



# The Keystone Modeler

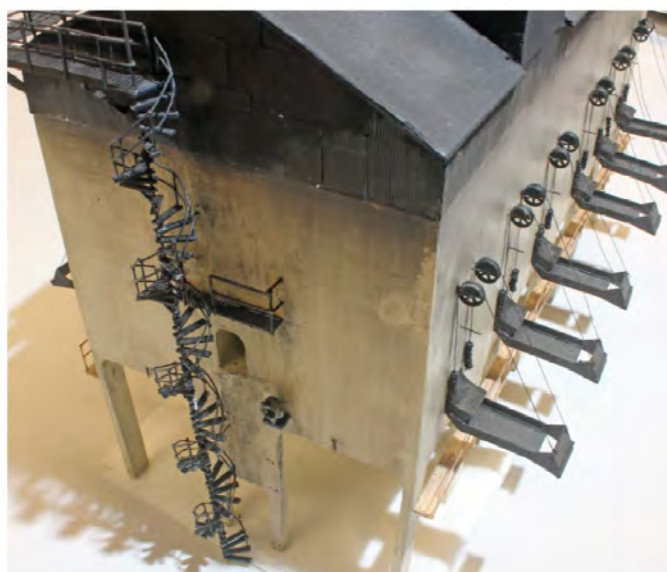
Pennsylvania Railroad Technical & Historical Society

No. 97

Summer 2016

## Inside:

- BLI S2 Steam Turbine Review
- Shamokin Branch HO Layout
- Scratch FD Gun and Cable Flat
- Annual Meeting Models – 1





# The Keystone Modeler

Pennsylvania Railroad Technical & Historical Society

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A scratchbuilt HO-scale FD gun and cable flat car by David Vinci. (*David J. Vinci*)

Two ILSA 2-10-0 Decapods on Chuck Cover's Shamokin Branch layout. (*Chuck Cover*)

This model of the Pitcairn Coal Tower in 1948 won Dave Wilson the coveted Bob Yagodich Award from the PRRT&HS Modeling Committee. (*Tim Garner*)

The front of BLI's brass-hybrid S2 6-8-6 steam turbine with large smoke deflectors in HO scale. (*Tim Garner*)

## The Keystone Modeler

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As many of you know, the modeling community lost an important contributor in May. There was a memorial service held for Chuck Yungkurth at the Colorado Railroad Museum on July 12. He was born in Scranton, PA, earned a mechanical engineering degree from Penn State, served in the army, worked for NASA, was well-known for his modeling and authorship, and spent part of the last fifteen years of his life volunteering at the Colorado Railroad Museum in Golden, CO. I will personally miss his scale drawings of prototype equipment which appeared in *RMC* and other publications.

For some time now, the Strasburg Railroad Company has been working on the restoration of a Juniata-built 4-6-0. They have entered into a cost-sharing agreement with the Railroad Museum of Long Island to bring G5s #39 back into operation. The agreement stipulates that the locomotive will operate on the Strasburg on lease for 48 years after restoration. As with all such efforts, a good deal of money is required to move forward, and the Long Island folks need donations to meet their share of the cost. I have decided to make a modest donation, because I believe this is a realistic project which could result in my riding behind an operating Pennsy steam locomotive in my lifetime.

We are all aware of the idealistic folks who want to build a T1. The PRR T1 Trust displayed a cast driver at the last annual meeting in Camp Hill in May. Building a T1 is a beautiful idea, but to build it from scratch, with alloys and materials to suit modern railroading, seems to me to be a nearly unrealistic dream. How could it ever come together in my lifetime (I'm 75), and where could it operate? Would Norfolk Southern permit it on their tracks? Would the T1 have to be taken out west where the Union Pacific has an on-going program with big steam? Wouldn't it make more sense to build a full-size model of a T1 and put it in a museum? If the T1 enthusiasts can achieve their goal in the next 25 years (and I'm still

around), then I'll be happy to admit that I was wrong, but meanwhile I will watch for #39 to appear on the Strasburg.

In our summer issue of *TKM*, we have a review of the Broadway Limited S2 by Tim Garner, another HO-scale flat car from David Vinci, and, of course, model photos from the annual meeting. And especially for those who would like to see more layouts in *TKM*, we present an article by Chuck Cover about his ore-run inspired layout.

**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 week-end 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](http://www.prrths.com). To join the Society, send \$35.00 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.

## PRR Product News

### Athearn

<http://www.athearn.com>

PRR EMD FP-7 – HO Scale



(Athearn)

A new run of the popular Genesis EFP-15 (FP7) is expected in April 2017. Available models will all be A units in Dark Green Locomotive Enamel. They will be offered as two units, 9860/9862 or 9852/9871, or a single unit, 9866. From the artwork, it appears that all models will be without skirts, as the units appeared in later years but before the renumbering for Penn Central started. All units will be available as either DC or DCC/Sound. Athearn has elected to use the new, state of the art Tsunami2 decoder for the sound versions.

### ATLAS

<http://www.atlasrr.com/default.htm>

PRR X26 Boxcar – N Scale



(Atlas)

Coming in the Circle Keystone scheme is the PRR version of the USRA single sheathed 40' boxcar. It is expected to be available in the third quarter of 2016, which makes it available as the X26 Project on PRRPro is in its last phase. By then there will be plenty of prototype info and photos available.

### ATLAS O

<http://www.atlaso.com/>

PRR X26 Boxcar – O Scale

Atlas O has made available the X26 single sheathed boxcar with additional road numbers. The new models are expected in the fourth quarter of 2016.

### BOWSER MFG. CO.

<http://www.bowser-trains.com/>

PRR GLA Hopper – N Scale



(Bowser)

**Bowser** is accepting orders for another run of their **GLA 2-bay hoppers**. They are expected to be available in February 2017.

PRR U25b Diesel – HO Scale



(Bowser)

**Bowser** is developing an additional run of their U25b. Two versions, Phase II with Train Phone Antenna and Phase IV will be offered in both DC and DCC with LokSound. These engines are expected in March 2017.

### BROADWAY LIMITED IMPORTS

<http://www.broadway-limited.com/>

PRR P70 and P70R Coach – HO Scale



BLI P70R. (BLI)



BLI P70. (BLI)

These cars are arriving mid-August.



## PRR L1s 2-8-2 – HO Scale



Prototype photo of #3273 with original headlight position and post-war details. (BLI)

The second run of this popular engine should be available in October 2016. In addition to the pre-1946 and post-war versions as offered in the first run, a new post-war version will be offered with the headlight in the original position.

## PRR Baldwin RF-16 Sharknose – HO Scale



(BLI)

This favorite Diesel will be offered in the single stripe scheme for its second run. The latest **Sharks** are due in November 2016.

## EASTERN SEABOARD MODELS

<http://www.esmc.com/Updates.html#>

## PRR G32C Gondola Kit– N Scale



(Eastern Seaboard Models)

ESM has released the final run of the G32C kit. This version differs in being produced from direct rapid prototype parts.

## MTH ELECTRIC TRAINS

<http://mthtrains.com/>

## PRR H10s 2-8-0 Steam Locomotive – HO Scale



(Paul Schulz)



(Tim Garner)

MTH has available a model of this common PRR steam engine. The tender is a mostly accurate rendition of a previously unavailable class. The engine requires removal of the H9s type snifter valves to be more correct. There will be a detailed review of this model in the Autumn 2016 issue of *TKM*.

## RAPIDO TRAINS INC.

<http://rapidotrains.com/>

## PRR Alco FA2 Diesel Locomotive – HO Scale



HAND-FINISHED PRE-PRODUCTION SAMPLE

(Rapido Trains)

**Rapido** continues in its efforts to bring this finely detailed AF-16 to the marketplace. Here is a video showing off a pilot model:

<https://www.youtube.com/watch?v=vbP1VVy5BzM>.

The model is expected to be available late this year or early 2017.

## SOUNDTRAXX

<http://soundtraxx.com/>

### Tsunami2 Sound Decoders – All Scales

Soundtraxx has available now the full featured **Tsunami2** sound decoder. This is much more than a follow on replacement for the original Tsunami. See the website for improvements and features, including both banshee and 3-chime whistles in the steam version.

## TANGENT SCALE MODELS

<http://www.tangentscalemodels.com/>

### PRR G43 Gondola – HO Scale



(Tangent Scale Models)

**Tangent** has produced this unique gondola class with its corrugated sides. Several road numbers are available. The model is highly detailed and very accurate. Subsequent sub-classes of this car were produced for Penn Central and Conrail.

## TICHY TRAIN GROUP

<https://www.tichytraingroup.com/Home.aspx>

### Freight Car Decals – All Scales

For a number of years **Jerry Glow** produced decals for the folks in our hobby known as prototype modelers. Sometimes the decals were intended to replace those found in Sunshine or Funaro & Camerlengo resin kits. Other decals were created just because someone's interest in a certain prototype was sparked. Jerry was very particular about his decals, and the artwork was excellent and accurate. Eventually Jerry became unable to continue production. **Tichy Train Group** has obtained the artwork and is now selling these decals. There are a number of PRR decals available.

## WALTHERS

<http://www.walters.com/>

### PRR P70 Coaches – HO Scale

Walters has canceled their plans to produce these cars.

## EXACTRAIL AND TRAINLIFE

<https://www.trainlife.com/>

The **TrainLife** web site has long been a source to view long out-of-print magazines such as **Model Railroading**, **Railroad Model Journal**, as well as others. However, not all magazine

issues have been entered into the database, and recently progress was nonexistent. The good guys at **ExactRail** have secured rights to the site and are promising good things for the future. They also have made the **TrainLife** site a portal into their online store. **ExactRail** now has an actual brick and mortar store in Provo, Utah.

## Upcoming Events

**September 30 – October 1, 2016** Fredericksburg, Virginia  
**Mid-Atlantic Railroad Prototype Modelers Meet**

<http://www.marpm.org/>

**October 20 – 22, 2016** Lisle, Illinois  
**RPM Conference Chicagoland**

<http://www.rpmconference.com/>

## Advance Planning

**January 5 – 7** Cocoa Beach, Florida  
**Prototype Rails Prototype Modeling Meet**

<http://www.prototype Rails.com/>

**TBD** Camp Hill, Pennsylvania  
**PRR&THS Annual Meeting**

<http://pennsyrr.com/index.php/home>

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

## 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.prtrhs.com](http://www.prtrhs.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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# Product Review: BLI PRR S2 Direct-Drive Steam Turbine in HO Scale

By Tim Garner – Model photos by the author unless noted



This PRR photo shows the 6200 after application of large smoke deflectors and trim along the running boards in front of the cab. Interestingly, the marker lights have not yet been moved to the front of the smokebox, suggesting the larger “elephant ears” made them harder to see. (PRR, William D. Volkmer collection)

Especially in terms of detail and accuracy, I believe Broadway Limited Imports does its best work on their line of Paragon brass hybrid locomotives. Their PRR Q2 4-4-6-4 duplex, in my opinion, ranks among the most beautifully detailed PRR locomotives ever produced. My understanding is that BLI chooses brass hybrid construction for desirable locomotives that have a more limited market. Since the PRR only had one, the S2 6-8-6 direct-drive steam turbine fits that description.

BLI produced models of the S2 in four versions – as built, painted; with small smoke lifters, painted; with large smoke lifters, painted; and varnished brass with large smoke lifters. I purchased the one of the painted large smoke lifter models for the late 1940's look. The model is absolutely beautiful.

## THE PROTOTYPE

PRR's final experimental steam locomotive was designed to pull passenger trains at high speed. In theory, the direct-drive turbine propulsion system was to be more efficient than

reciprocating steam and eliminated dynamic augment (the impact of heavy reciprocating parts at speed on the track structure). From the May 1948 PRR *Descriptive List of Locomotives and Tenders*, here are some of the S2's vital statistics:

Wheel diameters.....	pilot, 36"; drivers, 68"; trailing, 42"
Driver wheelbase.....	19'-6"
Engine wheelbase.....	53'-0"
Engine and tender wheelbase .....	107'-10½"
Steam pressure.....	310 psi
Boiler type .....	modified Belpaire
Total heating surface.....	6,782 sq. ft.
Grate area.....	115' x 86'
Engine weight, working order .....	590,800 lbs.
Starting tractive effort .....	67,860 lbs.
Factor of adhesion.....	4.00
Class of tender .....	180 P 85



6200 in the deadline at Crestline before scrapping. Note the marker lights are now in the forward position. (William D. Volkmer collection)

Required reading for anyone who admires the PRR turbine is the article "Trials and Tribulations of #6200," by Neil Burnell in *The Keystone*, Vol. 45, No. 3, autumn 2012. From this scholarly article, you'll learn why this experimental locomotive was built in 1944, how it operated over the years, and issues that led to its withdrawal from service. Also, read follow-up letters on the S2 by David Evans and by David E. Slee in *The Keystone*, Vol. 46, No. 1, Spring 2013 further discussing reasons for the failure of the S2.

The S2 was withdrawn from service in 1949. It sat at Crestline, Ohio until January 1952 when it was stricken from the roster and scrapped.

#### THE BLI MODEL

The S2 has captured the imagination of modelers starting with tinplate Lionel models when the prototype was new. PRR modelers in HO have been tempted with brass imports

from the Far East from time to time with varying degrees of accuracy.

When BLI was ready to tackle their models of the S2, they had the benefit of a series of exceptionally drawn, fully detailed plans by Jim Young that accompanied *The Keystone* article, coupled with the input of the PRT&HS Modeling Committee team led by Bruce F. Smith for this project.

#### CONSTRUCTION AND DETAILS

As is typical with BLI brass/hybrid locomotives, the engine and tender bodies and most of the applied details are made of brass sheet, castings, and wire soldered together. The die-cast chassis, drive train, brake details, and electronics are constructed using the same, mechanically sound design as with conventional BLI Paragon 3 locomotives. There are traction tires on the rear set of drive wheels for pulling power. The locomotive is shipped with a wrench for the side rod screws and two extra traction tires.



Right and left sides of BLI's rendition of SI 6-8-6 #6200 with large smoke deflectors.





Fireman's side of the BLI model.

The engine alone is a hefty 1 lb. 7<sup>1</sup>/<sub>8</sub> oz. Engine and tender together are 2 lbs. 5<sup>1</sup>/<sub>8</sub> oz. The engine has no trouble pulling an eight-car train of Walthers passenger cars up my 2% grades.

The locomotive is connected by a pin on the tender to a drawbar with three positions on the engine. The maximum spacing allows the engine to negotiate 22" radius curves. Wider radius curves permit closer spacing and a more prototypical appearance. Electrical connection is through BLI's traditional 8-pin JST plug and wiring harness.

The model is extremely accurate when compared to Jim Young's drawings. The driver spacing and the wheelbases of the leading, trailing, and tender trucks scale out dead-on. The

driver diameter is 4" undersized. This is a compromise typically made on model steam locomotives due to the size of NMRA RP-25 flanges. It isn't noticeable. On the other hand, the driver brake hangers are noticeable and very unusual. They have shoes on the top left and bottom right that face opposite drivers.

The PRR was a fan of drop coupler pilots to help deflect track obstructions and prevent derailments. The S2 was so equipped. BLI has executed this detail better than I've ever seen. The uncoupling rods above the coupler are modeled, plus the dummy coupler can be raised and lowered. A screw holds the dummy coupler in place so modelers can replace it with a working coupler if they desire.



Engineman's side of the cab showing the extensive detail below the cab and on the trailing truck.

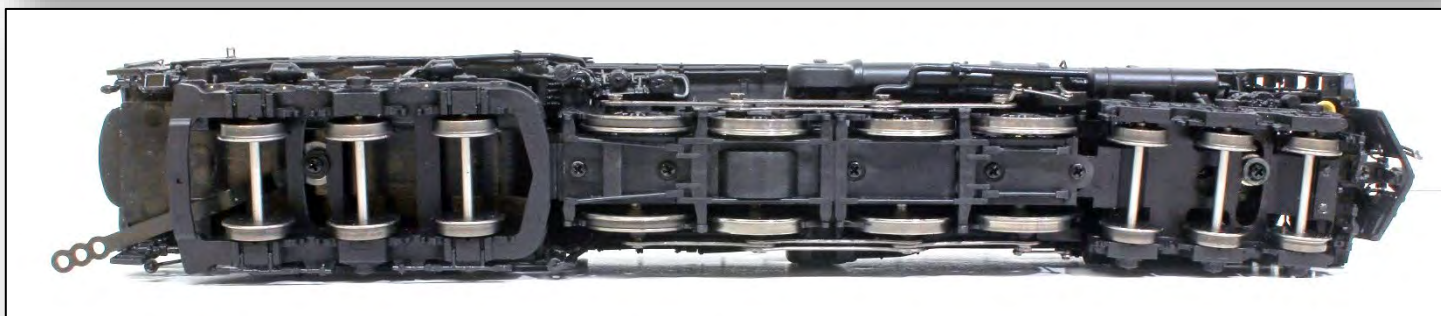




Images of the front and back of the locomotive and tender showing the details and connections. The details on the drop coupler are about the best I've ever seen on a model – and it's movable.







Underside of the tender and engine showing the underbody and brake details. Traction tires on the rear axle add to pulling power.

The cab interior has a number of details on the backhead with the gauge faces painted white. A painted engineman and fireman are in their seats. The cab windows are open as was typical during operation. There is a short fixed deck plate extending from the cab toward the tender. The interior of the cab is painted entirely black. That's not prototypical, but without a removable roof, it would not be easy to make a change.

The painting and lettering are well done. Most of the model is a nice rendition of PRR's dark green locomotive enamel. The smokebox is a dark graphite. The top of the tender cistern and the slope sheet are freight car color. The driving rods are a darkened steel color. The ends of the driving wheel axles are unpainted, but can easily be touched up. The lettering, cab window trim, builder's plates, and tender badge are printed in gold. The builder's plates accurately indicate this is a Baldwin-built locomotive. The border and numbers on the keystone number plate are printed gold on red. It would have been nice if the number plate could have some relief since these were castings on prototype locomotives. The safety valves on top of the boiler and the bell behind the pilot are brass-colored. The finish is so well done that I almost hate to weather it – but I will.

The tender is filled with coal, but the size of the chunks appears oversize to me.

#### LIGHTING

During the period when the prototype ran, the headlight would only be turned on when visibility was an issue – darkness or inclement weather. The model is equipped with a

working micro LED headlight on the locomotive and a back-up light on the tender. These are turned on by function key F0 in DCC and controlled by the direction of travel. Unfortunately, as with most of my BLI locomotive, the headlight is on by default when the locomotive is powered up, but without the typical turbo generator sound. It would be better if the light default was off.

The tender has red marker lights that are lit when the headlights are on. According to PRR rules, these should not be on unless the back of the tender was the end of a train at night. The marker lights on either side of the headlight are non-functioning. They have red jewels to the front and yellow jewels to the side. The marker design is unique to the S2. On the as-built and small smoke deflector models, the markers are accurately mounted on the smokebox above the handrails nearly even with the front of the stack. On the large deflector model, they are correctly mounted on brackets to the front of the smokebox.

There is a white micro LED cab light that comes on whenever the engine is stopped.

#### SOUND AND SMOKE

I was especially looking forward to how BLI would handle the sound of the S2. I was not aware of any recordings of how the prototype sounded in operation. In the book *Pennsy Power* (Al Staufer ©1962), Bert Pennypacker described the sound as a "loud swoosh-swoosh-swoosh sound" rather than the familiar chug-chug of reciprocating steam.

I asked Bruce Smith if he could shed some light on how BLI created the S2 turbine sound. He told me:



▼ Tender details showing the deck, hatches, and coal space.

*"We (BLI and the PRRT&HS Project team) could not identify any recordings of the S2 that could be useful. We were provided with a sound clip that claimed to be from the S2, but the hiss on the recording could just as easily have been from the recording equipment and not the locomotive! As a consequence, recordings of other turbines were obtained, with the primary issue being the identification of a direct-drive steam turbine. Fortunately, there is a video of a working Swedish direct-drive turbine on YouTube that was helpful. (<https://www.youtube.com/watch?v=Zsr-zUjcHeAs>)."*

*"From there, the sound was 'tuned' to fit the model."*

In the package, BLI included a separate sheet to explain how the sound and smoke function are different from typical steam locomotives. It describes the sound this way:

*"As the locomotive is powered by a steam turbine, there is no chuff sound. Rather than four chuffs per revolution, you will hear the steady sounds of a turbine whirring. By default, the model will sound like the turbine is spinning faster as you increase the speed of the model using your DCC controller or DC throttle. If you prefer, you can manually control the sound of the turbine by using the F5 and F6 keys on your DCC controller. F5 revs the turbine up faster with each press. F6 winds it back down. Once you've started using F5 and F6 to manually manipulate the sound, you will need to throttle back to 0 to restart the default automatic control."*

After watching the YouTube video Bruce shared, I have to give the final result high marks. When the model is idle, I hear the sound of the blower – a device used to supply draft to the fire when the steam engines are not moving – and the occasional sound of the cross compound air pumps. As the

throttle is advanced a louder blowing sound with a hint of a whine that rises in pitch and volume as the speed increases. When a stable speed is reached, the sound is constant.

The S2 includes all the standard Paragon 3 sounds controlled with function keys. They include bell, whistle, coupler clank, air pump, blow down, increase/decrease chuff magnitude, water fill, shovel coal, injector, brake set/release, brake squeal, grade crossing whistle, passenger sounds, freight sounds, track sounds, maintenance facility sounds, radio chatter, industrial sounds, and lumber mill sounds. Some DCC controller brands give you the ability to quill the whistle.

There are a variety of CVs you can set to vary the sound and adjust individual sound volume. Some of the "novelty" sounds are not appropriate for a high speed passenger locomotive, but you can disable them CV values.

with

The S2 features BLI's Paragon 3 decoder with "Rolling Thunder". In this system, a small short-range radio antenna on top of the decoder in the tender broadcasts bass sounds to a Rolling Thunder receiver (sold separately) that you position somewhere along the layout. This signal is then played through a sub-woofer placed under the layout. The volume increases as the locomotive approaches the receiver and diminished as it moves away.

The treble sounds are played through two speakers vented through holes in the underside of the tender. As in all earlier BLI locomotives, the speakers are not in enclosures. In my experience, this results in sound that is not as crisp as speakers so equipped. Based upon several of my own sound decoder installations, I think BLI could actually save some money and improve sound quality using one good speaker with an enclosure instead of two without.

When using the S2 with Rolling Thunder, I was not impressed. The main sound you hear out of the subwoofer is a bass blowing sound, comparable to the wind blowing in a microphone, which accompanies the turbine whirring from the tender speakers. Rolling Thunder is at its absolute best with Paragon 3-equipped diesels.





Three-quarter view of the front engineman's side of the locomotive.

The S2 is equipped with smoke as are other BLI steam locomotives (and a few diesels). The locomotive arrives with the smoke unit on. There is a slide switch on the underside of the firebox above the right front trailing truck wheel labeled ON or OFF if you want to disable the unit.

The S2 has four stacks, all of which exhaust smoke simultaneously. The smoke is emitted from a single opening below the center of the four stacks. This causes the smoke to leave each stack at an angle before drifting up. Refilling the smoke unit with mineral oil requires a syringe or the included plastic funnel be inserted in the central hole. I find it helps to blow a puff of air down the stack after filling to break up any bubbles that could prevent the smoke from escaping.

BLI describes the smoke function on the S2 as follows:

*"We have designed our model to produce smoke in sync with the sound effects. When you have the smoke unit turned on, the model produces a steady stream of smoke – no individual puffs as with most steam engines. The volume of smoke will be least at initial start-up, and the model will produce more smoke as the turbine sounds progress through the rev levels up to max. The smoke volume always follows the sound rev level regardless of whether the level is increased automatically, or you change it manually with F5 or F6."*

BLI lists five CV's that allow you to change the appearance of the smoke by setting minimum and maximum fan speeds and heat element temperature.

The shape and texture of prototype steam locomotive smoke is typically hazy and thin with a good fire or complex and textured if the locomotive is working hard. To my taste, model smoke units can't come close. I find the smoke on the S2 looks like that of four lit cigarettes held together. With the constant smoke, I imagine the S2 would go through more smoke fluid than an ordinary reciprocating locomotive. In addition, when the locomotive is not moving, the spinning of the smoke unit fan is audible. I intend to keep the smoke off.

#### A WINNER

Those of us who model the PRR in the transition era, particularly in HO-scale, never had it so good. There are more detailed, high quality steam and diesel locomotives available new (or lightly used on EBay) than ever before. Most of the steam engines are by BLI. We are fortunate that BLI is willing to work with our Modeling Committee to get it as right as current production methods and economics permit. The S2 is another winner in a long string. BLI has done an excellent job modeling a unique locomotive in three of its phases. Thanks to BLI, I have no idea what is going to happen to my significantly inaccurate Gem brass S2. With the BLI S2 in the house, I've lost the desire to bring the old model up to snuff.





Two images of the S2 pulling a passenger train on my soon-to-be-replaced Willsburgh Division layout.





# A Prototype-Based PRR Layout Built for Operation My PRR Shamokin Branch Layout

*By Chuck Cover – Photos and illustrations by the author*



Double headed ILSA locomotives rumble through Weigh Scales.

My model railroad is built in a 23' x 50' studio and is based on the Pennsylvania Railroad's Shamokin Branch and some of the main line along the Susquehanna River in central PA between Harrisburg (Enola yard) and Williamsport in 1957. The decision to model this area of the PRR was influenced by Clarence Weaver's movie "The Ore Train". The Shamokin Branch left the PRR main line at Sunbury, north of Harrisburg, and continued East through the valley following the Shamokin Creek to Mt. Carmel, PA where it interchanged with the Lehigh Valley Railroad (LVRR). I also model the LVRR's Hazelton Branch which leaves Mt. Carmel and goes east toward the steel mills and Allentown, PA.

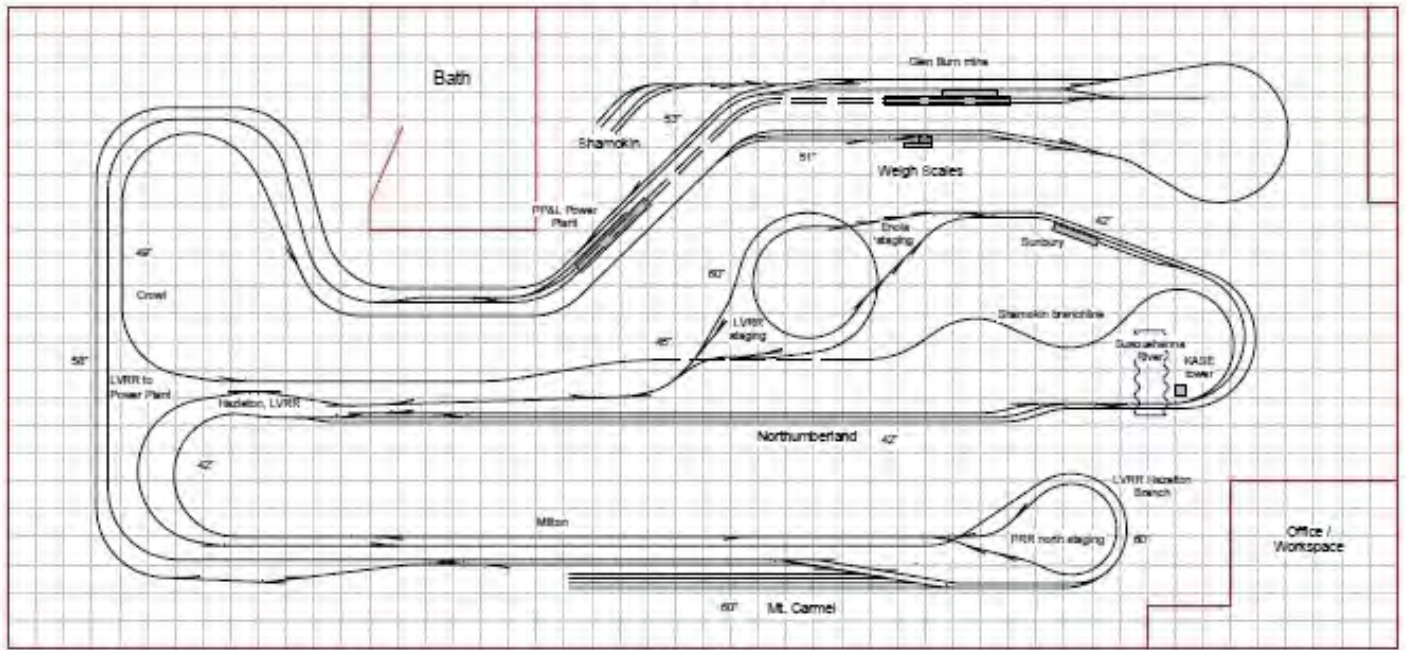
My goal is to build a prototypical layout that would be fun to operate and that I could share with friends. I have visited what is left of the Branch and have used photographs, track plans, structure diagrams, employee timetables, other prototype documents in planning the layout. Some photographs of the real railroad are displayed on the backdrop and I am attempting to copy these scenes and give the operators a feeling of central Pennsylvania in the mid-1950s. I am also planning to detail and accurately weather all locomotives and freight cars on the layout to represent the prototype. A number of buildings and rolling stock have been scratchbuilt.

In planning the layout, I had the following requirements:

- prototype scenes and structures
- built for operations
- linear design so the operator can follow the trains at all times
- trains only pass through each scene once
- point to point design with reverse loop staging yards at each end of the layout
- shelf type layout with all track within easy reach
- no hidden track and no duck-unders
- local switching opportunities
- locomotives and rolling stock detailed and numbered to reflect prototype and era

The layout has been described as a "walk-in island" design which is shaped like a warped "M" and is free standing. This design allowed me to make efficient use of my space and allows operators to walk completely around the perimeter of the layout. This type of design was necessary because of the doors and windows in the studio would not allow me to build bench work around the walls. This design also allows for close up viewing and maximum accessibility as everything is within easy reach for construction and maintenance which meets a number of my requirements that are listed above.

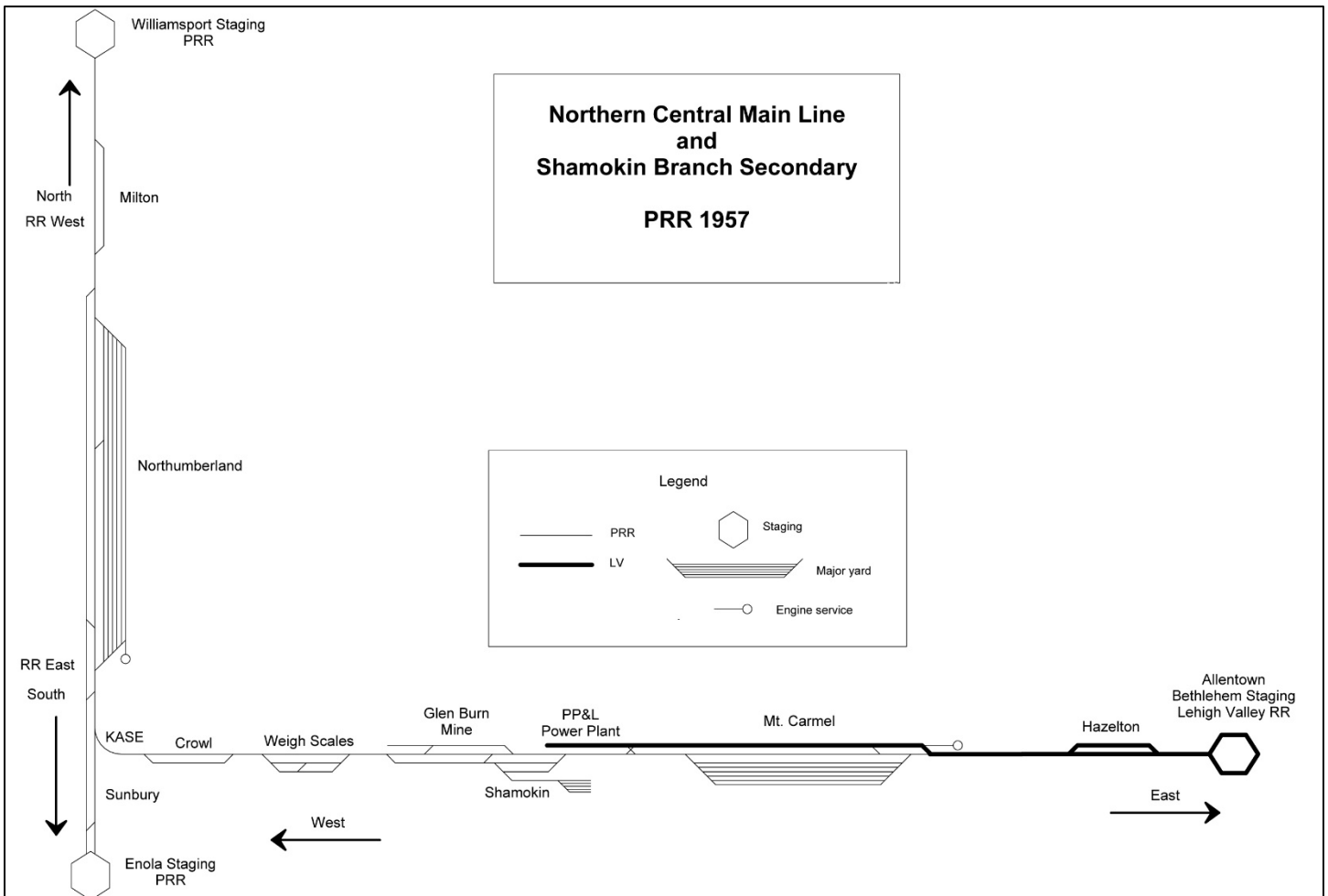
# PRR - Shamokin Branch Main & Branch Schematic



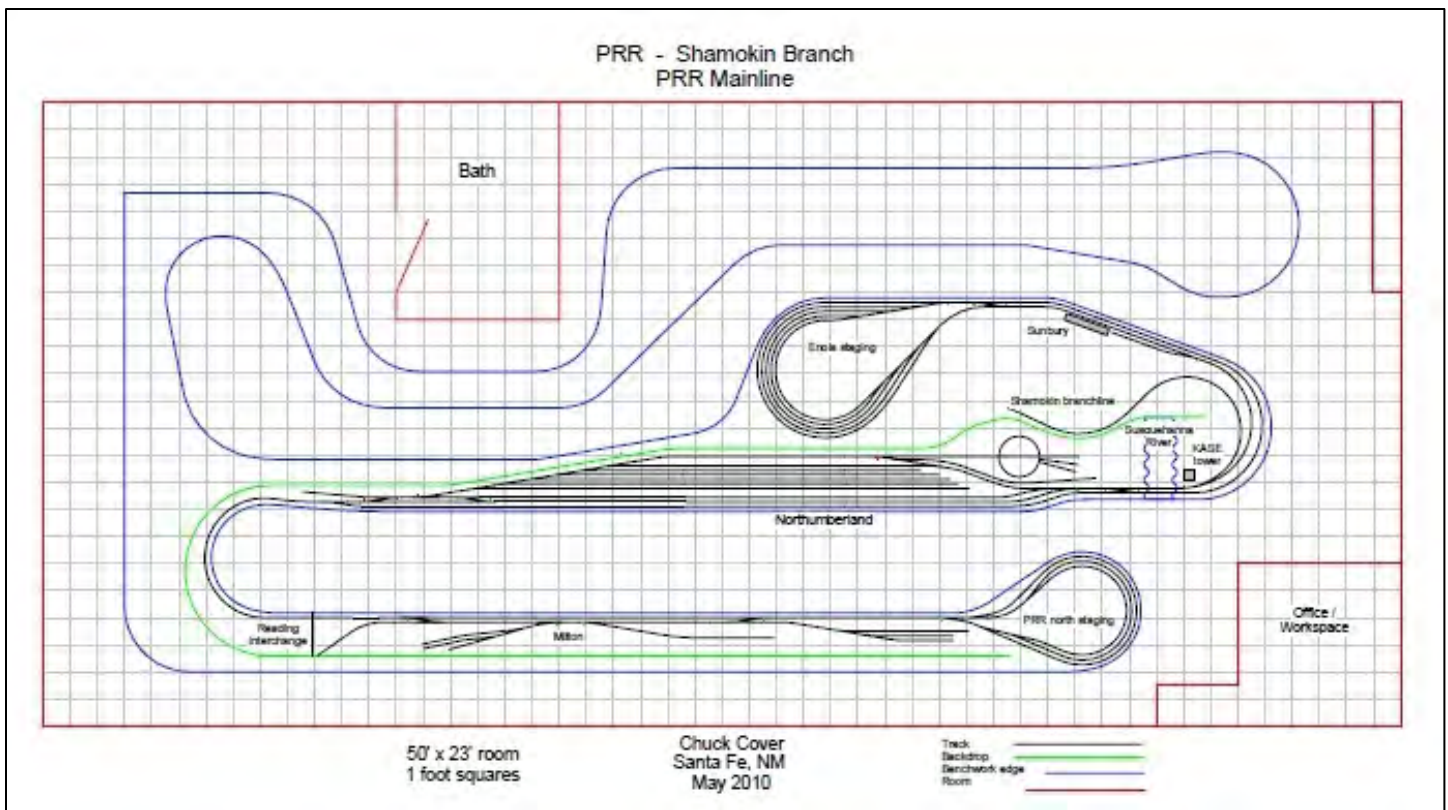
50' x 23' room  
1 foot squares

Chuck Cover  
Santa Fe, NM  
May 2010

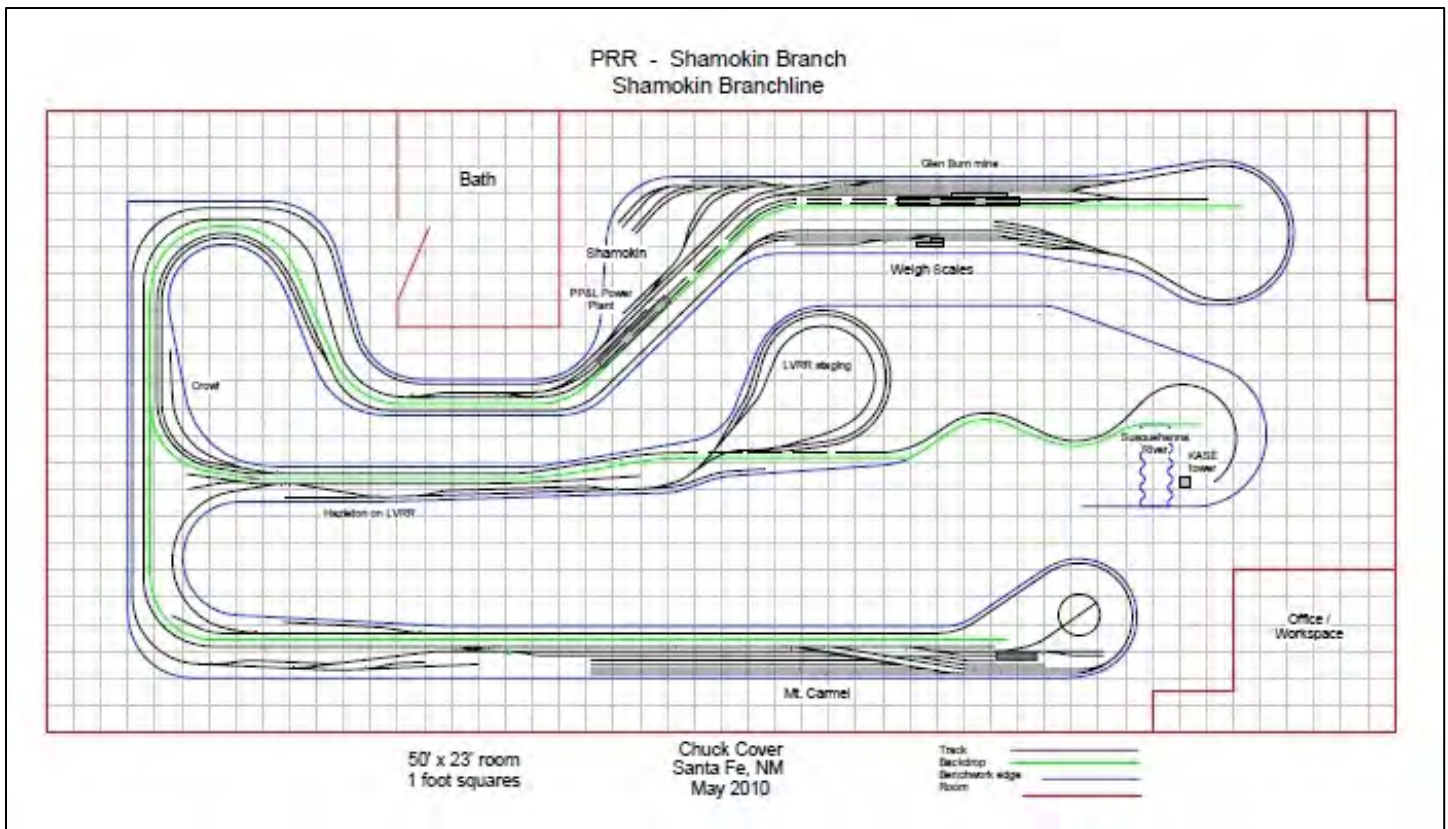
▲ Layout track plan. ▼ Line schematic for new operators.







▲ Lower Level, NC Main Line track plan. ▼ Upper Level, Branch Line track plan.



The main line, 42" above the floor, consists of a South staging yard (Enola), the town of Sunbury, KASE tower, the Susquehanna River bridge, Northumberland yard, the major industries in Milton and a North staging yard (Williamsport).

The main line is double tracked from Enola to Northumberland, then single track with a passing siding in Milton from Northumberland to Williamsport.



(Left) Operator working Milton on lower level. Lehigh Valley Hazleton Branch on upper level with operator working the Hazleton local in background. Notice the narrow shelf. Northumberland Yard behind Milton Local operator. (Right) Northumberland Yard, photo from 2007, before conversion to DCC.

The Shamokin Branch leaves the main line at KASE tower, 42" above the floor, and consists of the horn track going through Sunbury, Cowl, including the General Store, Weigh Scales, the Glen Burn Colliery, Shamokin and Mt. Carmel (60" above the floor) with the interchange with the LVRR. The branch line is single tracked with passing sidings at Cowl, Weigh Scales, Glen Burn and Shamokin. I used the 1945 CT 1000E and prototype track drawings as references to locate industries, passing sidings, design of Shamokin and location of the block limit stations/telephones along the branch line. The grade on the Branch is 1 percent from KASE to Shamokin and 2 percent between Shamokin and Mt. Carmel to reflect the steeper prototype grade as the branch terminates in Mt. Carmel. The grades are between towns, the towns and passing sidings are flat to allow for switching opportunities. The branch models about 4.5 scale miles of the 28 mile Shamokin Branch.

The LVRR portion includes the shared Mt. Carmel Station, the industries in Hazleton and the LVRR staging (Allentown). This portion of the layout is 60" above the floor on a narrow shelf that leaves Mt. Carmel and runs above Milton to the very north end of Northumberland, terminating in Allentown staging which is above the Enola staging. This is the only portion of the layout that is double decked. The narrow upper shelf does not block the view of the lower level. The towns of Milton, Hazleton and Northumberland are spaced along a single aisle so that operators can work without interfering with one another.

The bench work is L-girder with ½" plywood and ½" Homasote® overlying the girders. If I had to do it again, I would use a higher quality ¾" plywood as a base for the Homasote to avoid some slight warping. I did not have a standard minimum radius, however, most of the layout has 30" radius curves. There are several spots that are reduced to 26" radius, however, the BLI I1SA have no problems navigating those spots. The harder to reach turnouts and those

for the yard ladders are electrically controlled with rotary relays taken from WWII bombers and controlled with home-made power sources. I started building the layout using a DC block system. Once the DCC companies developed reliable wireless systems, and the locomotive decoders began to provide decent sound, I converted to DCC. I use the NCE Power Pro 5-amp radio system to operate the layout. I use all wireless throttles and all locomotives are sound equipped. The layout is broken up into 7 circuit breaker managed power districts and also has two reverse loop controllers/circuit breakers that manage the 3 reverse loop-staging yards and the two turntables.

In planning a layout for operations there are many things to consider in addition to the area modeled. There must be enough traffic to keep operators busy for a full session. I needed to model some of the Northern Central main line to provide freight cars that could be routed to the branch. The five-track staging in Enola (south staging) and three-track staging in Williamsport (north staging) allow for a constant flow of trains to Northumberland yard. In Northumberland, trains are classified into blocks for future trains headed northbound or southbound, for the Milton Local, or up the branch to local industries and the Mt. Carmel yard. The three-track Lehigh Valley staging provides freight traffic from the east (Allentown) to Mt. Carmel yard. Most of this traffic is sent down the branch to local industries and eventually to Northumberland. Since Mt. Carmel is the interchange between the two railroads, crew changes are made on all trains. The three staging yards are reverse loop staging for easy set up for next op session. Once a train goes into staging it remains there until the next session. There is no restaging of the layout between sessions. Another important feature of the staging yards is that they are open so the operators can see their trains. I have found by operating on other layouts that hidden staging is often a problem.





(Left) Northumberland Yard, photo from 2015. Card boxes for train classification are on the fascia. (Right) Northumberland Coaling Facility. (Below) Helpers are stopping at Crowl for lunch and to OS the dispatcher.



The timetable and train order operating sessions are held monthly and last approximately 3 hours. All trains on the branch are run as extras. There is a dispatcher who controls the traffic flow on the branch via verbal train orders using a telephone system and block limit signals that are located at each town along the branch.

There is a computerized car card/waybill system (car routing system) that was developed by my wife. Each freight car has a card with a sequence of 14 destinations. Along with the layout design, this car card system allows for a quick turn-

around time between operating sessions. There is no need to go around the layout and turn car cards or to place the cards into other fascia boxes (e.g. set-out box to hold box) to get ready for the next session. The next destination for a car will be the next location listed on the card.

Constructing a prototype based layout has been fun. I have enjoyed researching the PRR in this area and learning more about prototypical operation. There is still work to do and more to learn. If you want more information on the layout, go to: [www.chuck-cover.net](http://www.chuck-cover.net).





▲ Merchandise train heading east through Weigh Scales as an RS11 works the industries.



▲ Glen Burn Mine.



◀ H10s working the Freight House in Shamokin.

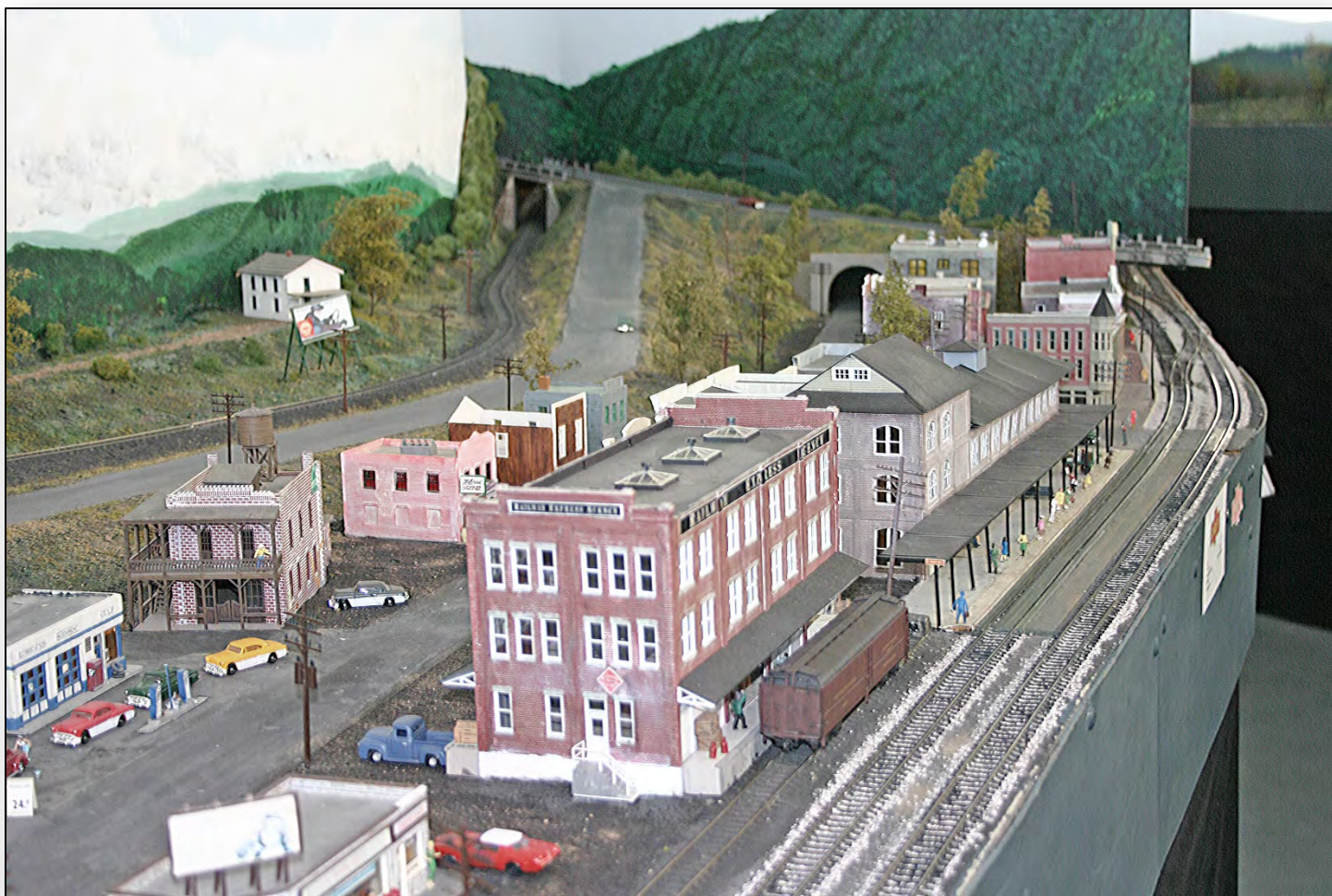




▲ Coal and ash hoists at engine facilities in Shamokin. ▼ PP&L on the east side of Shamokin.







▲ Looking south at Sunbury with the REA building and station in the foreground. Enola (south staging) begins after the tracks go under the bridge and behind the backdrop.

◀ Block Limit Signal (BLS) in Wiegh Scales. Operators are required to OS the dispatcher at all BLS on the Branch.



► PRR south staging on lower level with Lehigh Valley staging (Allentown) above. Note that both reverse loop staging yards are open and visible to the operators. Card boxes for train consists are on the fascia.





# Scratchbuilding a PRR Class FD Gun and Cable Flat Car

By David J. Vinci – Photos by the author unless noted



The completed car in service.

If you have been following this series of articles, you know that I like early Pennsy rolling stock. In the spring, 2015 issue of *TKM*, we built a class FI gun and cable flat from 1897. This time we're going to travel back 9 years earlier and build a class FD gun and cable flat from 1888. What makes this car interesting and fun for me is that it has four, 5'-wheelbase, arch-bar trucks, and its capacity was changed from 100,000 pounds in 1888 to 120,000 pounds (60 ton) capacity in 1896. Not bad for a time when most freight cars had a capacity of 25 or 30 tons.

I checked the 1919 and 1925 Official Railway Equipment Register (ORER) to see if there were any still around by the 1920s. In 1919 there were four cars (#425485 to 425488) listed on Lines East and two (#925001, 925002) on Lines West. In 1925, I found one (#425485) on Lines East and one (#925001) on Lines West. I don't know if there were ever more than six of this class. Since I model the 1920s, I chose to model Car No. 425485. I tried to find an original drawing to work from but to no avail. Figure 1 shows what we had to start with.

And along with this drawing was this tiny photo (see Figure 2). I did a lot of squinting to see the details of the car and did the best I could. For example, I'm not sure if there are any vertical ribs on the side sills or not so I didn't model any. I wish we could see the decking but I just guessed that it was wood. Not much to go on, but here we go.

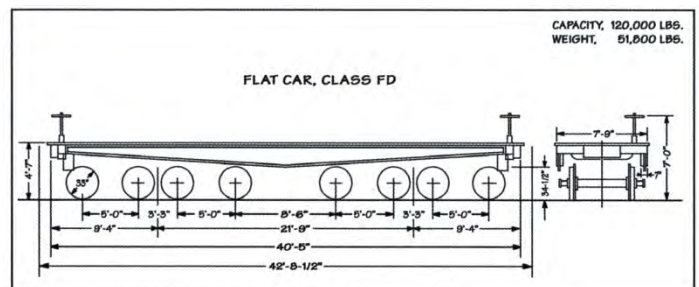


Figure 1. (Digitally redrawn by Chuck Blardone, July 2008)

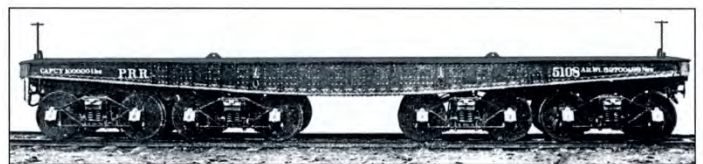


Figure 2. (PRRT&HS Archives)

The ORER had the car dimensions listed as 39 feet over the end sills in length, and the drawing above shows the same dimension as 40'-5", a small discrepancy I guess.

The first step for me was to prepare a scale drawing from which I could build the model. See Figure 3.

The first problem to be solved was how to weight this car. I finally decided to use just a bit of modeler's license and



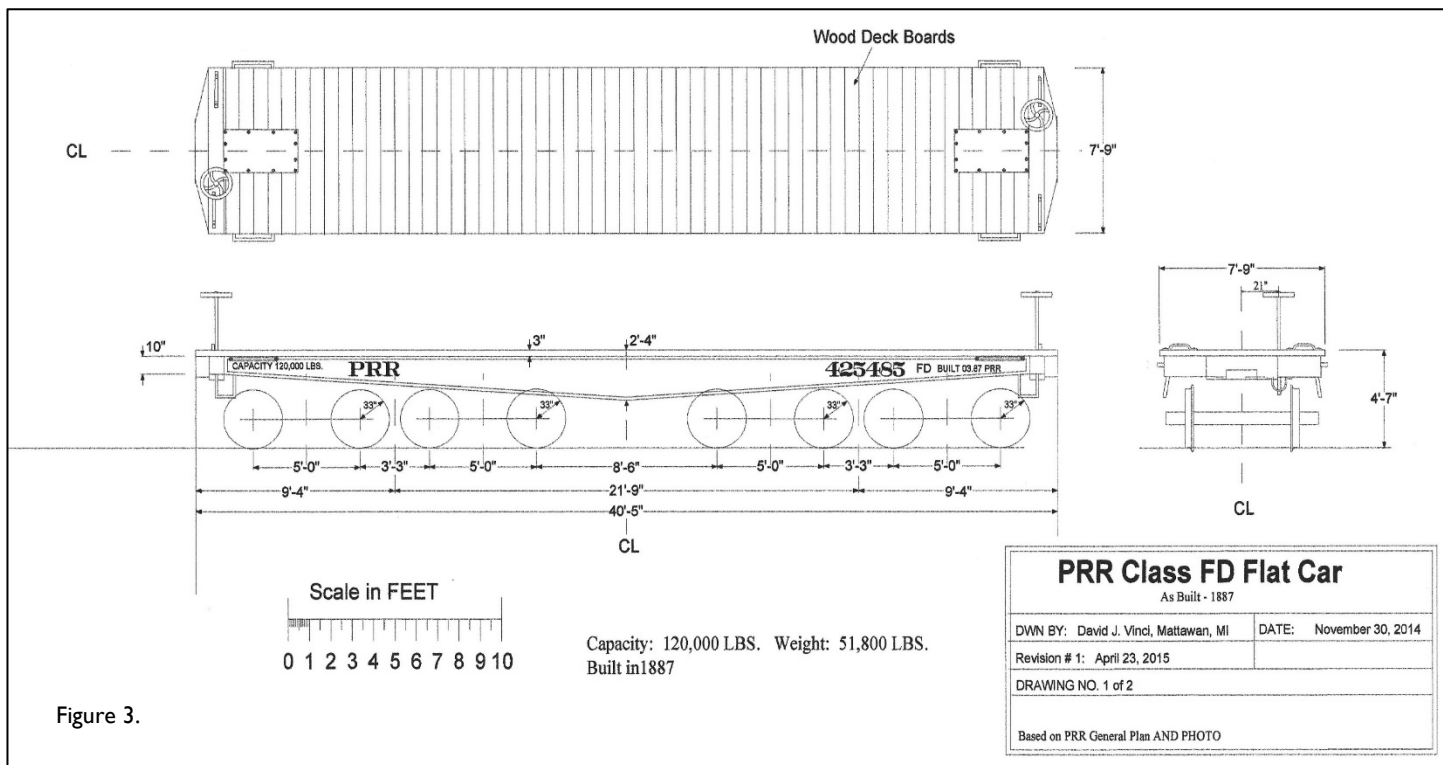


Figure 3.

fudged the car width by about 6". And how did this come to be? Well, I had a spare Accurail metal weight they use in their box car kits, and I found if I trimmed about 1/8" off one end, I could build the car body around it and only end up with a car 6" too wide. I felt I could live with that. I made the side sills from 0.040" styrene and used some 0.030" x 0.125" styrene strip to close the ends. I made the end sills from pieces of 0.125" square strip that I shaped according to the drawing. (See Figure 4).

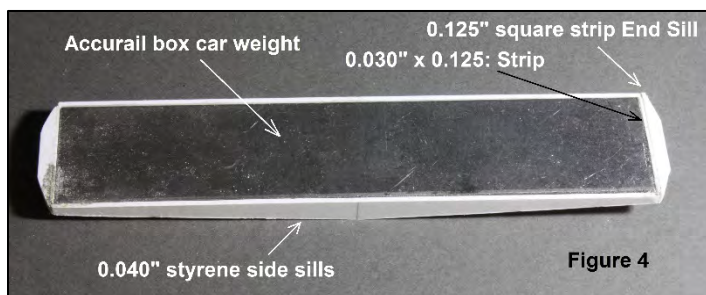


Figure 4

Next I cut a piece of 0.020" thick 0.060" V-groove siding for the top and cemented it in place. I then cut a piece of 0.030" sheet styrene to fit below the weight and between the side and end sills. This serves to completely encase the weight and gives us a surface to cement the truck bolster supports to.

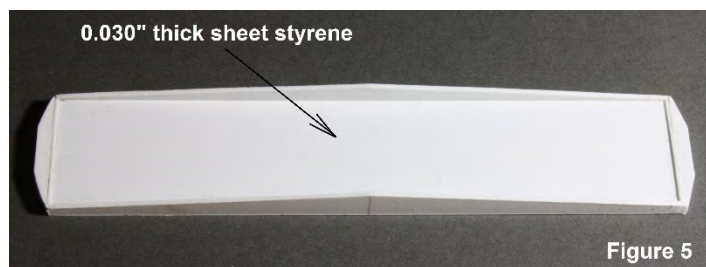


Figure 5

At this point I made the truck bolsters. Each bolster will have 2 trucks attached by 2-56 screws. The bolster will then be attached to the car floor by another 2-56 screw. Figure 6 shown on the next page has the details of the car construction and should make them clearer than the text.

The truck bolsters are made from 0.040" plastic. First make twelve (12) 2' x 2' squares from the 0.040" plastic. Then cement 3 of them into a pile. Drill and tap this for a 2-56 screw. Then cement this to one end of a strip of 0.040" plastic that is a scale 2' wide by 11' long. Repeat this to make a pile for the other end of the strip. Then cement 2 pieces of 0.030" x 0.100" along each edge between the piles of squares. See the drawing in the lower left corner of Figure 6. Then make another one of these for the other two trucks.

I wish I could have found an original drawing for this car to see how the trucks were actually mounted, but I used the method I did to permit the best possible operating characteristics.

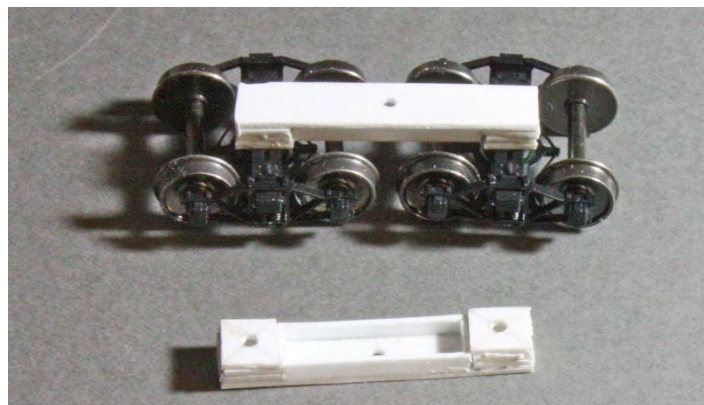


Figure 7.



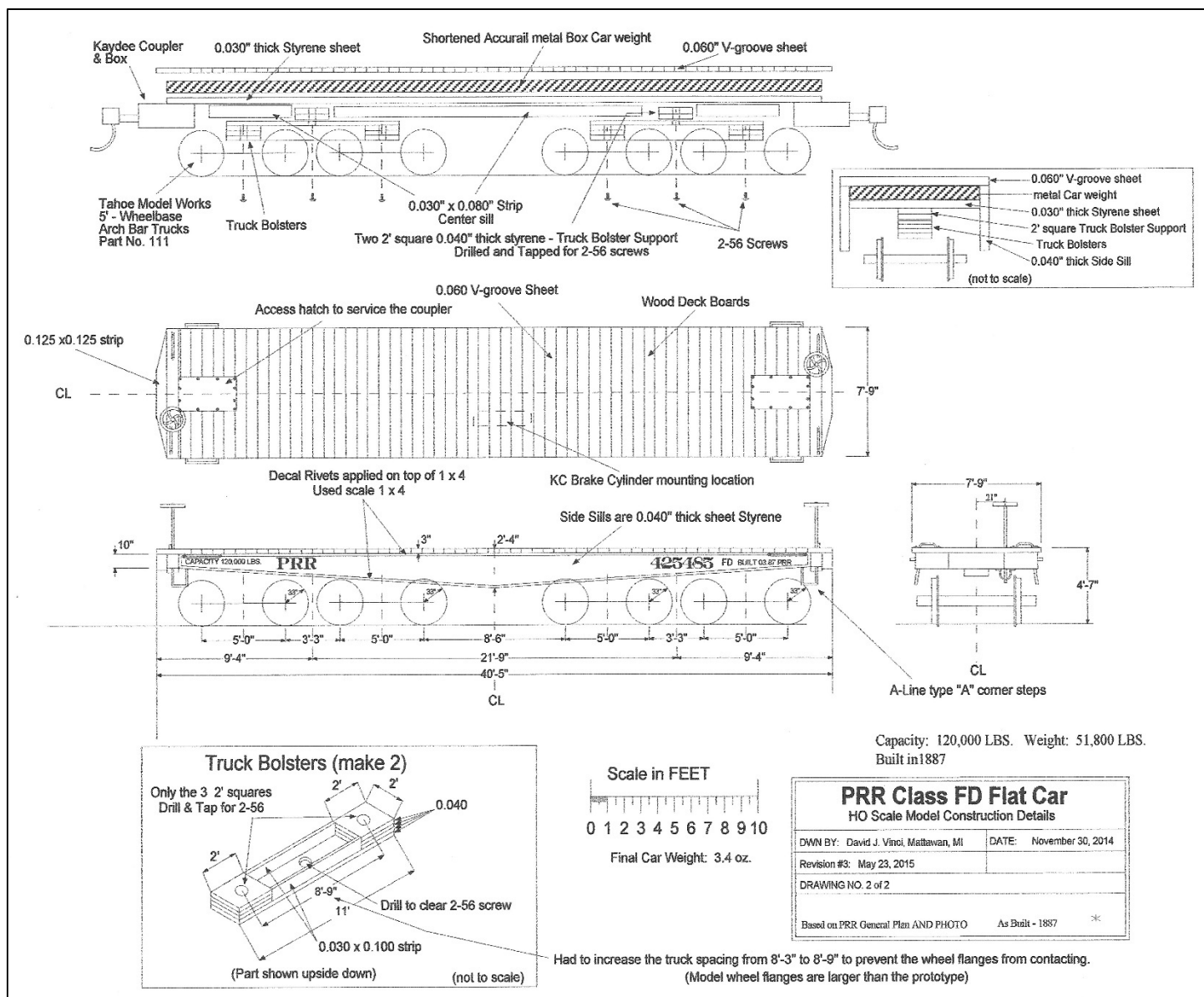
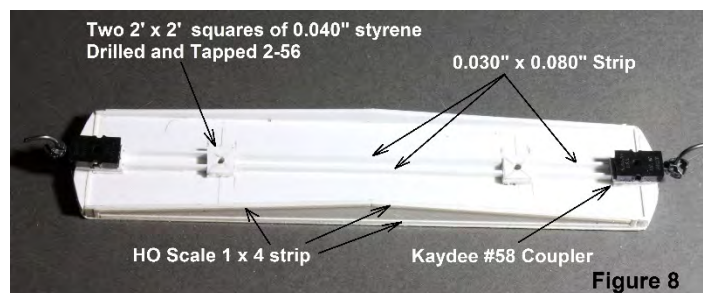


Figure 6.

Figure 7 shows the 2 completed truck bolsters, one of which has two of the Tahoe Model Works 5' wheelbase Arch-bar trucks (part #111) attached. The other truck bolster is shown upside down. Note that there is a hole drilled in the center of the bolster for a screw that will attach it to the car body. This hole should allow a 2-56 screw to pass through with no restriction so that the bolster may pivot freely.

Make 4 more of the 2' square x 0.040" styrene pieces and cement them in stacks of two. Drill and Tap these for 2-56 screws as before. Then cement them in place on the car bottom. Assemble both of the truck bolsters with the trucks and then attach them to the car body. Then, using a coupler gauge, determine how many shims to place between the coupler box and the car floor.

I made mine in the following way: one shim of 0.020" to make the car floor level with the end sill, then a 0.040" shim and a 0.010" shim to make the coupler height match the Kadee



coupler gauge. How you mount the couplers is up to you. I just glued the coupler box to the car floor, but you could use a small screw to make removal for servicing and or repair easier.

Next, cement some scale 1" x 4" around the edge of the side sill as shown on the drawings. I added some decal rivets on top of the 1" x 4". This is so much easier than any other method I've ever tried for adding rivets to a model. These are available from Archer, Micro Mark and others and are really

easy to use. The basic procedure is to cut the rivets in strips. Then brush some Walthers Solvaset onto the surface to which the rivets will be applied. Soak the rivet strip in water for about a minute then slide the decal just a tiny bit so you can place that end on the model. Then, hold that rivet in place and pull the paper backing away allowing the rivet strip to slide from the paper and onto the surface. The instructions that come with the decals are excellent, so just follow them. Once the rivets are in place add some more Solvaset to make the film disappear. Wait until they are completely dry before adding more solvent. Once you are satisfied, just paint the model as you normally would.

I added the corner steps and the grab irons and secured them in place with a drop of CA cement. Then I painted the car and added the side sill grab irons, brake wheels and the cut levers last, all held in place with some CA applied with a pin. After those final parts were installed I just touched up the paint.

For the paint, I brushed on my old standby, Poly S Oxide Red with some Reefer Orange added. The truck wheels were painted with rail brown on the axles and the wheel backs and then used grimy black for the face. I gave the truck frames a touch of freight car color, and put a touch of rust on the truck springs.

Next, I used some Westerfield decals and a few odds and ends from the decal inventory to make up the simple lettering for this car. Figure 9 below shows the painted and lettered car and you can just make out the rivets on the side sills. I didn't add much in the way of underbody brake details to this car but there is some room for them between the trucks.

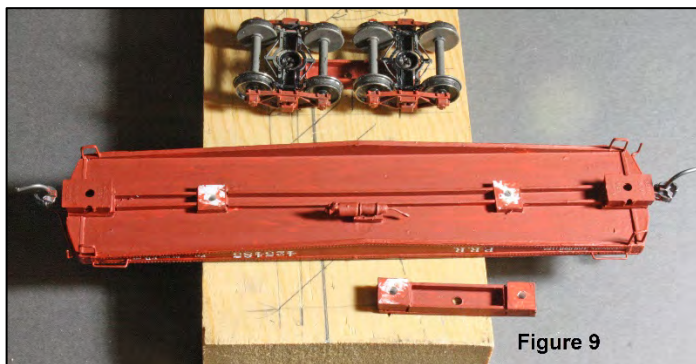


Figure 9

However, there isn't a lot of clearance between the truck bolsters and the floor, so I left out the underbody detail to ensure the car operates well; and it does.

The deck is plastic painted to look like wood, which I did by painting it with reefer grey and then streaking it with some rail brown. Once that was dry, I gave it a wash with India ink in alcohol. When that was dry, I did a light dry brush of grey on the car to highlight some of the details, (the rivets, for example), and then I added some weathering powders. I sealed the lettering and weathering up with a spray of Dull Coat.

The first photo shows the completed car in service. This is a unique car for sure, and it's all ready to haul some navel gun barrels or other heavy castings.

## Parts List

<b>Evergreen Styrene</b>	0.040" thick sheet styrene
	0.030" thick sheet styrene
	0.020" thick V-grove siding 0.060" spacing
	0.030" x 0.080" strip
	0.030" x 0.100" strip
	0.125" x 0.125" strip
	HO-scale 1" x 4"
<b>Tichy</b>	#3005 KC brake gear (optional)
	Brake wheels
	Plastic eye bolts (for the cut levers)
<b>A-Line</b>	#29000 stirrups – style A
<b>Kadee</b>	No. 58 couplers and coupler boxes
<b>Archer or Micro Mark</b>	HO scale rivets on decal film
<b>Westerfield</b>	#1302 decals
<b>Cal-Scale</b>	Plastic air brake hoses
<b>Tahoe Model Works</b>	#TW 111 5'-wheelbase arch-bar trucks
<b>Miscellaneous</b>	0.015" steel wire (grab irons, cut levers, and brake wheel staff)
	2-56 screws
	Nut, bolt, and washer castings (optional for the access plate)





# 2016 Annual Meeting Models – 1

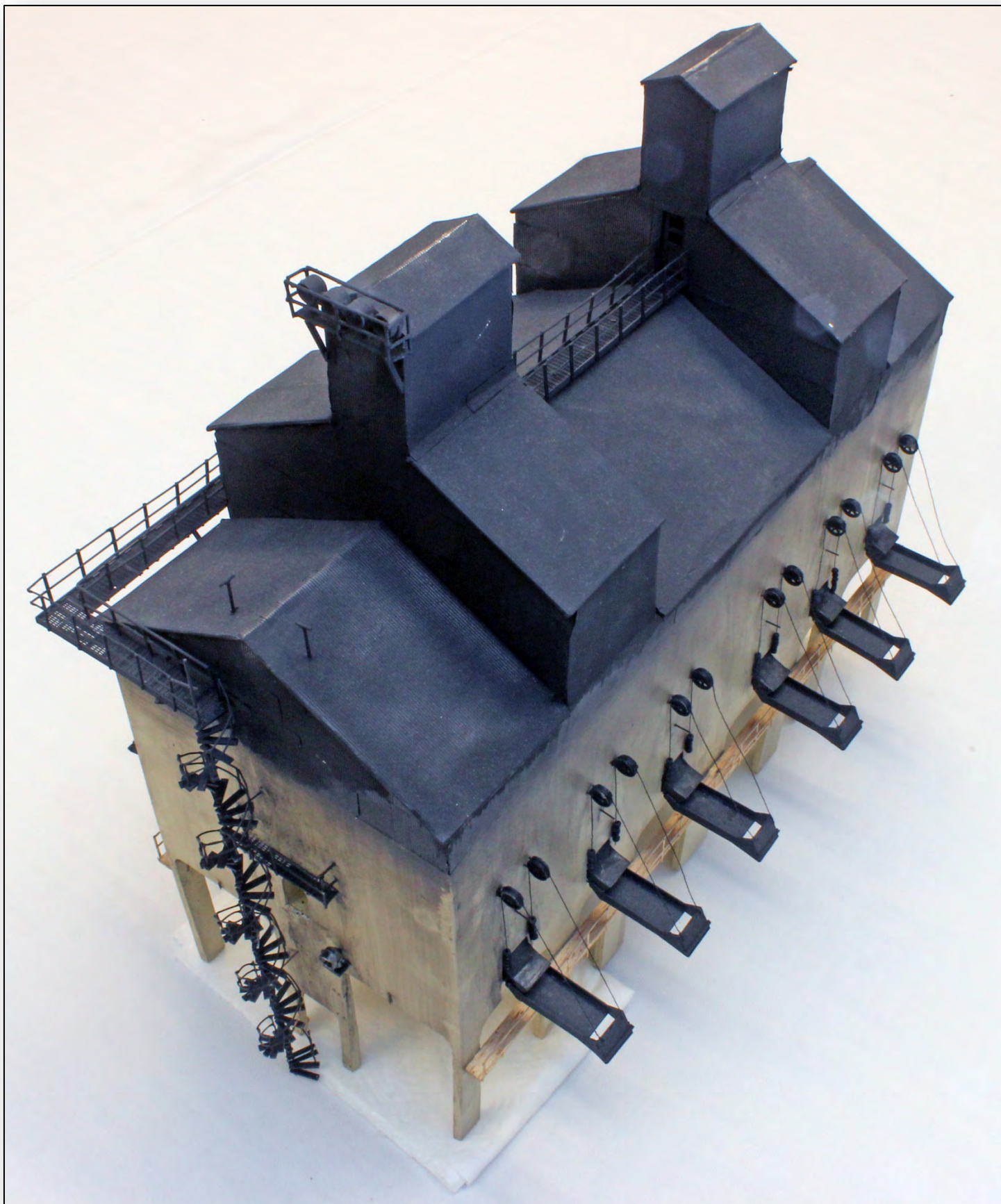
*The TKM Staff*

The quantity of models displayed at the annual meeting in Camp Hill, Pa. this year may have seemed less than usual, but the quality was high. Here are the first of them.



Mike Crosby won Best in Show for his diorama of the Fort Wayne, Ind. Winter Street Coal Dock circa 1930-1940. He originally built the coal dock in 2000-2001. Since then, he added two water spouts, sand bin, drying house, switch tender's house, telephone poles, and EZ Line wires. It's a mix of scratch and kitbashed structures.





Dave Wilson was awarded the Bob Yagodich Award by the Modeling Committee for his Pitcairn Coaling Tower, circa 1948. The scratchbuilt spiral staircase on the scratchbuilt structure is the most impressive feature on a very impressive project.



Josh Surkosky constructed this 3D-printed PRR tool shed in N-scale. The windows are etched brass.



Doug Nelson kitbashed this N-scale diorama of Sherman's Creek Bridge in Duncannon, Pa. as it appeared in the 1950's. He started with Atlas stone arch bridge kits. He added rock texture with matte medium gel. He painted and weathered the stone and added mortar. The water is acrylic gloss medium. A photo backdrop of the actual location finishes the scene.





▲ Lou Whitely displayed this under construction model of “WAWA” interlocking. The work done so far is amazing. The interlocking is manual with complex switch rodding. We’re sure the catenary will be impressive when Lou finishes his project.

▼ Doug Nelson displayed his N-scale FM flatcars modified for DDI container service on a small diorama. The flats are modified Red Caboose models. The containers are 3D printed by Shapeways from Keith Thompson’s plans. The truck is a 1933 Mack resin kit. The trailers are scratch and the crane is kitbashed from a Bachmann signal bridge.







Mike Crosby modeled the former PRR Ft. Wayne Division main line east of Ada, Ohio in present day with out-of-service signals. The track is handlaid with a variety of kit and scratch components in the scene.



Doug Nelson assembled this collection of N-scale N5 and N5b cabin cars circa 1946-1953. They are kitbashed and detailed from Bowser N5 cars. Doug added grab irons, smoke jacks, and Trainphone antennas. Five different schemes are shown along with one car in progress.



Jonathan "Rick" Glas displayed this scratchbuilt HO-scale NC cabin car. He added MV lenses, Precision Scale steps, Grandt Line pedestals with journal box lids, grab irons, and a Tichy K-brake set. The mud guards on the railings are an interesting touch.

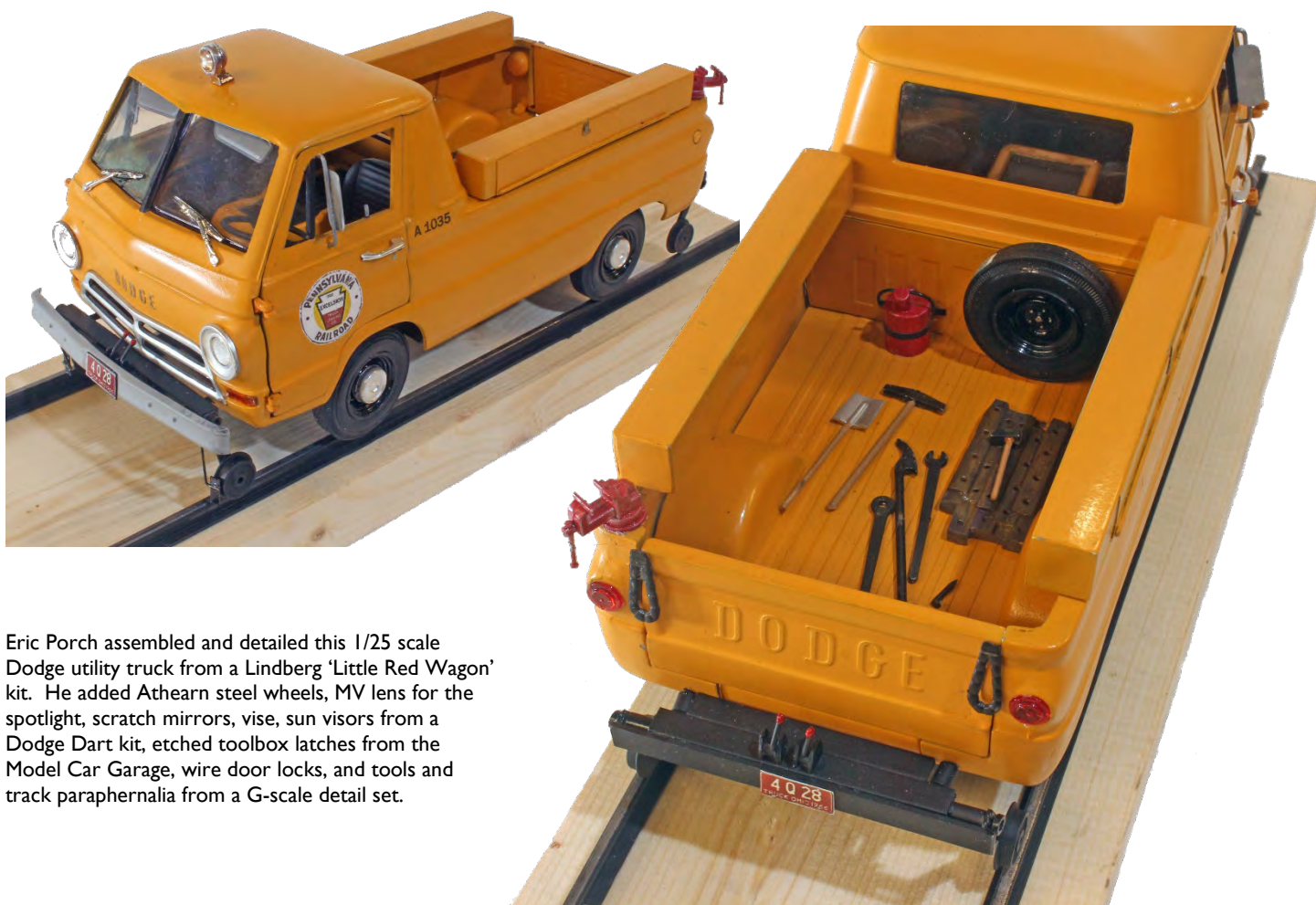


John Sethian brought this O-scale N5 crew express cabin car (right) kitbashed from a Lionel N5b 3-rail model (left). He stripped the original car, removed cast-on details, added 143 scratch and commercial brass parts, and installed full-length collision posts. He used microscope slide cover slips for window glass. He added a wood roof walk and end platform, brake hose bracket, end platform brake handle, and conduits on end walls. The cut lever and chain actuating the cut lever from the platforms are fully functional.





Matthew Hurst brought a collection of PRR cabin cars including ND, N5, N5b, N5c, and N6b as they looked in 1946-1947. They are a mix of kit-bashed and ready-to-run models by Bowser, Rail Classics, Funaro & Camerlengo, and Quality Craft. In general, Matthew added wire grabs, Tichy AB brake gear, modified/corrected cupola windows, marker lights, new paint and decals. Trainphone equipment is upgraded Cal-Scale parts.



Eric Porch assembled and detailed this 1/25 scale Dodge utility truck from a Lindberg 'Little Red Wagon' kit. He added Athearn steel wheels, MV lens for the spotlight, scratch mirrors, visor, sun visors from a Dodge Dart kit, etched toolbox latches from the Model Car Garage, wire door locks, and tools and track paraphernalia from a G-scale detail set.





David Wilson built a three-car Pitcairn work train from Westerfield XL camp car kits. Weathering is coming up.



◀ Neil Campbell built this X29D from a Funaro and Camerlengo kit with Branchline end and side details, Kadee roofwalk, Kadee couplers, Bowser trucks, and Kadee wheelsets. He used Scalecoat 2 PRR freight car color with a touch of IC orange. Mount Vernon Shops decals, powders, and washes finished up the car.

► Neil also built this model of an X29B in HO from another F&C resin kit with Kadee trucks and roofwalk and Branchline side and end details. Scalecoat 2 and Mt. Vernon Shops decals decorate the car.

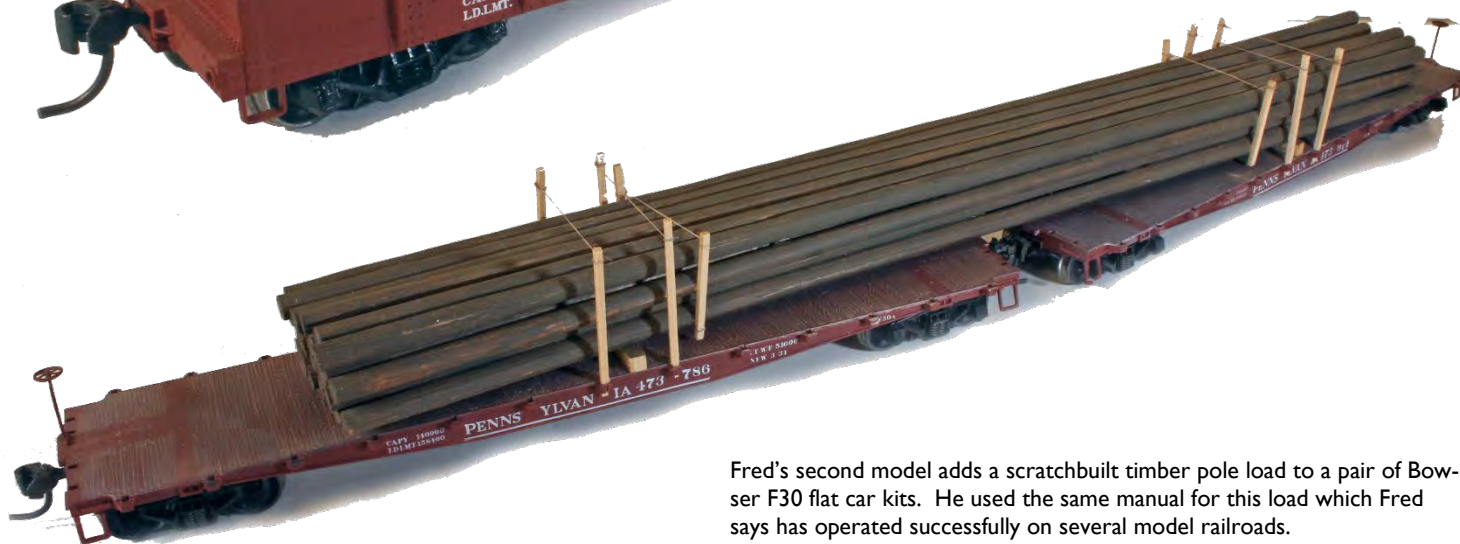
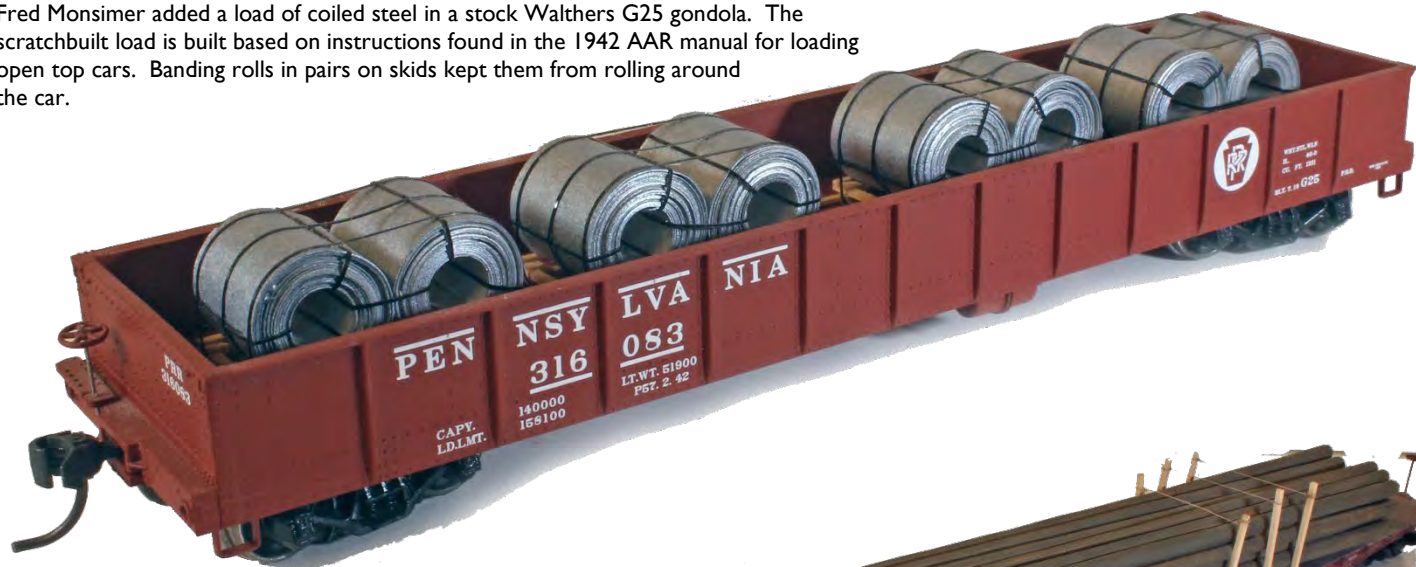






Neil Campbell put a nice pipe load in this F&C G29 gondola kit with Kadee trucks added. The pipes are glow stick wrappers on a plastic base and supports. He used Scalecoat 2 paint and Mount Vernon Shops decals.

Fred Monsimer added a load of coiled steel in a stock Walther's G25 gondola. The scratchbuilt load is built based on instructions found in the 1942 AAR manual for loading open top cars. Banding rolls in pairs on skids kept them from rolling around the car.



Fred's second model adds a scratchbuilt timber pole load to a pair of Bowser F30 flat car kits. He used the same manual for this load which Fred says has operated successfully on several model railroads.





Rick Glas scratchbuilt this circa 1900 Rb reefer from Evergreen styrene in HO scale. It includes Kadee #503 scale couplers, #533 wheels; Tahoe M.W. 5' wheelbase trucks; Tichy K-brakes, queen posts, turnbuckles, and hinges; Cal-Scale U-bolts; Precision Scale brake wheels; Grandt Line nut, bolt, washer castings; and A-Line style-A stirrup steps. Rick used Poly Scale paint and Westerfield decals.

Rick used similar methods on this scratchbuilt KE stock car with feed hatches from the 1900's.







Here are three more scratchbuilt circa 1900 HO-scale wood cars by Rick Glas. On top is a GI "Long Gondola" made of Northeastern scale wood and Evergreen styrene. In the middle is a GN drop bottom gondola made from the same materials. The XE Empire Line box car features working doors.







Claus Schlund kitbashed these four GLA hoppers as they appeared in the late 1920's. He replaced the trucks, added custom paint on some, and added coal loads made from crushed bar-b-que charcoal.

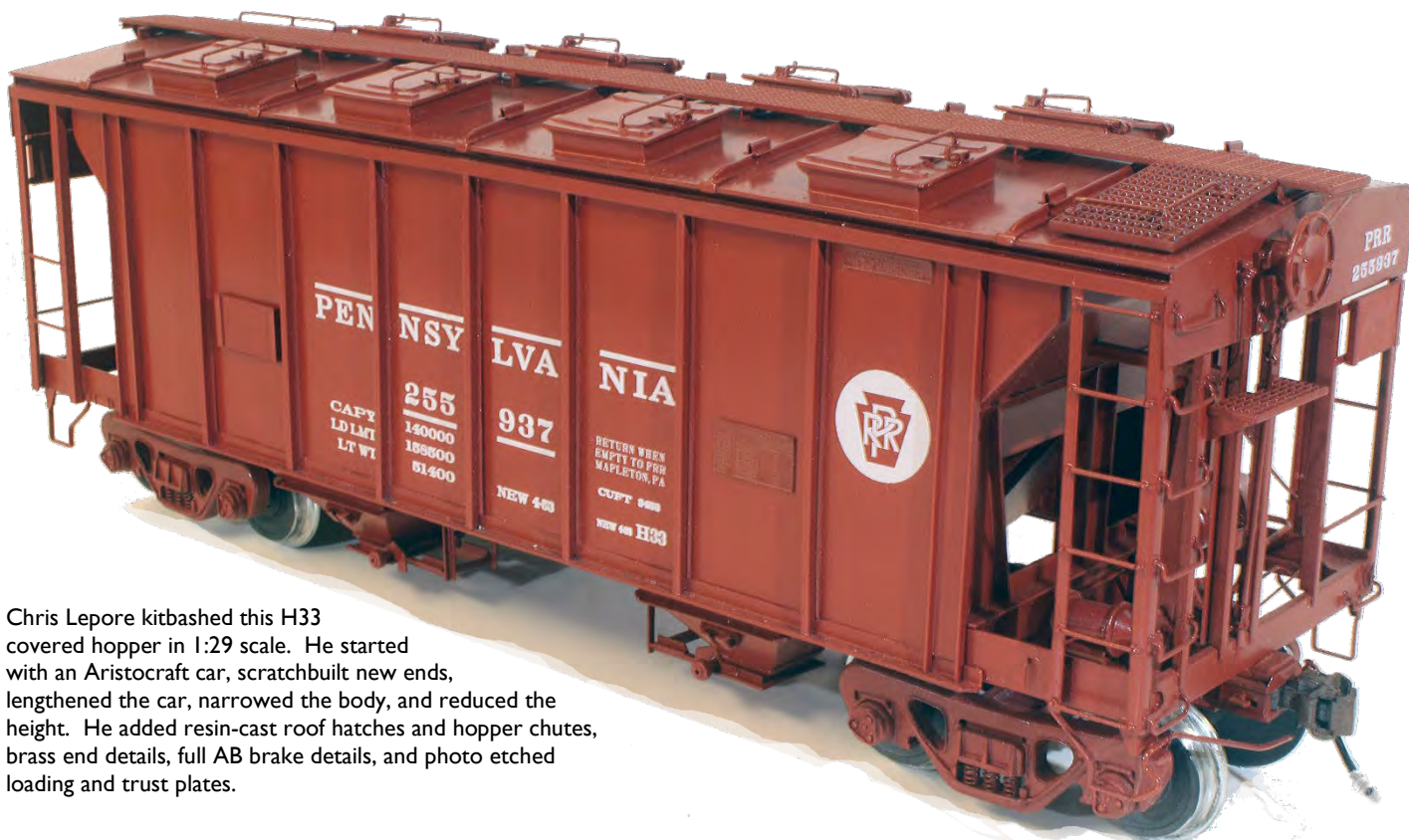


Josh Surkosky created this service-wear H21A hopper from a Bowser model to match an actual prototype. He lowered the car by filing the bolsters and adding metal wheels. He finished the model with MTL 2004 couplers and real coal.

Josh also built this 3-D printed F23 heavy-duty flat from a design by member Keith Thompson. Josh replaced the printed rivets with Archer transfers, added grab irons, stirrup steps, and a brake wheel.







Chris Lepore kitbashed this H33 covered hopper in 1:29 scale. He started with an Aristocraft car, scratchbuilt new ends, lengthened the car, narrowed the body, and reduced the height. He added resin-cast roof hatches and hopper chutes, brass end details, full AB brake details, and photo etched loading and trust plates.



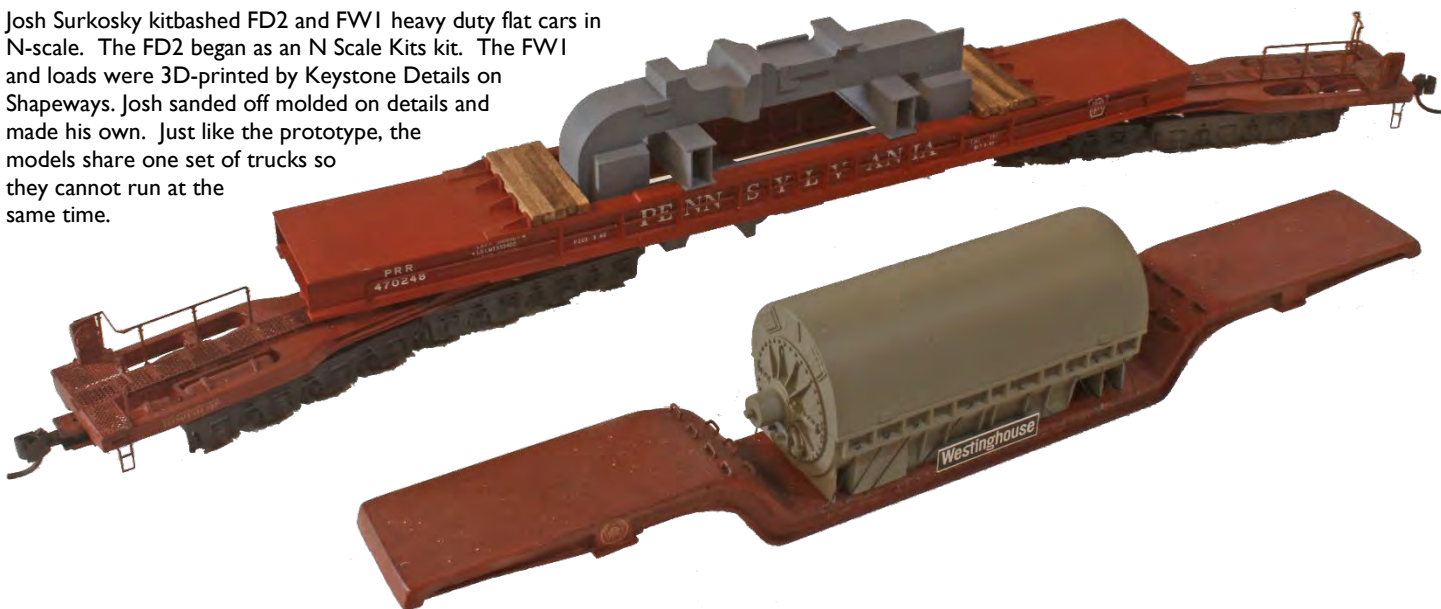
Chris built this FM flat car with DDI containers in 1:29 scale from a GAL Line kit. He lengthened the car 6 scale inches. The container brackets are 3D-printed by Doug's G-Scale Details and Shapeways. Chris used Tichy rivets on the car. He added cut levers, rivets on the containers, and hasp and lock details. He painted the car with Scale-coat II oxide red and finished with Mount Vernon Shops and Stan Cedarleaf decals.

Josh Surkosky kitbashed an N-scale interpretation of a similar prototype. He started with a Red Caboose flat car and 3D-printed DDI containers designed by Keith Thompson. He removed 2 scale feet of material from the center of the car, scraped off stake pockets, and sanded off rivets. He fabricated container brackets and end details from styrene. He used Mount Vernon Shops decals, too.





Josh Surkosky kitbashed FD2 and FWI heavy duty flat cars in N-scale. The FD2 began as an N Scale Kits kit. The FWI and loads were 3D-printed by Keystone Details on Shapeways. Josh sanded off molded on details and made his own. Just like the prototype, the models share one set of trucks so they cannot run at the same time.



John M. Johnson displayed this nicely weathered local freight in HO scale.

