

No. 99 Inside:

BLI P70 / P70R Coach Review

Winter 2017

- Trackside Battery Boxes
- 32' TrucTrain Tandem Trailers









Pennsylvania Railroad Technical & Historical Society

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Side of HO-scale 32' PRR TrucTrain tandem axle closed van trailer. (Curt LaRue)

Assortment of HO-scale PRR battery boxes ready for layout installation. (Jack Consoli)

Broadway Limited Imports HO-scale P70R coach. (Tim Garner)

The Keystone Modeler

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Before I moved to Pennsylvania, whenever I had the chance to visit the Railroad Museum of Pennsylvania in Strasburg, it was a bittersweet experience. Even though many interesting pieces of rolling stock were housed indoors, and even though the museum's exhibit hall had expanded in 1995, there were still parts of the Pennsylvania Railroad's Historic Collection of locomotives stored outside. There were birds nesting in the locomotives, and their droppings and the rusting of these steam era survivors seemed to be worse each time I visited. When the Friends of the Railroad Museum of Pennsylvania was formed in 1982, I decided to join, even at long-distance, in the hope that the organization might be able to do something about those priceless artifacts.

Finally, after years of discussion, various design changes, zoning changes, and the release of funds by the Commonwealth of Pennsylvania, those locomotives which have remained exposed to the elements will be housed in a new one-quarter roundhouse. Groundbreaking is now expected sometime in 2017. Eventually, five locomotives slated to be in the roundhouse will be cosmetically restored, as was number 460, which was recently moved into Rolling Stock Hall with much fanfare and which will also be in the roundhouse. Before that can happen, however, the museum and the Friends want to stabilize those locomotives with the removal of old paint and the application of a black, rust-preventive paint.

It is for this reason that the PRRT&HS announced a matching campaign of \$50,000 to raise money for the stabilization of the five unrestored locomotives. This campaign has already raised \$60,000. With the matching funds, that means that \$110,000 will be available to begin the restoration process. But it is going to take about \$250,000 to finish cosmetically restoring these engines. It is my hope that many members of our Society will make individual contributions to this project, as I have done. You can send your tax deductible gift to Friends of the Railroad Museum of Pennsylvania, P.O. Box 125, Strasburg, PA 17579. On the memo line of your check put "Ready for the Roundhouse." Of course, you can also contribute on line.

I understand that some members of the PRRT&HS believe that the money in our treasury could be spent on other things, such as digitizing the collection of documents in Lewistown. I appreciate their concern, since I also believe that the future of our Society will be modelers. On the other hand, the cost of organizing and digitizing all of those documents will be enormous compared to the amount spent to stabilize these last-of-theirkind locomotives. In my opinion, saving these locomotives is also a responsible thing for an historical society to do.

Two examples of modeling by the members of our Society appear in *Model Railroad Planning 2017*. Bill Neale, best known for his modeling of the Panhandle Division, has developed a plan for a portable industrial layout focused on the Delaware Avenue Branch in Philadelphia. Neal Schorr, who models many decades on the same railroad, gives us an update on his experience with his O scale Middle Division layout.

In this issue of *TKM*, we have an interesting variety of materials. Curt LaRue returns with further modeling of Pennsy trailers from the early days of trailers on flatcars. Jack Consoli describes his work on seldom-modeled details along the right-ofway: Part 1 covers battery boxes; Part 2 will cover relay cases. And Tim Garner offers his review of the Broadway Limited P70 passenger cars.

Jim Hunter, Editor

Pennsylvania Railroad Technical & Historical Society

The purpose of the Pennsylvania Railroad Technical & Historical Society is to bring together persons interested in the history and modeling of the Pennsylvania Railroad, its subsidiaries and its acquired companies. Our goals are to promote the preservation and recording of all information regarding the organization, operation, facilities, and equipment of the PRR.

The Society's quarterly illustrated journal, *The Keystone*, has been published continuously since 1968. Each issue of 64 or more pages contains illustrated original authoritative articles about locomotives, cars, other equipment, facilities, and operating practices of the PRR. The Society also publishes its own thoroughly researched books and other materials concerning PRR history. *The Keystone Modeler* is also a quarterly special 30-plus page online publication of the Society.

The Society meets annually, usually during a weekend in early May, providing an opportunity for its members to get together and learn more about the PRR. Local chapters around the country also provide members and guests with regular meetings that feature PRR related programs.

Information about our Society may be found on our website – <u>www.prrths.com</u>. To join the Society, send \$40.00 to:

PRRT&HS PO Box 54 Bryn Mawr, PA 19010-0054

All memberships are for a calendar year, back issues of The Keystone for the current year are sent upon joining. Overseas membership has added postage fees.



With Steve Hoxie

PRR Product News

ATHEARN <u>http://www.athearn.com/</u> Genesis F-unit Powered Mechanism—HO Scale



Athearn will have this powered mechanism later this year. Both standard DC and DCC with sound will be available. Athearn is currently using the Tsunami2 sound decoder. The mechanism is designed for Genesis and Highliner F2 through F9 shells. Included will be fuel tank skirts and several styles of truck journal boxes. If you have a B unit you want to power or a Highliners shell kit to build, this will be essential.

BOWSER MFG. CO.

http://www.bowser-trains.com/ PRR RS-3 (AS-16m) Phase II and III

The folks at **Bowser** have provided on their website an interesting article chronicling their efforts to date and citing the current thinking on versions to be offered. It is interesting that for the first time a Phase II model is listed. Also of interest: Made in America. Models still are expected to be available late in 2017.

PRR X31 Round Roof Boxcar Kit-HO Scale



⁽Bowser)

Bowser currently has available kits for the single door, inset roof version of the X31 in the Shadow Keystone scheme. Correct 2D-F12 coil and leaf spring trucks with metal wheel sets are included. The X31 and its subclasses were a PRRPro project. Photos and archived email discussions are available on the group's website.

PRR K11 Stock Car Kit-HO Scale



(Bowser)

Bowser again has the K11 available; this time in kit form.

PRR X32 50' Round Roof Ready to Run Boxcar-HO Scale



(Bowser)

Bowser has planned a new production run of the X32 in both single door and double door versions. Paint schemes will include Circle Keystone and Shadow Keystone. The ready to run model will have correct trucks with metal wheelsets. Ian Fischer's article in The Keystone, Vol. XIV, No. 1, March 1981 remains the best guide to the many variations in the X31 and X32 subclasses. The model is expected in October 2017.

PRR N5 Cabin-HO Scale and N Scale



(Bowser)

Bowser has announced a production run of the N5 and N5b cabins in several paint and lettering schemes and also with and without Trainphone antenna in both scales. The model is ready-to-run, happily now with separate hand grabs on the HO models. All the variations and available numbers are illustrated on the website. The models offered are correctly numbered for prototypes with and without Trainphone. The

The Keystone Modeler

models with Trainphone are also correctly lettered as N5b, but until actual models are available the accuracy of other unique N5b details is unknown. The N5 cabin classes were also a PRRPro project; photos and much info is available on the PRRPro website. Models in both scales are expected in November 2017.

BROADWAY LIMITED IMPORTS http://www.broadway-limited.com/ PRR Delivery Schedule

BLI PRR models due in the near future are in HO, P70 Coaches in April and the J1 in May.

CENTRALIA CAR SHOPS (INTERMOUNTAIN RAILWAY CO.) http://www.intermountain-railway.com/

PRR Diner – N Scale

SPEEDWITCH MEDIA http://speedwitchmedia.com/ PRR Decals – HO Scale



(Speedwitch Media)

Speedwitch has developed four new decal sets of interest to us.

- D175 FM Flat Cars and DD-1A Containers
- D178 X29B Rebuilt Box Car
- D179 X26C Rebuilt Box Car
- D180 G22 Gondolas and HB1/HB1A Containers

All are illustrated at the web site, but above is an example of D180 – G22 Gondolas and HB1/HB1A Containers.



(Intermountain)

Centralia has announced through **Intermountain** a streamlined diner in FOM and the standard three stripe schemes. It is due in late summer 2017.

RAPIDO TRAINS

http://rapidotrains.com/ PRR FA2 Alco Diesel—HO Scale



The **Rapido** FA2 is expected to be delivered in late summer 2017.

TANGENT SCALE MODELS http://www.tangentscalemodels.com/ PRR X58A Boxcar—HO Scale



(Tangent Scale Models)

Tangent has available now their well-done X58A boxcar with new numbers and in a different scheme than the initial offering.

BETHLEHEM CAR WORKS http://www.bethlehemcarworks.com Pullman 8-1-3 Sleeper Kits - HO Scale



PRR "Strasbourg Tower" (PRR)

BCW is releasing craftsman kits for Plan 4080 "Tower" heavyweight sleepers. These kits include Branchline Pullman bodies, resin car sides and roofs, air conditioning ducts from NERS, and correct decals for "Bell Tower", "Eiffel Tower", "Strasbourg Tower", and "Wimbley Tower". Kits include correct trucks, but exclude wheelsets and couplers.

WALTHERS

https://www.walthers.com/ PRR PA1 and PB1 Alco Passenger Diesel-HO Scale



(Walthers)

Walthers is producing for their Mainline series the PA1 and PB1 in the Tuscan 5-stripe scheme. It will be available with DC or DCC with Soundtraxx sound. It is scheduled for release in late April.

Upcoming Events

March 24-25, 2017 Greensburg, Pennsylvania RPM East, Railroad Prototype Modeler Seminar http://www.hansmanns.org/rpm_east/index.htm

March 30-April 1, 2017 Port Wentworth, Georgia Savannah Prototype Modelers' Meet http://www.savannahrpm.com/

May 18-21, 2017 Camp Hill, Pennsylvania PRR&THS Annual Meeting http://pennsyrr.com/index.php/home

June 2-3, 2017 Enfield, Connecticut New England/Northeast RPM Meet http://www.neprototypemeet.com/Welcome.html

June 17, 2017 Richmond, California Bay Area Prototype Modeler's Meet http://www.bayareaprototypemodelers.org/

June 23-24, 2017 Collinsville, Illinois St. Louis Prototype Modelers' Meet http://icg.home.mindspring.com/rpm/stlrpm.htm

July 30-August 6, 2017 Orlando, Florida NMRA National Convention and National Train Show http://nmra2017orlando.org/

Advance Planning

October 26-28, 2017 Lisle, Illinois **RPM Chicagoland (formerly Naperville)** http://www.rpmconference.com/

PRRT&HS Interchange

Selected Society Merchandise of Interest to Modelers

PRR EQUIPMENT DRAWINGS ON MICROFILM

Copies of PRR equipment drawings are available from the Society's microfilm collection. To order drawings, you must know the drawing number and title. Ordering information and lists of arrangement drawings are available on the Society's website. Go to www.prrths.com, select National Society, and then The Interchange. If you require a printed copy of this information, please send your address and a check for \$2.00 made out to PRRT&HS to:

> **Richard C. Price** 779 Irvin Hill Road McVeytown, PA 17051

Product Review: Broadway Limited Imports PRR P70 and P70R Coaches in HO Scale

By Tim Garner



BLI P70 #1046. The ten roof-top vents connected with conduit plus the sparse underbody equipment identify this as the basic "hot" P70 coach.

BLI P70R #3519. The large ice bunker below the center marks this as an air conditioned car. Correctly modeled by BLI, the standard PRR straight center sill is visible from the side. On the Alco/Eastern Car Works and Bachmann P70 cars, it is invisible from the side.

BLI has produced the most accurate non-brass models of the ubiquitous P70 and P70R steel coaches ever made. With a few tweaks, they will run reliably on most layouts and be more accurate as well.

PROTOTYPE HISTORY

As the Pennsylvania Railroad began building New York's Pennsylvania Station and the tubes under the Hudson and East Rivers, passenger equipment on American railroads was mostly constructed of wood. To reduce the risk of fire in the tubes and increase safety overall, the railroad decided to develop all-steel passenger equipment. In 1906, PRR built and placed into service the first all steel coach on any railroad. (This car is preserved at the Railroad Museum of Pennsylvania in Strasburg, Pa.) The same year, the PRR made steel passenger equipment standard for the system and ceased building wooden cars.

PRR's standard design became the P70. Over 1,000 cars were produced between 1907 and 1929 by Altoona and several other builders. The 70 referred to the length of the passenger space. The overall length of the cars was 79'-10".

Early cars had 88 seats, electric lights, steam heat, and opening windows. In 1926, the standard number of seats was reduced to 80. Some had end windows in the vestibules. Depending on the builder, some had two windows on the vestibule doors and others had a single window.

In 1933, PRR began installing ice-activated air conditioning in some of the P70 cars. In PRR nomenclature, any air conditioned car would have a capital R added to the end of its class (until 1954). A basic air conditioned P70 was called a P70R. The coaches air conditioned before 1936 retained their 80-seat capacity. Those equipped 1936 and later had the last window on the right on each side blanked out and the seating capacity reduced to 76. The vast majority of P70R cars had ice-activated air conditioning. Later cars, such as the P70FBR, were equipped with mechanical air conditioning. Cars without air conditioning were often called "hot cars" by railroaders and railfans.

For more prototype information on the P70 and all its variations, Jerry Britton's "Keystone Crossings" web site is a great place to start. Visit <u>http://www.pennsyrr.com/in-</u> <u>dex.php/passenger</u> and choose "The P70 in the Pennsy Coach Fleet".

HO MODEL HISTORY

The sheer numbers of the P70 in the most populous area of the nation led to a number of kit, brass, and ready-to-run variations of the car over the years. The earliest kit version I am aware of was a P70GR kit by Megow around 1940. Paul Ziesmer, founder of the New England Chapter, owned a pair which were featured on page 5 of *TKM* #72. Walthers offered an approximation of the P70 in its line of stamped metal passenger car kits available as late as the 1980's.

Alco Models, a well-respected brass importer, introduced plastic kits of the P70, P70FBR, and P70FAR. These were later offered by Eastern Scale Models for many years. Unfortunately, many of the details were primitive, the roofs were difficult to assemble, and the underbody details and centersill were completely inaccurate. Bachmann introduced a readyto-run version in their Spectrum line that copied many of the same underbody inaccuracies of the Alco model and added some new ones including rubber diaphragms with doors which should not have been there, and end details accurate only for a non-vestibule car end. NKP Car Company still offers kits with brass car sides for the P70GSR and P70KR using Eastern Car Works parts.

Both BLI and Walthers announced they were coming out with ready-to-run P70 cars in 2015. BLI announced P70 and P70R versions. Walthers announced P70, P70R, and P70FBR versions in more paint schemes than BLI. However, BLI got to the market first and Walthers canceled their project.

THE BLI MODELS

BLI lists the following features for both their P70 and P70R models:

FEATURES

- Beautifully Detailed and Accurately Modeled
- Precision Paint, Color, and Lettering Schemes
- Many Separately Applied Details including Hand Rails and Antennae (where applicable)
- Detailed Interiors
- Properly Colored Interiors
- Lighted Interiors
- Operating Sprung Diaphragms
- Composition: ABS with ABS Chassis
- **Couplers:** (2) Operating Kadee Compatible
- Compatible Tracks: Code 70, 83, 100 Rail
- Minimum Operating Radius: 22 in

To clarify, P70 cars did not have antennae. I suspect whoever wrote the text assumed the electrical conduit on the roofs of the hot cars was an antenna.

On the first run, BLI offered both body styles in Tuscan red with either gold lettering and three stripes, buff lettering and three stripes, and unlettered. The three-stripe scheme with one 1" stripe above the windows and two 1" stripes below the windows first appeared on PRR passenger and dining cars in the fall of 1947. Dulux gold (a pale yellow) began to replace gold leaf lettering and stripes in the summer of 1952. The three-stripe Dulux gold scheme with PENNSYLVANIA spelled out began to be replaced with a simplified scheme in the summer of 1962.

BLI offered each car type in both schemes in four-car sets with unique numbers plus two single cars with unique numbers. This makes it possible to have a six-car train of each car type in each of the two schemes with no duplicate numbers. In fact, the first run offered 24 car numbers with no duplicates.

The suggested retail price for four-car sets is \$349.99 and \$89.99 for individual cars. At Trainworld, advance orders for the second run (with new numbers) are going for \$299.99 and \$74.99 respectively.

Since we tend to look down on our models, roof detail can make a big difference. The "hot" P70 is on the left and the P70R is on the right. The rivet and seam detail is accurate, but was seldom seen on the prototype due to a coating of roof cement. Roof cement is typically an asphalt-based material that helps prevent leaks around roof penetrations such as flashing and (in this case) seams, rivets, and vents.

CONSTRUCTION

Both the P70 and P70R are constructed in the same snap-together fashion. This reduces manufacturing costs for BLI and makes access to the interior easier for modelers wanting to add passengers, window shades, and other details. The sides, roof, and ends are molded in one piece. Added to this are roof details, working diaphragms, door and end grab irons, tailgates at both ends, and flushfitting clear plastic window glazing. The glazing for the bathroom windows has a frosted effect.

From the side and ends, the detailing of the body and roof are quite accurate for the P70 and the 88-seat P70R conversions. My only criticism is that the relief on the details is too deep. When you compare prototype photos of the letterboard to the model, this is quite obvious. On the prototype, the steel sheet used for the upper part of the letterboard is less than 3/8" thick and the edge is barely visible in most photographs. On the model it scales about 2" thick and produces a noticeable shadow. Alco Models made the same error on their plastic kit. The riveted plates on the car sides below the window band are likewise too thick and pronounced.

The rivet detail and seams on the roofs are accurate, but were seldom seen on the prototype. Black roof cement designed to prevent leaks hid most of the rivet and seam detail. Modelers noticed the same thing on the roofs of Walther's B60b baggage car models when they were introduced. A couple coats of flat paint will mute the details if you are so inclined.

The body is held onto the chassis by eight plastic lugs – four over each truck. The easiest way I've found to remove the body is first to pull both snap-on trucks straight off. Turn the car upside down and hold the car near one end. With your thumbs, pull the car sides out from the chassis near the truck mounting hole and gently slide the chassis out of the body by pushing up on the stairs with your index fingers. One the chassis is slightly out of the body, turn the car around and do the same thing at the other end.

The chassis of the car is molded in black with a mix of separate and molded underbody details. This is the first time the profile of the box-girder centersill has been properly modeled on a plastic P70. Attached to the chassis are separately applied steps with separate black treads. Tuscan red vestibule bulkheads with glass window inserts are at each end. The floor, bathroom walls and fixtures, and the ceiling are molded in a medium green. Seats are separately applied parts molded in a medium maroon color.

LIGHTING

Above the center of the car is a small circuit board with a 1000uF capacitor designed to keep the LED interior lighting on over dead spots in the track. One LED shines in each direction from the center of the car into clear plastic inserts designed to reflect the light into the passenger compartment. Unfortunately, because the bottom of each LED is not shielded, two "hot spots" of light are visible through the windows near the middle of the car. I intend to experiment with translucent and opaque shields to reduce or eliminate the hot spots. At the same time, I will paint the interior spaces a more correct color, add window shades and passengers. The interior lighting is on whenever the car is on the track.

TRUCKS

The 2D-P5 roller bearing trucks are free-rolling. The outer frame is molded in one piece from a slippery engineering plastic. Brake shoes and end beams are molded in. Added to the frame are two stamped pieces of metal, probably phosphor bronze, that transmit electrical current from the axle ends to contacts in the chassis on either side of each bolster. This contact is visible through the truck from trackside. Most modelers will want to paint them. All wheels pick up current. Metal wheels with metal axle ends are press-fit into each end of a hollow plastic axle. While the wheels meet NMRA's RP25 profile, the gauge was off on almost all the wheelsets of the eight cars I purchased. Once you have adjusted the wheelsets to the proper gauge, I would recommend a drop of ACC where the axle and the back of the wheel touch to keep them in gauge. Below are the underbodies of the BLI "hot" P70 above and the P70R below. BLI has delivered significantly more accurate underbodies than the Alco/Eastern Car Works or Bachmann Spectrum P70 cars.

One "ding" on these cars is the wheels and trucks. Only one of my eight cars had the wheels in gauge. The snap-in kingpin is too tight which prevents easy swiveling and lateral rocking required to track easily over uneven roadbed. Until after I reduced the diameter of the kingpin with a hobby knife, I experienced derailments entering superelevated (banked) curves on my layout that all other equipment handled fine. Several members reported similar derailment problems on the Society's Modeling discussion group.

The cars have working diaphragms and accurate PRR tailgates at each end. BLI chose to install a mechanism to permit a wide coupler swing around tight radii. To make that work, they moved the air hoses and steam line from adjacent to the coupler to the outside edges of the car. If it was a prototype car, the connections could never reach the other car from that position. The cut lever also has an inaccurate shape for the same reason. I'll be changing the couplers and end details on my fleet.

ROOF DETAILS

On the models, the P70 and P70R roofs only differ in the type and placement of vents. The P70 has ten vents connected by separately applied electrical conduit and junction boxes. The P70R has one vent in the center of the car and ten vents over the same locations as the hot car, but without the conduit. Both arrangements are accurate. Since models are often viewed from above, these details nicely add to their visual impact.

PAINTING

The painting and lettering are sharp and neatly applied. The Tuscan red is too brown to my eye. The grabs on the sides of each door and under the trap are painted silver on the model. They should be black.

THE VERDICT

BLI's P70 and P70R are, in my opinion, are the best looking, most accurate plastic models of these cars yet produced. With modest effort, they'll be reliable runners, too. Hopefully BLI or Walthers will produce other variations of the cars that have not been available in this form including the P70FR, P70GSR, P70KR, and P70FBR, and the later model P70R

SOURCES

- Chuck Blardone and Peter Tilp, *Pennsylvania Railroad Passenger Car Painting and Lettering*, *PRRT&HS*, ©1988.
- The Passing of the Wooden Passenger Car from this Railroad, PRR, ©June 1928.
- Robert Liljestrand and David Sweetland, *Passenger Equipment of the Pennsylvania Railroad, Volume 1: Coaches,* The Railroad Press, ©2001.

Modeling PRR Telegraph & Signal Department Relay Cases and Battery Boxes in HO Scale: Part 1 – Battery Boxes

by Jack Consoli – Photos by the author unless specified

A 509-Y style battery box installed next to a block signal on my early 1950's layout. The outlet cap and wiring are on the near end, adjacent to the relay case yet be installed between it and the signal. These Signal Department details are a must to get your recreation of the Landscape of the PRR correct. C.E. 234-(b) rule 24(i) requires: "Batteries shall supply current as follows: 3. Distant or other signal-to all circuits originating at or confined to the location, and for signal lighting during failure of normal power supply."

PROTOTYPES

Without going into great detail about the contents of the enclosures, the relay cases housed the electrical gear required to operate signals, crossing gates, flashers and other electrical devices that were scattered across the railroad, and the battery boxes held the storage or primary batteries used to power, or back up the power, to operate them. As exposed electrical equipment does not react well to the forces of nature, these enclosures were designed and built to protect the equipment from the elements, unwanted animal and human intruders and maintain that protection for long periods of time. Reading the copious notes on the Signal Department tracings and publication C.E.234-(b) for these pieces of equipment gives insight and appreciation into what factors they were protecting against and

the measures taken to do so: geometries, materials, paints, coatings, seals, locks, etc. The photographs included here which I took in the 1980's and 1990's attest to the railroad's successful efforts in this regard as this still-functional equipment was designed and installed starting in the 1920's.

As with all things on the railroad, there was an evolution of this equipment as the technology and materials employed progressed and as the railroad grew. So, as is the case for locomotives or freight cars, what is correct for any one modeling period may not be for another. Fortunately, many of the PRR's tracings for this equipment are easily accessible, in particular, at Rob Schoenberg's excellent website, compiled from several sources: <u>http://prr.railfan.net/signalstandards/standards.cgi</u>.

A typical example of the supporting role relay cases and battery boxes played in the Signal Department's operations. Northward position light Block Signal 35.1 is typically the center of attention in a setting such as this as it controls the action on the railroad. However, the batteries and circuitry necessary to operate it stand (nearly) silently nearby, housed in those two relay cases and battery box. Here we see a 1920's era 509-Y battery case, a 1930's era two-door 5302 relay case and a more modern early 60's era single door case, still in operation at Mon City, Pa., 10/25/85.

For much of the equipment discussed here, there are multiple revisions and designs, which aid in sorting out the evolution. These tracings, referenced in conjunction with photographs, greatly help to explain what we saw in person or in period photographs and thus, how to model it. It becomes immediately apparent in looking at photographs that several designs and generations of this equipment could, and did, exist side by side. From a modeling perspective, this is probably a positive situation as multiple "standards" can sometimes add variety and interest.

BATTERY WELLS AND BOXES

Similar to what we have seen in recent years, battery design, materials and construction technologies have experienced continual changes since their invention. In general, the trends have been for reductions in size and increases in their capacity and robustness. The earliest designs that appear in the Signal Department tracings were called "wells" as they were essentially underground bunkers in which to house the batteries, usually having relatively small access covers and minimal protrusion above ground level. It would seem the underground well design offered better protection from temperature extremes, mechanical abuse and possibly provided better safety for the older style batteries and their more fragile nature.

Tracings from the early 1920's, show these underground wells beginning to be supplemented by above-ground boxes that featured full size access lids and were only partially buried. The boxes could accommodate the newer technology batteries that were coming into use; the lead-acid and nickel-iron types.

The general layout of the battery boxes consisted of a reinforced concrete/metal outer box enclosure with a lockable metal or metal-clad lid. Inside were linings, support racks for the batteries and one or more outlets for bringing the wiring into and out of the box. The wires entering and exiting the boxes either came in through conduits up from the ground or dropped down from poles or equipment nearby, entering the cases via "outlet" hardware. The earliest box-types I have found are the 509-series of slope-top concrete boxes shown below.

Tracing 249-S1-2 of 1/5/14 shows the container for the older caustic soda signal cells. Constructed of a glass or ceramic bottle and lid, zinc and copper electrodes and liquid electrolyte were inserted. (*Courtesy Rob Schoenberg*)

(*Top*) One half of tracing S-509-A of 1921 shows a cylindrical well-style battery enclosure that extends 6' underground, allowing the cells to be stacked on three shelves. The small exposed covers to these wells are occasionally visible along the right of way in older photographs. (*Bottom*) The similar rectangular design of 1922 appears on tracing S-508-A. (*Courtesy Rob Schoenberg*)

The second half of 1921 tracing S-509-A shows the early slope-top box-style battery enclosure with tabulated dimensions and specifications for three sizes. (*Courtesy Rob Schoenberg*)

(Top left) A 509-X battery box at Huston Run, Pa., 10/26/85. Here the smallest and lowest capacity of the 509-style boxes along with a late style relay case were all that was required for the dwarf signals here, part of former "H" Interlocking.

(Top right) A partially buried 509-Y battery box trackside next to one of the later style relay cases situated at the southward home signal (just out of view at right) also at the former H Interlocking, 6/25/88. The 509-style characteristic raised cast protrusion for the latch hardware, as well as the sheet metal covers over the unused outlets, are visible here. The outlet cap in use is at the other end, closest to the relay case to which it is wired. The box is bare concrete and the metal parts are silver (or gray).

(Above right) This 509-Y battery box shows the wiring entering/exiting via the outlet cap to the adjacent relay case for the northward home signal (on the near side of the case) on the Ellsworth Branch at Mon City Pa., 9/4/83. Due to the local terrain, this battery box is mounted on a concrete foundation, rather than being partially buried in the dirt.

(*Right*) Same location, opposite view, 1990. The Home signal mast has since been relocated a short distance away but is still apparently controlled through this relay case and battery box. The three cast protrusions for the hinges on the back of this 509-Y battery box plus the covers on the unused outlets on the near end are clearly visible. The need for the concrete foundation here is obvious from this angle.

(Bottom right) View behind "BF" Interlocking tower during a railfan event at Brownsville, Pa. on 10/8/59. The largest size 509-style box is seen here from the rear. The wide spacing of the hinges identifies this as a 509-Z box. The outlet cap is on the left end, adjacent to its associated 5302 relay case with its rear access panels removed, apparently being worked on. (William D. Volkmer)

Close inspection of the data table shows that the three sizes of the 509 boxes, X, Y, and Z, or 8, 20, or 40 cell, ranged in length from 2'-7" to 6'-0". The 5093 boxes were lined and accommodated the smaller 500 amp-hour cells, whereas the same exterior size 5094 boxes were not lined and held 5, 12, and 24 of the larger 1000 amp-hour cells. The weights of these cases were non-trivial, ranging from 900 to 2500 pounds! Cast into the concrete cases were protrusions to mount the iron hardware. Along the back were two on the type X, and three on the types Y and Z for the strap hinges and one centered in the front for the hasp and lock hook hardware. For strength and ease of casting in concrete, these protrusions had tapered sides. There were also roughly 6" rectangular openings cast into the ends of the boxes: two in the small type X box, and four in the larger Y and Z boxes. The notes instruct that only one outlet in each box was to be used on any given box, the others were to be plugged with wood blocks for insulation and covered with flat plate outlet covers. The cast iron outlet cap was a simple hood with the opening underneath for protection against infiltration of the elements. It was also noted the doors (lids) were to open away from the nearby main track, i.e., the hasp side faced the track. Rod hardware was also built in to the boxes to prop the lid up, when open.

Another style concrete of box was introduced in 1922 on tracing S-510-A. These were also slope-top boxes, specified in

two sizes: 5102 at 2'-6" and 5103 at 6'-1" long. These boxes had metal-clad wood lids and smooth concrete boxes without the protrusions for mounting the hardware, as eyebolts were used instead. This tracing was reissued in 1936 however, changing the design significantly. The lid slope was reduced and sectionalized all-metal lids replaced the earlier arrangement. A rod was inserted lengthwise across the tops of the lid or lids, through brackets on the box and the lid handles. A hasp at one end allowed for locking the rod and lids closed. The updated design also featured four box sizes: 5101 was 23" long with one lid, 5102 was 4'-2" with two lids, 5103 was 6'-5" with three lids and 5104 was 8'-8" with four lids. Upward facing steel separator channels across the top of the concrete box filled the gaps between the lids. Inside, these boxes had wood slat floors, frost and terminal boards. Each box had two outlet openings cast-in; one near the left front corner and one near the right rear corner. On the small 5101 boxes these ended up being centered on the front and rear faces. As previously, outlet caps and covers were to be applied to suit the location.

Later battery box designs appeared in the photographs and specifications as well, but I have not found tracings for them, including S-512, thus requiring some greater creativity to model. Many of these boxes survived in use through the end of the PRR era and into the 1980's and 1990's, when I photographed the examples included herein.

The redesigned 510-style boxes are shown here on the 1936 tracing S-510, B revision. The lid design was modified and the boxes specified in four sizes. (*Courtesy Rob Schoenberg*)

SPECIFICATIONS

In PRR publication C.E. 234-(b) "SPECIFICATIONS FOR SIGNALS and INTERLOCKING SYSTEMS" of May 1957, are a number specifications pertinent to this topic. Excerpts which may or may not be of interest to the reader/modeler follow:

24. Batteries.

- (a) Except in electric traction territory, where power line is established, local battery of sufficient capacity shall be provided to supply energy to signal lights and other control apparatus during power outages.
- (b) Batteries may be either approved nickel or lead type storage or primary type and housed in battery boxes in accordance with Drawing S-510 and S-512, or approved substitute.
- (c) The system of wiring from each battery shall be kept separate from that of any other battery or source of energy as far as possible.
- (g) Equipment for charging batteries shall be approved by the Chief Engineer.
- (h) Energy shall be applied to the circuit at the nearest practicable point to the controlling device.
- (i) Batteries shall supply current as follows:
 - 1. Interlocking station or instrument house-to all circuits originating in or confined to the building or house and, where required, for E. P. (electro-pneumatic) or electric switches.
 - 2. Home signal-to all circuits originating at or confined to the location, and between the location and interlocking building or instrument house except where supplied from building or instrument house battery; also for signal lighting during failure of normal power supply.
 - 3. Distant or other signal-to all circuits originating at or confined to the location, and for signal lighting during failure of normal power supply.
- (j) Batteries shall be provided:
 - I. One at each home signal location.
 - 2. One or more in interlocking building or instrument house.
 - 3. Where the above number of batteries is unnecessary for the amount of apparatus involved, one battery may be provided in the interlocking building, or at each home signal location, or in any combination as required.
 - 4. At highway grade crossing protection in accordance with Sect. 44, Para. (n) and Para. (o).

- (I) A separate battery shall be provided for:
 - I. Each D.C. track circuit.
 - 2. Each traffic control system line and local control.
 - 3. Train starting or train announcing system.

27. Instrument and Battery Shelters.

- (a) Instrument and battery shelters shall be in accordance with the following plans:

 - 2. Instrument Case..... S-470

 - 5. Instrument Houses...... S-538
- (b) Primary batteries shall be located in battery boxes or similar suitable housing.
- (c) Storage batteries shall be housed in battery boxes.

28. Painting.

- (a) All corrodible exposed metal parts and all wooden parts exposed to the weather shall be painted.
- (c) Small steel instrument houses, instrument cases, battery housings, unit compressors and air lines, telephone boxes and supporting post or pipe shall be painted aluminum, or in electrified territory the same as used on catenary poles and transmission line supporting structures in the area. Dwarf signals impedance bonds, switch valves, switch and lock 'movements, mechanical pipe line, Parkway outlets (where painted), shall be painted black. Note: Refer also to 28(e).
- (d) In other than electrified territory, instrument cases and small instrument houses, battery housings, unit compressor cases and air line, telephone boxes and supporting post or pipe, shall be painted aluminum, except black shall be used at locations where aluminum would become soiled and discolored from steam and Diesel locomotive exhausts. Dwarf signals, switch valves, switch and lock movements, mechanical pipe line, Parkway outlets (where painted), signal supporting structures such as bridges, masts, etc., shall be painted black. Note: Refer also to 28(e).
- (e) The backs of position light dwarf signals, valve cases, and similar objects between or adjacent to tracks, may be painted with aluminum paint if contact with such objects may endanger employees whose duties require them to be on or about these tracks, or where greater visibility at night is desired.

The basic 509 boxes assembled from styrene sheet.

The completed 509 X, Y, and Z box masters.

MODELING

The 1957 specification shows that new 509 style battery boxes were no longer being constructed by that date, but were still in use (as I photographed them in the 1980's) along with the 510 and 512 styles. I will detail below how I modeled the 509 (three sizes) and 510 (three sizes) styles, plus what I am guessing could have been the 512 design (one size) as well as one size of another, even later design. The bad news is that only one size each of two of the styles is available off the shelf commercially in HO. The good news is that the Signal Department tracings above make the modeling pretty easy.

509-Style

From my observations of what equipment was in use on the PRR's Monongahela Division I model, the majority of the boxes in use circa 1952 appear to have been the 509 styles. Since I had to scratch build them, I did it with the intent of these being the masters for making rubber molds from which I could clone an army of them as the specifications and photographs show they were everywhere.

Using the tracing dimensions, build the "concrete" boxes from pieces of .030" styrene sheet: four sides plus a bottom for rigidity. Once the basic box is assembled and dry, sand the sloped top, flat bottom and four sides smooth and even. It is important that the boxes have no holes if you plan to make molds as the silicone rubber will sneak through any small cracks and cause problems. Drill holes in the bottoms so when you apply the lids you can reach through the holes to apply your cement liberally to the inside of the joints to seal them.

Cut the .030" lids to size and glue in place with the proper overhang all around. Take a strip of .020" x .100" styrene and taper the long edges to 45° plus one end to form one of the protrusions on the concrete box where the hardware was mounted. Cut off the piece to length and glue to the box with the square cut up against the bottom of the lid overhang. Taper the cut end of the long strip again and repeat for the other protrusions. Get some detail parts for the hinges and latches and glue to the boxes and lids in the appropriate locations. If you soften the plastic hinges in the middle with some solvent cement just prior to assembling them, they are easier to bend around the box. Cut pieces of .010" thick .100" wide styrene strips to use as the outlet covers. Glue them to the boxes at *all* outlet locations, since you may not know which location on any given box you want to apply the outlet cap (where the wires exit) until you are ready to place it on your layout. Make some rectangles of styrene strip with a tapered top to represent the outlet caps, sans their flanges and set these aside. If you mold these separately, then you can apply them to any of the outlet covers as desired at installation. The outlet cover underneath will then look like the outlet cap flange.

If you are making a mold of these parts, glue the box and outlet cap masters into a suitable enclosure and pour your mold. Once cured, you can remove the masters and clone the parts using the casting material of your choice. Although these parts have some overhanging features which when upside down in the mold form "undercuts", they are small enough that the rubber will stretch sufficiently to release them. Making the parts with the bottoms being the open side (up) allows you to make simple one piece molds. Micro-Mark, as well as others, sells supplies for mold making and part casting.

The 509 X, Y, and Z box and outlet cap masters glued into the mold frame box, ready for the mold to be poured. When you cast the boxes, fill the cap cavities as well and then glue one casting to each box where best suited for the surrounding scenery.

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 The 509 style box mold shown with some raw castings.

Painted samples of each.

510-Style

The 510 style boxes are more of a traditional kitbashing project as Details West makes an HO pewter part, #GB-911, "Ground Box (large)" which is very close to the PRR 5102 box that was 4'-2" long with two lids. I used four raw parts to end up with one each of the 5101, 5102, and 5103 size boxes. To make their GB-911 more correct as a 5102, file off their blob representing the outlet cap (do this to all the parts, actually). To make the single lid 5101, if you just cut a GB-911 in half, it is too short and you lose the hardware detail on the cut end. So take one GB-911 part and make two cuts in one half of it, leaving one full lid and a partial end. File the end of the full half square and smooth such that the channel detail in the center is fully removed. Now file the short end square and to length, such that when mated to the other piece, the total

length is close to the 5101's 23" length. Glue the parts together, putty the joint and clean it up after drying, if needed.

To make the 6'-5" long 5103 with three lids, carefully file the details off one end of the first part. Cut the second part just beyond the channel on one side. Make sure you end up with the correct ends as they are different; one has the hasp and lock and the other just a mounting bracket. File the good end of the second part square, back to the point it properly fits under the lid overhang of the first part. If it goes well, even the latch rod on top of the lids will match properly. Glue, putty and clean up to complete. I also added a nut/bolt/washer casting near each end of the channels. I personally didn't see a need for the 8'-8", four-lid 5104 on my layout, but it could be easily kitbashed similarly.

A raw GB-911 (5102) shown at left and others cut apart at center and right in preparation for making the single lid 5101 and triple lid 5103, respectively.

(*Top*) Left to right, the completed 5103, 5102, and 5101 boxes, sans outlet caps and covers.

(*Middle three*) The masters for the outlet covers and caps shown prior to singulating, followed by the finished masters glued into the mold box and some raw castings awaiting de-flashing.

(Bottom) The painted 5103, 5102, and 5101 boxes.

512-Style?

The next style box I made is what I can only guess is the 512 style listed in the C.E. 234-(b) specification and which appeared sometime between 1922 and 1957. Much like the 510 box, this is a straight styrene scratch build. The challenge here is not the model, but the lack of a dimensioned drawing of the prototype. I observed these in at least two locations on the former Monongahela Division trackage, and, fortunately, I had taken some fairly close-up photographs. These were clear enough to work from to scale some dimensions off based on known dimensions of the relay case next to it, for which the tracing exists (and will be shown in Part 2). These cases appear to be all-steel construction, at least on the outside. The lid is split in the center secured with a back-to-front locking strap and two hinges per side on the rear. It is not clear what the function is of the large rectangular protrusion on each end. Traditional outlet caps and wiring are not visible. Possibly, since these are mounted above ground on a metal frame, the wire outlets are on the bottom as they are on some relay cases.

(Above left) A large, all-steel battery box, possibly type 512, and a four-door 5304 relay case still existed south of former "OB" Interlocking at Becks Run, Pa., on 10/12/91. The mounting hardware arrangement with the exposed bolts on the ends of the relay case is indicative of pre-1946 installations, and therefore may indicate the age of this style battery box precedes that date. (*Above right*) Other end view of the same box shows more clearly the fabricated angle iron frame which supported this box above ground, similar to those used commonly on relay cases.

Rough drawing I made of the all-steel box. Construction lines were drawn on the photograph and then the perspective effects were removed, leaving an outline drawing of the box and the relay case. With known dimensions for the 5304 rely case, those of the battery box could be scaled.

Construction was similar to the 510 cases using appropriate styrene sheet and strip to replicate the look of the prototype using the drawing I created: first make the box, then add the lid, then the details. The one tricky step was to create the small underset ledge along the bottoms of the front and rear faces such that when mounted onto sections of channel forming the foundation, as seen in the Becks Run photos, the box face would be more or less flush with the channel face. What would otherwise be tedious or doomed to failure is easy if you clamp a sharp razor blade vertically in a vise such that it protrudes above the top surface the precise height you want to make the recess in the box face. Then simply slide the box back and forth on the vise surface along the blade in a scraping action, until the depth matches your foundation channel section. This method assures a perfectly straight and clean edge to the recess you cut. I used one of the excess pieces of lock hardware from one of the discarded GB-911 bits.

A razor blade clamped in a vise was used to scrape the recesses along the bottom of the basic box assembly.

(Top right) Front view of the completed master for the all-steel box. Note that part of the front could hinge open on this style box, in addition to the lids opening upward.

(Second row) Rear view of the completed all-steel battery box master $% \left({{{\rm{D}}_{{\rm{s}}}}_{{\rm{s}}}} \right)$

(Third row) View of another all-steel battery box at the base of the southward home signal bridge (visible just behind the instrument house) at "OB" Interlocking on 9/1/84. This is an illustration of rule 24j-1 stating that "batteries shall be provided: 1. One at each home signal location".

(Bottom) Front and back of the completed battery box.

Late-Style

I photographed another style of box which appears to me to be the most modern of the four styles. The earliest dated photo of this type box I have found thus far is from July 1964. These are very simple square boxes with metal lids. They appear to be built up of four side slabs of concrete-like material and a base rather than being a solid concrete casting. Fasteners are visible in the four corners of the front and rear faces holding the four sides together. Like the others they have outlet covers and caps for the wiring.

Again, fortunately for the modeler, Details West makes a pewter casting, #GB-910, Ground Box (medium) that looks very similar to this style. All that is needed here is to clean up the castings and drill some holes at the corners representing the fastener recesses. The lids on the parts are somewhat sunken so apply some putty and sand flat. Make some bits of styrene to represent the pipe elbow-like outlet caps and glue to the boxes or clone them as before, if you need them in quantity.

(Top left) View of a pair of the late-style fabricated battery boxes at "OAK" interlocking, former location of "H" Interlocking tower, Shire Oaks, Pa. 5/12/85. A now-remoted interlocking, the instrument house behind, replaced the tower.

(*Top right*) One of the late-style fabricated battery boxes is seen here next to the concrete footings for the former southward home signal bridge at "CR" Interlocking in Dravosburg, Pa., June 1984. When the interlocking and two of the four main tracks were removed, new block signals and an associated modern-style two-door relay case and the battery box were installed.

(Middle right) Cleaned up GB-910 castings ready for painting.

(*Right*) Detail view behind "CITY" tower (formerly "MC" Interlocking) of another of the late-style boxes at right, next to an older 509-Y concrete box at left, Mon City, Pa., 11/23/81. The fasteners in the corners of the late style box belie its fabricated construction. Here and in the previous "H" Interlocking photo, rule 24j-2 is illustrated that "batteries shall be provided: 2. One or more in interlocking building or instrument house."

(Bottom right) The completed box.

PAINTING AND INSTALLATION

On the boxes with separate outlet covers and/or caps, once you have decided upon which outlets are to be wired for specific locations, glue on the parts. Wash and dry the parts before painting to remove dirt, oils, and films, especially on the cast parts. Paint the concrete boxes an aged concrete color and all the metal hardware grey or silver. Tracing S-510-B of 1936 instructs that the metal parts are to be primed and given two coats of light gray paint. C.E. 234-(b) states however, that the metal parts are to be silver. So apparently it changed at some point in between these dates. The relay case tracings still call out black paint for them as late as March 1946, whereas in photographs as early as 1951, they start appearing in silver paint, also as instructed later in C.E. 234-

(b) of 1957. So it is my guess that the battery box metal part color changed from gray to silver at the same time the relay cases were changed from black to silver, likely the late 1940's/ very early 1950's. Weather the painted boxes to taste.

If you desire, drill out the bottom of the outlet caps a bit to make it easier to insert whatever you choose to represent the wiring and route it to points appropriate for your installation. As seen in photographs, the boxes ranged anywhere from sitting on top of the ground to being buried up to the outlet caps in the ground. Some were supported above ground on concrete foundations or metal frames. Install as desired in your scenery at the appropriate locations.

- ▲ Battery boxes, outlet covers and caps painted and ready for weathering and installation.
- ▼ Eight variations of finished battery boxes

An HO 509-Y style battery box at a block signal installation. Part two will cover the relay cases, one of which needs to be installed between the battery box and the signal.

Coming up next: Part 2 – Relay Cases

PRR 32' TrucTrain Tandem Axle Closed Van Trailers

By Curt LaRue – Photos by the author unless noted

A Rail-Trailer Co. tractor removes 32' closed van trailer PRR32E250 from TrailerTrain F39c flatcar #470947 in Philadelphia around 1957. (Courtesy Railway Age and The Keystone)

BACKGROUND

Issue No. 87 (Winter 2014) of *The Keystone Modeler* covered two types of 30' single rear axle, closed van trailers. The second trailer covered, number 30E33, is similar to the 32' tandem axle trailer covered in this article. About the same time the railroad acquired the single-axle trailers, it also acquired 32' tandem-axle van trailers. Unfortunately, few good photos of this type of trailer have surfaced.

Brady McGuire and I found one with the newer number assignment, PRRZ 220010, in Columbus, Ohio. The trailer was parked between two other trailers making it impossible to photograph the sides. I was able get photos of the nose and rear of the trailer. I made a big mistake thinking that this trailer was like the other trailers seen that day and didn't take measurements.

An excellent photo and plans of this type of trailer appeared on page 9 of the Anthracite Railroads Historical Society, Inc. magazine *Flags Diamonds and Statues*, Volume Seven, Number 3, Issue Number 27. This type of trailer was built by Fruehauf and was used by several other railroads including the PRR, DL&W, and the NKP. A distinguishing feature of these trailers was their height. Modern trailers at 13'-6" are almost 2' taller. They also can be picked out in photos with other trailers since they are 1' shorter than the later 12'-6" thirty-five and forty foot trailers.

TRAILER DESCRIPTION

Length:	.32'
Width:	.8'
Height:	.11'6"
Nose:	Square
King Pin Setting:	18" from nose
Sides:	.Ribs 8" on centers
Side Door:	.Curb Side
Rear Doors:	Swing Type
Roof:	.Full Length Closed
Landing Gear:	.Retractable w/ wheels 102" from nose
Wheels:	.Dayton Type/ Cast Spoke
Trailer Numbers:	32E250 thru 32R257, 32C465 thru 32C473, 32E854 thru 32W861
(Known as of April 1, 1959)	

Driver side and rear of the 32' closed van trailer showing door latches, hinges, and rear step bumper. (PRR, Curt LaRue collection)

(Left) Nose of trailer PRRZ #220010 (new number after being renumbered) taken in Columbus, Oh. Showing vacuum brake hookups and utility box. (*Right*) Rear of trailer PRRZ #220010 showing rear door, dual door latches, hinges, rear marker lights, and step bumper. There appears to be a patch panel beneath the right hand lower door hinge.

Side of the van before painting.

MODEL CONSTRUCTION

Trailer Body – The side ribs are spaced at 8" on centers. I used Pikestuff #541-1014 Board and Batten or Metal Siding for the sides.

Left Hand Driver Side – Cut a piece of the Pikestuff siding 31'-6'' long x 6'-9'' high. Cut the siding so there is not a rib at the front. There should be a rib at the rear. Cement a $4'' \times 4''$ styrene strip full length along the bottom of the side. Overlap the ends of the sides by about 6'' as we will trim them later. **Right Side / Curb Side** – This side will be made from two pieces of the Pikestuff siding and a smooth styrene side door spacer. The front piece should be 12'-9" long x 6'-9" high with no rib at the front but with a rib at the rear. Next cut a piece of .040" styrene 6'-9" high x 3'-9" wide for the side door spacer. Finally cut a piece of the Pikestuff siding 14'-9" long x 6'-9" high for the rear side section no rib at the front but a rib at the rear. Cement the three sections together. Cement a 4" x 4" styrene strip full length along the bottom edge of the sides over lapping the ends by 6" as on the driver side.

Door Frame – Frame in the door opening with 1" x 6" strip styrene at the rear and top of the doorway. Do not frame the doorway at the front or bottom.

Door – Cut a piece of .010" styrene 6'-3" x 3'-3" for the side door and cement in place on the door opening. The door should just fit inside the doorway. If it does not, trim the door to fit and cement in place.

Trailer Body Spacers – The spacers are used to give the trailer body the right width and to make square corners. Cut two spacers 7' x 7' from .040" styrene. Cement one spacer at the front and one at the rear of the sides taking care that they are inside and squared up to the sides. Note that the spacers are cemented in place inside the sides and are flush at the ends and should not overlap the sides. I used a machinist square to ensure square corners. To ensure that the sides did not bow in or out. I cemented a third .040" 7' wide x 6' high spacer in the center of the body flush with the top of the sides. The 6' high spacer provides room for the frame to fit inside the trailer body. To strengthen the body, I cemented 6' high pieces of .125" x .125" strip styrene inside all of the corners with the tops flush with the top of the sides.

Nose Skin – Cut out the nose skin from .010" styrene 7' high x 8' wide. Lightly scribe in the nose panel seams as in the drawing. Cement in place centered on the sides. The nose skin will overhang each side slightly.

Upper Side Roof Battens – Cement a 1" x 3" styrene strip along the top edge of both sides of the body full length overlapping the ends slightly. When the cement is dry, trim off the excess flush with the ends as above.

Lower Sill Rub Rails – Cement a strip of $1" \times 2"$ styrene strip over the $4" \times 4"$ lower sills flush with the bottom of the ribbed sides overlapping the ends slightly. After the cement has dried, trim off the excess flush with the ends as above.

Side Door Gusset – Cut a 1" x 6" styrene strip to length tapering the ends per the drawing. Cement in place using the drawing for placement.

Rear Threshold/ Rear Floor Entrance – Cement a 4" x 4" x 8' styrene strip in place at the bottom rear of the body.

Rear Door Frame – Frame in the rear doorway with 1" x 6" styrene strips on sides and top as in the drawing.

Chassis of trailer before wheels are installed.

Rear Doors – Cut 2 rear doors from .010" styrene sheet 3'-6" wide x 6' high. Test fit inside the door frame. If needed, trim the doors to fit.

Roof – Lay the body top down on a sheet of .020" styrene and trace the outline of the roof on the styrene sheet with about 2" of overhang. Cut out the roof and cement in place.

Chassis/ Underframe - Use the frame from an Athearn #5100 series van trailer kit. This model is no longer available in kit form but can usually be found at train shows or model railroad flea markets. Cut 2' off the front of the frame as in the drawing. Measure back 30'-6" from the modified front and cut crosswise per the drawing. Next place the modified frame with the cross bearers face down on your cutting board. There is a lengthwise stiffener on both sides of the frame. Run a hobby knife along the outside of the stiffeners removing about 3 scale inches on each side. This will allow the modified frame to fit inside the trailer body. The frame will have a slight bow in it. To correct this cement two .125" x .125" styrene strips in place 2 scale feet in from the sides. Hold the strips in place with spring type clothes pins. Test fit the frame inside the body Making sure that the cross members and upper coupler (upper fifth wheel) are flush with the bottom of the sides. If needed, file the frame to fit and then cement in place.

Suspension – Use the Athearn 5100 Series kit tandem suspension. Cement in place with the center of the tandem (CT) 102" from the rear of the trailer per the drawing.

Tires and Wheels – Slip the tire/ wheel assemblies in place in the axle holes of the suspension. Make sure that the wheels are the spoke type.

Landing Gear – Use the Athearn 5100 Series landing gear with dolly wheels. Cement in place 102" from the nose of the trailer. Cut two diagonal landing gear braces from .020" styrene rod and cement diagonally in place as in the drawing.

Rear Step Bumper – Cut two 4" x 4" x 2'-3" long styrene strips and cement them vertically per the drawing. Referring to the drawing, bend a 2" x 4" strip of styrene around a mandrel to create curved corners, I used the shaft of a micro screw driver as a mandrel. Use the drawing as a guide cutting the bumper to fit and cement in place with ACC. The ACC will grip and hold the bumper in place quickly.

Threshold Cross Brace – Cut a strip of $1'' \times 8'' \times 8'$ and cement in place behind the rear bumper.

Lower Rear Side Gussets – Cut two lower rear corner gussets per drawing and cement in place.

DETAILING THE BODY

Curb Side Door Hinges – Shorten Tichy #3068 Strap Hinges as in drawing #4. Cement in place on forward side of door. **Curb Side Door Latch Bar** – Trim Grandt Line #5167 Reefer Door Latch Bar as in drawing making the latch bar 6' tall and trim the latch handle to be 15" long. Cement in place on the rear side of the door.

Rear Door Hinges – Modify Tichy #3068 Strap Hinges as on side door. Cement in place as in rear view drawing #4.

Landing Gear Crank Handle – Form this from .010" brass wire as in drawing 6 Cement in place on the right hand landing gear leg. The positioning of the landing gear crank is an option with trailer manufacturers depending on the buyer's preference on the curb or driver side.

Nose Utility Box – This is a box on the nose of the trailer with receptacles for the brake and electric connections from the tractor. These early trailers had vacuum brakes and 6-volt electrical systems as opposed to today's air brakes and 12-volt electric systems. Fabricate the box per drawing from 2" x 6" styrene strip and cement in place per drawing.

Mud Flaps – Cut out two 24" x 30" x .010" pieces. Paint the mud flaps Testors #1788 Euro Gray or Grimy Black and cement in place behind the rear tires of finished model.

Painting and Lettering – First paint the entire trailer with a light gray primer. This makes it easier for the color coat to cover evenly over dissimilar colors of plastic and metal parts on the trailer body. Paint the body caboose red and the roof aluminum color. I am uncertain whether the chassis color should be red or black. In this case, I painted the chassis, suspension, and wheels red. I painted the tires and upper coupler (upper fifth wheel) Testors #1788 Euro Gray.

Lettering – The great news is that Mount Vernon Shops have released two sets of decals for TrucTrain trailers. The first set, HO PRR Trailer Decals Early Scheme (Pre 1960) features the diagonal "PENNSYLVANIA RAILROAD" lettering with a clear background and a red background. Both can be used on red trailers. The lettering with the red background is for insulated trailers painted aluminum color. This set also features yellow numbers outlined in white and the large "TrucTrain" lettering which was applied to the lower right hand corner of many trailers. The set also includes the PRR keystone monogram which was applied to the nose, the rear doors, and at the ends of the diagonal "Pennsylvania Railroad" lettering of the sides.

The second decal set, HO PRR Trailer Decals Late Scheme (Post 1960) is for trailers which had the circular TrucTrain disc applied. The set has the two sizes of discs that are known to have been used plus a never before available disc for Refrigerated Service. This set includes correct numbers, PRRZ lettering, keystones, and Excelsior Leasing decals. Future articles on 35' and 40' trailers will cover trailers with this scheme. Both decal sets are now available and listed on the Mount Vernon Shops website.

Side Lettering – Apply a keystone monogram decal on the lower left hand corner and upper right hand corner on both sides of the trailer. The "PENNSYLVANIA RAILROAD" lettering is applied diagonally from the lower left to the upper right as in the photos of the finished model. To ease the application of the lettering, I cut the PENNSYLVANIA lettering out separately from the RAILROAD lettering. This makes it easier to make the decals conform over the side ribs. I applied Micro Set under the decals and let it dry. Then I applied several coats of Micro Sol over the decals working out any bubbles gently with a brush and pin. Take it slow and easy with the application of the decals over the side ribs. If you are applying the large TrucTrain decal, they should be applied in the lower right hand corner of the side as in the photos of the finished

model. Again take it slow and easy getting the decal to conform over the side ribs.

Nose Lettering – There is a good photo showing the nose of this type of trailer on page 60 of the book "Phillip R. Hastings Portrait of the Pennsylvania Railroad". The photo shows the positioning of the trailer number and keystone monogram centered and high up on the nose. If you have this book, you can use this photo to apply the number and keystone or refer to the photo of the finished model. To select a trailer number, refer to the Trailer Description section of this article. Because my eyes are not as good as they used to be, I had difficulty cutting out the numbers from Decal Set #1 so I used the num-

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bers Decal Set #2 which I found easier to read and cut out. Apply the decals as above. This is much easier as there are no ribs for the decals to go over.

Rear Door Lettering – I was unable to find any good vintage photos showing the rear door lettering so I referred to the photo I took in Columbus of trailer number PRRZ 220010 (pictured above) as my guide. The as-built lettering may have been different but I have no data to confirm this. Apply the decals as on the photo of the finished model.

Marker and Stop Lights – The upper marker lights on the trailer have rectangular bezels and the lower marker lights are round. To simulate the rectangular bezels, paint a strip of 2" x 4" styrene strip silver. Cut off 8 pieces 6" long. Cement two in place on the upper nose corners, two in place on the upper corners of both sides, and two in place below the upper door

hinges on the rear doors. I used a toothpick to place a small drop of ACC at each place a bezel was to be placed. To make the lens centered in each bezel, touch the tip of a .040" styrene rod or round toothpick in a small puddle of gloss orange paint to the center of each rectangular bezel. Practice this on a small scrap of styrene. The lower sides have round marker lights at the bottom corners. Dip a .060" styrene rod in a puddle of silver paint and lightly touch the tip at each lower bezel location. After the paint has dried, dip the tip of a .040" styrene rod into gloss orange paint and lightly touch it to the center of each round silver bezel. To make the tail lights, dip the .060" styrene rod into silver paint and touch it just outside the rear bumper in the recessed panel behind the bumper (see drawing). When the silver has dried touch the tip of the .040" into a puddle of Testors#2724 Stop Light Red and then to the center of the silver bezel.

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