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## NP 36000 Series PS-1 Rebuilt 40-ft Boxcars in HO Scale



### Prototype Cars: Heritage and Use

During the 1960s the NP acquired on lease from A.A. Morrison Co. many different lots of 40-foot boxcars rebuilt from older boxcars originally belonging to the Erie, Lackawanna, and Lehigh Valley railroads. Rebuilt, these cars saw widened door openings to accommodate forklift loading, and wider doors necessitated structurally reinforced side sills. NP's 36000-36298 series were single-sliding-door, 40-foot boxcars acquired in several delivery batches between September and December 1966, with possibly the last cars delivered early in 1967. They were originally built by Pullman-Standard Car Co. for the Lehigh Valley RR in 1947 (according to Matt Herson this was the first production lot of the then-new PS-1 design). While retaining their original dimensions and characteristic PS-1 ends with non-tapered

horizontal ribs, Greenville Steel Car Co. refit them for owner A.A. Morrison with wider door openings and new 10-foot wide Youngstown sliding doors, distinctive Standard Railway Co. non-overhanging diagonal panel roofs, sans running boards, and updated ladder and end grab arrangements (Photo 1). The cars did retain high-mount brake equipment and full-height B end ladders. Inside, nailable steel flooring and wood lining facilitated securing and protecting loads. The cars were equipped with cast steel side frame friction bearing trucks, apparently of A-3 Ride Control design, rated at 55 ton capacity. During their NP years these boxcars generally retained the "GV" reweigh mark they received at the Greenville plant prior to delivery to the NP.

A photo of NP 36057 (Photo 1) has been provided for reference courtesy of Matt Herson,

Wheel reports indicate the NP used these cars primarily for hauling eastbound shipments of lumber and plywood, with occasional service hauling wood pulp to paper plants. The cars most often returned west empty. Wood products shippers out of Auburn, Washington and Missoula, Montana in particular used large numbers of the 3600-series boxcars, although it does not appear individual cars were assigned to specific shippers. Like other NP boxcars shipping wood products, at the receiving end these cars dispersed widely across the US in interchange. These cars apparently saw a wider variety of service after the Burlington Northern merger. Examples of these boxcars in their NP paint, at least one modified with lowered brake appliances and B end ladders, appear in photos from throughout the 1970s.

## **Modeling Notes**

The boxcars can be modeled by kit bashing a standard PS-1 boxcar body with new roof, doors, and details. Intermountain's very nicely-tooled 40-foot PS-1 boxcar kit is accurate and inexpensive, and is a good fit with available Stanray diagonal roof castings from Intermountain or Branchline. Thus the principal challenge to modeling these cars was locating a suitable 10-ft Youngstown corrugated door. The most difficult modeling step is rebuilding the reinforced side sills--a chore that any serious modeler of 1960s NP boxcars needs to get proficient at sooner or later. The undecorated version of the IMRC PS-1 kit is usually in stock IMRC, and widely available through retail dealers. The kit has a separate roof piece, making it ideal for this conversion. Photo 2 shows the completed model, and Photo 3 shows a side view of the model with various modifications highlighted.

## **Bill of Materials**

*Body shell and underframe:* Intermountain HO 40-ft PS-1 kit, either 6-ft or 8-ft door opening (undecorated).

*Roof:* Stanray diagonal panel non-overhanging. A roof from IMRC's 12-panel boxcar kit is a perfect fit, or a Red Caboose or Branchline diagonal panel roof will work, with minor adjustments to fit the IMRC shell.

*Doors:* Accurail #6110 (Walthers # 112-110) 10-ft Youngstown corrugated door, as modified. An alternate door is Athearn's Railbox 10ft Youngstown door, sanded on the back to thin, but I have had difficulty locating and ordering the Athearn doors.

Plastruct #90531 1/16" or Evergreen .060" styrene C-channel for side sills)

Evergreen or other styrene strip, HO scale inches 1x3, 1x6, 2x2, 2x3, 2x4

Evergreen or other .010" styrene sheet (for door gussets)

Brass rod .008" (for end grabs and car pulls)

A-line metal stirrups Type B, Re-bend to shape.

Remainder of details from IMRC kit (or your choice of upgrade, grab irons, brake step, etc)

Ajax brake wheel, Kadee #2020

Trucks and wheels: The kit's cast steel side frame trucks are roughly correct for this car. Upgrade with steel wheels such as Intermountain's semiscale wheelsets.

Couplers" Kadee #78's or Accumates in scale size coupler boxes fit nicely on this car, or fit Kadee #5s or #58s in the kit's stock coupler box.

Red Caboose #5003 coupler lift bars (brackets optional)

Optional details for side sills:

Donor shell for rivets

Paint:

Your choice, the prototype cars were a rich oxide brown tending toward a dark mahogany shade.

Decals: As listed below.

## **Construction Steps**

*Prepare roof:* Remove the cast-on running board bracket mounts using a file or sanding stick. Be careful not to mar the remainder of the roof detail. If using a Red Caboose or Branchline roof, you'll have to shave and file underside insets to fit into the IMRC shell inside dimensions. Paint the completed roof to represent bare galvanized steel.

*Prepare doors:* The prototype doors had only very small rivets that are not visible in most photos, so I chose to shave the oversized rivets off the door frame with the edge of a hobby knife blade or a fresh sanding stick. You'll need to add two styrene strips to finish the face of the door. First, the prototype doors had a wider top rail and one fewer corrugation in the upper panel and a wider top rail piece than the Accurail door. Cut a length of HO 1x5 to fit over the uppermost corrugation. Trim to exact fit within the door side posts, glue in place, and sand the face till it is flush and trim with the door frame. Second, the prototype doors had steel reinforcing strip applied to the lower face of the frame. First scrape or file the door latch away where it projects over the lower door frame. Cut a second length of 1x5 to 9ft6in long, and glue it to the face of the lower door rail, flush with the lower edge of the door. Sand it to slightly bevel the butt ends toward the door face. Finally, restore the vertical piece of the latching mechanism at the

middle of the door by laminating over it with a piece of 1x2 styrene, trimmed to length and filed to a slight taper to match the original configuration. See Photo 2 for details.

*Body shell preparation:* With a fresh chisel blade on a hobby knife, shave the upper and lower doorstops and guide rails off the shell. Also remove the verticals on left and right edges of the door opening, so the door is flanked by a flush surface. Turn the car upside down and run a sharp No. 11 or equivalent blade to score along the inside of the seam where the side sills meet underbody of the floor. Bend and remove the entire length of the side skirts on each side of the car. Smooth the raw cut by scraping and carefully sanding flush with the floor, being careful not to damage the car-sides or underbody detail. At the peak of each end of the shell are a series of 6 rectangular nibs. Early PS-1s lacked these nibs, so scrape them off carefully with your chisel blade or hobby knife and sand smooth.

*Underbody:* Apply underframe details following kit instructions. Although the prototype underframe was probably modified to accommodate the wider doors, I was unsure what the specifications were, so I defaulted to the kit's standard underframe and brake gear layout.

*Shell reconstruction:* Rebuild side sills, by first sanding smooth the side sill area taking care not to damage the underbody or car-side detail. Masking tape over the car sides will help confine damage to the exposed lower edge of the body casting. Cut two new skirt pieces of styrene 060" U-channel to 33 HO ft in length (at correct length the sill pieces should extend just past each body bolster). Test the sills to ensure a good flush fit and glue them in place. Note that you may have to slightly trim or sand some ends of the body bolsters and cross bearers to allow you to fit the face of the new sill channel piece flush with the car sides. After drying, fill and finish any apparent seams with the car-sides with body filler or CCA glue, and sand with a fine sanding stick to smooth. Fill and sand in 2 or 3 repeated steps, but avoid over-sanding or the sills will become rounded. Bear in mind that 1) prototype had a discernible seam between the sill reinforcement and the body, and 2) most of this seam will be hidden by the lower door slide rail. Finally, file the ends of the sill pieces to a half-chalice profile, as seen in the prototype photo (photo 1), and glue a cap piece of 2x3 styrene (32 ft length) with the narrow edge exposed along the full length of the bottom of the channel to trim out the sill profile.

Attach stirrup steps, skirts, and corner pieces: I modified A-line Type B stirrups to represent the prototype profile (Photo 1) a little more closely, then applied them to mounting holes drilled into the car floor at all four corners of the car. Mount them with gel CCA or cyanopoxy just to the inside the car side walls, leaving just barely enough space from the edge to face each stirrup with a skirt piece of 1x6 styrene strip, cut to length and trimmed to cover both stirrup mounting legs. See Photo 1 and Photo 2 for details. I added a pair of bolt strips cut from Branchline stirrups to the face of each stirrup skirt, lined up with each stirrup leg (Photo 3). Finally, the fabricated downward projections of the corner posts at all four corners of the car are simulated with short sections of solid HO 6x6. Most PS-1 boxcars lacked these corner pieces, but they are a distinctive feature on these rebuilds. Cut to length, then file the pieces to shape, angling in toward the centerlines of the car like the prototype (fig. 1). Glue them to the corners of the ends

with gel ACC or cyanopoxy, carefully checking for vertical orientation with the sides and end faces. Finally, complete the shaping of these with a fine sanding stick and careful reference to photos for the length and angles. Fill any gap at the butt joint with ACC or body filler, and sand smooth. Note that I mistakenly failed to identify these corner pieces in Fig. 3, but they show at the terminus of the sill immediately end ward from each stirrup step.

*Door Hardware:* Extend upper door guides with 2x2 styrene strips, to total length of 22'6". Face the entire length of the new guide with 1x3 strip. Fashion upper door stop of a 2x3 cap, 8" long, glued over an angle cut from a 2x4 (See Photo 3 for dimensions and shaping);

Glue prepared door to body, snug against upper door guides.

Build new lower door guides of 2x3 styrene; cut these to 22ft long and note that they do not extend beyond the left edge of the door. Add the lower door stop, a simple block of 2x4 styrene notched to set partially over the guide. Add a door opening flange of 2x3 styrene set on its narrow edge flush to the left side of each door, with a tiny brace of 1x3 set at the upper end. Cut triangular door gussets from .010" styrene sheet or strip stock (see Photos, note the left gusset is notched to surround the door opening corner), test fit, trim and glue in place. Finally, add door latch mechanism. I scratch built these parts from a shaped piece of 2x2 styrene for a lever, .008" wire bracket, and latches from shaped bits of 1x3 (see Photo 3).

## **Side Details**

Apply the kit's stock side grabs and ladders, using the short ladders at the A end and long ladders at the B end (the end with the brake wheel mounted).

*Fine sill details:* This is an optional step because you have to be willing to fashion very small parts, but these cars had distinctive half-ring pulls mounted on the sill at each bolster end. I made the car pulls from .008" brass rod. Bend wire around the tip of fine-pointed tweezers to form a half-round, and use jeweler's needle-nose pliers to bend two long tails projecting 180 degrees, forming a sort of hat-section. Flatten each tail where it meets the bend with a squeeze of the pliers, then trim tails to about 3 scale inches long with flush cutting tool. With good light and the part held under a magnifier firmly in your best tweezers, file each cut tail end smooth and square, and make sure tails are of equal length. The total length of each pull should be about 10 scale inches, no more than a foot. You'll need four, but make six, because at least two are sure to flip from your tweezers or bury themselves in your shirtsleeve. With tweezers and a steady hand, cyanopoxy or ACC the tails flush to side sills centered on body bolsters (see photos). Using the "Culotta method," I added bolt heads ("rivets") harvested from another plastic car shell to detail the side sills, with two bolt heads at either end of each pull. A drop of saliva holds the harvested bolt head on an Xacto knife blade and thence in position on the car-side; a tiny drop of liquid styrene cement then seals the rivet in place.

*End details:* Apply ladders, brake stand and housing, end bottom grabs, left and right side as per kit instructions. To improve appearance and durability, I substitute 18" straight wire grabs at these locations, applied with gel ACC to fill gaps in the mounting holes.

The prototype had updated end grab configuration, so for an accurate end, you'll need to scratch-build the end bracket grab irons. . The parts are tiny but the work it isn't too difficult. Start by filling the kit's bracket grab mounting holes on the first and second ribs from the bottom w .020" rod and sand smooth. Build new grabs of 1x2 styrene strip or brass strap brackets 18 scale inches long, .010" brass rod handholds. Cut a pair of bracket strips long, then each is scored and bent in the middle to an angle of about 70 degrees. Trim so each half of the vee is 9" long, then make handhold rods to length. Handhold length is about 20 scale inches for the lower grabs on the second rib under the tack boards at each end. (Note that in my model I used the stock kit grabs at this location—but they are not accurate, as the prototype's brackets do not span 2 ribs, but fold over a single rib). With a bit of flattened 008" brass wire as applicator, apply a droplet of ACC to the inside of the bend on each bracket, and glue the handhold rods into the bend. Make sure the brackets are perpendicular to the handhold rod, and the ends of the rod are not protruding past the brackets (if they are, carefully trim or file). To meet new AAR specifications on the B end of the prototype, Greenville mounted two additional grabs mounted in series on the 5<sup>th</sup> rib from the bottom. So using the same technique you'll need to make one for the right side of 24 scale inches in width, then after a gap of about 6 scale inches of space, a midline grab of about 36 inches width. Together these 2 grabs roughly span the distance from the end of the rib to the brake staff.

Kadee's late Ajax brake wheel is correct for this car. Be sure and save Intermountain's excellent early Ajax casting, though (it has only four spokes in the central radius)—it is one you'll find a use for on some pre-WWII boxcars.

*Weighting and Final Assembly:* Add weight to NMRA recommended weight (follow IMRC directions, add 2 oz). Apply couplers and trucks, your choice of couplers. Kadee #78 boxes will fit to the underfloor if you trim away the kit's coupler box, or #58s will fit inside the IMRC boxes. After verifying the weight is as you want it, remove the trucks and mask the couplers in preparation for painting.

*Painting:* It's easiest to paint the car-body before applying the roof. When delivered to the NP, these roofs were probably bare galvanized steel, but with their edges hit by overspray from the car sides car sides and overspray on top. However, it appears from photos that paint weathered off the roof edged especially fast on these cars. Apparently Greenville Steel Car used a different paint mix than NP shops, and the result turned out more of a mahogany or cocoa brown shade, less oxide red or orange in tone than most NP boxcars. I used Badger Modelflex, mixing a 50:50 blend of light tuscan oxide red with Milwaukee maroon, then tinting it toward yellow-orange with a

dollop of rail brown, then lightening the mix with a few drops of reefer white. Trucks and underbody were apparently painted black.

After the paint dries, attach the roof to car-body and remount the trucks. Finally, apply a corner grab to the B end of roof. Note I forgot this on my model.

## Lettering

Microscale's decal sheet 87-843 (*NP 40ft Boxcars, 1942-70*) gives you the arched road name, reporting marks, side data, end data, and a 36 inch Northern Pacific Railway monad. You're shooting for dimensional data of CU FT ca. 3980, exterior width of 10-5, interior height of 10-5 and you'll probably have to patch in a BLT date of 7-47. (Photo 1). Alternately, TDS transfer sheet #HO-507 has the basic lettering and herald and correct dimensional data for these cars, but the smaller lettering is a bit oversized and webbed. Yellow "Keep Off Roof No Running Board" warning labels and ACI placards (post-1968) can be found on Microscale's 87-1 *Roman Data for Freight Cars* sheet.

Door width data ("OPENING W 10'-3" H 9'-10") stencils can be found on the Microscale Gothic Data for Freight Cars set 87-2 and Microscale's sheet 87-037, *NP Boxcars 1958-1970*. Rebuilder's Imprint: A similar (not exact) Greenville logo for the sill imprint can be found in Microscale's sheet MC-4309 *Builders Logos for Freight Cars* (note this imprint is missing from my model). Trust stencil (Upper left hand corner, "A.A. Morrison.."): Nothing exact is available. I used a stand-in stencil from Microscale's sheet 87-843, *NP 40' Boxcars (1942-1970)*, which is in fact an A.A. Morrison stencil, but correct for NP's 38000-series double door cars, not these cars. . .

Reweigh marks: Most cars probably retained Greenville GV reweigh remarks through most of or all of their NP lifespan. The "GV" can be scavenged from Microscale 87-843, but you'll have to patch for correct dates. As a guideline, here are reweigh dates assembled from several photos of as-delivered cars:

NP 36057, GV 9-66

NP 36132, GV 10-66 (Note error on my model)

NP 36230, GV 11-66

End data: I haven't been able to verify, but my best guess is these cars had "IW WROT WHLS" stenciled in the middle of the lowermost rib, and something shorter, possibly "D-5 SPRING," on the second rib. You can find these on Microscale's NP boxcar sets 87-37, 87-8431, or other general freight car data sheets from Microscale and Champ. .

## Clear Sealing Coat

For models representing freight cars a few years out from delivery or repainting, I like a 30:70 mix Testors Glosscoat:Dullcoat, thinned 1:1 with lacquer thinner for airbrushing. Much of the satin sheen of this glaze is cut by

later weathering, and the level of sheen is easily reduced with a final shot of Dullcoat, or restored with the same Glosscoat:Dullcoat mix.

## **Final Detailing**

Now is the time to add vulnerable detail that is easily damaged during handling and finishing steps. This includes coupler lift bars, and air hoses should you choose to add them. There is no suitable mounting location for lift bars on the model without adding brackets, and the Red Caboose part #RP-5003 offers preformed wire lift bars of the correct shape, and plastic brackets to hold them. Glue the bracket with gel ACC or cyanopoxy behind the lowermost ladder rungs, the mounting post of the bracket snug to the bottom of the end. (I found the Red Caboose brackets a bit coarse, so I substituted a piece of styrene angle from my scrap box and drilled it for a Detail Associates wire lift ring to hold the lift bar.) Bend a tiny up-kink in the inboard end of each lift bar wire, and drill a receiving hole with a #79 bit in the edge of the coupler box lid (where it will not interfere with coupler swing). Thread the lift bar wire through the bracket, snug the kink into the coupler box receiving hole, and secure the wire at the bracket with a tiny application of ACC or cyanopoxy. After an hour's drying time, brush paint appliances the same color as the car-body.

## **Weathering**

The 36000, like all leaser cars, were not pampered, but neither did they appear to be heavily weathered, as the NP kept them to lumber and similar fairly clean lading. Post-merger modelers will want to be more aggressive weathering these cars, as BN released them to a variety of messier and more grueling service. My car in the photograph is probably more heavily weathered than most of the prototype cars would have appeared in late 1969. I weathered this car with pastel chalks sealed with a topcoat of Testors Dullcoat. Finally I gave the roof an oxidized look by washing 70 % isopropyl alcohol over the final Dullcoat seal, which gives a faded or clouding effect.

## **Photos**

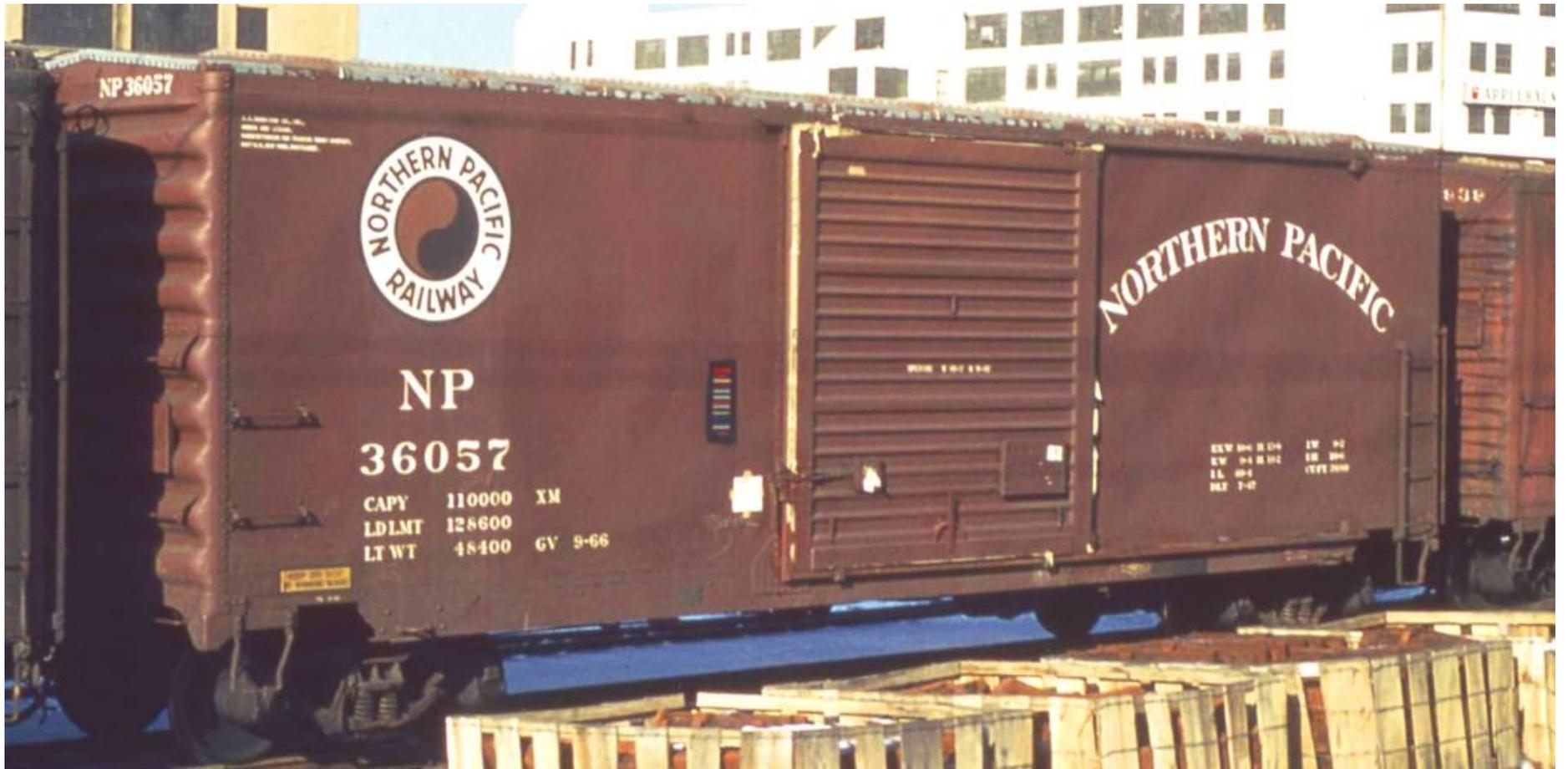


Photo 1: NP 36057. (Matt Herson Collection, used with permission).



Photo 2: HO scale model of NP 36132 built following methods described here. (C. Frissell photo).

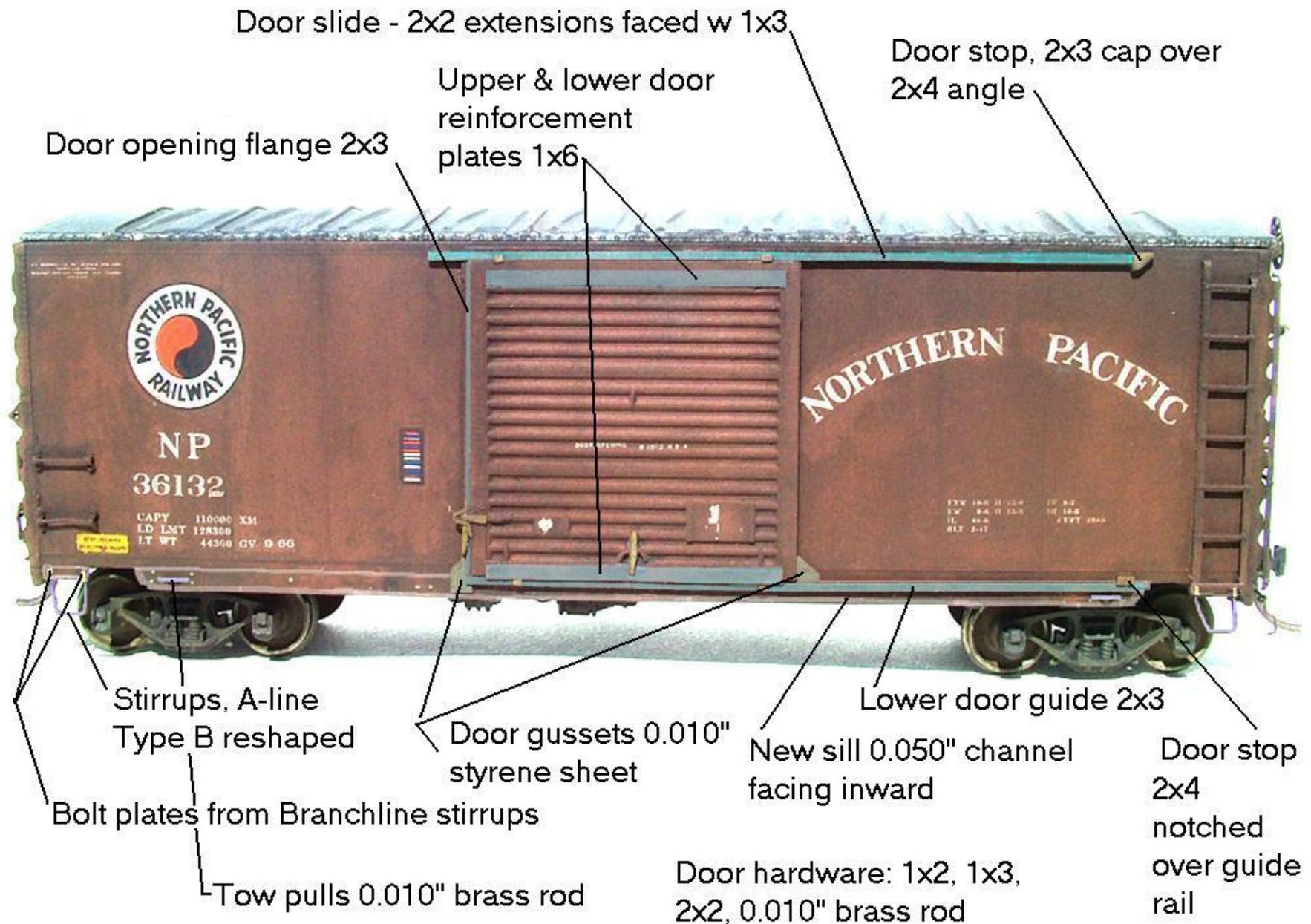


Photo 3: HO scale model with major car side detail modifications highlighted and labeled. (C. Frissell photo).