The Keystone Modeler

Pennsylvania Railroad Technical & Historical Society

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Inside:

The Keystone Modeler
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THE KEYSTONE MODELER STAFF

EDITOR – Jim Hunter
Jhthistle@gmail.com

ASSOCIATE EDITOR – Jack Consoli
jjaconsoli@gmail.com

NEWSWIRE EDITOR – Steve Hoxie
stevehprr@cox.net

EDITOR EMERITUS – Al Buchan
abbuchan1@comcast.net

CHAIRMAN MODELING COMMITTEE – Elden Gatwood
Elden.J.Gatwood@usace.army.mil

ART DIRECTOR – Tim Garner
t.a.garner@verizon.net

Send comments and corrections to the Editor at:
Jhthistle@gmail.com

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

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FRONT COVER

(Top to bottom) Completed Funaro & Camerlengo H25 hopper kit in HO scale. *(Bob Chapman)* • Photoetched floor plates to the F34 flatcar. *Bruce F. Smith)* • Scientific Models passenger shelter kit in HO scale. *(Jack Consoli)* • Athearn's PRR EMD SD40 diesel in HO scale. *(Tim Garner)* • A 3D-printed diaphragm from Shapeways installed on a Walthers HO-scale Metroliner model. *(Tim Garner)*

The Keystone Modeler

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Please contact the editor for information and guidelines for submission. Photo files 800x600 pixels or larger in JPG format are preferred. Statements and opinions made are those of the authors and do not necessarily represent those of the Society.

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Jim Hunter
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Recently, a good friend of mine, who is also a model railroader, called my attention to a book which I might have easily overlooked. Lance Mindheim is a well-known author of articles and books in the model railroading press, and much of his writing focuses on his Los Angeles Junction layout.

The book is called *Model Railroading as Art.* The very idea of thinking of our hobby as an art form resonated with my friend, who, like Mindheim, has a small layout in which he is trying to capture the essence of a particular urban area. On page five, Mindheim puts it this way, "We can enjoy our work as a standalone piece of art, the same as we would a painting, photo, or sculpture – something we enjoy looking at, whether it's in motion or not." There is the assembly part of our hobby, which the modeling press focuses on, and there is the emotional part, the evoking of a feeling about whatever it is we are modeling.

Lance refers to various artists and teachers of art in his book, and he borrows concepts from them that may be useful to us in creating scenes on our layouts. For example, color is very important and is not a monotone. The real world is not made up of vehicles, structures, and trains that are uniformly black, or grey, or freight car red, or blue. Lance also discusses scene composition, i.e., what we decide to represent, how to arrange the structures, and what we decide to leave out. "Scene composition and color treatment drive everything," he writes.

The idea that my layout is not just trains running through some tunnels and past some structures that I have put together but that with some careful thought and imagination could be akin to a work of art is very appealing. Some of Mindheim's ideas could be applied to my layout and could make it much more interesting to look at. On the other hand, other of his ideas, especially about backdrops and low buildings, seem to be more useful on his own shelf-type layout than an around-the-room layout with mountains or large industries.

In this issue of *TKM,* for spring of 2019, we have two pieces by Tim Garner. One is a review of 3D-printed diaphragms for the Proto Metroliners and the other is a review of the Athearn SD40. Jack Consoli reviews a passenger shelter kit by Scientific Models / Micro-Mark. Bruce Smith sent us a discussion of how he made etched decks for his F34. Bob Chapman tells us about the H25 in Pennsy's hopper fleet and his experience working with F&C's kit.

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 – www.prrths.com. To join the Society, send $40.00 to:

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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.

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:

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PRR Product News

BOWSER MFG. CO.
http://www.bowser-trains.com/
PRR N5, N5C, N8 Cabin Classes—HO Scale

PRR N5 Cabin Car *(Bowser)*

PRR N5C Cabin Car with Trainphone *(Bowser)*

PRR N8 Cabin Car with Trainphone *(Bowser)*

Bowser is taking pre-orders for N5, N5C, and N8 cabins. Delivery is expected in April of 2020. Models will be available in a variety of PRR paint and lettering schemes. They will be ready to run with separate hand grabs.

PRR N5 and N5c Cabin Cars—N Scale

PRR N5 Cabin Car *(Bowser)*

PRR N5C Cabin Car *(Bowser)*

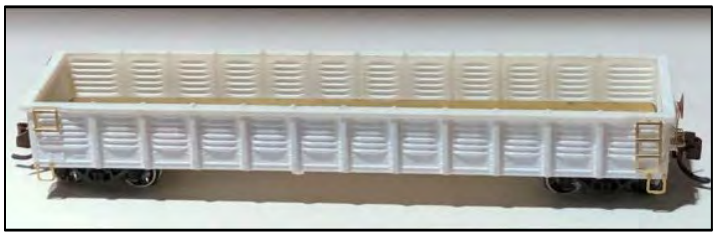
Bowser is also taking orders for N scale models of the N5 and N5C cabin classes in several PRR paint and lettering schemes. Ready to run and expected in April 2020.

BROADWAY LIMITED IMPORTS
http://www.broadway-limited.com/
PRR P5A Electric Locomotive—HO Scale

(BLI)

Broadway Limited has announced a revised June 2019 delivery date. The model will be equipped with Paragon3 Sound/DC/DCC capability.

EASTERN SEABOARD MODELS
http://www.esmc.com/
PRR G32B Gondola Kit—N Scale



(Eastern Seaboard Models)

As part of their **Made in America** series, **ESM** will have this kit available in the Fall of this year.

HIGHLINERS
https://highlinersonline.com/
EMD FP7 Shell Kit—HO Scale

(Highliners)

As a very limited edition, **Highliners** is offering an FP7 shell kit which includes the one-piece body shell used by **Athearn** in their Genesis line. Additional **Highliners** and **Athearn** parts are added to make the complete kit. If you aren't happy with what you find on E-bay and you want to build an FP7, this kit might be useful, but they are very limited in number.

INTERMOUNTAIN RAILWAY COMPANY
https://www.intermountain-railway.com/
PRR X29 Boxcar—HO Scale

(Intermountain)

Intermountain continues to hold production of the X29 in the *Needs Reservations* category. If you want this model produced, it would be a good idea to let your retailer know of your needs. This applies to your Local Hobby Shop as well as your favorite online source. Give them a call or email to let them know they need to get enough orders in to **Intermountain.**

Upcoming Events

May 31-June 1, 2019 Farmington, Connecticut
New England/Northeast Railroad Prototype Modelers Meet
http://nerpm.org/index.html

June 15, 2019 Richmond, California
Bay Area Prototype Modelers Meet
http://www.bayareaprototypemodelers.org/

July 7 -13, 2019 Salt Lake City, Utah
NMRA National Convention and National Train Show
http://www.nmra2019slc.org/

July 26-27, 2019 Collinsville, Illinois
St. Louis Railroad Prototype Modelers Meet
http://icg.home.mindspring.com/rpm/stlrpm.htm

Advance Planning

September 19-22, 2019 Baltimore, Maryland
Mid-Atlantic Railroad Prototype Modelers Meet
https://www.marpm.org/

October 24-26, 2019 Lisle, Illinois
Chicagoland Railroad Prototype Modelers Conference
http://www.rpmconference.com/

November 8-9, 2019 Winston Salem, North Carolina
RPM Carolinas School of Railroad Modeling Techniques
https://sissonstony.wixsite.com/rpm-carolina

Product Review – *Metroliner* Diaphragm by Shapeways

By Tim Garner – Photos by the author unless noted

A WalthersProto® Metroliner with a Metroliner diaphragm from Shapeways before installation.

I wrote a review of the HO-scale WalthersProto Metroliner for *TKM* (No. 91, Winter 2015). The prototype was designed by the Pennsylvania Railroad, Budd, General Electric, and Westinghouse in a project led by Bob Watson.

These high-speed multiple-unit powered passenger cars typically ran in trains of four or six cars. When coupled cab-to-cab, a front panel would be opened and a diagphram extended to allow safe passage from car to car. Walthers modeled the diaphragm on the blunt ends, but did not make a provision for the cab end. Nicholas Gotwalt's Spark and Wire Models has designed a 3D-printed diaphragm for Walthers Metroliner cab ends.

The part is available in Smoothest Fine Detail Plastic at $16 and Smooth Fine Detail Plastic at $14 through Shapeways.com. A typical 4-car Metroliner will require two.

Gotwalt suggests two possible methods for installing the diaphragm. In either method, you carefully slide the cab off of the body being careful not to disconnect the wiring to the headlight and number board. Pry out the small window insert from behind. If you want to keep the diaphragm removable, enlarge the hole in the rectangular backing piece. Place the diaphragm over the nose with the rectangular protrusion through the open window. Insert a 6mm long by 2.5mm diameter screw through the backing piece and into the hole in the rectangular protrusion. In the second more permanent method, you simply glue the diaphragm in place.

Before installation, Gotwalt recommends a process to prepare the piece for painting. "This can be easily painted for PRR, PC, and Amtrak Phase I Metroliners. Unfortunately, no decals are available for the Phase II cars. Unless you're modeling the last days of the Metroliners, you should be able to make this work. As always, I recommend that you first soak this in Goo Gone® for a day or two, then coat it with Mr. Surfacer 1500 from a spray can. Then it is ready to paint."

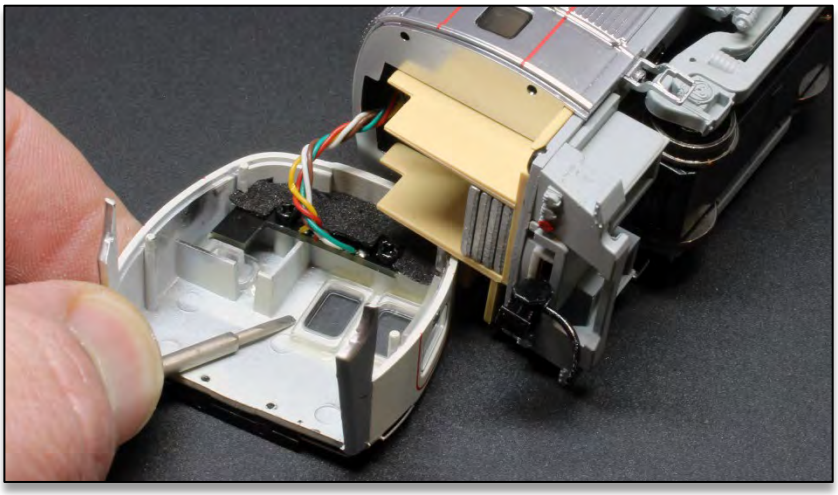
The flat surfaces would be painted in silver matching the front of the cab with black edges. The sides of the diaphragm would be black and the striker plate silver.

Although the part does improve the appearance of the coupled model, the diaphragms are not designed perpendicular to the ground which creates a v-shaped gap between cars when viewed from the side. In addition, the bottoms of the diaphragms are close enough to interfere with each other on tight curves or crossovers. This could be corrected by trimming the striker plate off the diaphragm and building the "bellows" up so the surface with styrene to a perpendicular position to the track. The striker plate would then be reattached.

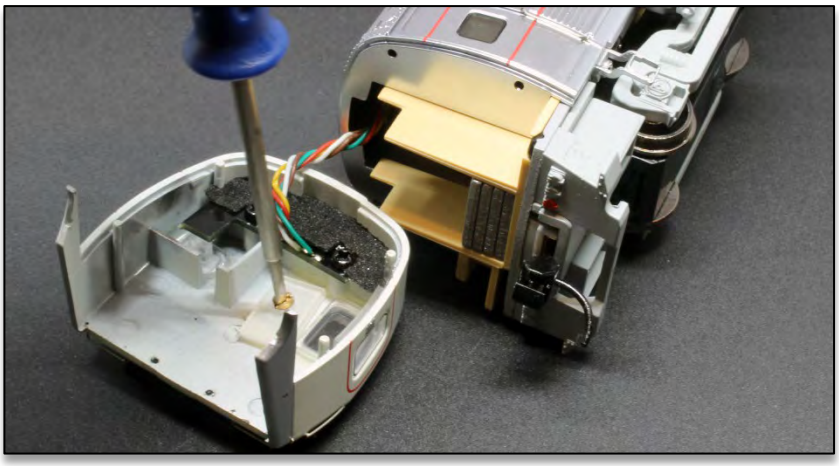
To summarize, although this 3D-printed part has one key imperfection, it does save time correcting a shortcoming in the Walthers' Metroliner at a fairly reasonable price. Even so, some modelers may want to save the money and scratchbuild a diaphragm instead.

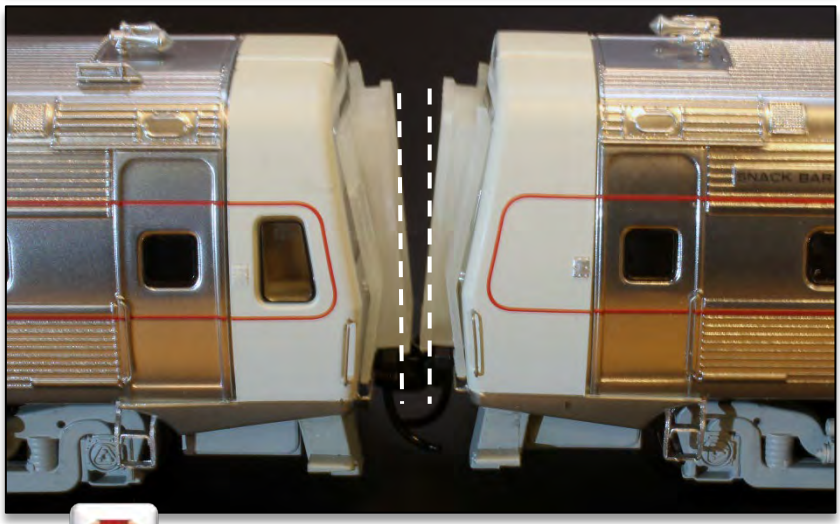
▲ Rare photo of a Metroliner cab with the doors open and diaphragm extented. *(Bob Watson)*

▲ The diaphragm installed, but unpainted. ▶ Cab-to-cab the appearance is better, but the diaphragms should be straight up and down as shown by the dashed line instead of angled away from each other.



▲ Prying out the small window from the cab with a small flathead screwdriver.
▼ Screwing on the diaphragm through the backing piece.





Product Review – Athearn HO PRR EMD SD40 (EF-30A)

By Tim Garner

Athearn's model of the PRR EMD SD40 feature several railroad specific details, DCC and sound.

In January 2018, Athearn announced a new EMD (Electro-Motive Division of General Motors) Pennsylvania Railroad SD40 diesel in its *Ready to Roll*® line. These models capture the look and sound of this prototype from the final two years of the PRR with only slight tweaks to make them exceptional.

THE PROTOTYPE

In 1965-1966, EMD introduced a substantially improved line of diesel locomotives built around its new 645-series engine. This included the GP40, 3000 hp B-B; SD40, 3000 hp C-C; SD45, 3600 hp C-C; and the DD40, 6000 hp, D-D. (There were no buyers for the DD40, but Union Pacific bought the DDA40X with 6600 hp in 1969.) Unlike the GP35 and SD35, the GP40 and SD40 delivered their highest continuous tractive effort at similar speeds. The 35's were 12 and 9.4 mph respectively while the 40's were 11.3 and 11.1 mph.

Up to then, EMD's locomotives were built around its pioneering 567-series engine – a two-cycle V-style engine with 567 cubic inch displacement *per cylinder*. These engines were tied to a direct current (DC) generator to drive DC traction motors. Through various improvements, including turbo-charging, 2500 hp (the GP35 and the SD35) was the maximum practical output from this prime mover.

The new platform offered 645 cubic inch displacement per cylinder in a 567-sized frame. Cooling capacity increased with a higher capacity water pump and bigger water manifolds. The improvements bumped horsepower to 3000. DC generators had reached their maximum size, so a higher-capacity AC alternator was used. This concept was first used by Alco on their Century C630 and later by GE on their U28C. Alternators don't have brushes, so less maintenance is required. The 4000-amp rating was 1400 higher than its predecessor. AC output was changed to DC for the traction motors by solid-state silicon rectifiers. The new D77 traction motors had increased capacity thanks to new Kapton insulation by DuPont which was ten times more effective than the old mica insulation. Thinner insulation allowed 18% more copper windings in the same space compared to the D67 motors.

EMD builder's photo of 6100 completed in March of 1966. The difference between the green hood and black frame is visible. Note the MU receptacles on the front deck and handrail stanchion. *(EMD, William D. Volkmer collection)*

Unit 6060 rests in Camden, N.J. on March 3, 1968. Penn Central is one month old. *(Ken Douglas, William D. Volkmer collection)*

Here is 6040 at Camden on December 7, 1966. This was PRR's first SD40 and it was built February 1966. *(Ken Douglas, William D. Volkmer collection)*

A total of 1,268 were produced between January 1966 and August 1972 for 33 different buyers. EMD and its affiliates built 856 for US railroads, 330 for Canada, 72 for Mexico, 6 for Guinea, and 4 for Brazil. The biggest purchasers were Canadian National, 241; Union Pacific, 115; Missouri Pacific, 90; Southern Pacific, 89; National of Mexico, 72; Pennsylvania, 65; Canadian Pacific, 65; and Chesapeake & Ohio, 63.

The SD40 had 40" wheels and was 65'-8" over the pulling faces, increased to 65'-9½" on units built starting in early 1968. It was 15'-5¼" tall. Each unit weighed 360,000 lbs. and carried 3200 gallons of fuel. The prime mover was the 16-cylinder EMD 16-645-E3. The same frame would also be used for the 3600 hp SD45 which had a longer hood.

The SD40 was succeeded in the EMD catalog by the SD40-2 which currently holds the sales record with more than 4,000 straight and derivative models produced. The main differences between them and the SD40 were a longer frame enabling a larger fuel tank and solid-state modular electronics.

The SD40 on the PRR

By the time PRR ordered 65 copies of the SD40 in September 1965, the road had received its last 4-motor road diesels. EMD Order No. 7862 was delivered to PRR over February and March of 1966. They were numbered 6040 to 6104. They were given class EF-30A – **E**MD, **F**reight, **30**00 hp, and **A** in this case for 6-wheel power trucks. The use of the "A" in PRR diesel classification is not consistent. In steam days, the letter would signify a minor class variation and could go past A to B, C, D, or farther. In diesels, it showed up with EMD F-units where the 1500 hp EMD F3 was EF-15 and the 1500 hp EMD F7 was EF-15A. The EF-30A is more a-kin to the EF-25A – the EMD SD35 – which had an EF-25 mate – the EMD GP35. PRR never owned the EMD GP40, so the PRR never had an EF-30.

All the PRR SD40 units were equipped with train control boxes, radio, and trucks with four under-slung brake cylinders per truck (two per side). They were assigned to pool service and split between the Enola and Harrisburg diesel shops for maintenance. Harrisburg had fewer locomotive to service with the decline in passenger service, and Enola was being overwhelmed as remote shops were closed. All the units were assigned to the Eastern Region and could often be seen in helper service around Altoona, Cresson, and Pitcairn. They were also assigned to move loaded coal trains out of Cresson.

None of the units was renumbered before the Penn Central merger on February 1, 1968 and all but 6072, which was damaged in a Leetonia, Ohio wreck in June 1975, made it to Conrail.

The Model

Athearn announced this PRR model in January 2018 and at this writing, they are still in stock. It is offered with DCC and sound with road numbers 6076, 6087, 6091, and 6101. Athearn's list price is $199.98, but the models have been available at Trainworld for $169.99. That's relatively low for a diesel model of this quality.

Left and right sides of the model. Note the train control equipment box in front of the cab on the right.

There is a significant number of separately applied parts including grab irons, MU and brake hoses, and windshield wipers. The only obvious omissions are lift rings and extra MU receptacles.

The first impression of this model in terms of detail and finish is excellent. On its web site, Athearn lists these features for this run of the PRR EMD SD40:

PRR Features:

- PRR class EF-30A
- Ratchet brake on nose
- Early fans with center "button"
- Extended range dynamic brakes
- Cab signal box
- Low profile S3L horn on cab
- Sinclair antenna
- Non-operating red marker lights on front and rear
- MU hose catch trays on front and rear
- For #6091 only, features alternate wheel bearings on rear truck

Locomotive Features:

- Fully assembled and ready-to-run
- Separately applied wire grab irons
- Separately applied air tanks
- Coupler cut levers
- Rubber MU hoses
- Photo-etch stainless steel windshield wipers
- Fine scale handrails molded in engineering plastic
- Non-sound version features 21-pin NEM DCC plug
- See-through dynamic brake and radiator fans
- Curved radiator fan grab iron
- Exhaust stack
- Frame mounted bell (unless noted)
- Detailed 4000-gallon fuel tank (unless different capacity is noted)
- Flexicoil-C trucks with high or low brake cylinders (per prototype) – *low on the PRR version*
- McHenry scale knuckle spring couplers
- Highly-detailed, injection molded body featuring new tooling
- Painted and printed for realistic decoration
- See through cab windows
- Bi-directional LED lighting
- All-wheel drive with precision gears for smooth and quiet operation
- All-wheel electrical pickup
- 5-pole motor with flywheels and multi-link drivetrain for trouble-free operation
- Wheels with RP25 contours operate on all popular brands of track
- Window packaging for easy viewing
- Interior plastic blister safely holds the model for convenient storage
- Minimum radius: 18"
- Recommended radius: 22"

Sound-equipped locomotives also feature:

- On-board Econami sound decoder by Soundtraxx
- Engine startup sound sequence
- Dynamic brake sound or Non-Dynamic Straight to idle on F4
- Extra prime mover and horn sounds exclusive to Athearn version
- Multiple bell sound files user configurable via Configuration Value (CV)
- Sound units operate in both DC and DCC
- Full DCC functions available when operated in DCC mode
- Engine, horn, and bell sounds work in DC
- All functions NMRA compatible in DCC mode
- Excellent Slow speed control
- Current Keeper ready with on board expansion plug
- Operating lighting functions with F5 and/or F6
- Program a multiple unit (MU) lash-up with lead unit only horn, bell, and lights
- Many functions can be altered via CV changes

The model comes with a small bag of additional parts. The ones applicable to the PRR model are end piping details for the fuel tank and drop steps. There are two raised and two lowered drop steps so you can change them as you wish. One warning about the fuel tank piping – if you plan to store your engine in the original packaging, first trim away the clear plastic that would touch the ends of the fuel tank. There is not enough room for the fuel tank piping once it's installed.

The engine has bright white LED headlights on each end, but the number boards are not illuminated.

The handrails are a thin flexible plastic and are appropriately painted yellow by the corner steps. Grab irons are wire. The footboards are molded with see-through holes, but this detail isn't carried through to the corner steps as seen on more expensive models. The walkways are molded flat without safety tread detail, but it is not that noticeable.

From a detail perspective, the main details missing are lift rings on the hood and two of the MU receptacles on the end platforms and handrail stanchions. The shell includes dimples where you can drill holes to install lift rings. Appropriate MU receptacles are available through Detail Associates (MU Stands – Intermediate #229-1503).

Painting and Lettering

The body of the model is painted in a very dark green. It's better than most manufacturer attempts at Dark Green Locomotive Enamel, but still too green. The frame and undercarriage are black. The lettering, keystones, and radio decal are sharp and legible. Everything is correct and properly placed except for the right rear side of the hood. Some lettering is missing here and what is there is misplaced based on prototype photos. (You can add the missing lettering with Micro-Scale set #87-48 HO Scale Data Diesel.)

Sound

I was familiar with and impressed with the quality of the Soundtraxx Economi sound system. All the function keys operate the same as other locomotives I have with this decoder.

The characteristic whistle of the EMD 645 prime mover is there and brings back memories of my first visit to Horseshoe Curve in 1975. If you have grades on your layout, you will appreciate the F4 dynamic brake function. With consisted locomotives heading downgrade, press F4 and the prime movers go to idle and the whine of the dynamic brakes comes up. When you reach the bottom of the grade, press F4 again and the dynamics shut down and the prime movers throttle up to speed. It's a great effect.

You can download Econami manuals and users guides from the Soundtraxx web site at https://www.soundtraxx.com/manuals.php.

Operation

The engines are good pullers on level track, but as with the prototype, you'll want more than one when handling trains on grades. I had three pulling a 50-plus car empty hopper train on the North Shore Model Railroad Club layout in Wakefield, Massachusetts with no difficulties – and no derailments.

I was having a problem with engines coming uncoupled from each other and discovered uneven coupler heights. I traced the problem to slightly bent frames. I don't know if this occurred during assembly or shipping damage, but it was a problem on two of the three models I purchased. It was easily corrected by removing the body and carefully flexing the offending end of the frame upward, reinstalling the body, and re-testing with a Kadee® coupler height gauge. At the same time, I replaced the Bachmann-style plastic couplers with metal Kadees.

A Good Value

If you model the PRR near the end of its existence or the sound of EMD 645 prime movers brings back memories, I recommend this model.

Sources

- Ken Douglas and Peter Weiglin, *Pennsy Diesels 1924-1968*, Hundman Publishing, ©2002.
- John Hahn Jr., *Pennsylvania Railroad Diesel Locomotive Pictorial, Volume 3 – Second-Generation EMD Road Switchers*, Withers Publishing, ©1996.

Underside of the model.

▲ Close-up of left side detail. ▼ Rear ¾ view of model. ▶ Parts bag with fuel tank detail parts.

Product Review – Scientific Models / Micro-Mark HO Scale PRR Standard Branch Roads Passenger Shelter

By Jack Consoli – All photos by the author unless specified

Completed Branch Roads Passenger Shelter kit.

This review is of a new kit offered by Micro-Mark, under the name of Scientific Models as their Item #88699. Per their website information "Scientific Models used to manufacture model kits, including ship kits and structures, in New Jersey. On our 90th Anniversary, we have restarted production of "Made in the USA" structure kits."

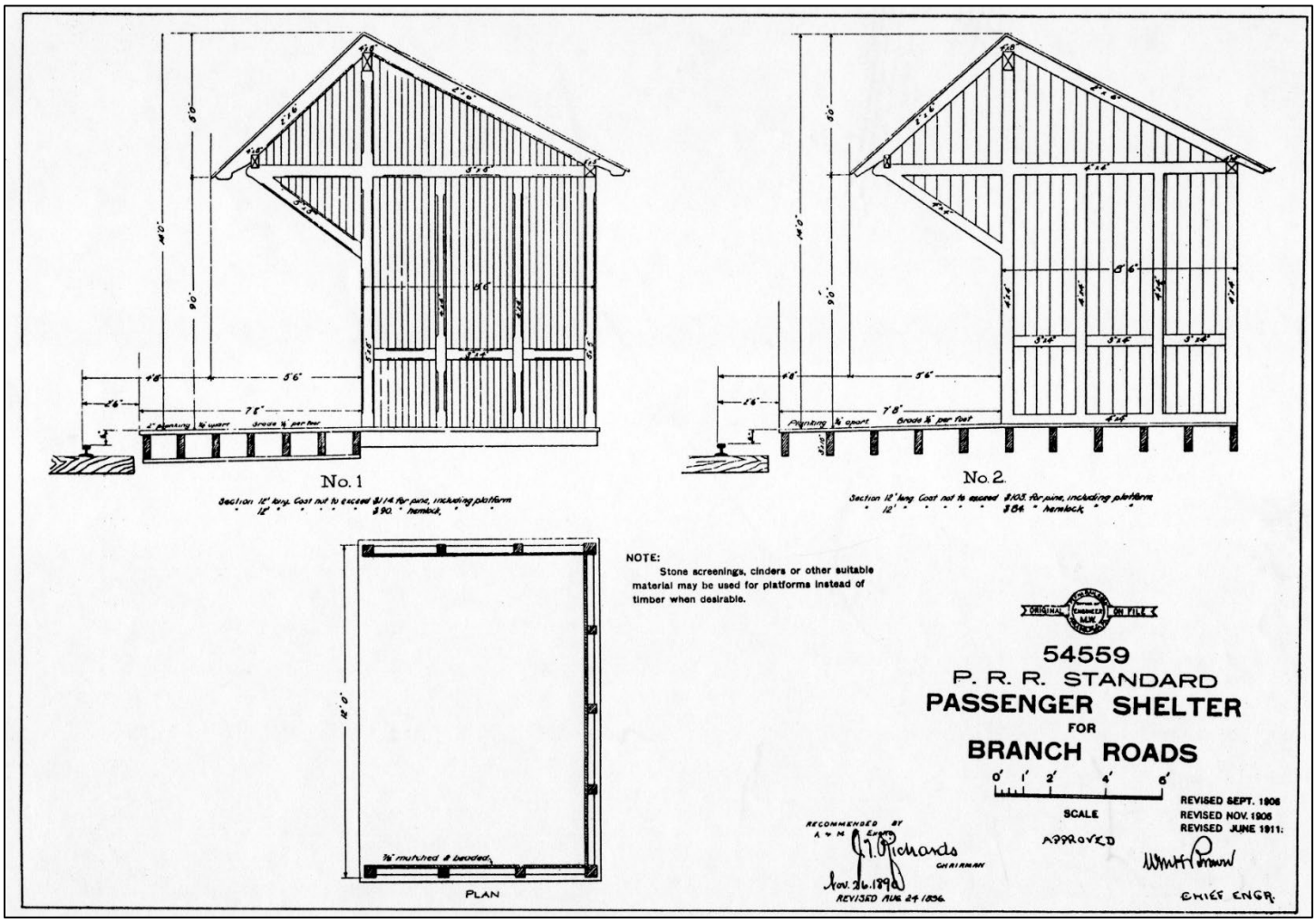
https://www.micromark.com/Pennsylvania-Railroad-Branch-Line-Trackside-Shelter-HO-Scale-by-Scientific_2

The kit is an unpainted, wood kit with laser-cut parts. A somewhat similar passenger shelter model has been offered in the past by one or more manufacturers but is for a different design shelter. Both versions feature an asymmetric roofline: this new kit is the version with the larger section of the roof at the rear, whereas the other kits have the larger roof section on the front side of the shelter. Both are essentially the same size but there are framing and dimensional detail differences. This is the first model that has been offered of this version as far as I know. The kit is well designed and is simple to build.

PROTOTYPE

This model represents the structure depicted below on PRR tracing #54559, PRR STANDARD PASSENGER SHELTER FOR BRANCH ROADS updated to 1911, originally issued 1890. The all-wood structure is 12' wide and 14' deep (under roof). Two variations are shown on the plan: No.1 (the fancy design) has narrow sheathing and contoured framing and No.2 (the plain design) has wider sheathing and no contouring. The kit represents version No.2.

For reference, a drawing for the other style shelter appears in the "Pennsylvania Railroad Standard Maintenance of Way Plans" book (the old green "57 plans" book) by Harold T. Smith, 1967, and more recently in the "Trackside on the Pennsylvania – Standard Plans of the Standard Railroad of the World" by Jeff Scherb, 2002. That plan, #59328, dated 1911 is titled P.R.R STANDARD PASSENGER SHELTER. The plan also illustrates two designs of the structure shown labeled "A" & "B" instead of "1" & "2" and has more detail called out. It



PRR drawing for Standard Passenger Shelter for Branch Roads signed by Chief Engineer William Brown.

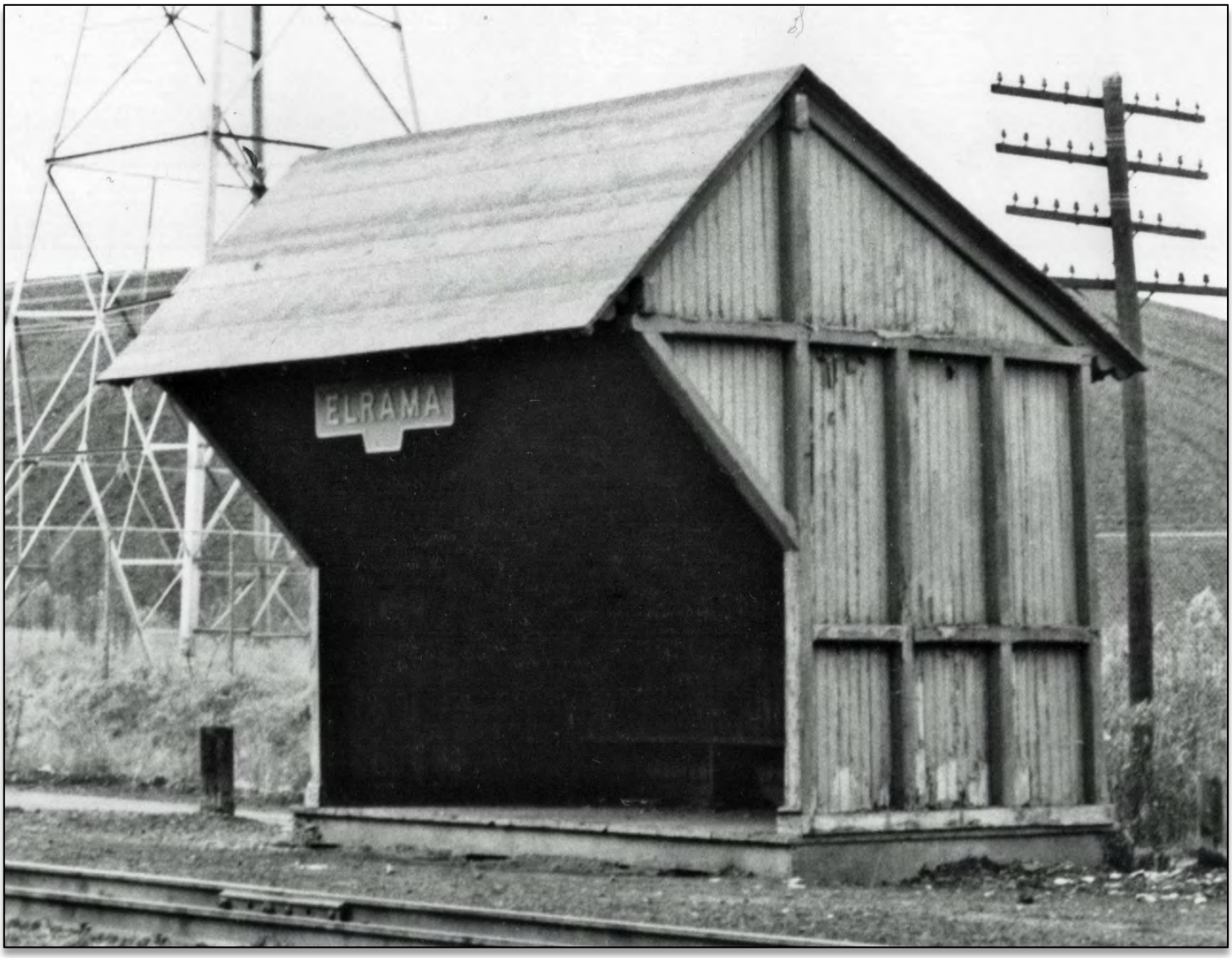
shows design "A" to have Red or Green "Ruberoid" or Red "Paroid" roofing, while design "B" has a slate roof. Similar roofing materials may therefore have been used on the Branch Roads shelters, but no details are given on the drawing.

In my modeling and research efforts of the Western Pennsylvania area, this Branch Roads style shelter is what appeared most frequently there, but installations likely vary across the system. Historically, in many small towns the original passenger stations were downrated from being agency stations in the early part of the 20th century and then abandoned. After falling into disrepair, when approval for completely removing the station was requested, many times the proviso was added that a passenger shelter would be put in its place to continue to provide some accommodation for the reduced numbers of patrons still using that stop, particularly along the commuter lines. Such was the case illustrated by the plan shown below (when the shelter and platforms were later removed in 1933) at Riverview, Pa., just south of Shire Oaks. The SHIRE OAKS shelter I modeled was in that large yard complex, solely for the use of employees traveling to and from work there.

On the next page, view the passenger shelter at Elrama, Pa. at the north end of Shire Oaks yard on the former Monongahela Division. This shelter has a Keystone-style station sign and it is mounted under the roof. The platform here appears to be of stone screenings or cinder composition as described in the notes on the #54559 tracing. There were platforms on the outside of both the double mainline tracks here. The patron's bench along the inside back wall is partially visible here.

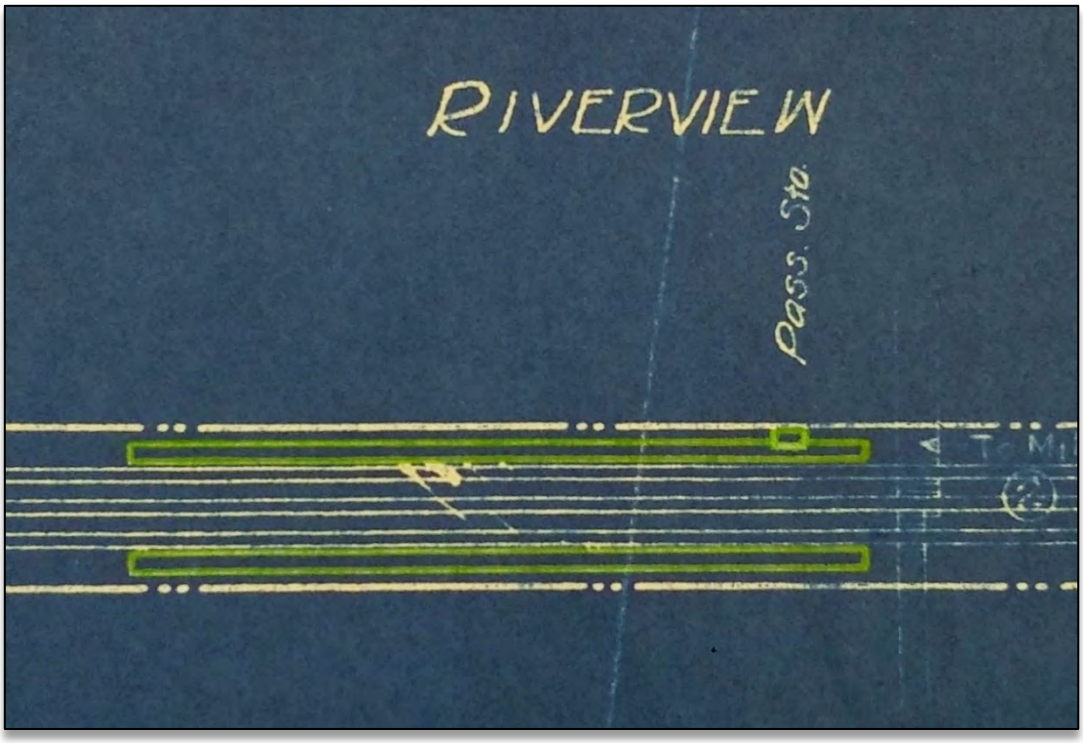
Model Construction

I built the model following the steps outlined in the instructions. This basically involved cutting the parts out of the laser-cut sheets, painting, then assembling them. The parts fit together nicely and only the roof beams require trimming to length after assembly. I did make one small deviation from the instructions and cut away the small pieces on the side framing parts that surround the roof crossbeams where they protrude through the sides. They are not part of the prototype structure but are a concession there to help make the model parts more robust by better tying the framing together. After trimming them, the parts become a bit more fragile, but it improves the look of the structure.



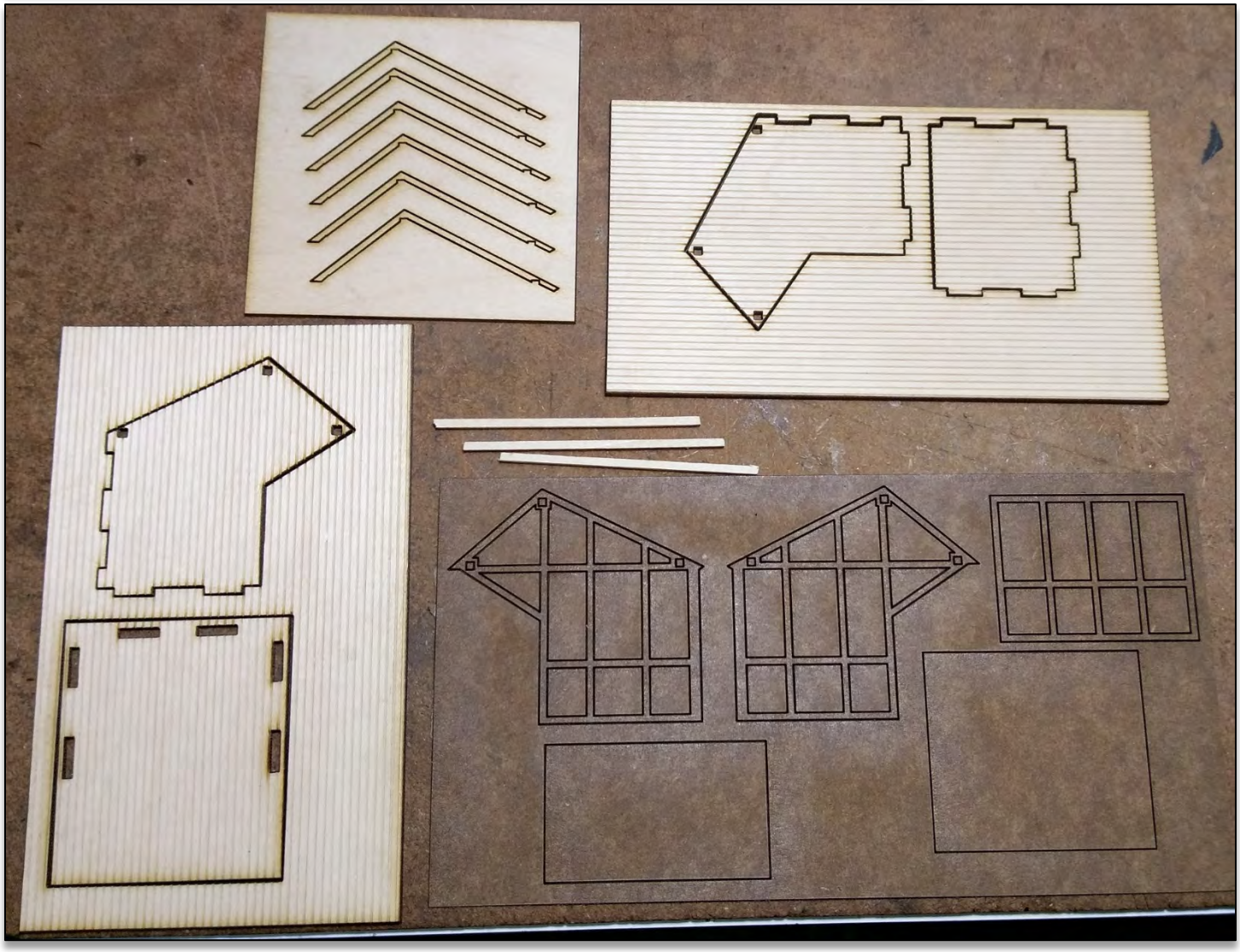
The passenger shelter at Elrama, Pa. at the north end of Shire Oaks Yard. *(Edward H. Weber)*

Another "Branch Roads" shelter near the end of track at the coal mine/coke oven complex at Marianna, PA on the Ellsworth Branch of the Monongahela Division. Note this shelter has a rectangular-style station sign mounted atop the roof near the eave and features a single long curving timber platform for the single track. Postcard view circa 1909. *(Jack Consoli collection)*



◀ PRR plan of passenger shelter and the platforms (shown in green) surrounding the two mains, plus center siding, at Riverview, indicate the platforms are each approximately 280 feet long. (Phantom lines shown are the PRR property lines.) *(Jack Consoli collection)*

▼ Kit parts as received.



Once the parts were singulated from the sheets, I stained the floor piece with one of those alcohol-based grey wood-staining model products. I scribed lines on the insides of the sides and rear wall pieces to match the exterior spacing with the tip of a #11 hobby blade held upside down. I then brush-painted the sides and rear wall a Buff color and the outside framing pieces, roof beams and rafters Dark Building Standard. As discussed in the past, the PRR had several standard structure paint schemes, and here I chose the one commonly referred to as Buff and Brown. I lightened my colors with white to simulate fading. I left the sub-roof sections unpainted.

After the parts dried, I assembled them with white glue. Simulated roll roofing is provided in the kit in the form of peel-and-stick strips. I overlapped them onto the sub-roof parts to simulate the appearance of the Elrama shelter shown above, turned the roof panels over and trimmed off the excess length. I cut a strip out of the spare dark, thin sheet material in the kit to make the patron's bench that appears to span the full width of the back wall inside the shelter, plus three rectangular supports for it.

There is no provision in the kit for a station sign, so based on other drawings in the same books noted above, I scanned and cut-and-pasted the artwork pieces to create an appropriate sign for mine. I printed out the sign for the shelter to scale on a color printer, spray-mounted it to thin piece of styrene, painted the back of it black and mounted it to the cross beam under the eave. Since these are apparently not "important" stations, a printed sign nicely simulates a painted wood sign and I chose colors to simulate French Yellow Ochre and Mars Red Medium (both of which you can find in tube oil paints at your local art supply store). All that is left to do to complete the structure is to apply some weathering.

This is a very nice, simple kit to produce a signature PRR structure model. I look forward to other PRR-based structures from this company in the future.

Rear view of completed shelter.

NOTE:- Signs for important stations, buildings and shelters, to be of cast iron; letters and border covered with gold leaf, laid on Yellow Paint; background painted with Mars Red Medium.

Signs for other stations may be of wood; or painted on the building or shelter, letters and border painted with a mixture of white lead and French Yellow Ochre to give gold yellow color, background painted with Mars Red Medium.

To insure uniformity of color, Mars Red Medium Paint is to be obtained from Altoona Shops.

Back, edges and lugs to be painted black.

Platform stations without buildings or shelters to be equipped with Approach Sign only.

For Approach Sign see Standard Plan showing details of same.

▲ Finishing notes from P.R.R. STANDARD STATION SIGN drawing #61840 updated to 1914. ▼ Completed Branch Roads shelter showing bench inside.

New Decks for the F34 Flat Car

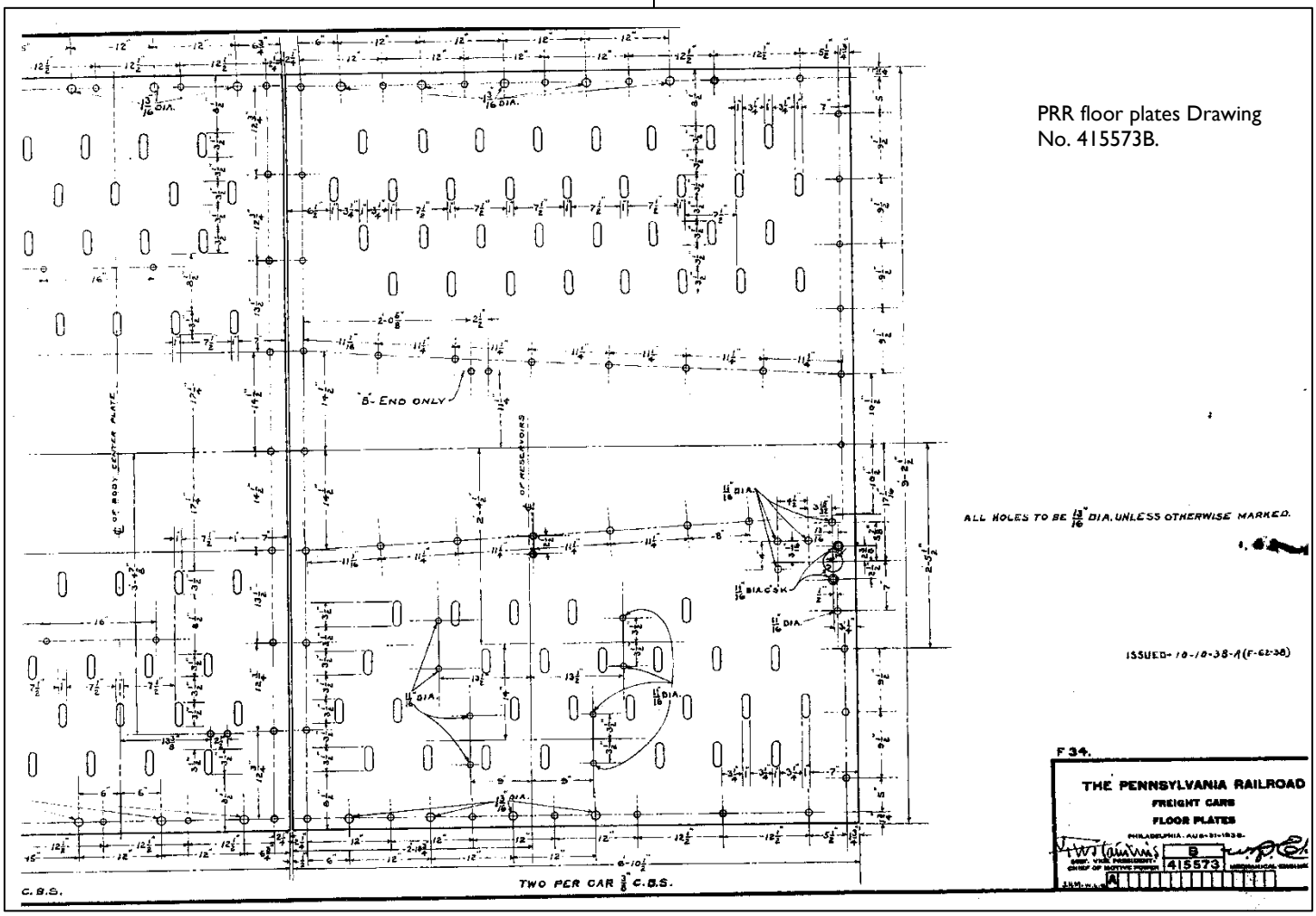
Bruce F. Smith

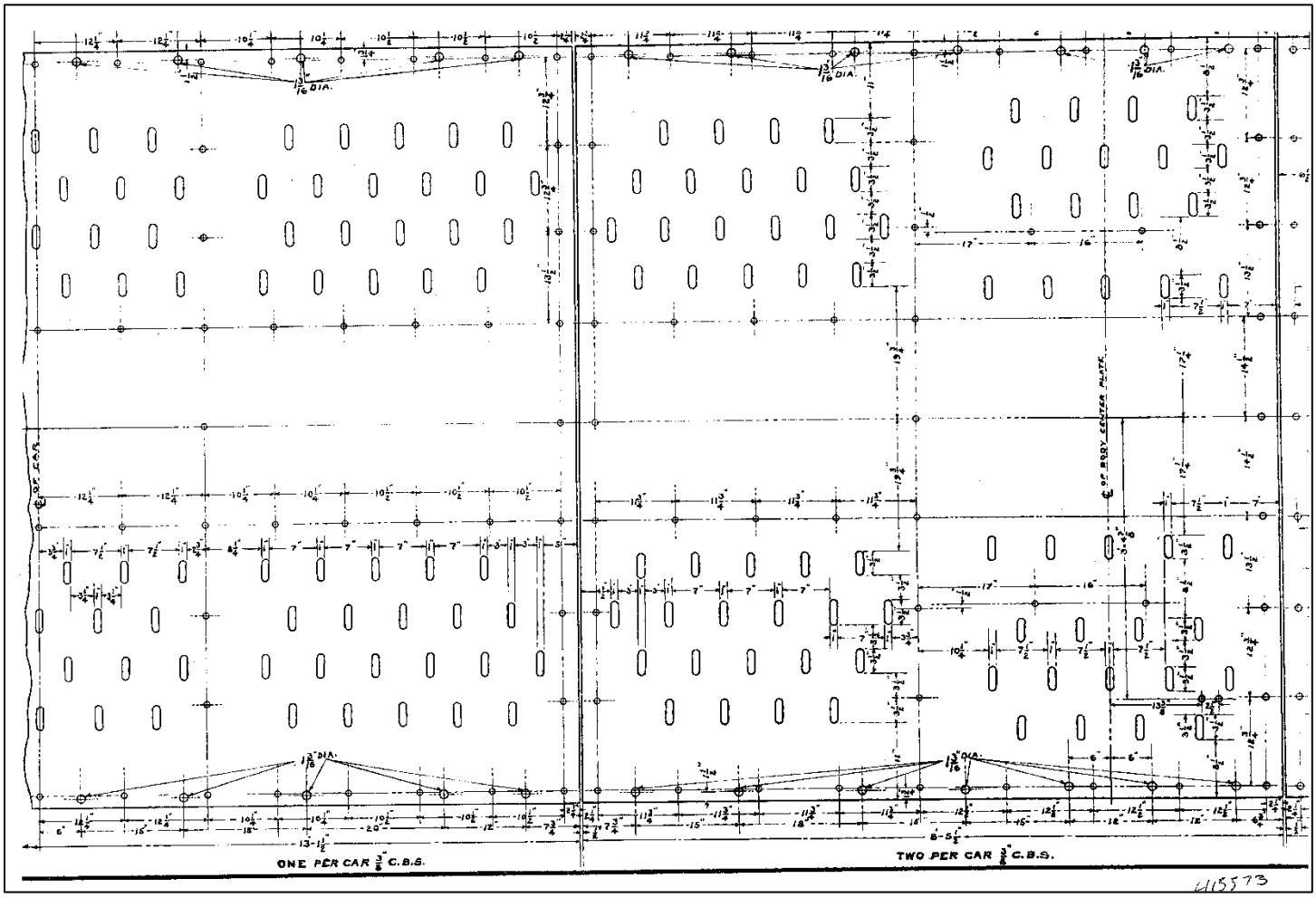
For the past few years, I've been saying that the F34 flat car would be the perfect opportunity to use an etched brass part to recreate the intricate pattern of oval holes on the prototype. Of course, I always said "someone should…" as many of us often do! As Chuck Cover noted in his excellent article in *TKM* 104, he contacted me during his building of his F34 and noted that he and John Sutkus had found the deck plate drawings in the PRRT&HS collection. Upon receiving the scanned drawings in my email, I might have somewhat brashly noted to them "somebody could knock out a drawing for an etch mask of this in a night". I really should have thought that through first, because it quickly became clear that I would have to back up those words with real actions! Here's the story of how I made good on that comment, and then produced a set of decks.

The process I used to make these decks was negative photoresist etching using the Micro-Mark Pro-Etch Photo Etch System. This kit contains everything needed to produce small photo etched parts. You really must read the directions in the kit completely before trying to use it.

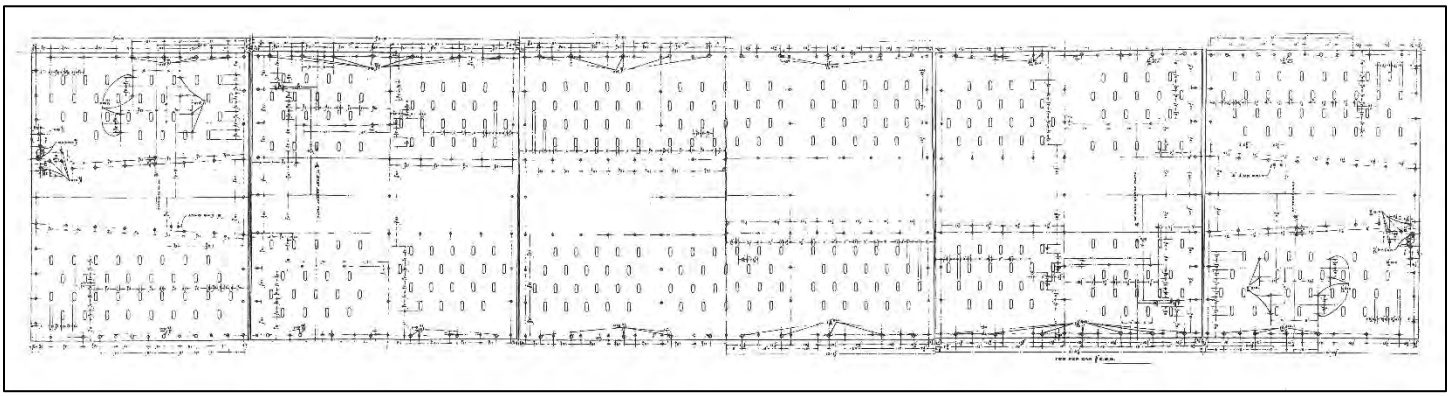
WARNING: The photoresist etching process uses some very nasty chemicals. This is not to be taken lightly and requires strict adherence to safety procedures! READ AND FOLLOW THE INSTRUCTIONS!

The first thing that you need is a set of masks. These are used to expose or protect the photoresist covered metal sheet. Where the photoresist is exposed to light the metal is protected from etching. Where the photoresist is covered by the mask, it can be removed by the developer, leaving the brass exposed for etching. To start, I created a "negative" drawing, where the holes and areas outside the deck were black, and the solid areas of the deck were clear. I used Inkscape, which is a fairly advanced drawing program, available for free online. I created full-sized drawings, which could then be reduced to any scale desired. The prototype deck was made up of 5 sections; one center section, 2 middle sections and 2 end sections.





▲ PRR floor plates Drawing No. 415573C. ▼ Assembled drawing of F34 deck.



Then I made a pattern for each of the 3 different sections. I started by outlining the whole deck section with a thick black line. This allowed the etchant to etch the outside dimensions of each plate. Then I created a black oval, 3.5″ by 1″. Using the grid feature, I duplicated that oval and spaced it 8.5″ (center to center) from the previous one. By selecting the 2 ovals and duplicating them and then selecting the 4 ovals and duplicating them, it was possible to modularize the rows of oval cutouts. Enabling the grid functions of the software allowed me to align the rows of cutouts to the correct locations. The center section was the easiest as all the ovals have the same spacing between rows, although the number of ovals in each row varies. The middle sections have the same spacing as the center on one end and different spacing on the other. The end sections have similar spacing to the center section, but there are several oval cutouts missing as these locations are places where there are rivets that attach the brake gear to the underside. When I had finished the ovals, I also added a black circle for the brake shaft. For the curious, I managed to do this in one evening, making good on my claim!

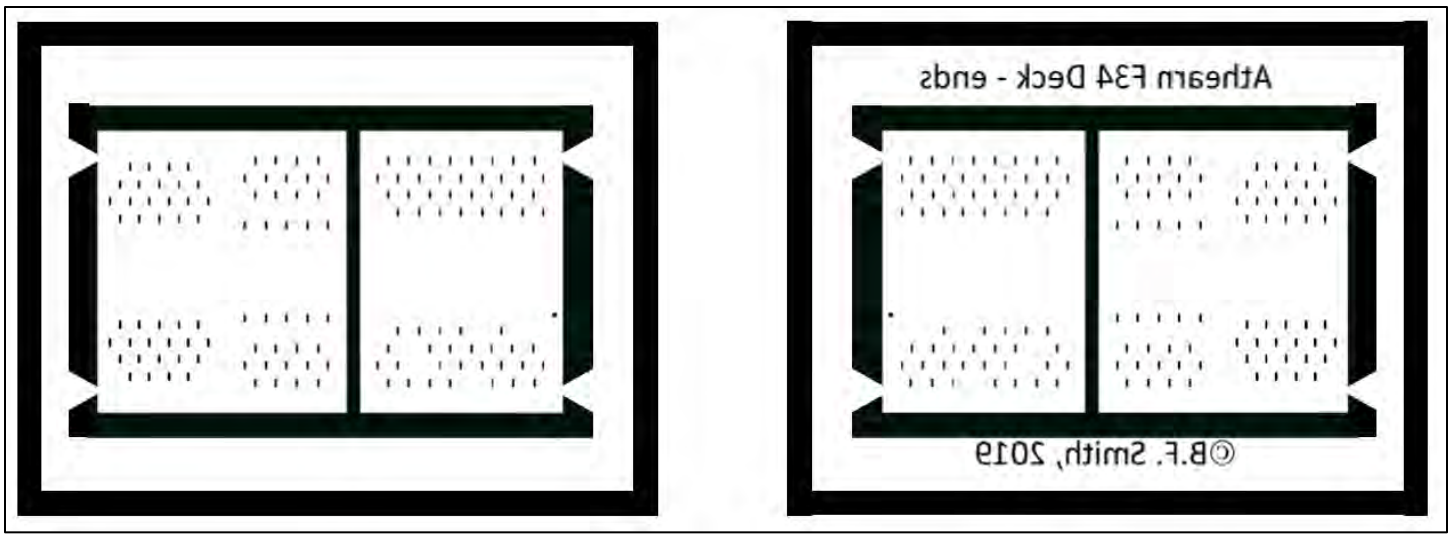


Plate etching masks.

John and Chuck informed me that the Athearn car required that the decks be increased to 9'-6½", rather than the prototype's 9'-2½" width, which was easily adjusted in the drawing program. To simplify my approach, I just added 2" of blank deck to each side. Once the patterns were complete, I reduced them to HO scale by using a factor of 1.15%. Inkscape can be a bit tricky to print from, so I saved the patterns as JPEG images and imported the JPEGs into WORD. Then, I created a black frame for each section, surrounded by a white frame and finally a second black frame. I connected the white frame with the deck pieces with white triangles, which barely overlap the deck pieces. These will serve as sprues to hold the deck pieces while they are etched. I used the commands DUPLICATE and FLIP HORIZONTAL to make mirror image copies of the mask. This copy will serve as the back-side mask, since masks are needed for both sides. I also added text to identify the etched part and a copyright statement. Note that the text is only on one mask and is mirrored. This is because it will be etched only ½ way through the brass and since the ink side will be next to the brass, it will reverse to the correct image when used. Note: I have made two sets of masks; one for the prototype width deck (and theoretically the F&C resin F34) and one to fit the Athearn F34. Look for an article on applying these decks to the F&C resin car in a future issue of *TKM*!

The masks were then printed on the clear film provided in the kit, being careful to print on the correct side. The masks were then placed face to face (ink side to ink side) and very carefully aligned and taped together. Care must be taken at this step as the masks need to be perfectly aligned to ensure that the holes etch as perfect ovals and in the correct location. I taped 3 of the 4 sides of the masks, leaving one open to allow the metal to be slipped between the masks.

I used 0.005" brass sheet for the decks. To start the process, I cut pieces that were just a bit larger than the mask. This brass is thin enough that it can be cut with scissors. Following the kit's directions, I polished the brass on both sides until water did not form drops. It is important to realize that brass has a grain and to polish in the direction of the grain. Then, in near dark, I cut pieces of photoresist to fit the brass. You will need one for each side of each piece. I peeled the protective coating off one side and put that side very carefully on one side of the wet brass and repeated this step with another piece of photoresist on the other side. It is critically important that you not have any bubbles between the brass and photoresist sheet. I then placed the brass/photoresist sandwich between carrier sheets and ran it through the laminator provided with the kit, again following the kit's instructions and laminating twice, while rotating the piece 90 degrees between trips through the laminator. Remember that all this happens in near darkness. I worked in a room with the lights off, the door open and no lights on in the hall outside, but enough indirect light so that I could see what I was doing. You may be able to use darkroom lights for this as well. Still in the near darkness, I carefully slid the photoresist coated brass into the pocket between the two masks, and then clamped it securely between the plexiglass sheets provided.

The photoresist was exposed with a 45-watt, 5500 Kelvin compact fluorescent bulb about 12" from the surface of the carrier for 15 minutes per side. Half-way through each side, I rotated the carrier 90 degrees to make sure that everything was evenly exposed. The kit says you can expose in sunlight for 15 seconds, but I have not had much success with that. I like the slower exposure with the lamp. When the photoresist is exposed, it turns blue and you should be able to see the pattern. When the exposure was complete, I removed the protective coating from the outside of the photoresist by peeling it off and removed the unexposed photoresist with Developer.

WARNING: Developer is dilute Sodium Hydroxide (NaOH) Solution, or Lye. Concentrated NaOH (as supplied in the kit) is very dangerous! Always use gloves and safety glasses or goggles.

I made the developer twice as dilute as the instructions called for which gave me more time to work with the parts. Make sure that you get all the unexposed photoresist off, but don't remove the exposed photoresist. Concentrated NaOH, as provided in the kit, will rapidly strip even the exposed photoresist, and the dilute NaOH will do that too, just more slowly. So, this is not a "drop it in and forget it" process. Just remember, if you mess up, you can always strip the photoresist and start over. Ask me how I know! Once the unexposed photoresist has been removed, you can etch the piece.

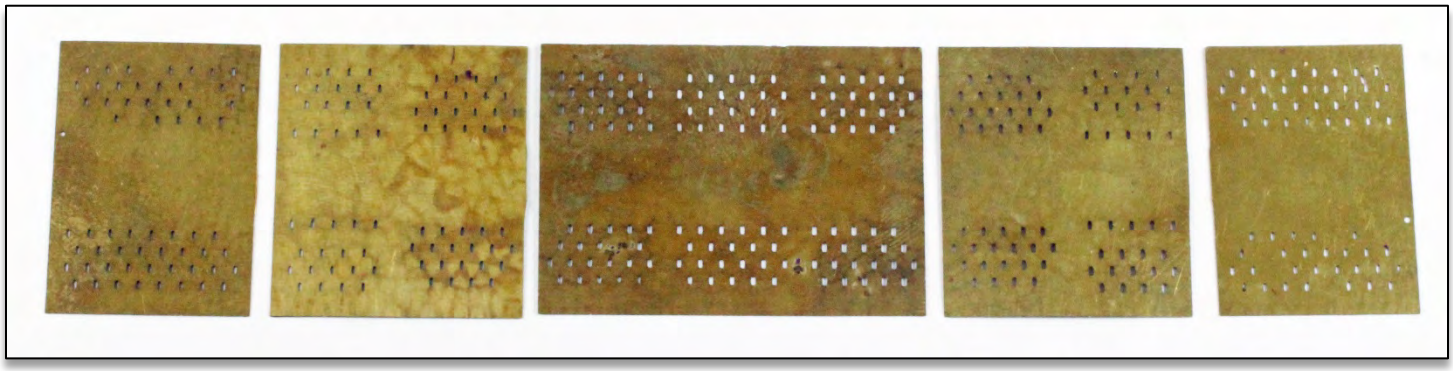
WARNING: The etchant is Ferric Chloride which is nasty stuff! Always work in a well-ventilated area, with gloves and safety glasses. It will also etch ANY other metal it touches!

I typically etch on my garage floor, with the door open, in an area covered with newspaper, with at least 2 buckets of water and a stack of fresh gloves nearby. The kit recommends warming the etchant, which I do by placing it in a bucket of warm water. The parts will take a few minutes to etch through and as the etching is completed, they should be rinsed thoroughly in one of the buckets of water. Once etching is complete, the remaining photoresist is removed with concentrated NaOH, the part is rinsed thoroughly in water and it is pretty much ready to use. Since these decks do not include any of the necessary rivet details, these can be added to the etched decks using resin rivet decals such as those sold by Archer and Micro-Mark®.

My etching set up.

Note that the chemicals in this kit must be disposed of properly. NaOH can be carefully flushed down a toilet. Ferric Chloride must be collected in a safe container, marked Hazardous Waste – Ferric Chloride, and disposed with your local authorities as hazardous waste.

Etching is a technique that requires care and strict adherence to safety rules, but it is safe and very versatile if done correctly. This approach is an excellent way to produce highly detailed parts that might not be available commercially. It is also an approach that can be used to create a cottage industry producing parts for other modelers. I have no intention of doing that with these decks, so I am making the masks for these decks available upon request. Email me at smithbf@auburn.edu. I have also placed the masks in a folder on our Groups.io PRR email list home page at https://prr.groups.io/g/PRR/files/F34 flat car decks.



The finished deck etchings.

Building F&C's H25 Hopper Kit

By Bob Chapman – Model photos by the author

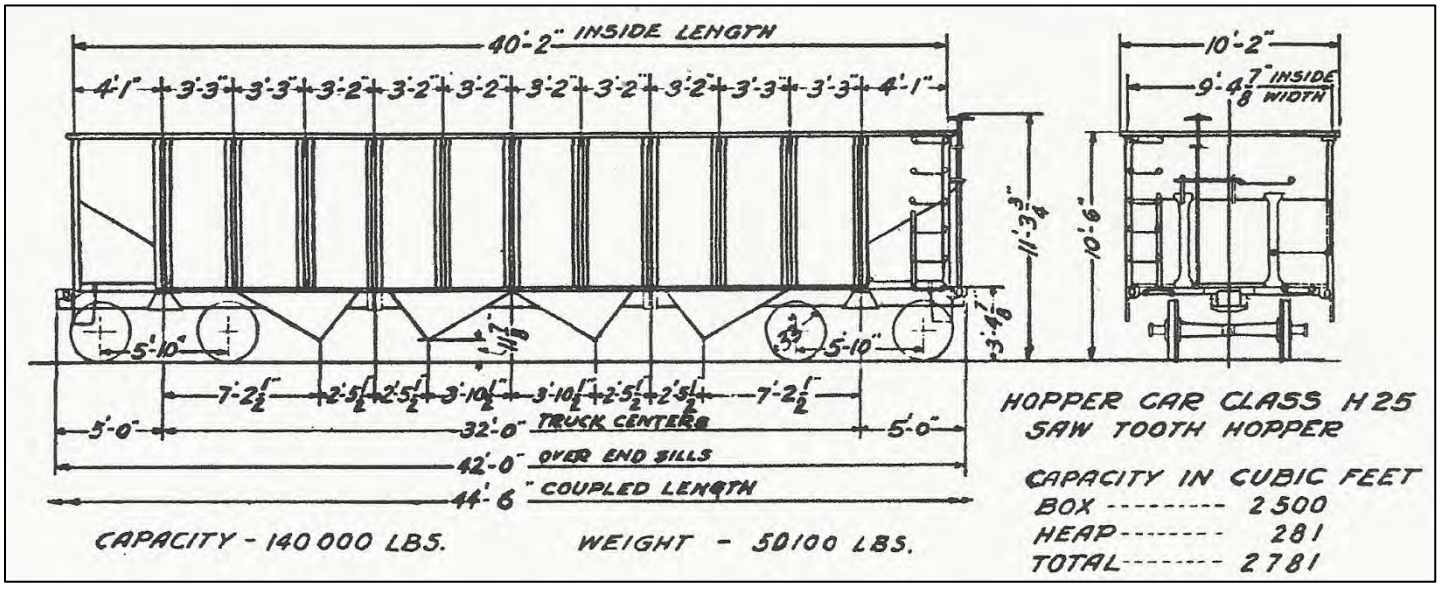
F&C's kit builds into a fine prototype model of Pennsy's H25 hopper.

The H25 Prototype

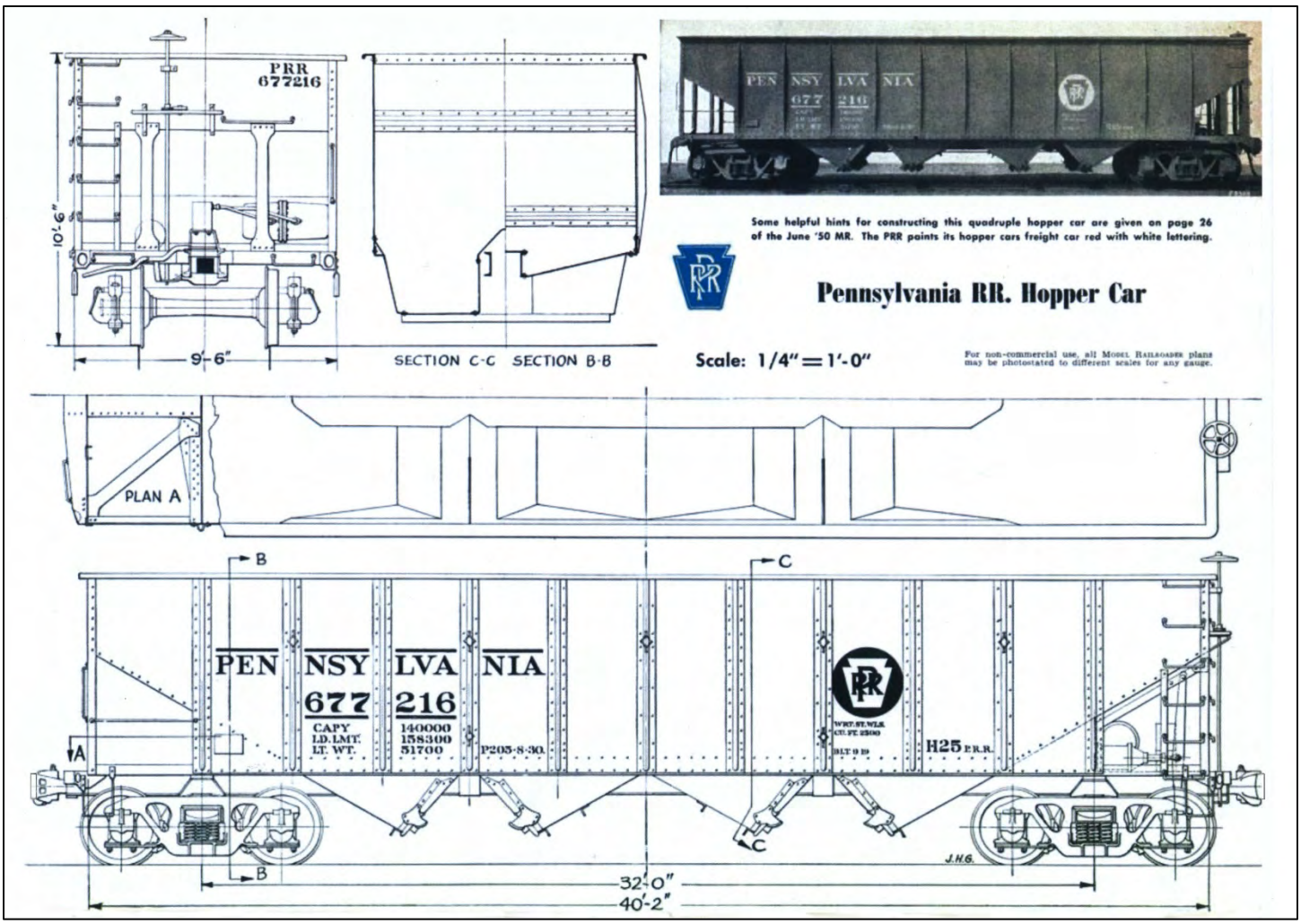
Pennsy's hopper fleet was huge, totaling nearly 100,000 cars in as-built quantities. Beginning in 1909 and peaking in 1951 at nearly 40,000 cars was Pennsy's most prominent hopper, the four-bay H21 class. Our subject is Pennsy' second most populous four-bay class of about the same vintage – the H25.

Serious Pennsy hopper car modelers continue to be indebted to John Teichmoeller, whose epic book *Pennsylvania Railroad Steel Hopper Cars* published in 2000 remains the definitive work on Pennsy's hopper fleet. Much of the following material is summarized from John's chapter on the H25's.

The H25 story begins in World War I, when the United States Railroad Administration (USRA) seized control of the country's railroads, their operation, and their equipment acquisitions. Increases to the nation's hopper fleet were a wartime need, and the USRA developed a standardized two-bay hopper design which was allocated to the railroads based on need. Pennsy was to receive 4,500 of the USRA twin hoppers, but somehow talked the USRA into allowing them 3,000 four-bay cars in their place. The new H25's would be an updated version of the successful H21 design.



Pennsylvania Railroad Equipment Diagram, Class H25 Hopper.



Scale drawing, Class H25 hopper, *Model Railroader*, January 1951.

Models by F&C and Westerfield nicely illustrate the primary differences between the H25 (left) and H21 (right) classes. Note the differences in side stake profile, end sills, and end center posts.

From a distance, the two classes could be easily mistaken for each other, but a closer look will reveal a few primary spotting differences. The H25 side stakes were symmetrical, with equal tapers top and bottom, while the H21's were slightly shallower and asymmetrically tapered. The H25 continued the H21 design of box end sills, but they were smaller. The H25's horizontal side sill extensions at each end of the side are thinner, matching the thinner profile of the H25's end sill. The center verticals on each end of the H25 were pressed steel members, rather than the paired angles of the H21.

Pennsy would ultimately field 5,287 H25's – the original 3,000 built between 1919 and 1923, and 2,287 purchased secondhand in the late 1920's from four private operators – Emmons Coal, Bethlehem Steel, Pickands-Mather, and Youngstown Sheet and Tube. The H25 class remained largely intact until the early-1950s, when new postwar designs and major attrition halved the fleet, and a new subclass surfaced – the H25A, essentially an H25 rebuilt with H21 sides. By late 1967, one H25 remained.

PENNSY'S TRANSITION-ERA HOPPER FLEET

With my focus on modeling the steam-diesel transition era, a logical question is "how many H25's do I need?" One way to approach the answer is to ask, "how many H25's do I need, if my roster mirrors the percentage of each hopper class in Pennsy's fleet?"

A look at the January 1953 Official Railway Equipment Register yields the following information:

PRR Hopper Car Classes, January 1953

Class	Quantity	% of Total	Number Needed for 40-Car Fleet
GLCA	6,002	8%	3
GLCB	1	+	+
GLD	43	+	+
GLH	58	+	+
GLA, GLG	25,710	34%	14
H21A, H21B, H21C, H21E	38,051	50%	20
H22A	99	+	+
H21A, H22A*	23	+	+
H25, H25A	4,426	6%	2
H31	704	1%	+
H31A	1	+	+
H31B	266	+	+
H31C	228	+	+
Total	**75,612**	**100%****	**40*****

*Jointly listed in ORER

**Identified percentages total 99%; the remaining 1% is comprised of all other classes

***Identified classes total 39 cars; the remaining one car can be drawn from the other classes

In a roster-balanced 40-car Pennsy hopper fleet, one would need a bunch of H21's and GlA's, and about two H25's.

MODELING THE H25

Roller Bearing Models introduced the hobby's first HO scale kit for the H25 in the early 1980s, and as an avid Pennsy modeler, it was with high excitement that I ordered one. Upon opening the box, excitement waned and reality set in. The sides were nicely executed in cast resin, but the underbody and hopper assembly were a nightmare. The individual pot-metal hoppers were poorly executed and would fit into their allotted spaces in the underbody only with laborious trial-and-error file-and-fit, and lots of Bondo. As John quotes reviewer James Hunter, "It is unlikely that anyone will want to build large numbers of the Roller Bearing Models (H25) version (for their fleet)".

Bowser's styrene H21 opened an inexpensive and capable starting point for an H25 kitbash. Bruce Smith replaced the H21 side stakes with cast resin copies from an RBM kit, and with other changes created a fine H25 model (*TKM* #45).

Over the years, Funaro & Camerlengo has developed an extensive line of cast resin kits of unique prototypes – a boon to those who enjoy modeling the real-life diversity of the US freight car fleet. Their models are typically well-researched and well-executed, with most recent offerings featuring one-piece bodies.

For those needing a few H25's, the F&C kit is likely the best option, both now and long-term. For many Pennsy modelers, Bowser's styrene H21 will already fill the need for a Pennsy four-bay hopper. For those wanting a few styrene H25's to diversify their fleet, a totally new (and expensive!) carbody mold would be required to correctly execute the different side and end features of an H25. In today's world, it does not seem reasonable to hold one's breath for a styrene kit manufacturer to make this happen.

THE F&C KIT

Funaro & Camerlengo (fandckits.com) has been in business for several years and offers over 300 cast resin freight car kits of various prototypes, including several PRR classes. Included in the line are three Pennsy hoppers – the H25, the GLCA, and the GPA.

Upon opening the box, one is struck with F&C's amazing one-piece H25 carbody. It is exquisite, with accurate molded detail top and bottom, inside and out. The model is dimensionally accurate per PRR diagrams, and the signature H25 features such as the symmetrical tapered side stakes are correctly rendered. A "wow" factor is the molded-on Wine door locks (but be careful – they are fragile!) And best of all – there is little flash to deal with. The one-piece carbody eliminates the need to assemble sides, ends, slope sheets, and hoppers, and to assure that they are square and properly aligned. The resin material is soft, not brittle, and easily worked. Dimples are cast adjacent to the grab bolt-head detail, making it easy to locate where to drill for the add-on wire grabs.

An early H25 kit was produced in the 1980s by Roller Bearing Models. It was a bear to build, but the result was a credible prototype model.

Assembly involves adding about three dozen other cast resin parts, and wire parts such as grabs, to the carbody. The resin details must be cut from cast sheets where they are grouped. Flash for the most part is thin and easily removed. Custom decals with car numbers and dimensional data tailored to the H25 prototype are included. Kit #8030 will letter the model in the circle-keystone style prevalent in through the transition era, while #8031 features the later shadow keystone decals.

Not included are trucks, couplers, weights, and a few "modeling commodity" items such as paint and screws. Several lengths of soft, green-coated (florist?) wire are provided; you may want to replace this with harder, more correctly sized brass wire.

Unfortunately, the strength of F&C's H25 kit stops with its four-page instruction sheet. The instruction steps are highly summarized to a fault, requiring time-consuming study of prototype photos and plans to understand exactly what is intended. In some cases, important steps were totally omitted; examples – installing the grabs and underbody brake parts. Included in the sheet are nine photos – six of the completed model, one of the prototype, and two of the cast resin parts sheets (labeled with parts names – a nice touch). None of the photos is an in-process photo of the unpainted model. Also included is a prototype drawing.

It has been said that a picture is worth a thousand words. In F&C's instructions, I'd rate the photos at about 700 words since they are a bit murky. For example, it is difficult to see which way the angles face on the hopper and hopper door cross ties. But given the issues with the text, even the low-res photos proved helpful. Despite these shortcomings, the kit can be built into an excellent model. Note that F&C offers discounts at the train shows they attend and has made some of their kits available with multi-kit discounts by mail. Be sure and check!

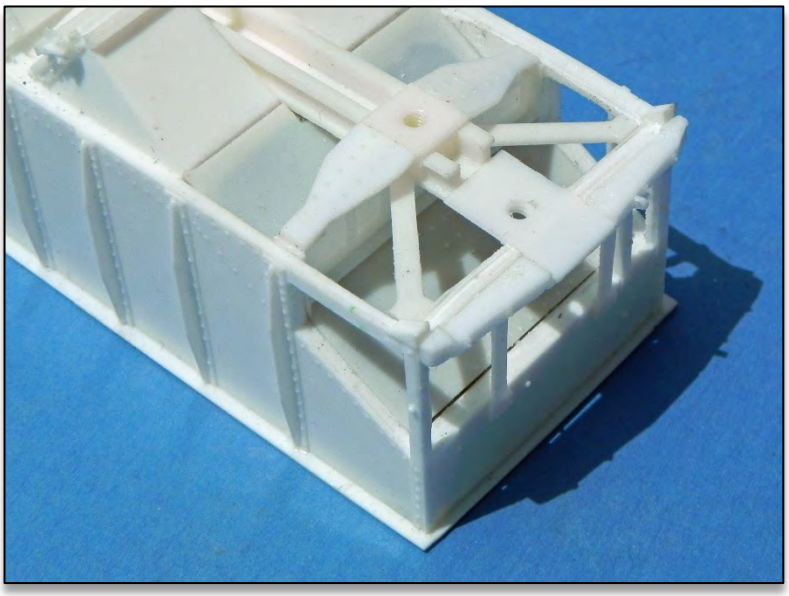
Begin Construction

First, a few caveats. In building the H25, my goal was to create a "layout model" – a prototype model credible under normal layout viewing. I omitted some of the less visible details such as brake system piping, where in my world the effort seemed to exceed the benefit. Those wanting their H25 to star in a NMRA contest will clearly want to go further. It has been said that if you give ten modelers a cast resin kit, they will find eleven different ways to build it. What is presented here is what worked for me – not the only or even the best way to build the kit. We will roughly parallel the sequence in F&C's instructions; along the way I'll add a few technique tips that may be helpful.

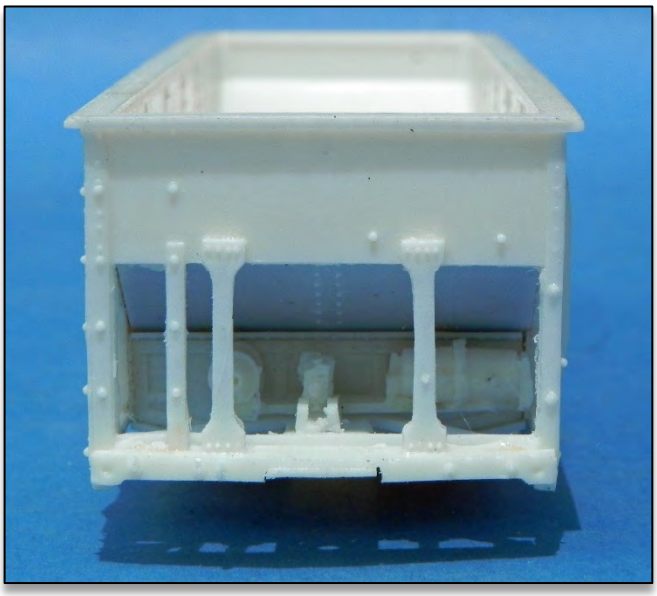
That said, let's get started! Begin with the carbody. Atop the sides, there are extraneous lugs cast along the top of the upper angle. These are easily removed by sliding the top of the body across a sheet of fine wet-dry sandpaper resting on a flat surface such as a sheet of plate glass. Check for flash at each end in the cutouts under the slope sheets and remove as necessary with a small file or #11 X-Acto® hobby knife. Remove flash around the Wine door locks. As I learned from sad experience, they are fragile. For proper glue adhesion, wash the carbody and other major parts in an oil-free dish detergent such as Ivory Liquid.

Build the Underbody

Remove flash from the underframe, and test-fit it to the carbody. On my model the underframe was a bit too long. I removed equal amounts from each end of the coupler pads and corner angle braces. Note that the underframe can be placed in the carbody in either of the two orientations. There is no "B" (brake wheel) end at this point. Set the underframe aside.



In this bottom-up view, the bolster caps and underframe have been glued in place; the slope sheet covers conceal a thin sheet of lead for added weight.

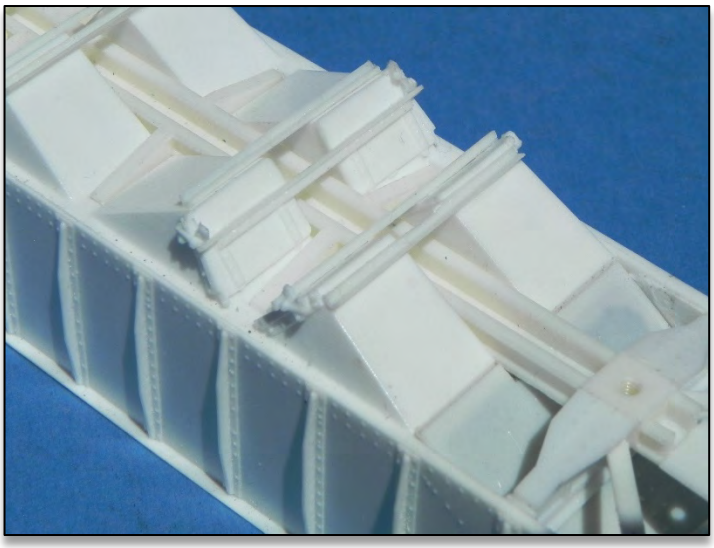


After adding the end assemblies, the AB brake components are added to the underframe, and the underframe glued to the carbody.

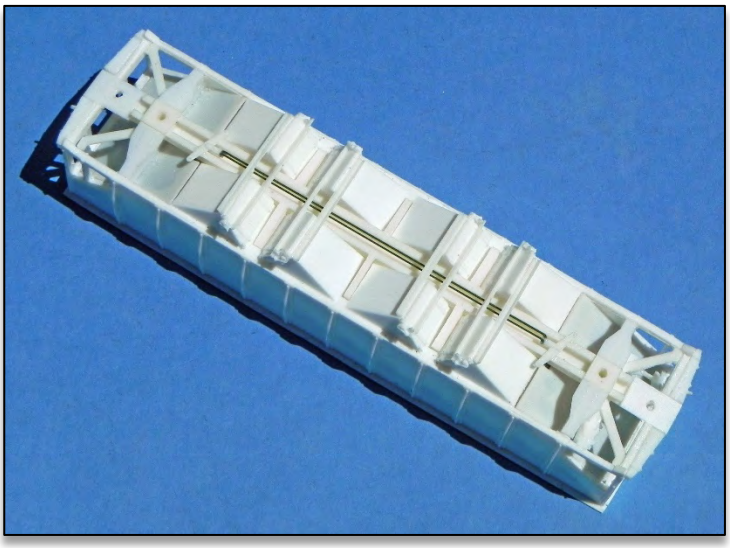
Remove flash from the two slope sheet covers and test fit them under the slope sheets with the riveted edge resting on the top lip and the bottom edge touching the carbody inset. Behind the slope sheet covers F&C has allowed space for installation of flat weights like the approach of many styrene hopper models. A steel or lead sheet up to about .030" thick (not provided) can be used. This will bring the weight of the model to about 2.5 ounces – still about an ounce shy of the NMRA recommendation, but OK for many layouts. If you choose not to weight the model (or add weight via a load), substitute a thickness of .030" styrene sheet to maintain correct slope sheet geometry. Again, test fit the slope sheet covers and bevel the bottom edge notch if necessary so that the underframe will properly seat. Glue (CA) the weights and covers in place.

Next come the bolsters which nest below the slope sheet covers between riveted shims glued to the backs of the sides behind the first side stake. The shims are cut from the long cast resin strip with rivets along one edge. Cut the shims to fit behind the first side stake, their top angled to match the angle of the slope sheet and their bottom extending slightly below the bottom of the side. Thin them a bit and glue them in place riveted edge facing outward toward the carbody end.

File the sides of the bolsters equally so that they will fit between the shims. File the top edge of the bolster to match the angle of the slope sheet. Glue the bolsters to the carbody, centered behind the first side stake. Test fit the underframe to make sure it fits into the notch in the bolsters and clears the bottom edge of the slope sheet. Remove it and set it aside.



After gluing the underframe, add the hopper and hopper door crosstie angles; the door crosstie angles point up, the hopper crosstie angles point down.



The underbody brake levers and rodding were added per F&C's instructions; the prototype may differ!

Install the End Assemblies

Clean flash from the end assemblies. The upper end of the middle center posts is a bit thick versus the prototype. Thin it a bit (I didn't, and wish I had!) Glue the end assemblies to the carbody. Begin with the bottom gluing it flush with the bottom of the end sill. Then lift the top edge of each middle center posts and place a small dot of CA behind it to glue it to the carbody.

F&C has cast a strut at the center of the carbody end to temporarily support the end sill. It is now safe to remove it. Check the coupler box notch in the end sill and widen it if necessary to fit your coupler box.

Install the Underframe

Select one end of the underframe as the "B" (brake wheel) end and glue the brake reservoir/cylinder support bracket on top of it. Locate the bracket so that the reservoir and cylinder will clear the bolster. The end of the reservoir will be just inside the side sill extension. Glue the brake valve to the bracket above the side of the centersill closest to the brake cylinder.

I often will install brake system piping between the components on hopper cars since it is at least somewhat visible in normal viewing. In this case I was unable to find a diagram or a clear photo showing the H25's arrangement so I omitted it. Modelers building a contest model will want to install it, perhaps following the general practice of other hopper car prototypes. If so, consider using wire a bit thinner than what F&C has provided.

It's now time to glue the underframe to the carbody. First, glue a rectangular coupler pad at each end butting the end of the centersill and nested into the coupler box notch. This piece strengthens the joint between the underframe and the end sill and provides a surface for mounting the coupler box.

Clean flash from the bolster caps and glue them to the bottom of the bolsters. They will need to be trimmed to fit between the edge of the centersill bolster plate and the inside edge of the carbody side. Trim the bottom of the shims flush with the surface of the bolster caps.

Drill (#50) and tap the bolsters for 2-56 truck screws. Take special care to perfectly center the holes on the bolster plate. Using a coupler box as a guide, locate, drill, and tap holes in the coupler pad for the coupler box mounting screws.

Now is a good time to test fit the trucks and couplers, and make sure that the couplers are at a correct height. I used Bowser Crown trucks (#40191), and Kadee #158 scale-size couplers. On my model, no coupler height adjustment was needed. Consider a test run of the car on the layout to assure that there are no hidden operational issues.

Detail the Underbody

The parts sheet has two sets of four angle irons – a long set to crosstie each pair of hopper doors and a shorter set to crosstie each pair of hoppers. Each set has rivets on one leg of the angle. This leg will be the side glued to the door or hopper.

Begin with the hopper door crossties. Remove about 6" from each end of the riveted leg of the angle (see F&C's diagram). Glue to the hopper door, angle leg pointed upward, on the hopper door. The angle iron should snugly fit between the end of the hopper door hinge and the upper edge of the Wine door lock.

Glue the hopper crossties about 3" from the bottom edge of the hopper. The angle leg points downward toward the bottom of the hopper.

F&C's model photos show the underbody brake lever installation which I followed. The underbody brake rodding is a good place to use up some of F&C's green wire.

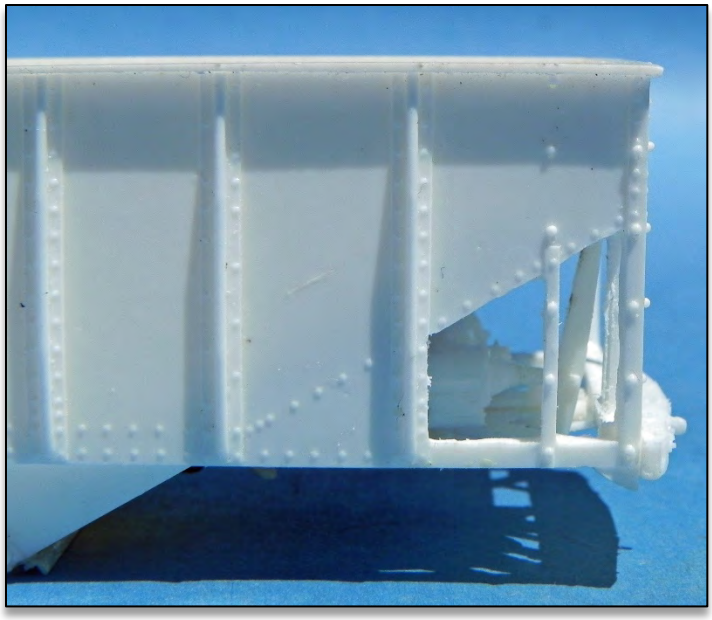
Install the Brake Cylinder Lever

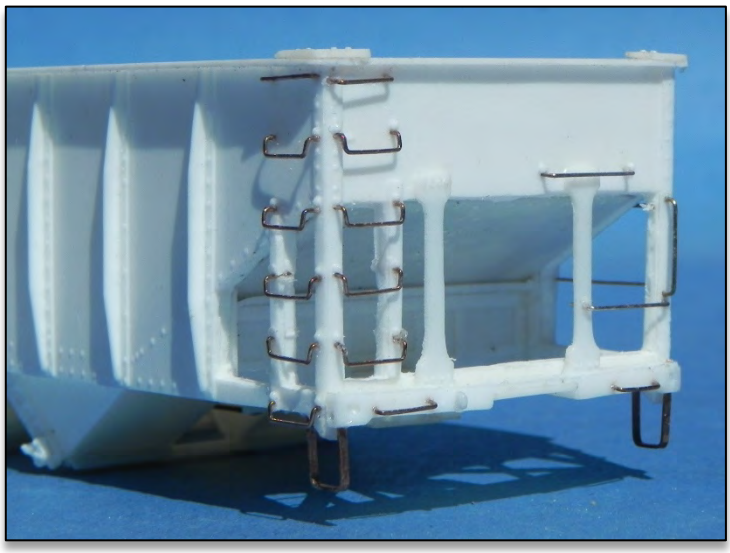
Vintage hopper cars typically have a lever attached near their middle to the brake cylinder piston. The top of the lever is pivoted from a bracket attached to the bottom of the slope sheet. I have not been able to turn up a clear photo of the H25's lever arrangement so I went with the arrangement shown in F&C's scale drawing. Glue the lever's piston to the brake cylinder and tack the top to the underside of the slope sheet. Glue the bracket next to the lever's top. The bottom of the lever will project through the underframe above the truck.

Add the Grabs

Now is a good time to add the grabs. The H25 has 36 (count 'em – 36!). Turn on some good music and get ready for lots of drilling (#78 drill).

For the ladders, the top grab is straight, while the rest are drop grabs. F&C has provided locator dimples below the cast rivet heads for drilling; where these are not provided, a map or push pin is handy for pressing a starting dimple. Be gentle drilling for the ladders. The corner posts and ladder posts become fragile as holes are added. When installing the grabs, snip their legs to match the thickness of the ladder posts. Since the end ladder grabs are directly opposite the side ladder grabs, snip their left leg extra short so that it butts against the leg of the side ladder when installed.



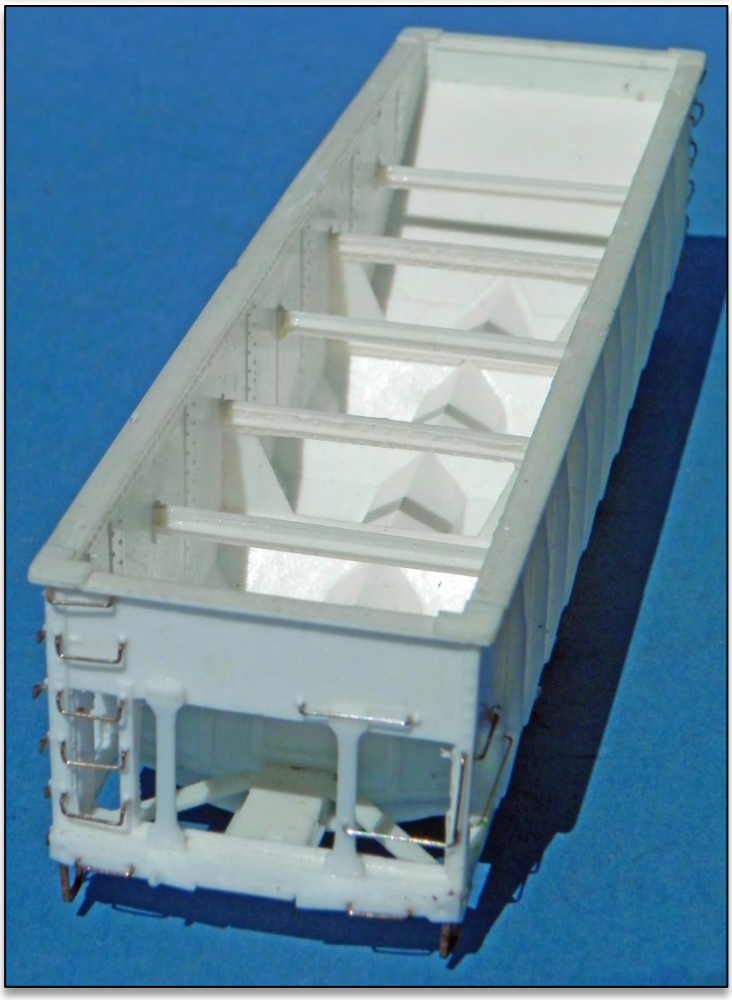


(Top left) Glue the brake cylinder lever piston to the end of the brake cylinder, and its top to the underside of the slope sheet.

(Top right) Ladder corner grabs; note the top ladder grabs are straight grabs. I substituted A-Line stirrups for F&C's fragile cast stirrups.

(Bottom left) Opposite corner grabs; the H25's box end sill triggered a regulation for extra grabs on the upper end vs. the standard hopper car arrangement.

(Right) The H25 required five crossties, with #2 and #4 extended to include lower gussets. Rectangular end plates were added to crossties #1, #3, and #5 as an extra detail.



Because of the box end sill, safety regulations require extra grabs on the H25 not found on other hoppers – a 30" horizontal grab near the top of the end sheet, and a 24" vertical grab on the corner post. Note also the extra horizontal 24" upper grab at the left end of the side. F&C supplies two 24" grabs. You'll need to bend the other long grabs from bulk wire or acquire more from Tichy Train Group (#3053). F&C's green wire is available for this, or you may prefer to substitute .015" wire.

The rivets and dimples for the end sill grabs are spaced at about 15", which appears incorrect compared with prototype photos. I drilled my holes spaced at 18" and removed the incorrect rivets. Install straight grabs on the end sill.

F&C supplies cast resin stirrups – nicely executed, but often fragile in the operation of a "layout model". I substituted A-Line #29000 stirrups as a bulletproof replacement. Note that the stirrups are significantly offset toward the end of the car, rather than directly under the ladder as on many prototypes.

I discovered too late that F&C omitted the small tack boards at the lower left corner of the side. You'll likely want to add these to your model. Had I added them they would have been cut from .015" x .080" styrene strip 1'0" long.

Detail the Interior

Before detailing the interior, consider making the noticeably wide side's top angle a bit narrower by removing small amounts of material from both its inside and outside edges. I did not do this, and wish I had.

The interior has five crossties. The two with the large lower gussets are placed at the vertical locators behind side stakes 4 and 8, atop the hopper bay peaks with the wide part of the gusset at the bottom. Narrow them to fit the carbody, file a small notch centered in the bottom edge to clear the longitudinal peak, and glue them in place.

With our models usually viewed from above, the remaining three crossties present a detailing opportunity. At each end on the prototype crosstie is a rectangular plate. Cut six of these from .010" x .060" x 10" styrene strip, and glue them behind side stakes 2, 4, and 6 at a height matching the top of the two gusseted crossties. Trim the three remaining crossties to fit between the plates, and glue them; the tops of all five crossties should all be at the same height. Glue the L-shaped corner gussets atop each corner of the carbody.

Complete End Details

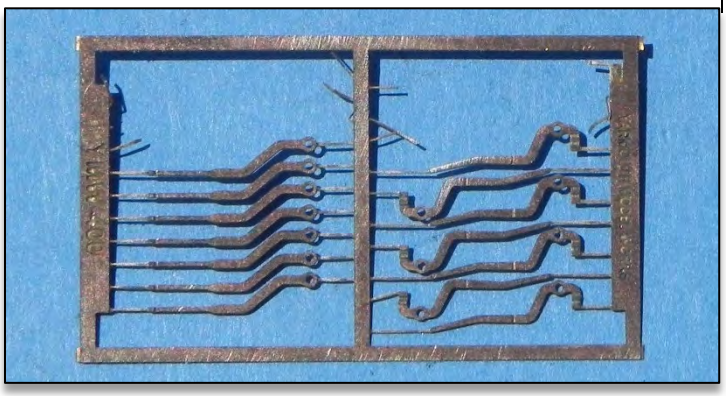
Glue the retainer valve near the top of the end next to the "B" end ladder. The retainer line is a length of .012" wire, secured in a hole below the retainer valve, and bent to follow the angle of the slope sheet. More serious modelers will want to correctly tie it into the brake system.

While some H25's received power handbrakes, most cars retained their original staff handbrakes, which F&C supplies. Begin with F&C's very nice one-piece brake platform. Its left leg rests on the top of the left center post and is inset versus the right leg. Clean flash from the legs making sure the platform snugly fits against the end sheet. Drill (#76) for the brake staff, and glue it in place. Since brake staffs are susceptible to bending during handling and operation, I substituted .016" hard brass wire for F&C's softer green wire. Temporarily insert the brake staff through the platform, mark where it hits the top of the end sill (making sure it is perfectly vertical) and drill the end sill. Glue the brake staff to the platform and end sill, leaving a short projection below the end sill, and cutting its top 11" above the top of the end. Slip the upper clamp onto the top of the brake staff and glue it near the top of the end. As supplied, the brake wheel is a bit thick. Thin it by drawing it several times across fine sandpaper on a flat surface and install it.

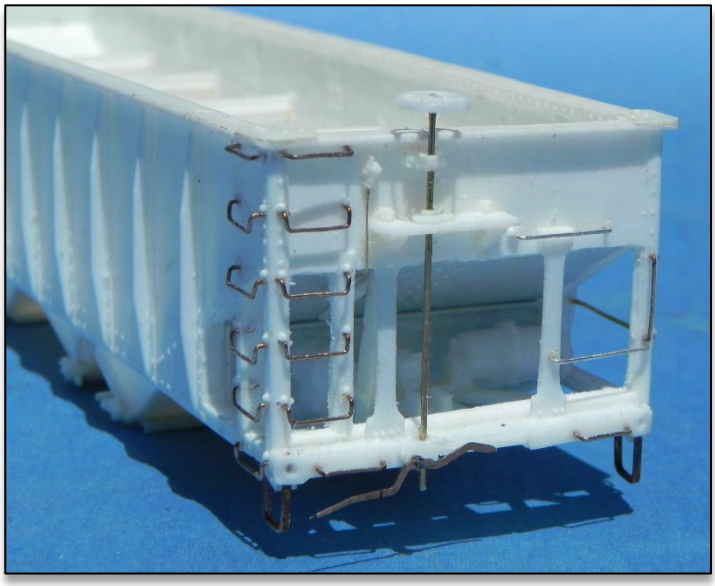
To its credit, F&C supplies cast resin Pennsy-style Carmer uncoupling levers. While these parts are flexible, they are also fragile – again suggesting that they be replaced. To the rescue is Yarmouth Model Works (yarmouthmodelworks.com), who offers a set of eight photoetched brass Pennsy-style Carmers as their part #400.

F&C has cast a short rounded nub at the location of the Carmer pivot – essentially useless as a hub for our model Carmer. Cut it away, and drill (#76) a hole in its former location. Form a new hub from Evergreen 3/64" rod (#221); drill into the rod's end and cut it to an appropriate length. I have no insight regarding the length of the prototype Carmer hub, so I opted for a length of 3" which looked good to my eye. Cut a short length of the F&C wire, install it in the end sill hole, slip the drilled rod hub onto it, and install the Carmer levers.

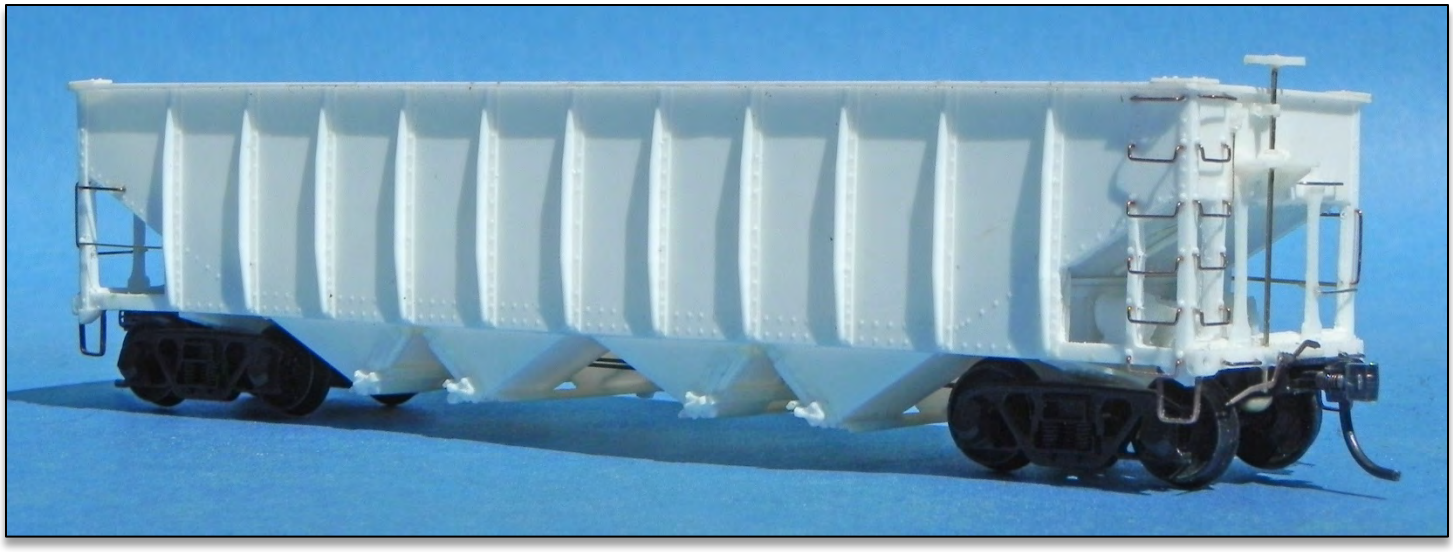
Give the carbody casting edges a final check for fuzz where there was any sanding or filing – often a problem with F&C's soft resin. Wash the model with a non-oily dish detergent such as Ivory Liquid. A toothbrush or fine file will help remove any remaining fuzz. Our model is now ready for painting.



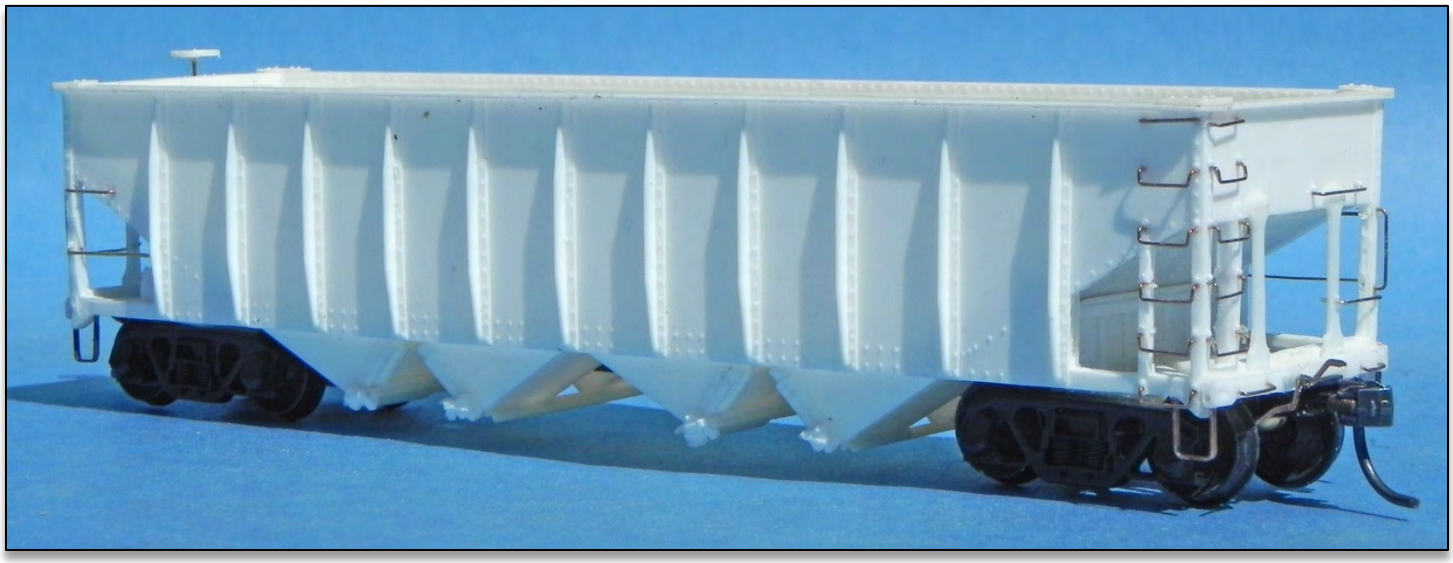
▲ Yarmouth Model Works offers accurate photoetched Pennsy-style Carmer uncoupling levers, which I substituted for F&C's more fragile cast resin levers.



▶ Completed end detail, "B" end.



▲ Completed unpainted model, ¾-view of B end. ▼ Completed unpainted model, ¾-view of A end.



PAINT THE MODEL

Pennsy freight car color appears to have significant differences across eras as well as variations within eras – issues that the PRRT&HS Paint Committee has been wrestling with for decades. A good current reference is the Keystone Crossings website (http://pennsyrr.com/index.php/general/172-paints), which has collected a comprehensive set of era-specific model paint suggestions from several PRRT&HS sources.

For my early-1950's Pennsy freight cars, I continue to use a five-component mix of Floquil's "primary colors" suggested in an early issue of *The Keystone* by a member whose name has been lost to history:

- 20 parts Boxcar Red
- 10 parts Tuscan Red
- 12 parts Caboose Red
- 5 parts Reefer White
- A few drops of Reefer Yellow

The result is a slightly warmer version of Floquil's Oxide Red. Is it correct? Who knows? But to my eye it looks good compared with prototype photos from my era and I continue to stick with it. Paint the inside of the car with a grungy mix representing rust and coal dust.

Apply F&C's lettering as follows:

1) the top of the road name overline is 4'-6" above the bottom of the side,

2) the bottom of the car number underline and the circle keystone are 2'-3" above the bottom of the side, and

3) the bottom of the dimensional data is 9" above the bottom of the side.

According to the 1953 Official Railway Equipment Register, correct car number series for the H25's and H25A's are 169635-172921, 244737-249989, 677046-677425, 686353-686467, 706910-707016, 710069-710073, 720276-720451, 723082-723123, 729801-730894, 740701-740726, and 909741-909795. Note that not all numbers in a series were in use in the 1953 roster.

Compared with boxcars, prototype hoppers seemed less likely to attract chalk marks, but a few chalk marks will add character to your model.

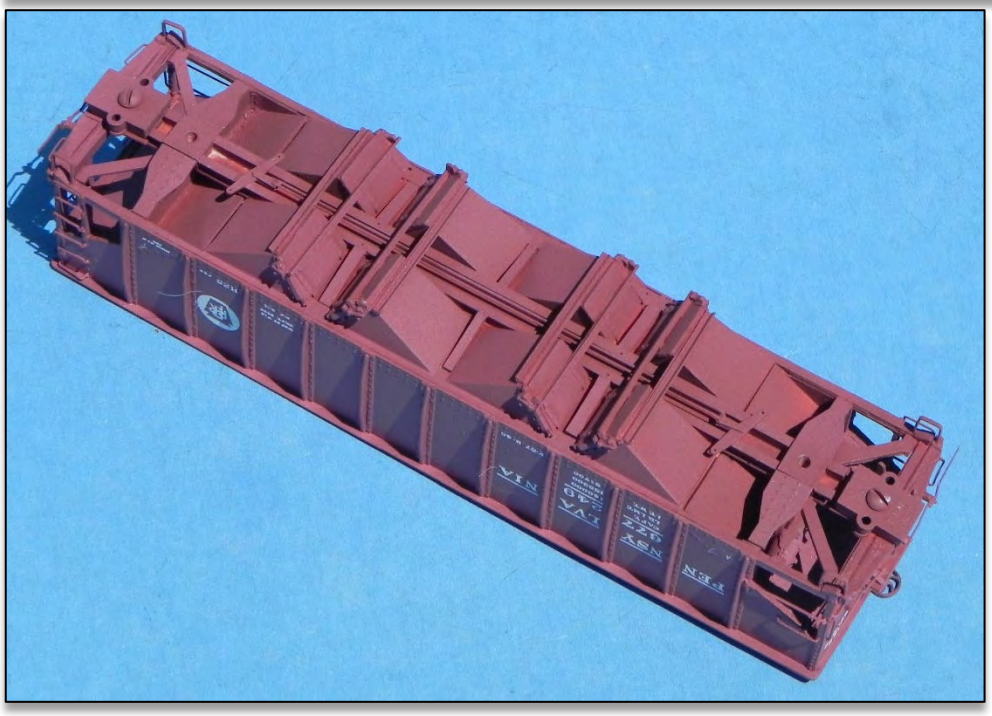
Weathering is one of the more personal aspects of freight car modeling. Each of us has his or her own preferences, weathering techniques, and favorite signature effects. In my case I try to weather each completed model with different effects, media, and intensity, resulting in freight consists where each individual car has its own weathering personality. For the H25, I opted for weathering a bit lighter than is found on the typical grimy prototype. The body was sprayed with a light overspray of very dilute black paint to represent light coating of coal dust. Upward-facing surfaces received a bit darker coating. The hopper area was dusted with AIM Dark Grey powder. The area next to the side stakes was dusted with Bragdon Dark Rust powder to represent the natural accumulation of coal dust and road grime near to the stakes. The interior seams, trucks, and couplers were highlighted with AIM Dark Earth representing a light buildup of rust. Again – weather as you choose. There's probably a prototype for it.

Add trucks and couplers and your H25 is ready to haul coal as an interesting variation to your fleet of H21's and GLA's.

Parts List

Manufacturer	Part #	Description
Funaro & Camerlengo	(See Text)	PRR H25 Hopper Kit
Bowser	40191	Trucks, Crown
Kadee	158	Couplers, Scale
(See Text)		Weights
Optional Parts:		
A-Line	29000	Stirrups
Detail Associates	2504	Wire, .012"
	2505	Wire, .015"
Evergreen	103	Styrene Strip, .010" x .060"
	114	Styrene Strip, .015" x .080"
	221	Styrene Rod, 3/64"
Precision Scale	4869	Wire, Hard Brass, .016"

▲ Painted model, unweathered. The "Pennsy Red" is a five-component Floquil mix.



◀ Underbody detail, unweathered.

Completed model; weathering is a very dilute black overspray, followed by weathering powder highlights.

Completed model, B-end.

Completed model, A-end.

Completed model interior; the base color is a grungy rust-black paint, followed by weathering powder highlights.

Our H25 at work on the layout, ready to receive its next load of Pennsylvania coal.

Two PRR EMD SD45 (Athearn) diesels enter Willsburgh Yard with an empty coal train past an EMD GP30 (Proto) next to the General Electric plant on Tim Garner's old layout. The track is hand-laid code 70, the trees are Scenic Express Super Trees, the water tower is a Tichy kit, the factory is from Walthers modular kits, the light tower is NJ International, the backdrop is hand-painted, and the aerosol fog effect is Fantasy FX Diffusion in a Can. *(Tim Garner)*