northern Railway herald. I would have also modeled GN 9583, with the older, See America First herald.


*Tacoma, WA 3-4-1951, Bob's Photos, R Remiarz Collection*

*Circa 1954 W Ainsworth Collection, GNRHS Archives*

Other differences in the models are based on the materials that were available at the time the models were built. We now have TruColor paints, Tahoe Model Works trucks, and National Scale Car decals, all much better than what was available in the past.

My skills and techniques have improved over time. Initially I built the kits simply following the instructions. Now I make changes where better methods or materials are available. For me, the front cover photos made me realize how much has changed over the past 15 years, and how my skills and models have gotten better. Take a look at some of your models. Do you see changes and improvements over time?

# MODELING WFEX 890-899 SERIES MECHANICAL REEFERS

*BY TED FANDEL, RICH REMIARZ, AND RICHARD YAREMKO*
*MODEL PHOTOS BY TED FANDEL*

## The Prototype


Based on the journal repack stencil date of 11-4-1952, WFEX 893 was photographed circa 1953. This photo shows the original paint scheme, with the sides and ends painted a light color. Note the built date of 9-52 and the reweigh date of 11-52, only two months later. The air reservoir is mounted in a non-traditional location, nearer the B-end of the car, to make room for the fuel tanks. This Stan Styles photo was taken in Wenatchee, Washington. **Collection of Bob Kelly.**

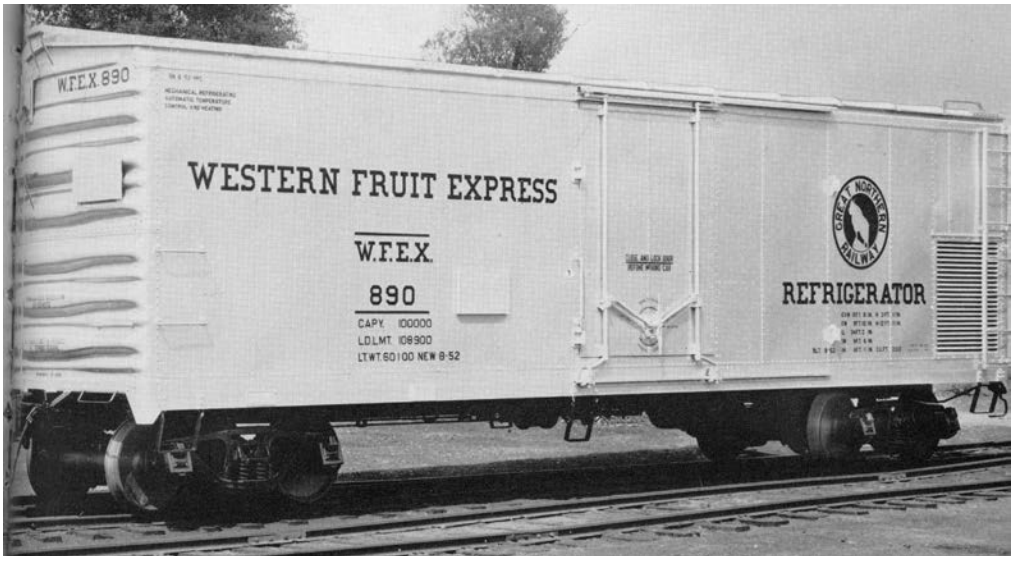
The WFEX 890-899 series cars were the first mechanically refrigerated cars purchased by Western Fruit Express (WFE) and were built by Fruit Growers Express (FGE) at their Alexandria, VA shops in 1952. The cars had a length of 42' 3", an internal length of 34' 2" and a 6' wide plug door. The 1969 Official Railway Equipment Register shows all 10 cars in the series were still in service. The cars were featured in the 1953 and 1957 Car Builder's Cyclopedias (CBC), where it states the WFE cars were equipped with refrigeration equipment from Frigidaire, Detroit Diesel Engine and Delco Products divisions of General Motors and were designed primarily for the shipment of quick-frozen foods.

With only ten cars in the series, photos are rare. A Cordell Newby photo of WFEX 897 was included in the article "Western Fruit Express Refrigerator Cars Conclusion", by Clive Carter, in the May, 1996 Mainline Modeler magazine. A photo of WFEX 890 appeared in the May, 1994 Railroad Model Craftsman in the article "The Post War Refrigerator Car – A Brief History: Part II", by Dave and Jennie Lambert. We later found the same photo in the 1953 Great Northern Railway Annual Report. Black and white photos of WFEX 899 appeared in the 1953 Car Builder's Cyclopedia. A Cordell Newby photo of WFEX 897 appeared in Scott Thompson's book *Great Northern Freight Car Pictorial Volume 3* on page 33. This color photo shows the car in a Big Sky Blue era paint scheme.


A weathered reweigh date of 12-62 dates this photo to the late 1963 to 1966 time period. An Automatic Temperature Control logo now appears on the door. **Bob's Photos, collection of Richard Yaremko.**

The original paint scheme shown in the CBC and the photos published in Railroad Model Craftsman and Mainline Modeler show a non-standard paint scheme with the ends appearing to be the same color as the car sides and not the usual mineral red. Interestingly, the CBC photos show WFEX 899 with black hardware and side sills while the photos of WFEX 890 and 893 show the hardware is the same color as the car sides. In addition, an Automatic Temperature Control logo appears on the photo of WFEX 890 taken in the 1960s.

Unfortunately, all the photos of the cars in the original paint scheme are black and white. In addition, better images were required for publication. This lead to another search for photos. The search led to the discovery of the Stan Styles photo of WFEX 893, the publishable quality photo of WFEX 890 in Richard Yaremko's collection, and the photo of WFEX 890 in the 1952 Great Northern Railway Annual Report. The photo of WFEX 890 in the Railroad Model Craftsman article and the Annual Report created another mystery. The car has a New date of 8-52 but is missing the large fuel tanks hanging from the underframe. All of the other photos of these cars, including the builder's photos in the CBC, show the fuel tanks, but instead of a New date there is a reweigh date of 10-52 or 11-52 with an AX location. It appears that the cars may have been originally built without the large fuel tanks, but the tanks were added within a couple of months. Hopefully additional prototype information can be found in the future.



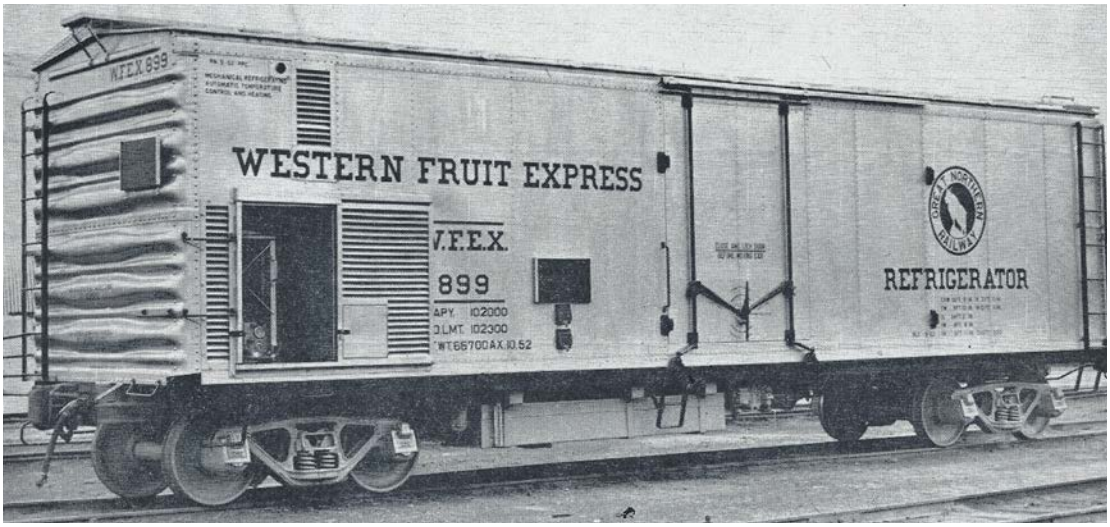

This photo of WFEX 890 appeared in the 1952 Great Northern Railway Annual Report. Note the New date of 8-52 shown in the capacity data. Also note that in this photograph WFEX 890 doesn't have large fuel tanks hanging from the underframe and the air reservoir is located in the traditional location, nearer the A-end of the car. **GNRHS Jackson Street Archives**

The only color photo of this series found to date is the Cordell Newby photo in Scott Thompson's book. The photo was cropped in the book but is included in this article with the cars that appear on either side of WFEX 897 visible. WFEX 897 has BSB era lettering and the normal WFEX color scheme of that time, yellow sides, mineral red ends and aluminum roofs. The cars on either side of WFEX 897 have yellow ends and silver roofs. This includes WFEX 895, which has been repainted in Burlington Northern lettering.


This photo of WFEX 897 was taken in Spokane in 1972. Note that the refrigerator cars on either side have yellow ends and silver roofs, including WFEX 895 on the right. **C Newby Collection, GNRHS Jackson Street Archives.**

## The Model

Since I was unable to locate a diagram or a drawing for these cars to get relatively accurate measurements, I used the following methods. If looking at the "B" end of the car, I will refer to the car sides as right or left to avoid possible confusion. The photo of WFEX 890 is, fortunately, a broadside photo of the right side of the car. I obtained approximate measurements of features on this side of the car by enlarging the photo to O scale and measuring with a scale ruler. The known measurement to verify the correct enlargement size is the 6' 6" plug door. I used the same method described below to verify the approximate height of the louvered panel. The left side is a little more difficult. I used a 3/4 angle photo of WFEX 899 from a Car Builders Cyclopedia and extended a line along the roof line and the bottom of the sill to establish a vanishing point for the photo. I established the heights of the features on the car side by drawing a line from the vanishing point along the tops and bottoms of the louvers, doors, and other components and extended it to the car end. Since the kit ends are the same as those on the prototype you can then use the location on the car end to determine the proper height on the car side for the various components. To help verify the height and width of the components I used a Golden Spike Series Pacific HO 50' mechanical reefer model. The left side if this car has the same lower louver and door configuration as the 40' car. Whew, too much rail car archeology, let's build a model!




This photo of WFEX 899 from the Car Builders Cyclopedia shows the left side of the car and was used to determine the size and location of the various components. **Photo from *1953 Car Builders Cyclopedia*, published by Simmons-Boardman.**

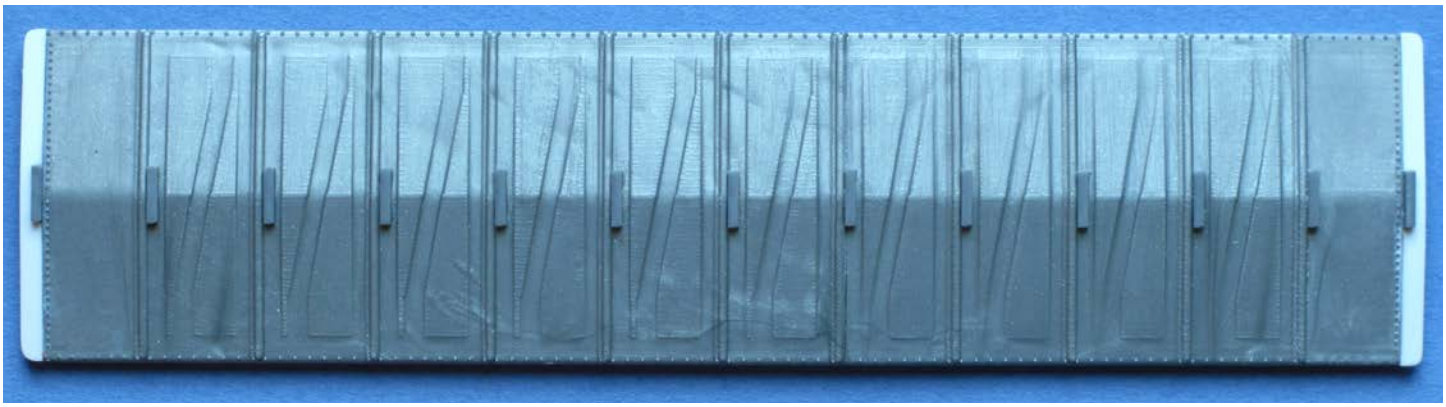

This Golden Spike Series Pacific HO 50' mechanical refrigerator car model was used to help verify the height and width of the various louvers and doors.

To make it easier to decorate cars in the multi-color paint schemes often found on refrigerator cars, the Accurail cars have separate sides and ends that are attached to the car body shell. The roof is part of the car body shell. If the roof and ends are attached to the body shell, start by removing them from the car body. Remove the cast on ladders, door grab irons, and grab irons. Since the sides are identical, mark one left and the other right on their back sides for future reference. Mark the ends as "A" and "B" and also mark the ends of the car body shell as "A" and "B" for future reference.

## The Roof

We need to eliminate the ice hatches by either replacing the roof or filling in the ice hatches. I tried Accurail, Branchline Trains, and McKean roofs. The Accurail and Branchline Trains roofs are too narrow. The McKean roof does not have all of the finer detail of the other two but it fits. The other alternative is to fill the ice hatch holes, remove the unwanted details, and add diagonal roof panels from styrene on the second blank panel from the ends. In retrospect, the latter approach seems to be the easiest but the added diagonal panels will be a littler narrower than the prototype. Of course, not the path I took.

The following instructions are for using the McKean roof. Scribe a line 8' 6" from the bottom of the car body shell all the way around the body. Remove the roof and the top part of the sides and ends down to this line. I initially cut and then sanded until the scribed line was reached. Add pieces of .060" styrene in the middle of the top of the car body to keep the sides straight. Remove the both ends of the McKean roof up to the rivet line. Add a piece of 2"x 8" styrene strip to both ends of the roof to match the top of the roof and round the corners. Add a strip of 2" x 3" styrene strip along the outside lower side of the roof to make the side of the roof wider. Temporarily attach the car ends and sides to check the fit of the roof. Remove the roof and add Tichy roof walk supports. Put the roof back on to check the fit of the Kadee Apex running board and mark the location of the running board end supports on the car ends. Glue the roof to the car body. Add the running board later during final assembly.



The ends of the McKean roof were removed up to the rivet line. 2"x8" strips of styrene were added to the ends of the roof. The corners of the roof were rounded.

## Car Sides

The side grab irons appear to be standard 18" straight grabs. On the right side of the car, drill holes to mount these at the same height as the cast-on grabs you removed except the left end of the grab iron is now mounted on the rivet strip. The door grab iron appears to be 24" long which is longer than the cast on grab iron you removed. I left the top of the grab the same height as the original but used 23" Westerfield grab irons to keep from interfering with the lower door stop which is molded higher than the prototype. Install the grab irons and add nut/bolt/washers to the grab irons, if you wish, after the sides are detailed. We will add the left side grab irons after the new louvered panels and the sliding door are added. Add the plug door stops to the right side of the door from .060" channel after the car side details have been added.

## Right Car Sides

Lightly scribe a vertical line 4' 8" from the right end. This will be the location of a new vertical row of rivets and the left side of the louvered panel. Now scribe a horizontal line 5' 6" up from the bottom of the side sill from the vertical line to the end of the car. This will be the top of the louvered panel. Remove the vertical rivets and panel line below this line. The bottom of the louvered panel is the same location as the bottom row of rivets of the car side. Remove the horizontal row of rivets on the side sill from the vertical line you marked to the right end of the car. Make sure the right side where the louvered panel is located is as smooth as possible. The louvered panel will be approximately 4' 6" square. The louvered portion will be approximately 4' square with a .030" border on all four sides. Use .010"x.030" styrene strip to outline the panel border and add rivet decals later after the car is primed and gloss coated for the five fasteners on each border. Measure the panel inside the borders and cut a piece of .005" styrene sheet to fill the space to provide a smooth surface for the louver decals you will apply after the car has been primed and gloss coated. Add the plug door stops to the right side of the door from .060" channel after the car side details have been added. Measure 9' 9" from the right end of the car, drill a #68 hole in the lower side sill, and insert a short piece of .035" styrene rod to represent the fuel filler. Drill holes and add the three sill steps to the car sides.

## Left Car Sides

Lightly scribe a vertical line 4' 9" from the left end of the side from the lower side sill rivets to the upper rivet strip. This will become a new vertical row of rivets running from the top of the side down to the rivet line on the side sill. This new row of rivets will be the right side of the upper louvered panel and the sliding louvered access door. Remove the existing vertical rivets and panel line to the left of your new line. Scribe a horizontal line 5' 9" above the lower side sill from the left end of the car to just past the first row of vertical rivets on the right. This will be the location of the upper door track for the access door. You will have to remove a couple of rivets from this vertical row of rivets when the upper door track is installed. Scribe a short line 7' 9" from the left end of the side to where it intersects the right end of the horizontal line you just scribed and the lower row of rivets on the side sill. Remove the horizontal rivets on the lower side sill from this new line to the left end of the car. This will be the location of the lower door track.

Cut the following panels from a piece .005" styrene sheet, 4' 6" tall by 12" wide, 3' 3" tall by 15" wide and 9" by 9" for the exhaust pipe panel. Align the 12" wide side of the 4' 6" tall piece with the bottom lower side rivets and next to the side end rivets. Mount the 3' 3" tall piece next to but not covering the new rivet line and against the top row of rivets. Glue the exhaust pipe panel to the left and next to the louvered panel and against the top row of rivets. Drill a #61 hole in the middle of the exhaust pipe panel to represent the exhaust pipe exit.

To construct the sliding access door assembly, cut a piece of .020" styrene sheet 4' tall by 2' 9" wide and add a border of .015" x .030" styrene strip with the .030" side vertical against the edge of the door. Cut a panel of .005" styrene sheet 18" by 18" and glue it in the lower left corner with CA. Cut an access door 15" by 15" from .005" styrene sheet and glue it with CA centered and on top of the panel you just added. Add small hinges of .010" styrene rod and a latch from a sliver of .005" styrene sheet. Louver decals will be added after the car is painted. Add a piece of 1"x 2" styrene strip and glue it to the top of the door with the 1" side flat and against the top of the door. Cut a piece of 2"x 3" styrene strip a little longer than the left door edge and glue it to the left side of the door with the 3" side vertical. Trim the top of this piece after you have added the upper door track. Cut a piece of .005" styrene sheet 3" wide by 6' 6" long and glue it below the side sill rivet strip with the left edge slightly beyond the right edge of the louvered panel. This is the lower door track support. Cut a piece of 2"x 3" styrene strip 6' 6" long for the lower door track and glue it to the bottom of the door with the 3" side vertical and the left end even with the left edge of the door. Cut a piece of .030" x .030" styrene strip 6' 6" long for the upper door track and glue it to the top of the door with the left end against the 2" x 3" vertical styrene strip on the left side of the door. Trim the vertical strip even with the top of the upper door track. Cut a piece of .005" styrene sheet 6' 6" long and .080" wide, center and glue it under the upper door track. Cut a piece of .005" styrene sheet .050" wide and 4' 3" long and glue it to the upper door track so it overlaps the top of the sliding door. Temporarily place the door assembly on the car side and determine where you will have to remove a few vertical rivets for the upper door track. Once you are happy with the fit glue the door assembly to the side of the car.

The completed sides and ends. All of the louvered panels and doors have been added, along with door stops and other details. Free-standing ladders and grab irons were added to replace the molded parts that were removed.

Cut two squares of 2"x 8" styrene strip and drill a divot in the middle of the pieces with a #55 drill to represent the temperature gauges and glue them evenly spaced under the center of the tack board. Temporarily attach the left car side and the "A" end to the car body and mark the grab iron locations. One end will be next to the sliding door frame and the other

will be on the edge of A-end. Drill holes for the grab irons and the nut/bolt/washers if you are going to add them. These grabs may need to be custom bent since our model is not exactly the same as the prototype. I was able to get an 18" grab iron to fit on my car. These grab irons will be added after the car is painted and assembled. Remove the left side and the A-end from the car body. Measure 9' 9" from the left end of the car, drill a #68 hole in the lower side sill, and insert a short piece of .035" styrene rod to represent the fuel filler. Add the plug door stops to the right side of the door from .060" channel after the car side details have been added. Drill holes and add the three sill steps to the car side.

## The Ends

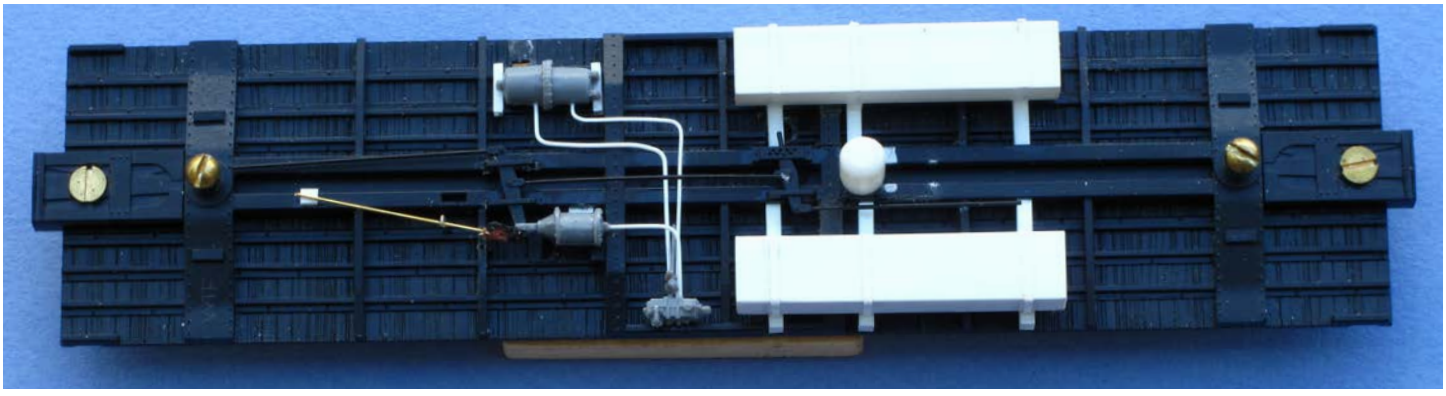
The ends on my car were difficult to get to seat properly against the car body. I ended up lightly filing the holes in the body ends to correct this. If you plan to detail the ends, remove the two molded grab irons and drill holes for the 18" straight grab iron replacements. The lower grab iron is bent down at a 45 degree angle. Add nut/bolt/washers if you wish. I could not find any evidence that the cars had poling pockets so I removed them. On the bottom left corner of each end there is a small protrusion for the bracket to hold the coupler lift bar. Drill a hole for the coupler lift bar bracket support of your choice and remove the small, rounded piece on the right side of the protrusion. I did not remove the molded tack boards. Remove the cast on ladders, if you wish, and fit and glue a new ladder to the A-end. The A-end is complete except for the mounting holes for the new running board.

The B-end needs to have the hand brake and a new ladder added, if you removed the cast ones. Add the retainer valve just to the right of the ladder location and above the top end corrugation. I used .010" styrene rod for the valve pipe. The pipe goes straight down the car end and curves slightly to the right half way down the end and ends up next to the brake rod and fulcrum. Add the fulcrum to the bottom of the end. The cars used a Universal hand brake and brake wheel. I used Tangent parts. Shorten the Tangent brake rod to fit the lower reefer height and attach it to the fulcrum. Add the brake step supports and a scrap of Apex running board for the brake step. The new ladder needs to be cut down before being glued to the B-end. The B-end is complete except for the mounting holes for the new running board.

## The Underframe

Thread the coupler boxes and the kingpins to accept 2-56 screws. I counter sunk the coupler box bottom cover to use a flat head screw. I removed the cast on mounts for the brake valve and cylinder since this car uses a different brake system configuration.

The fuel tanks are 10' long and constructed from 1/4" x 3/16" rectangular styrene tube with a 10' piece of .040" x .188" styrene strip added to front edge to get the correct tank depth. The ends and the bottom are covered with .010" styrene sheet. The tank supports are .060" I-Beam cut to fit from the center sill to the edge of the underframe with a .010" cap on one end. You will need to cut a notch in the underframe side ridge behind the location of the doors to get the tanks to fit correctly. Mark the tank tops 1' in from each end and 6' from one end. The 6' spacing on the other tank will be reversed. This is the location for the tank supports. The tanks are set back .050" from the outer end of the beams. Tank support straps are 1"x 4" styrene strip and located under each tank support and go around the fuel tank. Add a piece of .010" x .040" styrene strip to represent the fuel gauge and glue it vertically between the "A" end of the left side tank (next to the sliding door) and the tank strap. Cut a small groove in the "gauge" from top to bottom and add a section of .020" white styrene rod after the underframe is painted. The photo of WFEX 890 and the CBC photo show a fuel sump that is located below the center sill and hangs between the fuel tanks. The fuel sump is made from 3/16" styrene tube that is plugged and rounded on the bottom and cut so it extends 6" below the bottom of the fuel tanks. Mine measures 2' long. Glue the fuel sump on the center sill 6' from the "A" end of the tanks.



The completed underframe shows the scratch built fuel tanks located at the A-end of the car. The brake reservoir was relocated to the B-end of the car to make room for the fuel tanks.

The brake system layout was deduced from the photo of WFEX 890, 893 and the CBC photos. Use the photo of the completed underframe as a guide. Pre-drill all the brake components if you plan to add piping. I used short pieces of .100" styrene channel to mount the reservoir and a scrap of styrene to mount the AB valve. The brake cylinder is mounted on a short piece of .125" styrene angle glued to the center sill. I used .015" styrene rod for the brake piping. I find it much easier to bend and trim than wire. The prototypical correct size wire to use is .012" wire. I modified and used the Accurail brake rod and cylinder parts. Cut the brake cylinder off next to the lever and cut off the slack adjuster. Drill a hole on the center sill for the slack adjuster and glue it to the underframe. Drill a hole for the eye bolt/brake rod support in the underframe so it will align with the brake cylinder clevis. Glue the Accurail brake lever assembly in the brake cylinder clevis and glue the supports to the center sill. Trim the connecting brake rod and glue it to the slack adjuster. Use a piece of .010" brass wire with a modified turnbuckle attached for the brake rod. Add a short piece of chain between the brake lever and the brake rod clevis. Adjust the height of the brake rod support, glue it to the underframe and glue the brake rod to the support. Glue the car weight on top of the underframe and set aside for the final assembly.

## Paint and Decals

After much research, Rich and I believe the sides and ends were painted yellow with a silver roof. I'm pretty certain that a color photo will surface immediately after this is published to prove us wrong! I painted the car ends, sides, underframe and body/roof separately and assembled them after the decals were applied.

The car parts are first painted with Tamiya White Fine Surface Primer and then gloss coated in preparation for rivet decal application on the sides. After priming I noticed the Archer rivets I used are a little smaller than the ones on the car side so use the Micro Mark rivets instead. Apply the two vertical rows of rivet decals, a horizontal line of rivets above the large louvered panel on the right side, and rivets for fasteners around the large louvered panel. I used the alternating rivets for the correct spacing. Spray another coat of primer to seal them. The car sides, ends, and roof edge are painted Tru-Color TCP-156 WFE Yellow. Mask the sides of the body and paint the roof TS-17 Gloss Aluminum. Paint the underframe and sill steps Tamiya TS-82 Rubber Black.

Locating decals for this car is pretty much a scavenger hunt! Check the Bill of Materials for the decal lettering selections to see what I used and decide what you want to use. Use the photos as a guide. The Micro Scale set had dimensional and weight data that was the easiest to modify, have a much clearer font, and have a much thinner film than the K4 decals. The ends of the Archer louver decals need to be trimmed to remove the dip at each end since the prototype louvers are straight. The louver decals will have to be cut and joined together to cover the two larger louvered areas. The cars carried several lettering schemes. Photos show that even the original paint scheme had three variations. After the completion of decaling, wash and dry the car. The decals are sealed with another gloss coat to hide the decal film and then a flat coat in preparation for assembly and weathering.

The trucks and cut levers are painted with Tamiya TS-82 Rubber Black, couplers are painted Krylon Camo Brown, and the wheels Grimy Black. Put some Micro Mask in the truck journals before painting the wheels to protect the rolling surfaces. Put a touch of aluminum paint on the air hose glad hands and valves.

## Final Assembly

Attach the ends to the car body so they fit snugly against the body and the roof. Hold the running board against the supports on the roof and the car end to mark the location of the holes for the running board end supports. Use a #73 drill for a press fit. Fit the sides on the car and make sure they align properly with the car ends, especially the A-end where you will have to add two grab irons that attach to the car end and the car side next to the sliding equipment access door. After everything is aligned, glue the ends and sides to the car body. Glue the underframe into the car body, then add trucks, couplers, air hoses, and cut levers.

## References


1952 Great Northern Railway Annual Report

*1953 Car Builder's Cyclopedia*, Simmons-Boardman, pages 126, 127

*1957 Car Builder's Cyclopedia*, Simmons-Boardman

*Great Northern Equipment Color Pictorial, Book 3*, Scott Thompson, pg. 33

Western Fruit Express Refrigerator Cars Conclusion, by Clive Carter, Mainline Modeler, May 1996, pg. 73

The Post War Refrigerator Car – A Brief History: Part II, by Dave and Jennie Lambert, Railroad Model Craftsman, May 1994, pg. 90


This view shows the A-end and the right side of the completed car. The refrigeration equipment was housed in the A-end of the car. The fuel tanks are also located at the A-end of the car, forcing the air reservoir to be moved to the B-end.

This view shows the A-end and the left side of the completed car. This side includes an access panel for the refrigeration equipment.



A Tangent Scale Models Universal hand brake housing and brake wheel are featured on the B-end of the car. A scrap of Apex running board was used to model the brake step. Moderate weathering was added to represent a car as it would have appeared in the mid-1950s.

## Bill of Materials

**Accurail**

446 Steel Reefer Roof Walk and Details, Brown, Extra "A" End

8500 40' Plug Door Reefer Kit, Undecorated, Preferred

8518 40' Plug Door Reefer Kit, Canadian Pacific, alternate, has least lettering to remove

**Archer Resin Surface Details**

AR88026 HO Scale Rivets

AR88056 Assorted Louvers

**Champ Decals**

BRH-47, GN Tank Car, 8K – 16K Aluminum Cars, Black data for Car Ends

BRH-61 GN WFEX Frt. Reefers, Optic Lettering, AX Weigh Dates

HR-66 GN WFEX Frt. Reefers, Serif Lettering, Build date

**Detail Associates**

2203 Nut/Bolt/Washers

2210 Safety Chain

2222 Eye Bolt, Brake Rod Support

6416 Stirrup Step

6608 Stirrup Step-Baggage Car

102213 Coupler Lift Bar Bracket-Brass

**Evergreen Scale Models**

101 .010" X .030" Styrene Strip, Louvered Panel Border

102 .010" X .040" Styrene Strip, Fuel Gauge

111 .015" X .030" Styrene Strip

131 .030" X .030" Styrene Strip, Upper Door Track

148 .040" X .188" Styrene Strip, Fuel Tank Face

220 .035" Styrene Rod, Fuel Fillers

226 3/16" Styrene Tube, Fuel Sump

261 .060" Styrene Channel, Plug Door Stops

263 .100" Styrene Channel, Brake Reservoir Supports

273 .100" Styrene I-Beam, Fuel Tank Supports

294 .125" Styrene Angle, Brake Cylinder Support

8102 1" X 2" Styrene Strip, Top Door Trim

8112 1" X 12" Styrene Strip, "Builder's Plate" on "B" side of car

8203 2" X 3" Styrene Strip, Door Trim and Bottom Door Track

8208 2" X 8" Styrene Strip, Temperature Gauges, Roof End Overhang

9009 .005" Styrene Sheet

9010 .010" Styrene Sheet

9020 .020" Styrene Sheet

**High Tech Details**

6039 Air Hoses 22"-w/Brackets

**K4 Decals**

HO WFEX (Great Northern) Reefers, Serif Lettering, WFEX Lettering, Refrigerator lettering, Heralds and Plug Door Operating Instructions

N WFEX (Great Northern) Reefers, Serif Lettering, Black WFEX lettering and Numbers for the Car Ends

**Kadee**

5 Couplers

2003 40' Apex Running Board Galvanized

**McKean Models**

021 50' Diagonal Panel Roof

**Micro Mark**

84985 Rivet Detail – HO Set for Rivets, Fasteners around Louvered Panel and Alternate for Archer Rivet Decals

**Microscale Decals**

87-535 Burlington Route Refrigerator Cars #1, Dimensional Data, Weight Data and Frigidaire Data

**Plastruct**

90849 .015" Styrene Rod, AB Brake Pipes

90850 .010" Styrene Rod, Relief Valve Pipe

90631 1/4" X 3/16" Rectangular Tube, Fuel Tanks

**Tamiya**

TS-17 Gloss Aluminum

TS-82 Rubber Black

**Tangent Scale Models**

203 Cut Levers

1004 Universal High Brake Housing

1055 Universal Brake Wheel

**Tichy**

3013 AB Brake Set

3021 18" Straight Grab Irons

3076 Freight Car Ladders

3081 Roofwalk Supports

8021 Turnbuckles

**Tru-Color Paint**

TCP-156, WFE Yellow

**Vallejo**

73.814 Fuel Stains

**Westerfield**

1183 23" Straight Grab Irons, Plug Door Grab Iron

# MODELING GREAT NORTHERN'S ACF-BUILT 39500-39699 SERIES 50' CUSHION RIDE BOXCARS – CANNON & COMPANY KIT FC-4034

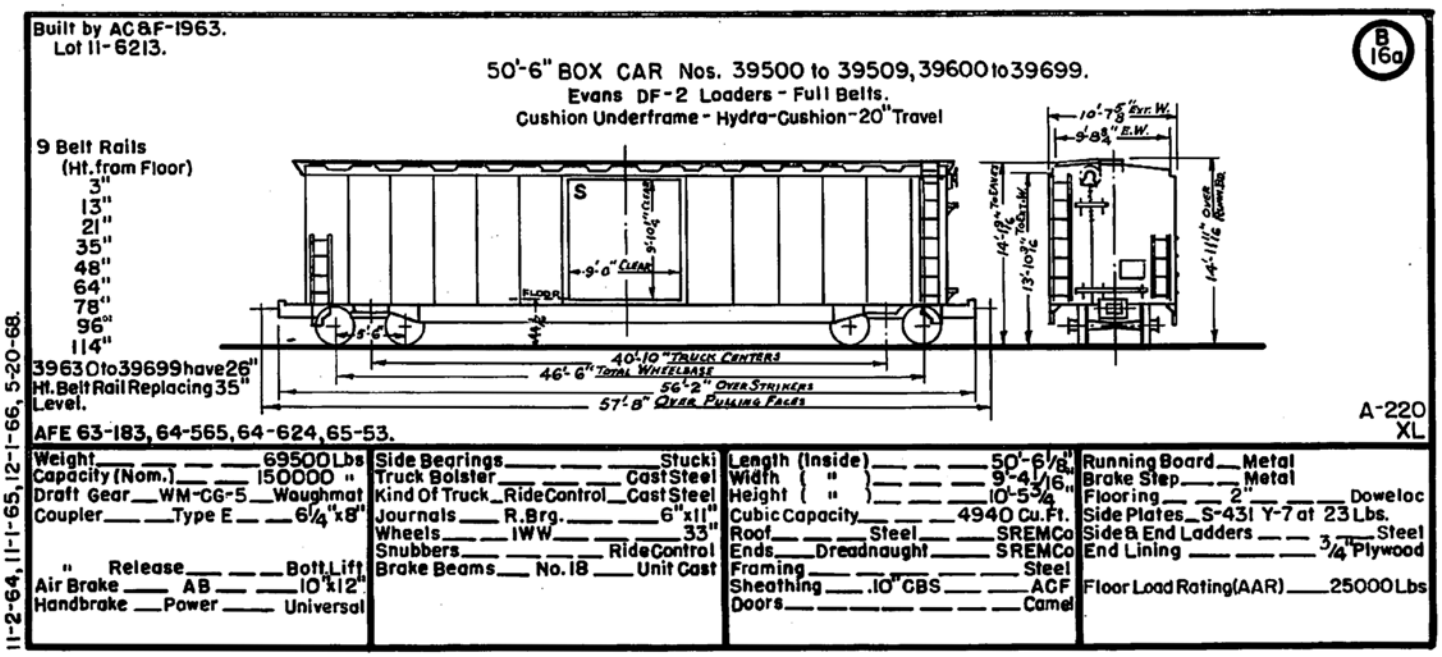
*ARTICLE AND MODEL PHOTOS BY RICHARD YAREMKO*

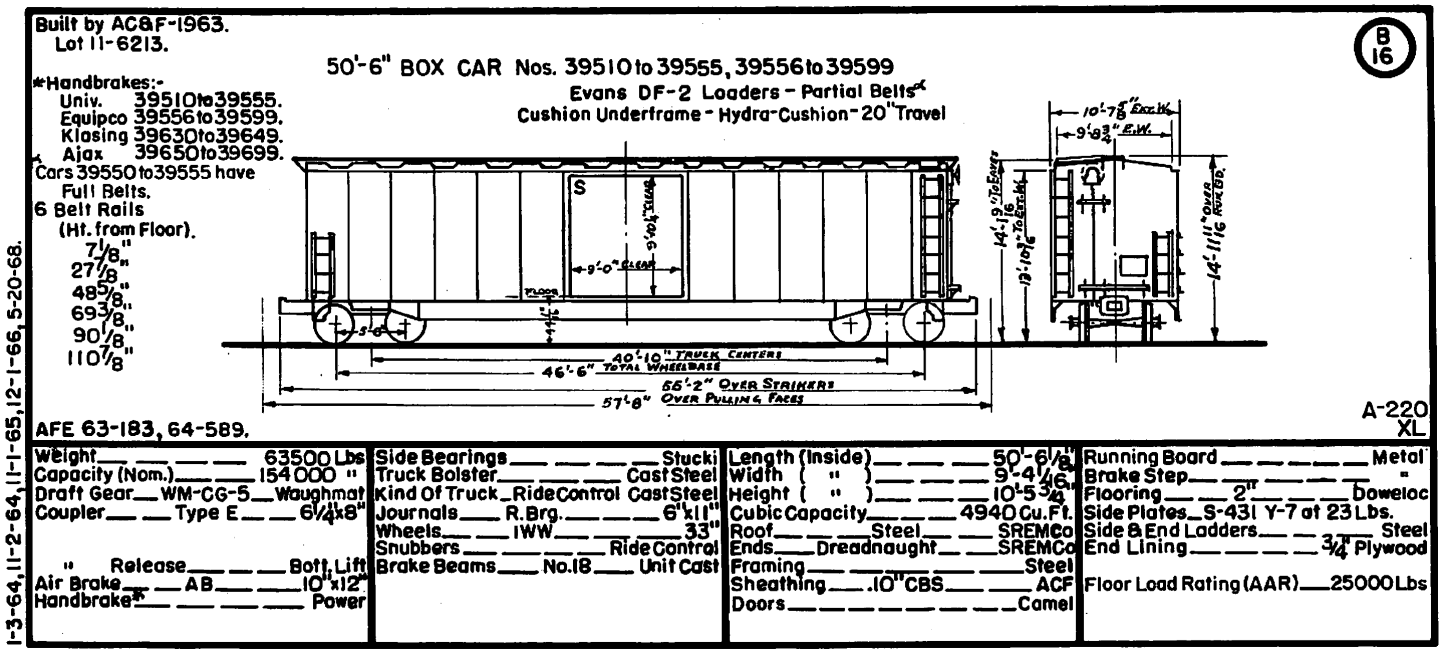

A builder's photo of Great Northern boxcar 39583, from the 39500-39699 series, built in 1963. American Car and Foundry Company photo from the BNSF Freight Car Collection, Minnesota Transportation Museum.

The December 2023 Modelers' Pages contained an article describing my construction of the Modelers Choice kit for GN's Pacific Car & Foundry built 50' dual combo door boxcars of the 38000-38299 series. The laser cut styrene process used by Modelers Choice for their kits was picked up and adopted by Cannon & Company. For Great Northern Railway modelers with a 1960s to BN merger interest, the Cannon & Company freight car line of kits fills a 50' boxcar void that we may never see produced in a quality, ready to run form from any of the current model railroad manufacturers. The Cannon freight line can be found at https://cannonandco.net/shop/ols/categories/freight-car-kits?page=1. This will show two pages of boxcar kits. Gondolas can be found at https://cannonandco.net/shop/ols/categories/gondolas.

I have now built all of Cannon's GN boxcar kits, which will be covered in upcoming issues of the Modelers' Pages. We will start with the easiest project to construct first, allowing the reader to become comfortable with the processes used, then move to the single sheath ribbed prototypes and kits, which are more complex. Each kit comes with detailed step by step instructions that when followed result in a nice basic model. For this and following articles, I will focus on step numbers where I feel there could be an improvement or have made a change.

## The Prototype Cars






Two hundred 50' 6" boxcars equipped with Evans DF-2 Loaders and Hydra-Cushion 20 inch travel underframes were built for Great Northern by American Car & Foundry (ACF) in 1963 as part of Lot 11-6213. They were painted Glacier Green with a Vermillion Red 9' Youngstown sliding door with Camel door fixtures. These are easily confused with the later similar looking 1966 Pullman Standard built car with the 10' Youngstown sliding door in series 39800-39899 that Kadee has produced in HO for Great Northern modelers.


This photo shows both GN 39506 and GN 39816, a rare occasion when a car from GN's 1963 ACF build was coupled with a similar appearing car from the 1966 Pullman Standard build. Besides the end and roof differences between the two, note the different door sizes and lettering. Collection of Richard Yaremko.

The overhanging diagonal panel roof and 1-3-4 Late Improved Dreadnaught ends were supplied by Stanray (Standard Railway Equipment). Running boards and the end crossover platforms were from Apex. Note that on the car side and ends short 4-rung ladders were used instead of grab irons. Four different brands of hand brakes were used on these cars with the breakdown as follows:

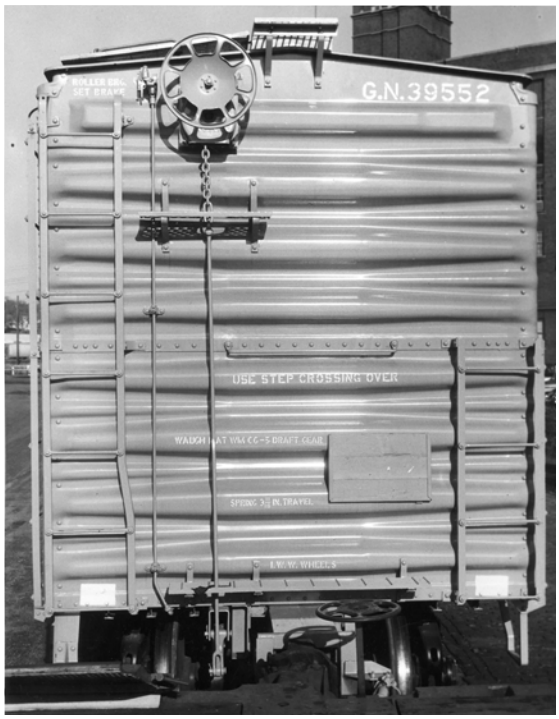
Universal - 39500-39555, 39600-39629

Equipco - 39556-39599

Klasing - 39630-39649

Ajax - 39650-39699

These three builder's photos of Great Northern boxcars 39583 and 39552 provide additional detail on these cars. Note the Hydra-Cushion draft gear, Universal hand brake and brake wheel, coupler cut bar and support bracket, and the short ladders used instead of grab irons. **BNSF Freight Car Collection, Minnesota Transportation Museum.**


This photo of GN 39562 was taken at Fort Worth TX in March, 1965, by K.B. King Jr. **Richard Yaremko Collection.**

## The Model Cars

Cannon offers their kits in two forms, Kits and Kit Bundles, with an appropriate price break. The Kits include the sides and the doors. If you do not want to source the roof, draft gear, ends, and underframe then I suggest purchasing the Kit Bundles. In addition to the parts in the basic Kit; Kit Bundle B-5034 includes the following:

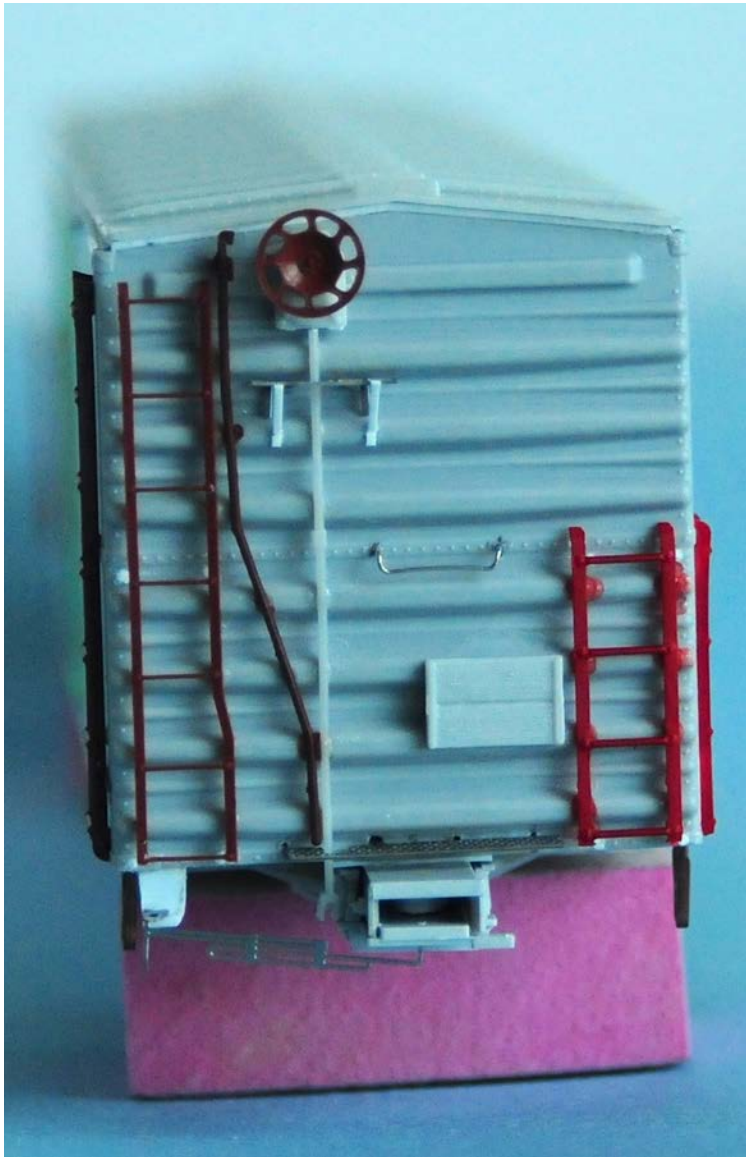
- Moloco RF 0801 Stanray Diagonal Panel Roof
- Moloco DG-0412 PC&F Draft Gear
- Atlas/Branchline 1-3-4 Late Improved Dreadnaught ends and ladders
- Athearn Genesis RBL underframe

In addition to the parts included with the Bundle, the modeler must supply:

- ASF 70 ton Barber S-2 trucks with 33 inch wheels
- Kadee 158 whisker spring couplers
- Plano Cut Bar 12001
- Plano Apex pattern running board and cross over platform
- Detail Associates brass wire
- A-Line Stirrup Steps 29002
- Plastruct Styrene strips for door detail
- Decals, Microscale 87-996 and Champ BRH-72 -New 7-2000

The running board is only required if building the "as built" version and is not required if building a post-1966 AAR mandated running board removal version. Even using two different decal sets, some additional lettering is required, such as the Trust Plate Data, to model everything included on the prototype cars.

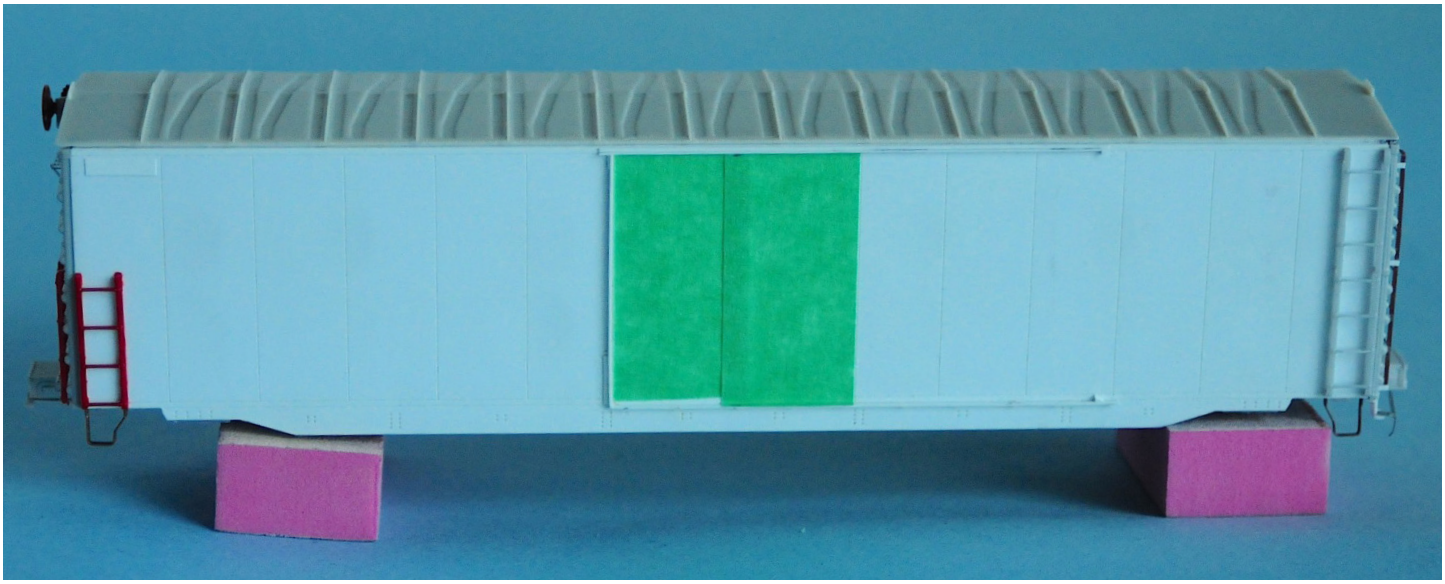
Let's get started. Remember, this and future articles will focus on the steps where I made changes from the kit instructions. Step 6 deals with the Kit Bundle supplied Atlas or Branchline ends. Since ladders are being used instead of grab irons, all holes should be filled with either Plastruct .020" or .025" styrene rod, cemented then trimmed, and when dry sanded smooth. Trim the poling pocket nubs off each end. Tack boards are mounted in their appropriate lower position to the left of the short ladders. The walkway grab iron was made from .012" wire and is 24" long.



The details have been added to the B-end of the car. This includes the tall and short ladders, retainer valve and air line, hand brake and brake wheel, brake platform, cross over platform, walkway grab iron, tack board, and coupler cut bar.

Step 11 deals with the Kadee doors. I added top and bottom hinges made from Evergreen .010" x .030" strip styrene. To avoid masking off the doors, they were painted separately then installed after the car body was painted.

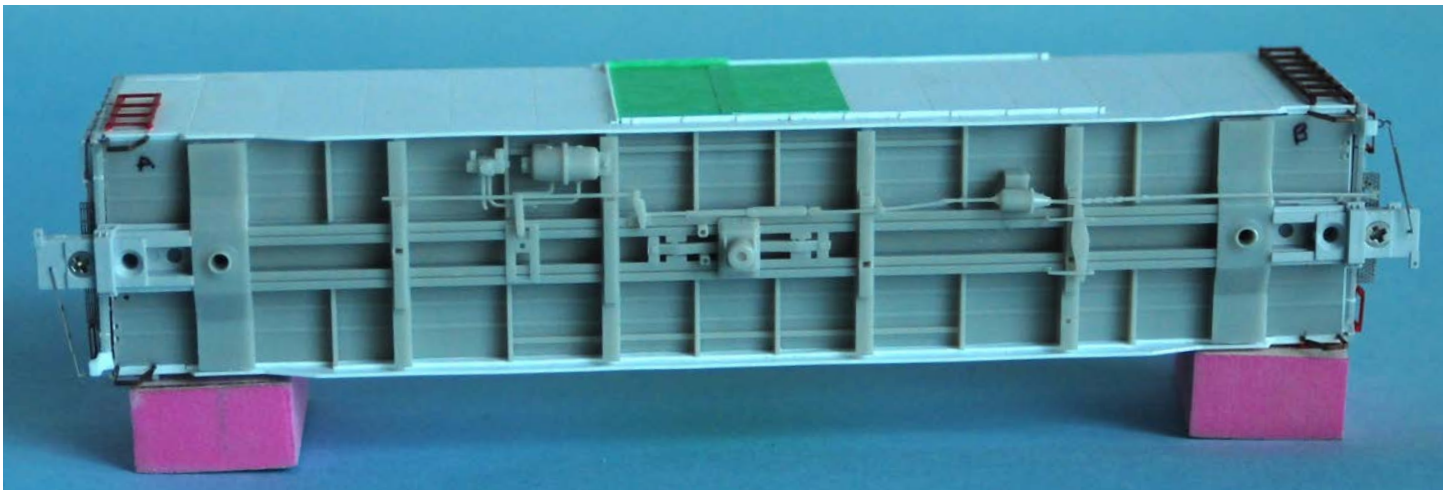
Assembly of the top door track is described in Step 12. I replaced the .030" x .030" styrene strip with a two piece component made up of a .010" x .020" base and then the top overhanging section of .010" x .030" styrene strip. The top door stop was made from .030" x .030" styrene, a scale 3" long cut diagonally with a razor blade. Use the larger of the cut pieces.



The car side after assembly and detailing. The Vermillion Red Youngstown 9' sliding door was painted separately and will be glued into the masked off area after the car body is painted Glacier Green. The masked off area will provide a stronger glue bond to the back side of the door. Other details added and mentioned in the text are the equipment trust plate, door stops, left door post, and lower door track and its supports.

Other door details are described in Step 13. I lengthened the lower door track from 2-3/4" to 2-11/16" long from the provided instruction sheet template. The supports were changed to .010" x .030" styrene cut longer than needed, then trimmed flush to the rail with my sprue nipper. The lower door stops was made in the same manner as the upper door stops. After the top and bottom door tracks were installed I added the left door post cut to fit from Evergreen .015" x .030" styrene strip.

Underframe assembly is covered in Steps 14 and 15. Be sure to orientate and mark the A- and B-ends before cementing the underframe in place. After the underframe is glued in place and dry, the corner pockets need to be filled with .030" x .030" styrene strips. When those are dry, holes for the A-Line # 29002 sill steps can be drilled with a #76 drill bit. The sill steps can then be glued in place. Once the floor is installed the car body must rest on its roof or in a cradle to prevent damaging the underbody detail.



The detailing of the car's underframe and cushioning system is shown in this photograph. This may not be 100% correct but is the closest I could determine the arrangement to be from the information I had available.

Finishing the car side and end detail is covered in Step 16. I added the equipment trust plates to the upper left corners from .005" styrene sized to fit the decal I was going to use for it. New coupler cut bar bases were made from Plastruct 1/8" Z-stock profiled with my nippers. Instead of the recommended Plano cut bar, which is a 2-part complex piece, I used the new Tangent #TSM-220 Cushion Underframe Coupler Lift Bars. The last piece of extra detail I added was the defect card holder made from Plastruct .040" half round styrene rod (#90880) cut to 9 scale inches.

Painting is very subjective. Every modeler has their favorite method. My choice of paints for this model are:

- TruColor Light Primer TCP 256
- TruColor Aluminum TCP 13 for the roof
- TruColor GN Glacier Green TCP 155 for the body
- TruColor Vermillion Red TCP 079 for the door

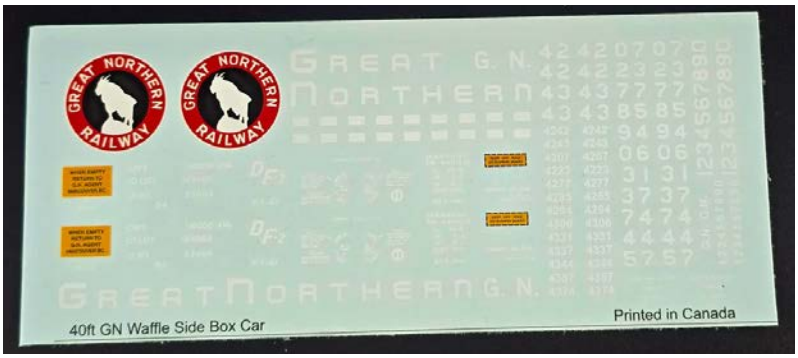
The model was decaled using a combination of lettering from Microscale 87-996 and Champ BRH-72 -New 7-2000 and prototype photos for correct placement and lettering identification.

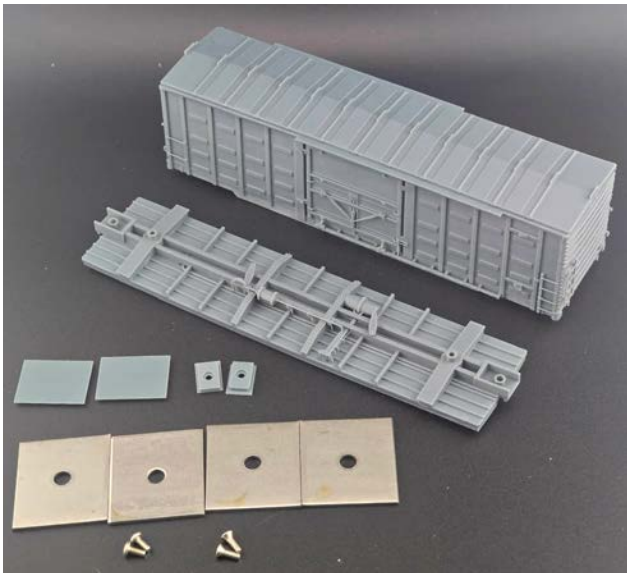

The finished model built from Cannon & Company kit FC-4034 of a Great Northern ACF-built 50'-6" interior length, Plate B boxcar with 9' Youngstown Door. The prototype cars were built for the Great Northern in 1963.


An overhead view of GN 39562 modeled shortly after being delivered. Cannon's kit can be built to represent an as-delivered car or after the running board was removed.

## NEW PRODUCTS

A&LW Lines Kits (Bruce Barney) are offering 3D printed HO scale Great Northern 40' 4200-4399 rebuilt waffle sided boxcars. These cars were rebuilt from 44025-44399 series plywood sided boxcars in 1967. The kits include 3D printed bodies, floors, logo panels, and coupler box covers along with screws and weights. Decals are offered separately for these cars. The cars and decals are available from 3D Central Trains. Their website is 3dcentraltrains.com.



Photos courtesy of AL&W Lines

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It may be of interest to GN modelers that Custom Model Railroads makes N and HO scale models of two buildings located less than three blocks from our convention site at the Doubletree. The former Donaldson's Department Store (The Golden Rule Department Store) was built in 1886 and is located at 7th Place E and Robert Street, a half block east of the Doubletree. The CMR kit sells for $110 in N scale and $221 in HO. The Saint Paul Building is located at W 5th Street and Wabasha (3 blocks west of the Doubletree) and was built in 1888. The kit sells for $93 in N scale and $167 in HO. The Donaldson's Store is 6 stories and The Saint Paul Building is 8 stories. CMR offers a 4 story extension for the St Paul Bldg. for those desiring a taller structure. Their website is www.cmrtrains.com.

Photos courtesy of Custom Model Railroads

## CLOSING COMMENTS

I hope you enjoyed this issue of the GNRHS Modelers' Pages. Thank you to Ted Fandel and Richard Yaremko for their articles and Donovan Proft for the information on the Custom Model Works structures.

Usually I don't like to publish photographs taken from other publications. The quality is never as good as using the original photographs. In the case of the WFEX article, we used high resolution scans of images from a Great Northern Annual Report and a Car Builders Cyclopedia because we could not find appropriate photographs. The original photographs were GN publicity photographs, but we have been unable to find them anywhere.

Thank you to everyone that responded to my pleas for more content by submitting articles or photographs. We now have a backlog of articles that will carry us through the next couple of issues. Please keep those articles and photographs coming. I would also like to have more photos for the Favorite Model and Along the Line features. If you have any ideas for a future article, please contact me at rremiarz@msn.com.

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