

# Model Railroad Hobbyist magazine™

**HAVING FUN WITH TRAINS**

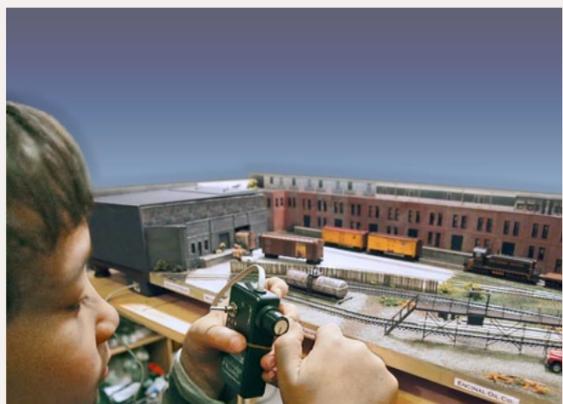
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Edition

May 2012

## Kids and model railroading

- Help visitors learn your layout
- Build a diesel fuel storage tank
- Modeling a paper mill, part 2
- Trona Railway track plan
- Single track N modules  
and lots more, inside ...





**Front Cover:** This month our cover story gives practical ways to share the joys of our favorite hobby with the next generation. M.C. Fujiwara talks about how he takes his kids' natural fascination with trains and immerses them into the hobby. Cover photo by M. C. Fujiwara.

ISSN 2152-7423

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John Drye, N scale  
Les Halmos, Modular railroading  
Bruce Petrarca, DCC

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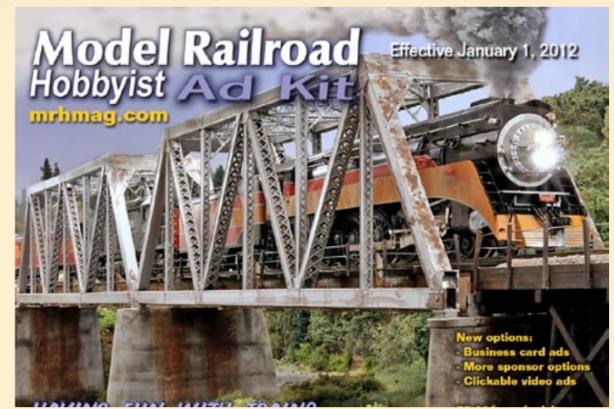
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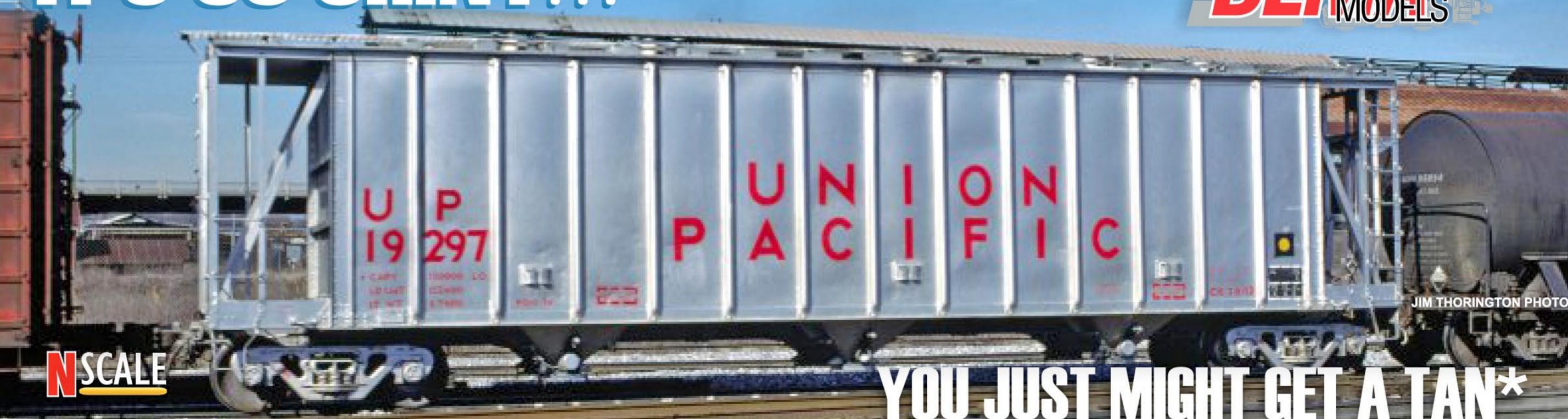
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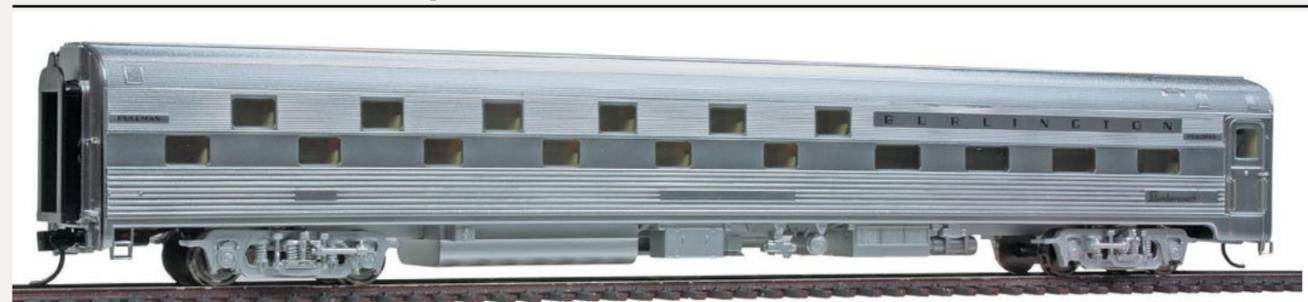
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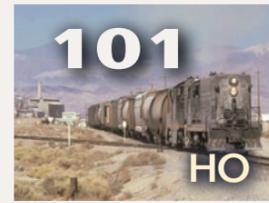
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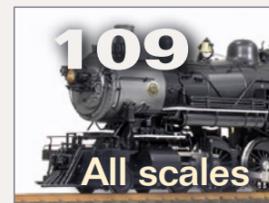
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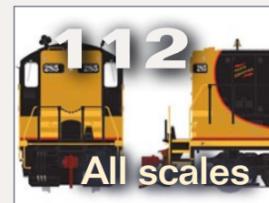
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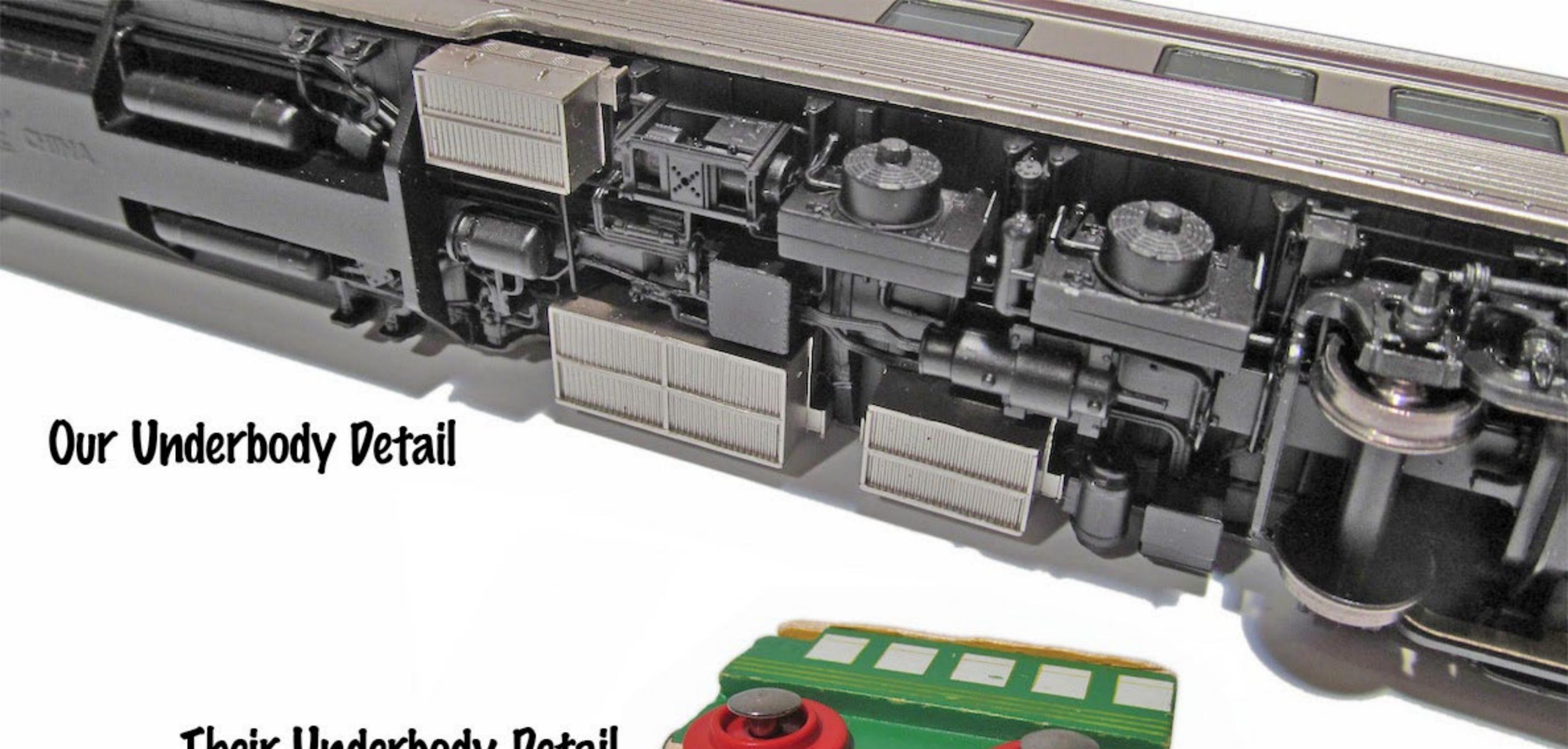
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## About the Publisher



**Joe Fugate** is the featured expert in many [Model-Trains-Video.com](#) videos, and he's also the founder and publisher of **Model Railroad Hobbyist Magazine**.

To learn more about Joe, [click here](#).

# PUBLISHER'S EDITORIAL: Sectional layouts – the wave of the future?

Musings from MRH's founder



**M**y large basement layout, the HO Siskiyou Line, uses a typical fill-the-room-with-benchwork approach.

Recently, I've been thinking about how I would do my layout today if I were starting over.

I started my layout while I was in my 30s, and crawling under or bending over the benchwork in uncomfortable positions for long periods of time didn't bother me then.

Now that I'm in my late 50s, it's a whole different story. I look at Free-Mo modules, for example, and imagine how much more enjoyable working on a module "at the bench" would be. By contrast, I think of some sessions I've had in my current layout room where I've been imitating a contortionist. Not fun!

For those who don't know, Free-Mo ([free-mo.org](#)) is a module standard that calls for a single-track main and allows for a more free-form module shape. Visually, it results in a more true-to-prototype looking scene as compared to the more common triple-track main module standard.

I think our current permanent benchwork paradigm for building layouts could stand some updating in the light of the Free-Mo movement.

I wonder if a new standard of designing even permanent layouts as sectional or modular would make more sense.

Think about the advantages.

I do my best work when I'm comfortable and working at my workbench. Why not make your layout into portable sections that you build at a workbench?

The quality of the trackwork would go up, as would the quality of wiring.

Imagine being able to turn the layout section over and install the Tortoises™ or turnout servos from above! Think how much easier that would be.

Imagine working on fine scenic details at the workbench in comfort, or installing a bridge at the bench. Much easier, and much more likely to be done well instead of done in haste because bending over the scene is uncomfortable.

What if you move? Just take the favorite parts of your layout with you!

Or do you have something on your layout you'd like to redo? No problem, just take out the section and rebuild it.

And there are the operational advantages.

For years, the Layout Design SIG ([ldsig.org](#)) has promoted getting your layout operational as soon as possible. To further this, the SIG recommends "flattop staging", where the staging is a yard that's built on a long flat board or piece of plywood. Because it looks kind of like an aircraft carrier, this staging has become known as "flattop staging".

The idea with flattop staging is you build a bit of layout, then put flattop staging at the ends so you can run trains on and off the current bit of layout you have built. The flattop staging represents the yet unbuilt parts of the layout.

Imagine building a couple modules from your layout design, and throwing some flattop staging on each end.

Instant operational layout!

As you add new sections to your layout, you just move the flattop staging and your layout remains operational at all times, even while incomplete.

Here's to new, more innovative ways to do benchwork as the hobby moves further into the 21st century.



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## Notes from the

# MRH STAFF

**MRH Staff changes, Link to us, Finding new posts easier, MRH website tricks ...**



## MRH staff changes

There's a number of staff changes this month at Model Railroad Hobbyist.

The largest change first – Charlie Comstock has stepped down as Editor.

He's basically going into semi-retirement to work more on his layout and other personal projects. Charlie will remain on the staff, but now as a contributing editor rather than as editor-in-chief. Charlie will continue to do his popular column, *Up the Creek*, as well as a few other projects now and then.

Plus you'll still see Charlie frequenting the MRH forum, or showing his face as at a show now and then in the MRH shirt.

This means Joe Fugate will be stepping back in as editor, as well as publisher. Essentially, we're going back to the way things were in the early days of MRH when Joe was both publisher

and editor, and Charlie was a contributing editor.

What's different this time is that Joe's hiring some new staff to take over his role of website guru and advertising assistant for Les Halmos.

**Meet our new web tech:** Jimmy Simmons.

If you're a Scotty Mason podcast fan, then you probably already have heard of Jimmy and his hobby business, Monster Model Works. Jimmy's also got a strong background in all



Your rating:   
Your rating: 5 (votes)

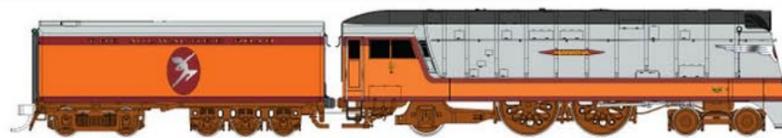
The five top-rated articles in the [April 2012](#) issue of MRH are:

- 4.7 Building a paper mill complex, pt 1
  - 4.4 Getting Real - Plans from photos
  - 4.4 Modeling the N-C-O railway, pt 2
  - 4.3 DCC Impulses - N Scale decoder installs
  - 4.2 Staff Notes - Whats in a layout visit
- Issue overall: 4.6

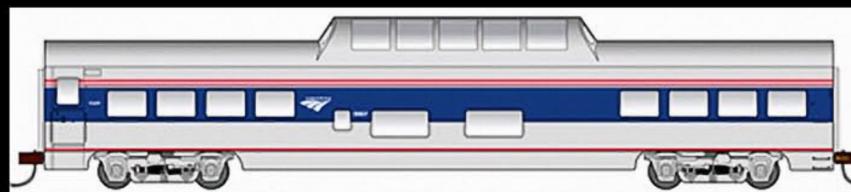
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N and HO

things Web, so you'll start seeing Jimmy a lot more on the MRH website.

Plus, we've got a lot of new features and updates we want to make to the website, and Jimmy will be building those out for us in the months ahead.

Welcome aboard MRH, Jimmy!

**Meet our new ad assistant:** Daniel Nava.

Daniel has a background in administrative tasks and tools (he's an Excel whiz), and he's getting training in Web marketing, so he'll make a great right-hand-man to Les Halmos, our Advertising Manager.



You'll also be seeing Daniel at some train events wearing the MRH shirt. Be sure to say hello, and welcome him aboard as the newest member of the MRH staff.

These two new positions will enable Joe Fugate to concentrate more on the core train-related part of publishing and editing MRH. He'll be able to delegate his other tasks to Jimmy and Daniel.

### Link to us!

Even though MRH is free, we sometimes get asked how people can donate to MRH or otherwise can say thanks for being a quality publication even though we're free.

If you've ever wondered how you can "pay" for MRH, here's a good way: link to us.

Search engines like Google rank sites people link to higher in the search results – and it makes sense if you think about it. Google considers a site people link to must have something useful so they put that site higher in the search results.

Do you have a website or a blog? Do you like MRH? Then link to us!

You can just do a simple hyperlink like this: [mrhmag.com](http://mrhmag.com).

Or you can put a banner on your website. To see the banners we provide, just go here:

[mrhmag.com/spread\\_the\\_word](http://mrhmag.com/spread_the_word)

By linking to us in this way, MRH will rank higher in Google search results and more model railroaders will find us.

Thanks in advance to those of you who will be linking to us because you read this!

### Finding new posts easier

Do you visit the MRH website now and then, wishing there were an easy way to see what posts are new since your last visit?

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See figure 1 to get an idea of what you now get as a subscriber. The screen on the top left is what you see without logging-in – not real helpful. But if you subscribe and then log-in, then voila! We track the posts you've read and only show you the new stuff you have not yet read.

Just click the red "new" text (it's a link) and you'll be taken immediately to the new post, right where you last left off.

Also, check out the Recent Posts by Type option on the right-hand menu.

Recent posts by type lets you filter the recent posts list by blog, forum topic, or ezine article comment page. If you just want to read blogs, for instance,

this is a great way to filter out the other types of posts, and just concentrate on reading blog posts.

Come visit the MRH website – some of the posts are as good as our magazine articles, and the ability to discuss ideas with your fellow modelers can pay dividends in time and money saved, as well as helping you avoid mis-steps as you pursue our favorite hobby.

### MRH website posting tricks

Speaking of the MRH website, not only will you find good stuff to read, look at and watch, but consider posting something as well.

### Recent posts

Type	Post	Author	Replies	Last updated
Topic	MRH Webcam Chat Sessions...	JLandT Railroad	22	17 min 4 sec ago
eZine	Publishers Musings - Wanted, layout visit authors	MRH	32	1 hour 57 min ago
Blog	Train Holiday	Scarpia	2	2 hours 21 min ago
Blog	Switched to N Scale	Paulster	15	2 hours 24 min ago
Topic	Looking for someone who can print some white decals	Rob_C	12	2 hours 27 min ago
Topic	advice on MTH Cab Forward problem	Ezra Kowadlo	2	3 hours 13 min ago

### Not a subscriber

### Recent posts

All recent posts | My recent posts

Type	Post	Author	Replies	Last updated
Topic	MRH Webcam Chat Sessions...	JLandT Railroad	22 6 new	17 min 58 sec ago
eZine	Publishers Musings - Wanted, layout visit authors	MRH	32	1 hour 58 min ago
Blog	Train Holiday <b>new</b>	Scarpia	2 2 new	2 hours 22 min ago
Blog	Switched to N Scale	Paulster	15 3 new	2 hours 25 min ago
Topic	Looking for someone who can print some white decals	Rob_C	12 1 new	2 hours 27 min ago

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Figure 1: If you subscribe to MRH (free!) and then log in, the new posts haven't read are marked for you!

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We'd all love to hear about what you're up to in the hobby. But think more than just text – post pictures, and yes, even some videos.

We've recently simplified the image-posting process, so it's pretty easy. Just watch this video to see how to do it:



Video: Putting an image in your MRH post

How about posting a video on our website?

Video hosting takes a lot of bandwidth and dedicated servers to do it right, so the best approach is to post your video on YouTube, Blip.tv, or Vimeo – and then come drop your video inline into a post.

Putting your video inline allows others visiting the MRH website to watch



Video: Putting a video in your MRH post

your video right there in your post without ever leaving our website.

Putting a video into your post is also quite easy, just watch the Posting a video on the MRH site to see how.

## In this issue

Our cover story this month is M.C. Fujiwara's *The Joys of Kids and Model Railroading*. When we saw M.C.'s submission we just knew it had to be a cover story. Now if you find someone complaining there are few youngsters in the hobby, send them over to read this article, and ask them how many kids they're helping get more involved in the hobby.

Tom Patterson shows us how to build a nice-looking diesel fuel tank facility, so you have no excuse for not being able to fuel your diesels now.

Bruce Petty discusses a great prototype for a layout, along with giving you a track plan for a 9 x 11 spare room, with plenty of ideas for trains and rolling stock to populate it.

Jerry Boudreaux demonstrates how he helps visiting engineers to his layout quickly figure out what's where in his *Modeler's Workbench* piece, *Station Strips*.

And of course, we continue Mike Con-falone's fabulous *St. Regis* paper mill scene modeling article in this issue. In part 2, Mike uses more novel tricks in modeling this scene.

**PLAYBACK PROBLEMS?** [Play image post on YouTube](#) [Play video post on YouTube](#)

Also, we remind you that Mike sent us almost three hours of video, which was too much for the magazine, so we've released it as a feature video for purchase that's a whopping 3 hours long. Early feedback from those who've watch the video is it's a "don't miss" addition to your model railroading how-to library.

Bruce Petrarca's popular DCC column continues this issue with a great overview of all the pieces-parts that go into a DCC system. We're all pretty DCC-savvy on the MRH staff, but we even learned a thing or two from Bruce's column this month.

Tony Thompsons does the *Getting Real* column this month, going in-depth on the developing trend toward more-prototypical car routing paperwork.

John Drye, our N-scale columnist, takes a breather this month, and our guest columnist David Salsbery talks about single-track N scale modular railroading.

And finally we have our MRH Product Showcase photo gallery and many pages of new product news, loaded with photos – making our news section one of the best of any hobby publication.

Enjoy!



# May 2012 Premium Extras!

Available to subscribers!

DVD and HD quality versions of:

- Posting an image on MRH website
- Posting a video on MRH website
- Florist's foam terrain

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# MRH

## Questions, Answers and Tips



### QUESTIONS AND ANSWERS

**Q. What kind of railroad cars should I use to haul sugar beets?**

**A.** Sugar beets were a seasonal short-haul commodity for railroads so it rarely made sense for the companies to order new cars. Union Pacific used drop-bottom gondolas or ballast hoppers for its beet traffic. In the 1940s, to replace worn-out cars, Southern Pacific built hundreds of drop-bottom gondolas, added wooden racks in the 1950s to extend the sides, and used them until beet trains ended in the 1990s.

Sugar beet farming in the United States started in the 1890s, and cars would be loaded at rural sidings all over beet-growing areas. From the 1950s on, cars were usually loaded at

centralized beet dumps, using conveyors, and unloaded at sugar factories through the bottom dumps. Beet-harvest times varied from area to area according to the growing season, but harvest and shipping only lasted a few weeks. That makes beet traffic an interesting twist for calendar-conscious model railroad operators.

A full-length “campaign,” from harvest through processing, can be several months, with the beet factories running 24 hours a day, but it is still seasonal.

Sugar beet factories also received loads of power-plant coal, and lime for the refining process.

Colorado beet-hauler Great Western Railroad built up a fleet of 188 used drop-bottom gons. Its phase-out of

beet traffic started in 1979. SP ran its last beet train, from California’s Imperial Valley around El Centro to the Holly Sugar Mill at Betteravia, in July 1993.

George Booth talks about beet traffic and building beet cars in his thread at [mrhmag.com/node/6779](http://mrhmag.com/node/6779) and there’s more on Colorado operations at [longmontian.blogspot.com/2009/03/longmont-sugar-beet-factory-part-1.html](http://longmontian.blogspot.com/2009/03/longmont-sugar-beet-factory-part-1.html).

Don Strack has compiled several pages of info on Utah’s sugar beet history at [utahrails.net/industries/sugar.php](http://utahrails.net/industries/sugar.php). Another link, at [www.pwrr.org/prototype/sugarbeet/index.html](http://www.pwrr.org/prototype/sugarbeet/index.html), focuses on Southern Pacific’s operations, as does an old Trainorders thread at: [www.trainorders.com/discussion/read.php?1,75428](http://www.trainorders.com/discussion/read.php?1,75428).

HO general-service (GS) gondola kits were built back in the 1950s and ‘60s by Ulrich. Details West produced plastic kits and Red Caboose offers built-up cars through Intermountain. Trainworx Inc. offers one in N, and MTH has offered an O-scale version. Walthers has an HO 50-ton USRA composite drop-bottom gondola as well.

– MRH

**Q: Can anyone tell me why there are sets of wheels sold for freight cars in 33” and 36”?** Why are there two sizes?

**A:** Prototype railroads use different size wheels for different size cars. There are also 28” wheels for some intermodal equipment and 38” wheels for very heavy freight cars. Most freight cars in service before 1965 used 33” wheels. As larger and heavier cars came into service, 36”



**Figure 1: A string of the Southern Pacific’s iconic sugar beet cars, GS gondolas built from 1942-49, pass through Black Butte, California, on their way to Tule Lake in the 1990s. Photo by Robert Morris.**

wheels became more common. Some cars have the correct wheel size stenciled on the end of the car. Some models carry this stenciling, but be careful. Model manufacturers have been known to recycle lettering from car to car.

A better indicator is the capacity stencil on the side. Cars of 100-ton or so capacity need 36" wheels, while 70-ton and lower capacity cars will have 33". 246K cars now in service, including covered hoppers and container well cars, are fitted with 38" wheels. A car's gross loaded weight

also dictates the sized of the bearings and axles used.

Because automobiles aren't very heavy for the amount of space they take up, modern auto racks can use 28" wheels. The small wheels also lower the bottom loading deck of the car.

There's a fascinating discussion of railroad wheel dynamometer testing at [files.asme.org/ASMEORg/Communities/History/Landmarks/5486.pdf](http://files.asme.org/ASMEORg/Communities/History/Landmarks/5486.pdf) in a paper presented to the American Society of Mechanical Engineers. It includes a

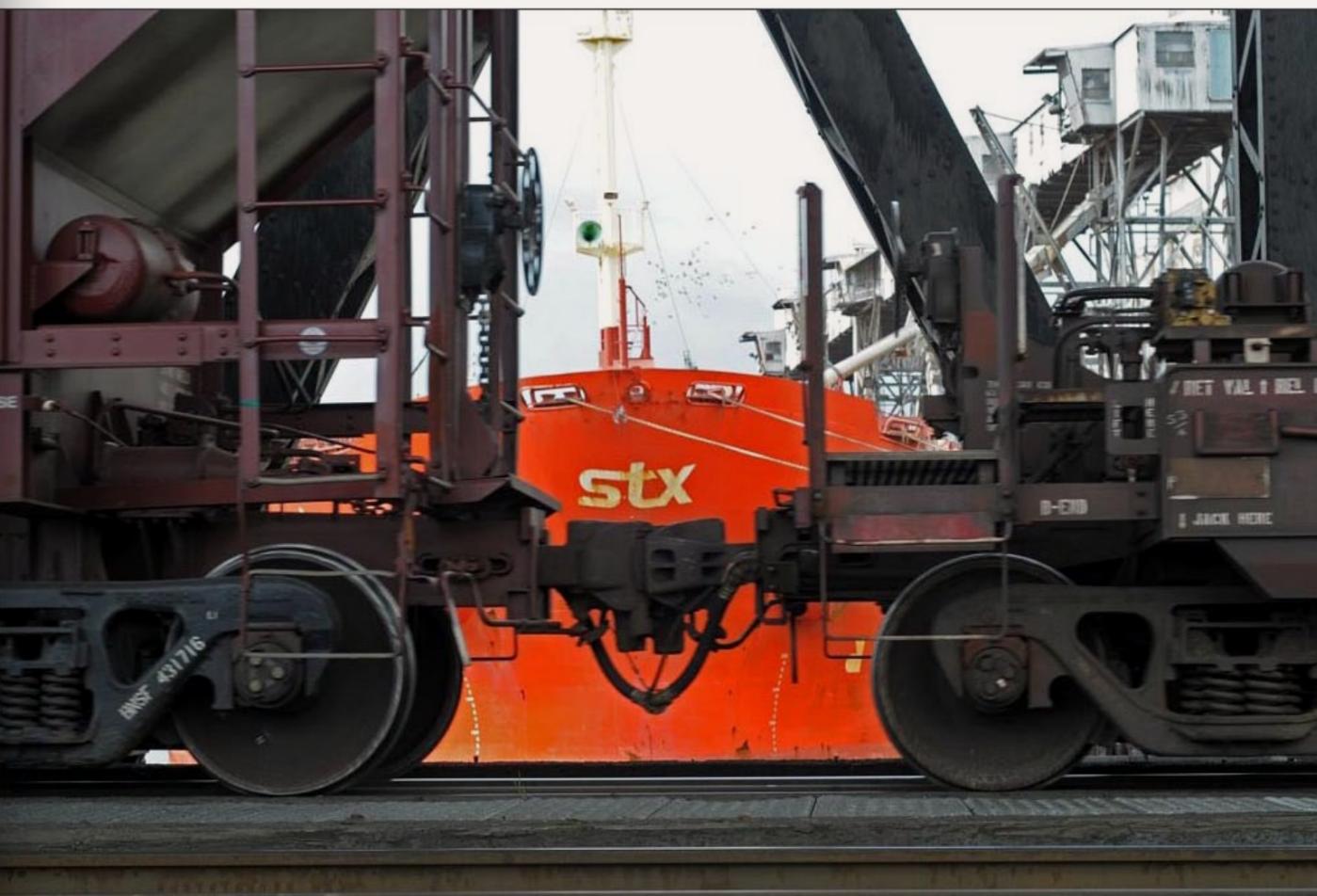


Figure 2: Railroad car wheels are sized according to the weight of the freight car and can range from 28 to 38 inches for cars in general service. Photo by Graham Line.

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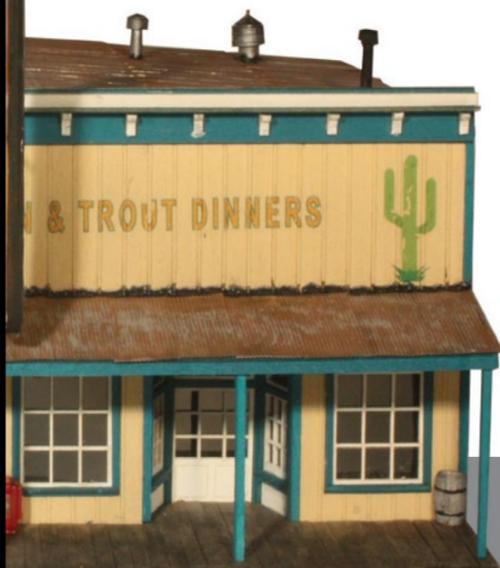


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chart of common wheel sizes and their gross wheel load in pounds (multiply the wheel loading by the number of wheels to find the car's gross load):

28", 24,375 (45-ton capacity car);

33", 27,500 (70-ton capacity car);

36", 32,875 (100-ton capacity car);

38", 39,375 (125-ton capacity car);

40", 35,000 (4-axle 3,800 hp locomotive).

John White, the long-time curator of transportation at the Smithsonian Institute, wrote about wheels in "The American Railroad Passenger Car," first published in 1978:

"The overall size of railroad car wheels has remained remarkably constant over almost a century and a half. With few exceptions, freight cars have ridden on 33-inch-diameter wheels for the entire period. (The exceptions today are the thousands of "low-level" TTX cars for TOFC and auto-rack service, which use 28-inch wheels, and all 100-ton capacity cars, which require 36-inch wheels. The biggest eight-wheel cars, with 125-ton capacity, use 38-inch wheels.)

Many passenger cars have employed 33-inch wheels, although larger wheels were generally used. In the 1830s, 36-inch wheels became popular and, except for a brief period late in the

nineteenth century, when 42-inch wheels were in vogue, remain the standard of the present day.

"Big wheels offer several advantages. They make fewer revolutions than a small-diameter wheel, resulting in less tire wear and cooler running brasses. They ride better and are said to pass through frogs and crossovers more easily. Large wheels deflect or flatten out less on the rail under a given load and hence require less power to draw. Their larger tread and flange service provide more braking area, and their greater mass absorbs and dissipates heat from the brake shoes more readily.

Of course, many arguments were made over the years against large wheels; they weigh and cost more; they tend to bend axles; and when they are made in the largest size of 42 inches, they interfere with air and steam pipes and brake rigging."

— MRH

**Q: I bought an old Magnuson Models resin kit called "Merchants Row" and everything is covered with a sticky goo. Anyone know how to get this gunk off?**

**A.** Start with warm soap and water. Let the pieces soak for a bit, then scrub them gently with a soft brush. Be very careful around fine detail.

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Other options are Goo Gone (some people swear by it, others say it leaves an oily residue) or a citrus-based cleaner like Orange Glow. Other people recommend Pine-Sol. Lighter fluid (naphtha) is also an excellent solvent that won't damage Styrene or other plastics.

Some older resin kits seem to always have a smelly, sticky feeling, but they can be bargains and are worth some effort. Once the parts have air-dried, prime both sides with a solvent-based spray paint to seal the surfaces. Krylon has some brick red and stone-colored paints that work well.

Older resin kits may also be warped. They can be flattened with the following process:

Set your oven to warm. Let it heat up, then turn the oven OFF. Place the pieces on a flat metal sheet or piece of plywood, put them in the oven, and leave them there until the oven cools. Repeat as needed.

**Note:** It may be wise to consult with household authorities before attempting this procedure.

— MRH

**Q: I love working on the layout but my feet and legs really ache after a couple of hours on the concrete floor. What can I do?**

**A.** There are a couple of things. The vogue right now is for carpeting train rooms, but modelers run the risk of having a train room that is nicer than the

rest of their house. Modeling can also be messy. Painting, plastering and water-based scenery can make new carpet look secondhand in no time. Expensive detail parts can vanish into long-pile carpet; berber is a better choice.

On the other hand, carpet or rubber flooring can keep the railroad room warmer and quieter, and falling freight cars may sustain less damage.

You can do what a friend of mine did: Build all of your benchwork, then find a carpet installer who likes a challenge and hire them to install nice wall-to-wall carpet under the layout. They managed to successfully unroll the carpet, sliding it under the legs, and it looks and feels great. But my friend's a very careful worker and doesn't create big messes.

Before you spend good money for mats or carpet, it's a good idea to seal concrete against moisture.

One flooring option is secondhand carpet from a store or installer. Offices use good grades of carpet, but when high-traffic areas get worn down, frequently all of the carpet is replaced and large pieces are available cheap.

Charlie Comstock points out that carpeting the entire room isn't always necessary. Long carpet runners are great for linear layouts with a lot of aisle space and are easy to find as remnants if you don't mind a limited choice of types and colors.

Jeff Shultz advises paying attention to the padding; the price difference isn't

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very great between materials that only last a couple years, and padding that will be good for a decade.

Another option is carpet tile, which usually has its own pad or underlayment attached. It's available from carpet specialists and big-box home stores. Tiles have the advantage of being easy to replace if a disaster happens. Home Depot's website lists several varieties, from \$1.19 to almost \$5 a square foot.

Also try searching for "anti-fatigue mats" (designed for work stations), or "commercial entry mats," that can be moved around to wherever you are working.

There are a couple of mat types. One is rubber with a diamond or waffle pattern on the bottom for cushioning. The others are either a high-density foam, or a foam core with a harder rubber skin. Look for something that is resilient, but not mushy.

Foam floor pads are also sold in 2x2 foot squares that interlock to form large mats. They are easy to install, less expensive than carpet, and are easy to custom-cut with a knife or scissors. These foam floor pads are very easy on the knees and very kind to falling objects. 48 square feet sell for about \$30 and they go on sale fairly often. The same material can be found in pads without the jigsaw-puzzle edges.

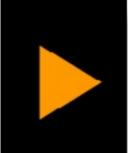
Laminate floors also have some spring to them, are easier to clean than carpet, and are less annoying if you like to keep your tools and materials on roll-around carts. They don't gobble up coupler springs and other small parts, either.

Believe it or not, eating bananas is a good way to get rid of leg aches. [www.ehow.com/facts\\_5685321\\_foods-can-aching-legs\\_.html](http://www.ehow.com/facts_5685321_foods-can-aching-legs_.html). Also, take a look at your shoes.

Run-down deck shoes from years ago might not be the smartest choice for a couple of hours' standing on concrete. Cross-trainers or a light hiking shoe will be a lot more comfortable.

— MRH

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## About our DCC columnist



**Bruce Petrarca** is a well-known expert on all things DCC.

[Click here](#) to learn more about Bruce.

# DCC Impulses: Anatomy of a DCC system

## What makes up a DCC “set”



### Understanding the terminology

When folks get started in DCC or are thinking about starting in DCC, I frequently hear them say, “Gee, there are so many terms and they don’t make sense.” Well, let’s do what we can to blow away some of the mist and remove the mystery.

This is not just a column for the newbies; I hope to enlighten folks who have been around the block a few times, too.

This is a “kid’s” issue of MRH. Look at the SMP sidebar for a way to keep your expensive locos safe from the grandkids and other guests.

### What makes up a system?

I frequently use the analogy that you don’t have to know the theory of color TV transmission to watch your favorite show.

While this is true of DCC, there are a lot of the terms relating to the internals of a DCC system that become important along the way.

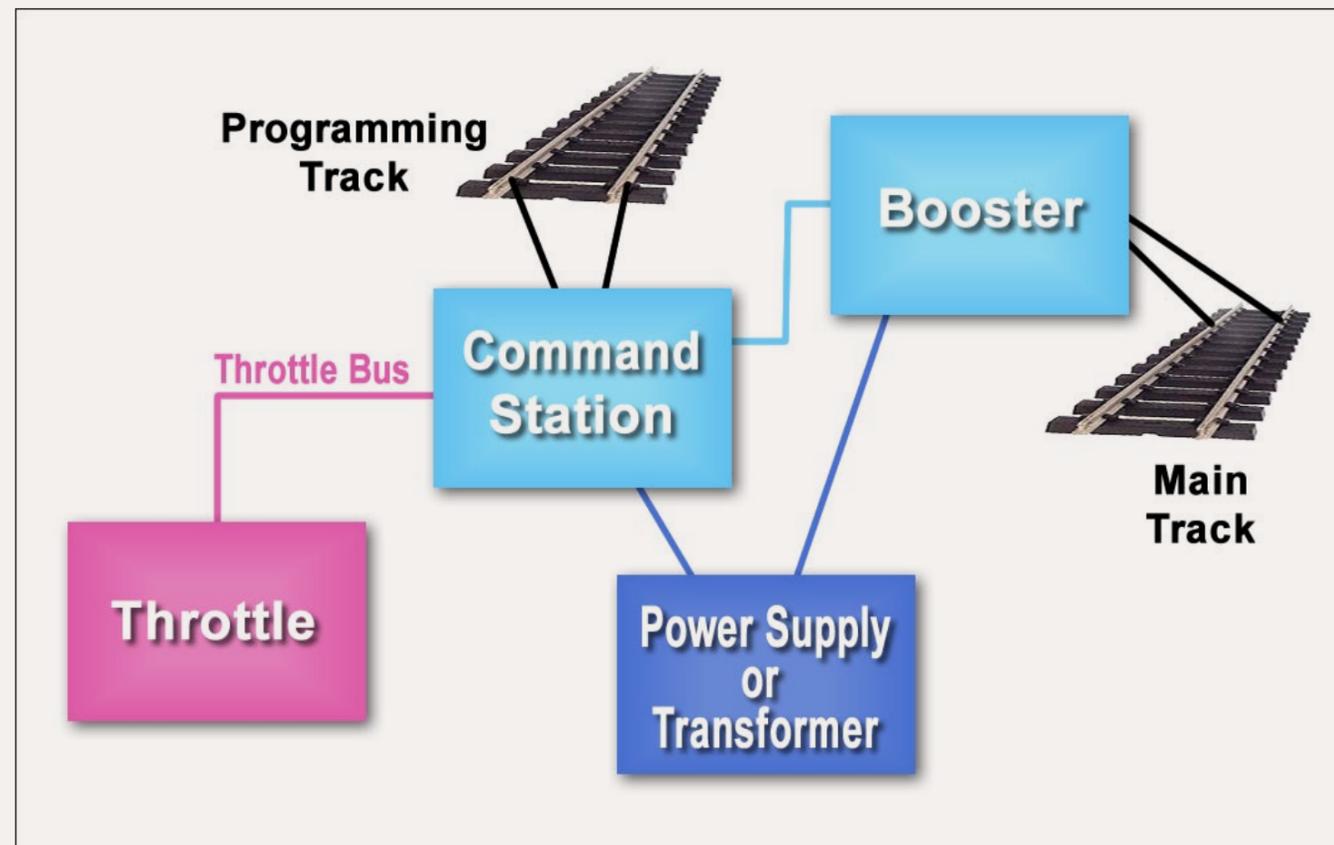


Figure 1: DCC system components

A DCC system takes your input (in the form of speed and direction requests, as well as activating functions) and turns that information into high-powered data. That data is put on the rails as “track voltage”, to command and run your trains.

Early DCC systems had the piece-parts in separate boxes, which led to folks talking about the piece-parts.

So, since folks discuss them, let’s define them.

Figure 1 shows the building blocks that make up a DCC system.

### Throttle

The throttle (AKA cab) takes its cue from the operator – which loco you want to run and how fast – and talks to the command station in a language specific to the brand of DCC set that you have.

There is no standardization of the communication between the throttle and the rest of the system. This allows the designers to customize their throttle bus for their specialty. While this allows unique features for each system, it also makes it virtually



**Figure 2: The Lenz LH-90 is an example of a DCC throttle.**

impossible for one manufacturer's throttle to work on another's system.

Unlike computer keyboards, DCC throttles are not interchangeable between systems.

## Command Station

The next item in the signal chain is the command station.

The command station takes the data from the throttle and converts it into low-level data pulses that meet the NMRA standards for DCC data timing. They don't (yet) meet the NMRA standards for voltage and current on the track. That transition is the booster's job.

Frequently things such as turnout routes and consists are stored in the



**Figure 3: NCE CS-02 is an example of a DCC command station.**

command station. Some command stations contain a battery to retain data while the system is powered down. This battery requires regular replacement to avoid losing data.

The command station is also responsible for controlling the programming track.

A stand-alone command station is frequently the heart of higher-powered (10 amp) DCC systems. The NCE CS-02 in figure 3 is one of the most common. When connected to the PB110A booster shown in figure 4, it makes up the powerful NCE 10-amp set for O-scale and larger layouts.



**Figure 4: NCE PB110A is an example of a DCC booster.**

**“You don't have to know the theory of color TV transmission to watch your favorite show ... this is true of DCC.”**

## Booster

Perhaps the most misunderstood function in a DCC set is the booster.

Some of the confusion comes from the name and its similarity to the (illegal) CB amplifiers popular in the 1970s. Understand, a “booster” doesn't push your DCC signal any farther.

The term comes from the fact that the booster takes the low-level data pulses from the command station and “boosts” their power to meet the NMRA standards for current and voltage as track power.

Booster: data in → track power out.

If you have a functioning layout, there are a couple of things that adding a booster won't do for you:

- A new booster won't make your trains go faster.



**Figure 5: Digitrax DCS-100 system box: booster and command station bundled together.**

- A new booster won't make up for inadequate track bus wiring.

Splitting your layout into districts and adding boosters to the new districts on your functioning layout will allow you to draw more current over the layout. This means:

- More locos running at the same time
- Power for lights in buildings or in cars
- Redundancy that can be exploited to keep running in the case of the failure of another booster.
- Cooler operation of the existing booster(s), since it (they) won't be asked to deliver as much current.

I find that many layouts have more boosters than they really need. One

**“I find that many layouts have more boosters than they really need. One extra is redundancy. Many extras are usually a waste of money.”**

extra is redundancy. Many extras are usually a waste of money.

Think of boosters as similar to amplifiers in audio systems, while we discuss this idea. Boosters take their input from one of two sources:

- Track data – like car stereo amplifiers that hook into the speaker outputs of your existing radio.
- DCC bus data – like a low level (line output) audio source for an external amplifier.



**Figure 6: Bachmann E-Z Command starter set.**

We will talk more about boosters and their relationship within your DCC system and layout later in this column.

## System Box

In many designs, the booster and command station are bundled into the same box. This bundling is sometimes called a “system box”.

The Digitrax DCS-100 shown in figure 5 is representative of this design. This single box combines the command station and booster functions shown in the aqua blue color in figure 1.

## Starter Sets

In some basic sets, the throttle is bundled in a box with the command station and the booster, to make a complete system in a single container.

Examples of this packaging include Bachmann's E-Z Command (figure 6), Digitrax' Zephyr, and NCE's PowerCab.

These systems frequently include a power supply. You have everything

you need to get started in one package. Hence the name, starter set.

## Power supply or transformer

Okay, here is an area where terminology can get confusing. I'll be consistent, but not everybody is.

A few DCC systems come with a power supply or transformer designed specifically for them. Starter sets frequently are packaged this way. Most systems do not include a power supply for a variety of reasons, leaving the modeler with the need to pick one.

There are two different ways to get the necessary power:

- A transformer changes line (or mains) voltage (115 VAC in North America and 230 VAC in most of the rest of the world) to the AC voltage needed (frequently 15 VAC) for the DCC system. See figure 7.
- A power supply converts the line voltage to a DC value needed by the DCC system (frequently around 20 VDC). A representative power supply is shown in figure 8.

If your system manufacturer recommends a power supply or transformer, buy it, as long as it works with your power line (main) voltage. Who knows better what works than the folks who designed the system?

If you have selected a “go-to” DCC dealer, you might want to ask them for their recommendation.



**Figure 7: NCE P515 is representative of transformer units.**

If you want to set out on your own, then consult your owner's manual. There should be a section listing the power requirements. Note that AC and DC voltage ranges are frequently different. Be aware of the maximum current needed.

Make absolutely certain that you get a supply that provides voltage within the specified range at both zero current and the rated maximum current. It must also provide as much current as your system needs, or more.

If you are having a hard time understanding my terminology here, it may be best not choose your own power supply or transformer. Let the system designer or a trusted DCC dealer lead you.

The rule here is voltage must match the needs, current must at least match and may exceed the needs. Systems may be damaged by excessive voltage.

As an example, think of your desk lamp. Your home wiring has a fixed

voltage and the capability of delivering probably 15 to 20 amps of current. The desk lamp needs an amp or less. It only takes what it needs, even though the wiring is capable of delivering much more. However, if you connect a lamp to a voltage above its rating, its life will be very short.

The trend is toward regulated DC power supplies and away from transformers for DCC system operation. The advantages of power supplies are:

- They are perceived as being "greener" than transformers.
- They can accept the input power available anywhere in the world.
- They weigh less per watt than transformers, making them less expensive to ship.
- They provide the same output voltage over a wide range of input voltages, making for more stable DCC operation in brownout type conditions.



**Figure 8: Crest 55465 is representative of power supplies.**

- They can be smaller than transformers with the same power rating.

### **Even suppliers can goof**

The MF615 transformer from DCC Specialties is similar to the NCE P515 shown in figure 7. It has been a staple of the industry for years, powering many 5-amp and 8-amp DCC layouts.

**Figure 9: Notebook computer supply similar to the proposed MF615GU.**



The MF615 has been phased-out for a new product, the MF615GU – a switching power supply that looks very much like the notebook computer supply shown in figure 9.

However, the MF615GU introduction has been marred by confusion about voltage.

The initial data sheets showed 15 VDC output at 6 amps, for a power rating of 90 watts. That is too low a voltage to provide the popular 14 to 16 volts on the track. Early shipments were verified to be putting out 15 VDC or even a bit less.

As this column is being written in late March 2012, the importer's web site says that the data sheets are being revised. A recall has been issued for the 20 or so units shipped so far and they are being replaced with transformers. New switching power

supplies are promised sometime this summer. They are planned to be 120 watts (20 VDC at six amps). DCC Specialties is doing the right thing, paying return postage and making things right. I extend kudos to them.

Personally, I believe that somewhere the AC voltage and DC voltage needs got confused. I tell the story here to show that even the professionals can get things mixed up at times.

As an aside, the original MF615 transformer put out 9 amps before it dropped below 15 VAC (135 watts). This would work fine with the Digitrax 8-amp sets set on HO- or N-scale settings.

Unfortunately, the replacement, with 20 VDC and 6 amps, will not have the reserve power necessary to work with the Digitrax DCS-200 or DB-200 units.

### **Bringing it all together**

Okay, now you have some idea of what goes into the various functions inside your DCC system, whether it is in a single box or many.

In December ([mrhmag.com/magazine/mrh-2011-12-dec/dcc-impulses](http://mrhmag.com/magazine/mrh-2011-12-dec/dcc-impulses)), I talked about how to wire your layout.

That column didn't deal with the parts of the DCC system itself, but explained track bus and throttle bus wiring with

fascia panels, circuit breakers, etc.

### **Do I need another booster?**

This is one of the most frequent questions I get. Earlier I discussed what boosters will and will not do for you.

If you still have a question on this topic, answer these questions:

- Am I planning a large expansion of operations? This is not the length of your track, but more locos or operators.

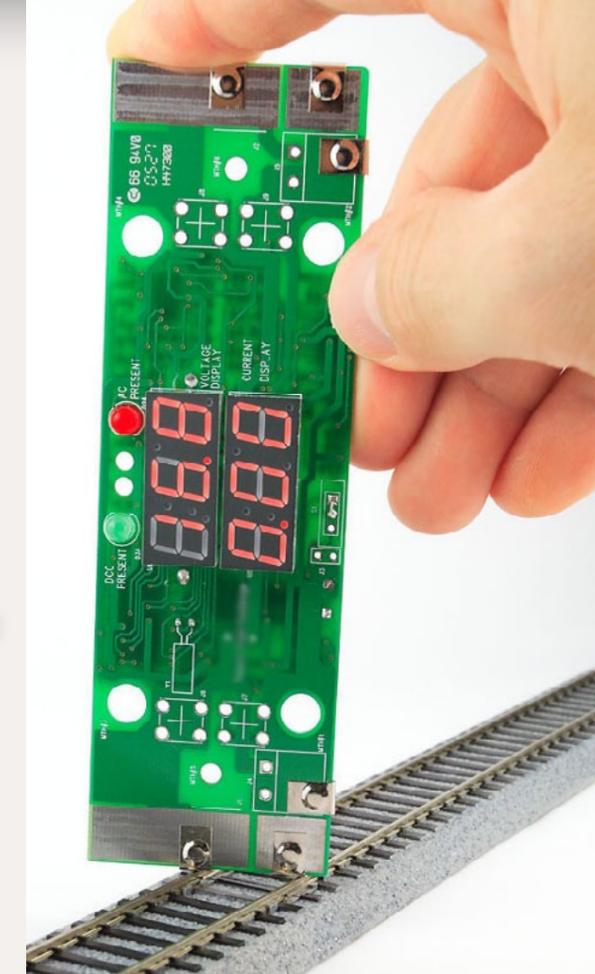


Figure 10: RRampmeter measuring track voltage – photo courtesy of American Hobby Distributors.

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■ Is my system shutting down or overheating?

If either answer is yes, then you may need an additional booster or two.

However, if you are getting involved in a layout large enough to have these questions, then you need to know more about what is happening on your layout.

Nothing tells better than a meter. Unfortunately the nature of the DCC signal makes normal meters read inaccurately. The only way to accurately measure DCC track voltage is with an oscilloscope or a measuring device designed for DCC.

The only DCC-specific measuring device that I know of comes from American Hobby Distributors. Known as the RRAmpmeter, it measures DCC voltage and current accurately. It will also measure AC or DC voltage and current. There are several different options available, as shown on their web site ([amhobby.com/products/tech/ahd/rram-notes.html](http://amhobby.com/products/tech/ahd/rram-notes.html)).

I suggest you get one and measure the amount of current being drawn from your booster(s). If you are consistently pushing 75% or more of your booster's rated current, then you probably do need more power on the layout.

As I discussed in December ([mrhmag.com/magazine/mrh-2011-12-dec/dcc\\_impulses](http://mrhmag.com/magazine/mrh-2011-12-dec/dcc_impulses)), you will need booster districts – separating your layout into manageable sections, and powering

each section from a booster and/or circuit breaker.

## Another way

With his inexpensive boosters, Duncan McRee of Tam Valley Depot has introduced a new idea in DCC network design.

Duncan offers a five-amp booster and power supply for almost the price of a good circuit breaker – about \$60. His boosters run on the “car stereo amplifier” methodology discussed earlier – they take their input data from the DCC track bus, not from some proprietary manufacture-specific bus.

So you can start off with a simple system and expand by adding these small boosters instead of circuit breakers and using your old track bus to bring data to the inputs of the new boosters.

Duncan told me that his layout has a NCE PowerCab running his boosters.

This concept can significantly change the thought processes behind layout design and wiring.

Consider a friend of mine who has a Digitrax HO layout in a 10 x 20 room. He is looking at adding a small section in the hallway adjacent to his existing layout, with barge service from the main layout.

One option to expand this layout is to wire the new layout as a single district with 14 AWG wire. He can use one of Duncan's boosters to connect from the



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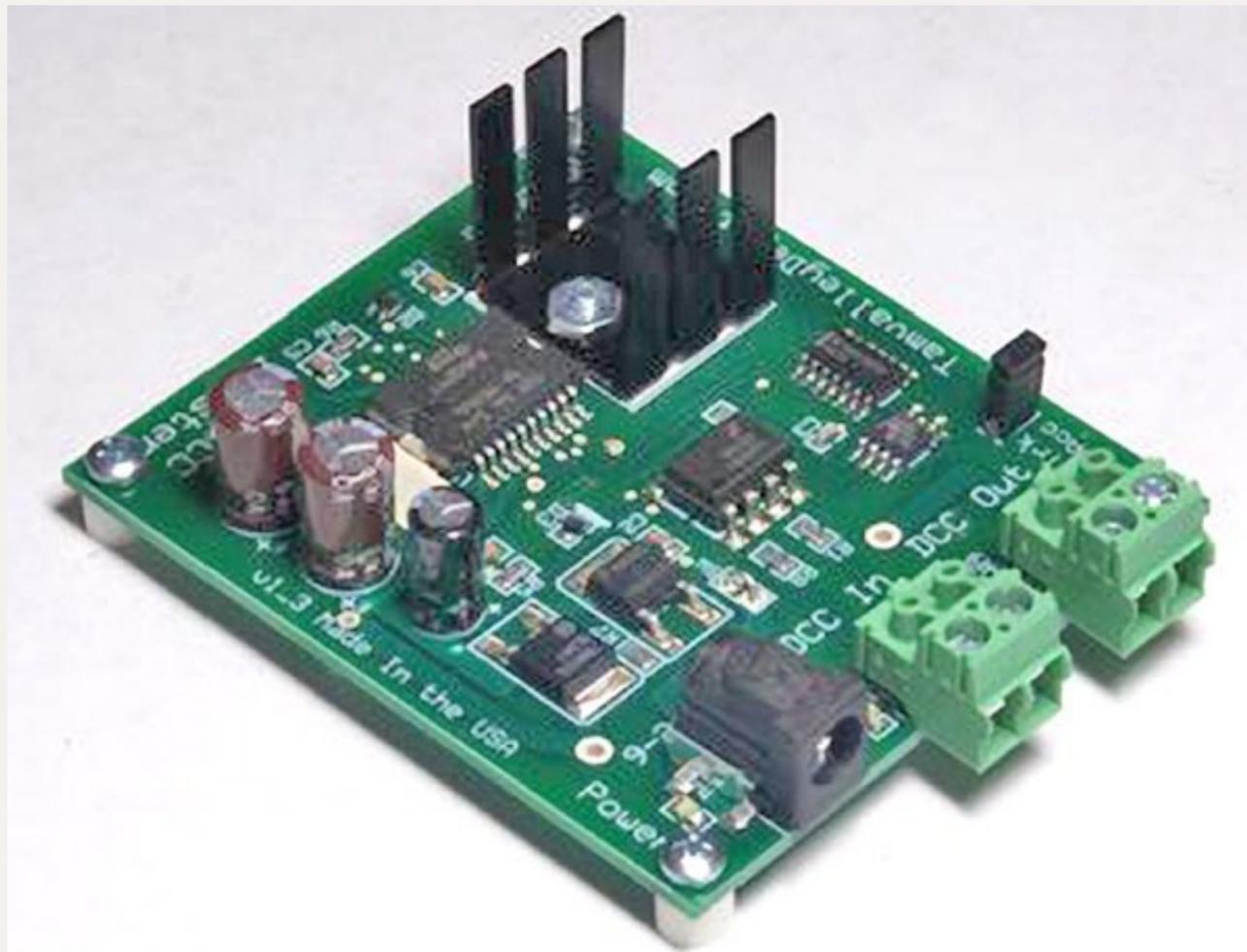


Figure 11: Tam Valley Depot five-amp booster – photo courtesy Tam Valley Depot.

new layout to the main DCC track bus in the existing layout. The new section becomes isolated and fully powered.

## My glossary

I've been working on a glossary of DCC terms on my web site. The terms discussed here will be covered, as well as many others.

I'll be building upon it as I find time. Send your friends there, or look yourself, and see if understanding DCC terms helps your overall experience.

The glossary is at: [mrdccu.com/curriculum/glossary.htm](http://mrdccu.com/curriculum/glossary.htm).

### Until next month . . .

Have fun with your railroad and blow a whistle or blink a light for me.

If you like this column, be sure to click the button below and rate it *awesome*. Your votes made DCC Impulses the top rated article or column in the March issue.

Thanks.



## SMP\* from Mr. DCC

One of the common complaints about the Lenz LH-90 throttle is that it is so difficult to input a new loco to it. Most throttles accept a new loco address by turning a few knobs or punching a few buttons.

The LH-90 requires a combination of dial turns and button presses that I find too difficult to remember. I have a tough time with them, even with the instruction book in hand.

Many folks use the difficulty of setting an address in the LH-90 throttle to their advantage. They put all of their inexpensive (read: non-brass) locos in the LH-90's eight-unit roster, allowing a simple selection by pressing the button.

Here come the grandkids or other visitors. They get an LH-90 from the host. They can have a field day running trains, just not the prize units that the owner reserves to run on his LH-100, with its simple "punch in the address" set-up. ■



Figure 12: LH-90 throttle from Lenz

\* SMP comes from the Amtrak world and is short for Standard Maintenance Procedure.



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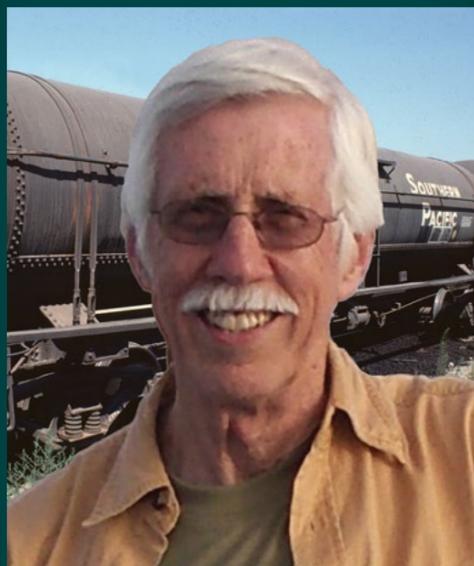
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About this issue's  
prototype modeling  
columnist



Tony Thompson is a long-time modeler in HO. He's interested in Southern Pacific history and has published magazine articles and books on this subject. He writes the modeling column in the Southern Pacific Historical and Technical society's magazine, "Trainline", and served five years as the Society's president.

For more information, go to:  
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## GETTING REAL: A More Prototypical Waybill for Model Railroads Adventures in Prototype Modeling – Freight Paperwork Tips

Making freight car routing paperwork look and act more like the real thing ...

**M**odel railroad operation has long been recognized as an important goal in the hobby, because it gives a purpose to the layout and to the rolling stock. In this column, I want to discuss one part of making operation of freight cars realistic. That part is the paperwork.

Paperwork to move model freight cars realistically has been part of the hobby from its earliest years. Al Kalmbach (writing as "Boomer Pete") and Frank Ellison in the 1940s described methods that, though primitive by modern standards, had goals much like ones we have today. (Recommendations for Further Reading are presented at the end of this article.) I would summarize these goals today as creating realistic paperwork that contributes to realistic operation, and generates realistic car movements and, within reason, resembles prototype paperwork.

"Realistic paperwork?" Yes, and although the first thought one might have would be a desire to *avoid* recreating bureaucratic procedure, realistic paperwork actually is something



Figure 1: As this local train approaches the Ballard, California depot on my layout, set along a mythical branch line of Southern Pacific's Coast Division in 1953, its freight cars all have associated Waybills. In addition, upon reaching the depot the conductor will consult with the agent to find out what newly loaded or empty cars need to be picked up. Thus the crew of this train has well-defined work to do, in accord with realistic freight car paperwork.

many of us already do for other hobby purposes. We often work hard to construct realistic timetables, and then to design our layout timetable document to look and work very much like the prototype. Freight car paperwork has the same genesis and the same goal.

Freight car paperwork is like any other aspect of railroad realism: its obvious

starting point is the prototype, and I will describe prototype Waybills as a starting point in a moment. But first, let's make sure we understand the role this paper plays in prototype car

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movements. I will describe typical procedure for the steam-diesel transition era. (See the Further Reading section for more sources on the prototype procedures.)

## The Waybill Cycle

Consider the usual cycle of freight car movement, starting with a shipper who needs an empty car to load. How does he arrange to get that car? He calls his local railroad agent or, in a city, the railroad's freight agent or car distributor. To get the empty on its way to him, all that is needed is the car type required and its destination. The agent or clerk who takes the call forwards the information to the nearest yard office which will supply the car. Yard forces identify a suitable car and arrange for its movement to the shipper's location.

Meanwhile, the shipper makes out a Bill of Lading, with many particulars about the shipment, including a detailed destination, and of course a cargo description, which may or may not conform to a tariff category. This Bill of Lading is provided to the agent or car clerk, who makes out a Waybill using the information. This may happen while the car is being loaded, or after it is loaded. The two documents have a number of differences but do contain much of the same information.

The Waybill has to be completed by the time the car is picked up, because the conductor of the local train or

switch job that picks up the car will take the Waybill with him. When he arrives at his destination yard, his accumulated Waybills are turned over to car clerks, who log the information. Each Waybill then travels in each of its car's trains, in the custody of each conductor, over the entire route to destination, perhaps involving a number of different conductors over a long journey.

The local agent at the destination may know of the arrival of a car in advance, if he has received a Waybill copy via U.S. Mail, but his first awareness of it may occur when the local comes to town with that car in tow. The conductor's first move is to stop at the depot and consult with the agent, both to hand over each Waybill for a loaded car which is going to be spotted, and to collect the Waybill for each loaded car which will be picked up.

The Waybill then becomes the basis for billing the freight shipment, either by the local agent or by clerical forces. At that point, of course, its relevance to model railroad operation has ended.

What can we learn from this? First, of course, cars are moved with Waybills for direction. Second, the agent plays a pivotal role in the prototype situation, and although it may not be practical to have a person play this role in layout operation, there are ways to mimic the agent's role (discussed below). Third, local train crews did carry and use Waybills, even though some "operations gurus" in recent

**620 THE PENNSYLVANIA RAILROAD 620**

**FREIGHT WAYBILL**

AD 5880 R-2  
6-63



WBILL FORMAT	CODE	CLASS FWD.	CLASS RECD.	TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD															
CAR INITIAL	CAR NUMBER	L/E	KD	NET TONS	CONTENTS	DESTINATION	ST.	CONSIGNEE	OFF GOING	JUNCT.	ROAD	CAR CHAR.	INSP.	ZONE	SPEC. INSTR.				
WM	54502																		
C. L. TRANSFERRED TO OR L. C. L. LOADING NO.										TRAILER NUMBER	&	TRAILER NUMBER	&	LENGTH/CAPACITY OF CAR ORDERED	WEIGHT IN TONS FURNISHED	WAYBILL DATE	WAYBILL NO.		
																5/28/65	63639		
<b>STOP THIS CAR AT</b>																			
<b>AT</b>																			
<b>AT</b>																			
TO STATION NO.		STATION				STATE		FROM NO.		STATION		STATE							
		HOMESTEAD PA				PA		4705		SHARPSBURG PA		PA							
DEST. RD.		ROUTE Show each Junction and Carrier in route order to destination of waybill										SHIPPER		FULL NAME OF SHIPPER, AND, FOR C. O. D. SHIPMENTS, THE STREET AND POST OFFICE ADDRESS, AND INVOICE NUMBER IF AVAILABLE.		OUTBOUND PATRON'S CODE			
PRR												THE DEITCH CO							
SHOW "A" IF AGENT'S OR "S" IF SHIPPER'S ROUTING RECONSIGN TO		STATION				STATE		ORIGIN AND DATE, ORIGINAL CAR, TRANSFER FREIGHT BILL AND PREVIOUS WAYBILL REFERENCE AND ROUTING WHEN REBILLED.											
AUTHORITY		CONSIGNEE AND ADDRESS				INBOUND PATRON'S CODE		AMOUNT		WEIGHED									
		USSTEEL HOMESTD WKS. 501738						C. \$		AT									
								O. \$		GROSS									
								D. \$		TARE									
								TOTAL		ALLOWANCE									
										NET		152200							
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Lading, Ventilation, Heating, Milling, Weighing, Etc. If load, Specify to Whom Lading Should be Charged).																			
WHEN SHIPPER IN THE UNITED STATES EXECUTES THE NO-RECOURSE CLAUSE OF SECTION 7 OF THE BILL OF LADING, INSERT "YES"																			
IF CHARGES ARE TO BE PREPAID, WRITE OR STAMP HERE, "TO BE PREPAID"																			
PICKUP SERVICE DELIVERY SERVICE REQUESTED																			
YES NO YES NO																			
Indicate by Symbol in Column Provided * how weights were obtained for L.C.L. Shipments only. R-Railroad Scale. S-Shipper's Tested Weights. E-Estimated - Weigh and Correct. T-Tariff Classification or Minimum.																			
ACCORDED TRANSIT AT PER L. C. C.		DESCRIPTION OF ARTICLES, SPECIAL MARKS & EXCEPTIONS				COMMODITY NO. *		WEIGHT		RATE		FREIGHT		ADVANCES		PREPAID			
		C/L OF SCRAP IRON FOR RMPO						152200		160GT		108.72							
BUREAU NO.		INBOUND BILLING, REFERENCES * POINT OF ORIGIN, ROAD, COMPLETE WAYBILL REFERENCES IN DATE, ORDER AND ROUTING				COMMODITY		WEIGHT		RATE		CHARGE							
						IN OUT		THRU PAID BAL. ADJ.											
Outbound Junction Agent Will Show Junction Stamps in Space and Order Provided. Additional Junction Stamps and all Yard Stamps to be placed on back hereof.																			
FIRST JUNCTION				SECOND JUNCTION				THIRD JUNCTION				FOURTH JUNCTION				DESTINATION AGENT WILL STAMP HEREIN STATION NAME AND DATE REPORTED			
<b>620 THE PENNSYLVANIA RAILROAD 620</b>																			

Figure 2: Original PRR Waybill, 8.5 x 11 inches exclusive of pin-feed edge.

years have stated that crews should not handle Waybills. Fourth, it may be evident that empty cars don't have Waybills, so what paperwork directs their movement? I will address that point as part of describing realistic Waybills.

## Creating a Waybill for Modelers' Use

Let's begin with the Waybill. The immediate question that a modeler might ask is whether there was a standard or typical document. In fact, the AAR adopted standard Waybills at least as early as the 1930s, and essentially every railroad used the standard forms without change. (All the standard AAR forms are shown in the various editions of *Railway Accounting Rules*; see Further Reading.) There are obvious advantages to everyone using the same paperwork for loads that could travel over widely different railroads, and it's also an advantage to the modeler, who only has to consider a standard form. Here's a prototype Waybill (figure 2 previous page), somewhat arbitrarily chosen from 1965.

Much of this prototype bill has space for information which modelers either don't use, or would need less space to fill out. So my approach to this problem is simply to scan the prototype bill, thereby creating a digital version of it, and in an application like Adobe Photoshop, cut and discard all the parts not wanted (shown in pink in figure 3), and then paste the remaining parts together into a whole.

With some rearrangement, here is that reassembled information from the same PRR document (figure 4 next page).

This is not yet a finished model Waybill, and needs further rearrangement. But before going any further there are some points to note here. First, the prototype bill is divided down the center between shipper information on the right, and consignee information on the left. It was very common practice for those working with Waybills to fold them in half the long way, and some modelers, as I discuss shortly, have even gone to the extreme of omitting entirely the right-hand side of the bill. So that center-line division is important.

Next up is probably the question of what size bill you want to make, and therefore how much of the prototype format can be retained. I will describe three different kinds of Waybill formats that various people are using, to illustrate how these formats vary. The first model Waybill is the one I use on my layout, and is 2.5 x 3.5 inches in size (the reasons for the size and for the blank area at the bottom will be discussed in a moment). Here is how it looks, as derived from the Pennsylvania document shown above, as figure 5 next page.

A second waybill design was created to match the size of many modelers' existing "mini-bills" and car cards, namely 2 x 4 inches. This size match, of course, permits continued use of

Figure 3: PRR Waybill of Figure 1, highlighted in pink to show parts to be removed.

various accommodations for these documents on layouts, such as bill files or slots. The preparation process is identical to the first example, but the arrangement is somewhat different because more space is available. figure 6 next page is an example, again sticking with the PRR prototype source, note that there was space to include the “stop this car” directions, for partial unloadings or LCL.

Third, there are modelers who either prefer a larger bill so more information can be included, or whose eyesight is better served by a bigger

format. One example of a large bill is from Frank Hodina, whose bill is 4.25 x 5.5 inches in size, because Frank wanted to present a more complete bill. This bill is illustrated in figure 7 next page, shown here as a Nickel Plate document and is filled out. I will comment below on the railroad name headers for Waybills, and about how the Waybill is filled out.

In addition to size, there is a decision to make as to whether the waybill will serve as a single document, or whether an additional component,

playing the role of a “car card,” will be used. Two of the three Waybill designs just shown do indeed intend

that no car card function will be implemented, and the car initials and number are to be shown on the

620 THE PENNSYLVANIA RAILROAD 620				AD 5880 R-2 6-63			
FREIGHT WAYBILL							
TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD							
CAR INITIAL	CAR NUMBER	LENGTH/CAPACITY OF CAR ORDERED		FURNISHED			
WM	54502						
TO	STATION	STATE	FROM	STATION	STATE		
	HOMESTEAD	PA		SHARPSBURG	PA		
ROUTE Show each Junction and Carrier in route order to destination of waybill			SHIPPER				
PRR			THE DEITCH CO				
CONSIGNEE AND ADDRESS			ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged).				
USSTEEL HOMESTD WKS. 501738							
NO. PKGS.	DESCRIPTION OF ARTICLES & EXCEPTIONS						
	C/L OF SCRAP IRON FOR RMPO						
620 THE PENNSYLVANIA RAILROAD 620							

Figure 4: PRR Waybill parts which were retained, and pasted back together.

620 THE PENNSYLVANIA RAILROAD 620				AD 5880 R-2	
FREIGHT WAYBILL					
TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD					
TO	STATION	STATE	FROM	STATION	STATE
CONSIGNEE AND ADDRESS			SHIPPER		
ROUTE Show in route order			AAR CLASS OF CAR ORDERED		
			LENGTH/CAPY OF CAR ORDERED		
			WEIGHED		
			E-Estimated S-Shipper's Tested Weights R-Railroad Scale T-Tariff Classification		
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Etc.) & EXCEPTIONS					
NO. PKGS.		DESCRIPTION OF ARTICLES			

Figure 5: PRR Waybill sized for 2.5 x 3.5 inch design.

# 620 THE PENNSYLVANIA RAILROAD 620 FREIGHT WAYBILL

TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD

CAR INITIAL		CAR NUMBER	
AAR CLASS OF CAR ORDERED		LENGTH/CAPY OF CAR ORDERED	
TO STATION	STATE	FROM STATION	STATE
CONSIGNEE AND ADDRESS		SHIPPER	
ROUTE Show in route order		Indicate how weights were obtained for L.C.L. Shipments only. S-Shipper's Tested Weights. T-Tariff Classification or Minimum. R-Railroad Scale. E-Estimated.	
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged). & EXCEPTIONS			
STOP THIS CAR AT			
AT			
NO. PKGS.	DESCRIPTION OF ARTICLES		

Figure 6

Waybill itself, just as on the prototype. This is visible in figures 6 and 7. The first design shown, figure 5 (previous page), is intended to be placed in a clear plastic sleeve with car number and initials on it, thus acting like a car

card. Here is that bill type, completed by inserting it into a clear sleeve, figure 8 (next page). (This idea comes from Bill Neale, see Further Reading, who suggested these baseball-card-collector sleeves.) Now it should be evident

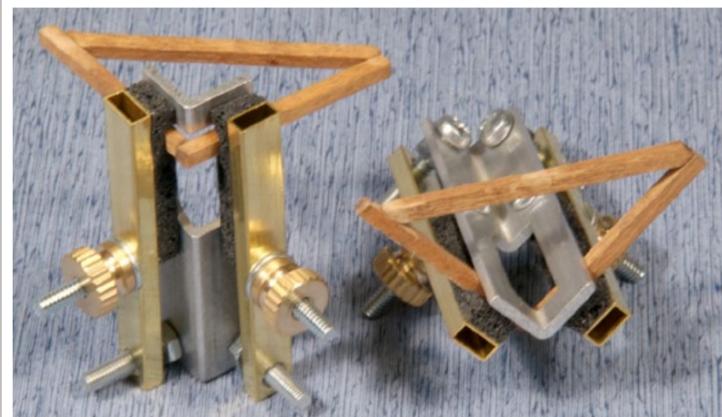
SPECIAL SERVICE <b>4-114-1</b>		<b>NICKEL PLATE ROAD</b> 541-THE NEW YORK, CHICAGO AND ST. LOUIS RAILROAD COMPANY-541 <b>FREIGHT WAYBILL</b> TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD					
CAR INITIALS AND NUMBERS <b>NKP 26047</b>		KIND <b>XM</b>	LENGTH OF CAR ORDERED    FURNISHED		CAPACITY OF CAR ORDERED    FURNISHED		
STOP THIS CAR		C.L. Transferred to	DATE <b>AUG. 17</b>	WAYSBILL No. <b>2322</b>			
AT		CONSIGNEE AND ADDRESS AT STOP					
AT							
AT							
TO No.	STATION	STATE	FROM No.	STATION	STATE		
<b>4-114</b>	<b>KINCAID</b>	<b>ILL</b>		<b>LIMA</b>	<b>OHIO</b>		
ROUTE (Show in route order to destination of waybill) <b>NKP-P&amp;PU(PEORIA)-CIW</b>			FULL NAME OF SHIPPER <b>LIMA HEAVY EQUIPMENT</b>				
RECON. TO	STATION	STATE	ORIGIN AND DATE				
CONSIGNEE AND ADDRESS <b>KINCAID MINING SUPPLY</b>			AMOUNT				
FINAL DESTINATION AND ADDITIONAL ROUTING			WEIGHED				
ON C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Milling, Weighing, Etc.)			C. Fee				
			O. Gross				
			D. Total				
			Yare				
			ALLOWANCE				
			IF CHARGES ARE TO BE PREPAID, WRITE ON STAMP HERE "TO BE PREPAID"				
			WHICH SHIPPER IN THE UNITED STATES RESIDES				
			THE NO. RESIDENCE CLASS OF SECTION F OF THE BILL OF LADING, INSERT "YES"				
			Indicate by symbol to Carload provided or how weights were obtained for L.C.L. Shipments only. R-Railroad Scale, S-Shipper's Tested Weights, E-Estimated, W-Weigh and Count, T-Tariff Classification or Minimum.				
No. PKGS.	DESCRIPTIONS OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS		WEIGHT	RATE	FREIGHT	ADVANCES	PREPAID
<b>CL</b>	<b>MINING SHAFT EQUIPMENT</b>						
FIRST JUNCTION		SECOND JUNCTION	THIRD JUNCTION	FOURTH JUNCTION		DESTINATION AGENT WILL STAMP HEREIN STATION NAME AND DATE REPORTED	
541 - THE NEW YORK, CHICAGO AND ST. LOUIS RAILROAD COMPANY - 541							

Figure 7

Figure 6: PRR Waybill sized for 2 x 4 inch design.

Figure 7: Nickel Plate Waybill, 4.25 x 5.5 inch design. The green box is operational coding.

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why the blank bill of this design, figure 4 (previous pages), has the empty space at the bottom: it is to accept the car information on the car sleeve.

Another important point to recognize is that Waybills with car initials and numbers printed on them cannot provide the flexibility of "this load, any car" which is obtained with classic car cards/sleeves and Waybills. This is the

downside to their more prototypical appearance. Each modeler can choose which aspect of a Waybill system is more important.

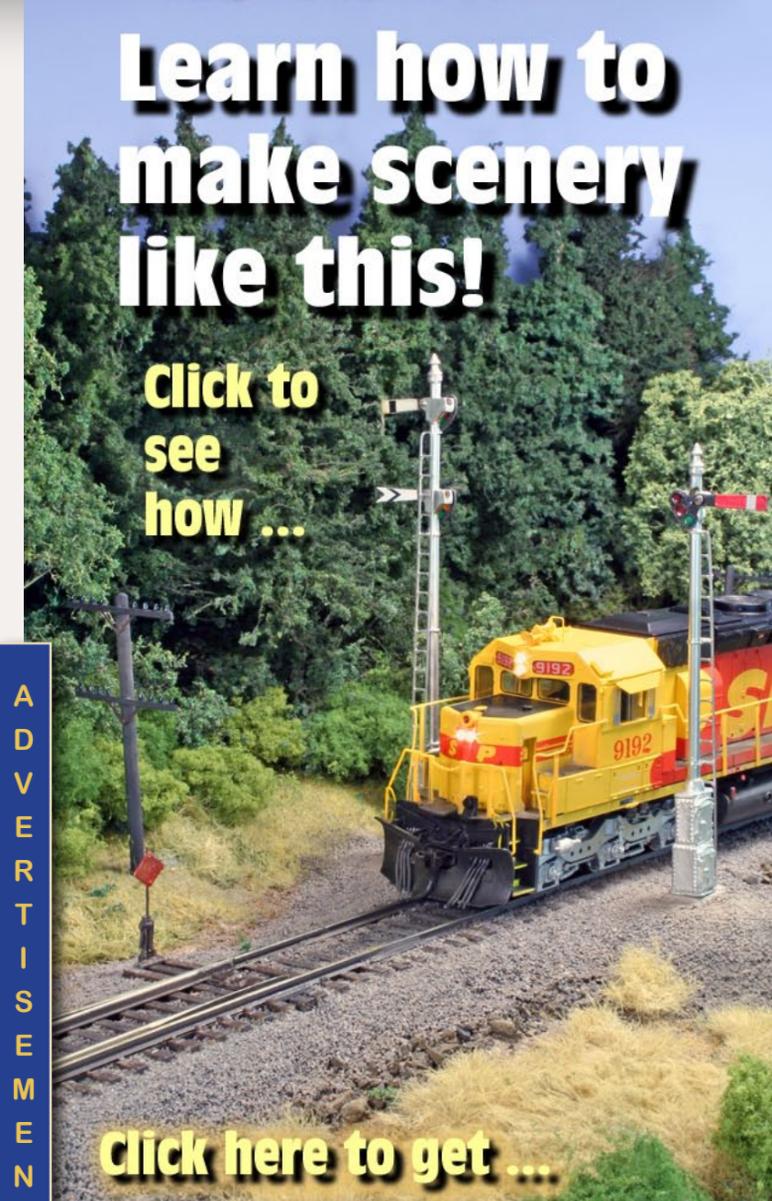
The 2.5 x 3.5-inch Waybill, which uses the readily available baseball-card sleeve, need not have car sleeve information at the bottom; Jeff Aley has devised a somewhat different Waybill, shown in figure 8, which has

AD 5880 R-2					
<b>620 THE PENNSYLVANIA RAILROAD 620 FREIGHT WAYBILL</b>					
TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD					
TO STATION	STATE	FROM STATION	STATE		
SHUMALA	CA	PITTSBURGH	PA		
CONSIGNEE AND ADDRESS			SHIPPER		
B&B FOREMAN, SP, SHOP TK.			PITTSBURGH PAINT COMPANY		
ROUTE Show in route order			AAR CLASS OF CAR ORDERED		
PRR-ST L-SSW- COR-T&NO-ELP- SP			XM		
			LENGTH/COPY OF CAR ORDERED		
			WEIGHED S		
			E-Estimated S-Shipper's Tested Weights R-Railroad Scale T-Tariff Classification		
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Etc.) & EXCEPTIONS SHIPPER LOAD & COUNT					
NO. PKGS.		DESCRIPTION OF ARTICLES			
48 DRUMS		BRIDGE PAINT			
<b>BOX CAR</b> <b>RI 146765</b> <b>AAR XM</b>					

Figure 8: Completed 2.5 x 3.5 inch Waybill, for bottom-information type of car sleeve.

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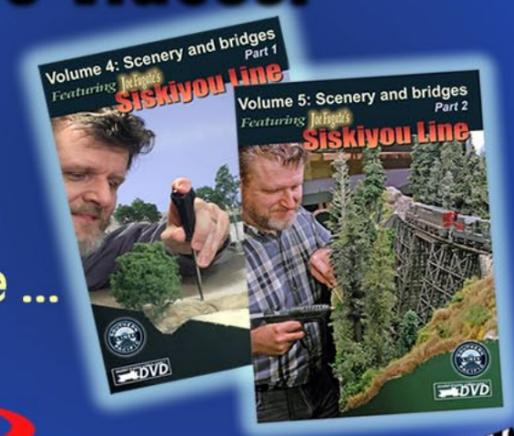
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the car initials and number in the prototype location. Note, however, that Jeff omits shipper information (the Waybill is imagined as folded to conceal it), and he is typographically somewhat limited by producing this document in Microsoft Excel.

But a clear sleeve need not be only for the purpose of making a car card. Sleeves help keep paperwork

together and permit multiple Waybill placements for a single car. There is a very convenient side-loading sleeve which will hold the 2 x 4-inch Waybill, and Frank Hodina has located a clear sleeve which can be cut down to fit his 4.25 x 5.5-inch form. Sleeves are widely available. The 2 x 4-inch and Hodina's 4-5/8 x 5.5-inch sizes are from Everyday Plastics (visit their web site at: [www.everydayplastics.com](http://www.everydayplastics.com)).

802 - UNION PACIFIC - 802		
FREIGHT WAY-BILL		
TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD		
CAR INITIALS <b>UP</b>	CAR NUMBER <b>127889</b>	
AAR <b>XM</b>	DESCRIPTION <b>BOX</b>	LENGTH / CAPY <b>40 FT</b>
ROUTE (Show each Junction and Carrier in Route order) <b>UP-OOB-ONW-OHI-DTI</b>		
TO (STATION) <b>DETROIT</b>	(STATE) <b>MICH</b>	
CONSIGNEE AND ADDRESS <b>MOTOR CITY ELECTRIICAL</b>		
INSTRUCTIONS (Regarding Spotting, Icing, Ventilation, Etc.)		
NO. PKGS. <b>0/L</b>	DESCRIPTION OF ARTICLES <b>ALTERNATORS</b>	

Figure 9: Completed 2.5 x 3.5 inch Waybill, for top-information type of car sleeve.

# The SCOTTY MASON SHOW

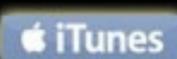
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## END OF TRAIN DEVICE

FLASH CIRCUIT UNDER TRUCK

TRACK POWERED

**BRIGHT RED FLASHING LIGHT!**



READY TO RUN!

Installs in minutes with no freight car modification required!

**RE RING ENGINEERING**

Patented Technology - US Patent 7,549,609

**Does not affect Load!**

↓ Car without Load ↓

↓ Car with Load ↓



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**721 SOUTHERN PACIFIC COMPANY 721  
PERISHABLE FREIGHT WAYBILL**

TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD

CAR INITIAL <b>PFE</b>		CAR NUMBER <b>41354</b>	
AAR CLASS OF CAR ORDERED <b>RS</b>		LENGTH/COPY OF CAR ORDERED	
TO STATION STATE <b>PORTLAND OR</b>	FROM STATION STATE <b>SHUMALA CA</b>	CONSIGNEE AND ADDRESS <b>BLUE SHIELD FOODS</b>	
SHIPPER <b>PHELAN &amp; TAYLOR PACKING</b>		ROUTE Show in route order <b>SP</b>	
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged). & EXCEPTIONS			
RECONSIGINED TO			
RECONSIGINED TO			
PRE-ICE	INITIAL ICE	CPS	
<b>YES</b>	<b>YES</b>	<b>2</b>	
NO. PKGS.		DESCRIPTION OF ARTICLES	
<b>462 CRATES</b>		<b>ORANGES</b>	

Figure 10

**840-THE WESTERN PACIFIC R.R. CO.-840  
LIVESTOCK FREIGHT WAYBILL**

TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD

CAR INITIAL <b>WP</b>		CAR NUMBER <b>76058</b>	
AAR CLASS OF CAR ORDERED <b>SM</b>		LENGTH/COPY OF CAR ORDERED	
TO STATION STATE <b>K. FALLS OR</b>	FROM STATION STATE <b>OROVILLE CA</b>	CONSIGNEE AND ADDRESS <b>C. B. JACKSON STOCK SALES</b>	
SHIPPER <b>FEATHER RVR. LIVESTOCK</b>		ROUTE Show in route order <b>WP-SAC-SP</b>	
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged). & EXCEPTIONS			
STOP THIS CAR <b>AT</b>			
AT			
NO. HEAD	DESCRIPTION OF STOCK		
<b>36 HD.</b>	<b>BREEDER CALVES</b>		

Figure 11

**Additional Points About Waybills**

Having made the foregoing points about format, it's worth addressing some further details about prototype Waybills. First, the bills shown above are derived from the standard Waybill of the AAR. But there were also other AAR forms, in particular for perishables, for livestock, and for LCL.

Those standard forms can, of course, be cut down to model size and shape, just as described above. The AAR recommended that perishable Waybills be printed on pink stock, and this can of course be done with model bills too. Here are examples of model-form perishable (figure 10) and livestock (figure 11) bills. There are a number of details in the livestock bill relating to transit regulations for livestock, which can be a source of further operational points for those interested.

Further, it is important to recognize that prototype empty cars usually moved on separate documents, often called Empty Car Bills, which were quite different in appearance from Waybills.

Figure 10: Pink perishable Waybill, 2 x 4-inch format.

Figure 11: Livestock Waybill, 2 x 4 inches.

Usually they were about 4 x 11 inches in size, to match the lengthwise-folded waybills in a stack. Shown as figures 12 and 13 are two examples of prototype Empty Car Bills. These Bills were in effect only on the issuing railroad and were not used after interchanging to another road, so at every

**Figure 12** FORM 1304 1-65-500M

# EMPTY CAR BILL

No. \_\_\_\_\_ Date \_\_\_\_\_ 19\_\_

Initial \_\_\_\_\_ No. \_\_\_\_\_

From \_\_\_\_\_

To \_\_\_\_\_

Class or Suitability \_\_\_\_\_

AUTHORITY FOR MOVEMENT \_\_\_\_\_

REMARKS \_\_\_\_\_

These Bills to be used only for movement of empty cars without charges.  
If car is ordered loaded while en route, Conductor will make notation under "Remarks" showing point at which empty run ceased, and leave Bill with Agent, who will change destination accordingly, and send Bill to Division Superintendent.

**Figure 13** 5MM 12-56 ARB (Printed in U. S. A.) NYCS HR-2 Revised I.C.C. 150(a)-3 Yrs.

**NEW YORK CENTRAL SYSTEM**

## COMBINATION HOME ROUTE CARD AND EMPTY CAR BILL

Part 1

INITIAL	NUMBER	KIND

**HOME ROUTE INFORMATION**  
(Form HR-2 Revised (Parts 1 and 2) MUST be prepared on all loaded cars, also empty cars on orders, received from connecting lines, except:  
Private Line Tank Cars—any mark; Live Poultry Cars—any mark; System Cars marked B&A, CCC&StL, MC, NOR, NYC, P&E; also cars marked P&E, PM&K&Y, B&O, Erie and PRR.)

Part 2

ROAD REC'D FROM	STATION	DATE
(a)		

On arrival at destination or junction point where delivered to connecting line, if road received from (Item a) is not proper route under Car Service Rules secure proper route in usual manner and insert information in Item (b) crossing out Item (a).

ROAD	STATION	AUTHORITY
(b)		

**EMPTY CAR BILL**  
(Form HR-2 Revised (Parts 1 and 3) MUST be prepared for all empty car movements on Foreign, System and Private Line Cars, except Tank and Live Poultry Cars.)

Part 3

### EMPTY CAR MOVEMENT

DESTINATION _____	FOR _____
FROM _____	DATE _____
AUTHORITY OR ORDER NO. _____	

### EMPTY CAR MOVEMENT

DESTINATION _____	FOR _____
FROM _____	DATE _____
AUTHORITY OR ORDER NO. _____	

### EMPTY CAR MOVEMENT

DESTINATION _____	FOR _____
FROM _____	DATE _____
AUTHORITY OR ORDER NO. _____	

### EMPTY CAR MOVEMENT

DESTINATION _____	FOR _____
FROM _____	DATE _____
AUTHORITY OR ORDER NO. _____	

When spaces for empty movements have all been used transfer home route information to new card and destroy old card.  
For complete instructions on handling empty cars see Booklet NYCS MFT-110A.  
APPLY YARD STAMPS ON BACK

interchange point, the receiving railroad would issue a new Empty Car Bill to move the car onward—or perhaps confiscate that empty car for loading.

These Empty Car Bills may be white, yellow or manila in color. Empty Car Bills, unlike Waybills, were not only not standardized, but no two even seem to be alike. To be accurate, a modeler would want to locate a

prototype example for the road being modeled. The example I had seen of an SP version was yellow, so that was what I followed in making up a 2 x 4-inch version, shown as figure 14.

This bill is filled out in its lower section for a car headed toward a location where it is expected to be loaded. In this type of Empty Car Bill, a car being moved toward its home rails (or to an intermediate yard which needs

J-62-48 Form 1304

**SOUTHERN PACIFIC COMPANY**

# EMPTY CAR BILL

CAR INITIAL	CAR NUMBER
SP	90873

AAR CLASS OF CAR ORDERED	LENGTH/COPY OF CAR ORDERED
LO	

**FOR HOME**

Billed from \_\_\_\_\_

To or Via \_\_\_\_\_ R.R. \_\_\_\_\_

**FOR LOADING**

Billed from WEED CA

To BAKERSFIELD CA

Shipper \_\_\_\_\_ Spot \_\_\_\_\_

**INSTRUCTIONS—This form must accompany all empty foreign cars and must be used in billing private line cars under General Order Ten.**

**Figure 14**

Figure 12: Union Pacific Empty Car Bill.

Figure 13: New York Central Empty Car Bill.

Figure 14: Empty Car Bill for Southern Pacific, 2 x 4 inches.

empties) would be filled out in the upper part of the bill instead.

My own feeling is that use of Empty Car Bills is a real improvement in prototypical practice, compared to the usual “four-cycle waybill” usage of having the paperwork look about the same.

## Additional Points About Waybills

There is one important exception to the use of Empty Car Bills: privately owned tank cars, when empty, were

moved with regular freight bills, though their cargo was marked as “L/C,” meaning “last contained,” so that any safety issues with residue or fumes of the previous cargo could be recognized. A pair of Waybills for this situation are shown as figures 15a and 15b.

Several of the Waybill examples already given illustrate an important point about prototype bills: every railroad issued its own form, with its name styled as it preferred, even though the balance of the form was

pure AAR standard. Since Waybills are issued by the road originating the shipment, this means that a satisfactory model Waybill system has to have a wide range of railroad names as headings.

My approach has been to try and collect actual Waybill examples, primarily from modelers of other roads, and in the absence of an actual Waybill, to use related documents such as freight bills or Bills of Lading to acquire headers. I now have such headers for about 75 railroads. One also needs to

add the AAR number code, assigned to each railroad, to the header. A complete list of assigned numbers can be found in Railway Accounting Rules. An abbreviated list of major roads is shown below as Table 1.

## Filling Out Waybills

Every car on an operating layout should have some paperwork moving it as an empty or a load (except, say, maintenance cars on a siding). The Empty Car Bill in figure 14 (previous page) presumably corresponds to a loaded move in the other direction, and since it is a cement hopper (as were the vast majority of covered hoppers in 1953, when I model), there is one logical load in the opposite direction. That is what is shown in the corresponding Waybill for this car when loaded, figure 16.

759 TEXAS & NEW ORLEANS RAILROAD COMPANY 759	
FREIGHT WAYBILL	
TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD	
CAR INITIAL SHPX	CAR NUMBER 5605
AAR CLASS OF CAR ORDERED TPI	LENGTH/COPY OF CAR ORDERED
TO STATION STATE KLAM. FLS. OR	FROM STATION STATE LK. CHARLES LA
CONSIGNEE AND ADDRESS MODOC FARM SUPPLY	SHIPPER OLIN-MATHIESON CHEMICAL CO.
ROUTE Show in route order T&NO-ELP-SP	Indicate how weights were obtained for L.C.L. Shipments only. S-Shipper's Tested Weights. T-Tariff Classification or Minimum. R-Railroad Scale. E-Estimated.
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged). & EXCEPTIONS	
STOP THIS CAR AT	
AT	
NO. PKGS.	DESCRIPTION OF ARTICLES
C/L	ANHYDROUS AMMONIA

Figure 15a

721 SOUTHERN PACIFIC COMPANY 721	
FREIGHT WAYBILL	
TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD	
CAR INITIAL SHPX	CAR NUMBER 5605
AAR CLASS OF CAR ORDERED TPI	LENGTH/COPY OF CAR ORDERED
TO STATION STATE EL PASO TX	FROM STATION STATE KLAM. FLS. OR
CONSIGNEE AND ADDRESS OLIN-MATHIESON CHEMICAL CO.	SHIPPER MODOC FARM SUPPLY
ROUTE Show in route order SP-ELP-T&NO	Indicate how weights were obtained for L.C.L. Shipments only. S-Shipper's Tested Weights. T-Tariff Classification or Minimum. R-Railroad Scale. E-Estimated.
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged). & EXCEPTIONS	
RECORD RIGHTS, REVERSE ROUTE	
STOP THIS CAR AT	
AT	
NO. PKGS.	DESCRIPTION OF ARTICLES
L/C	ANHYDROUS AMMONIA

Figure 15b

721 SOUTHERN PACIFIC COMPANY 721	
FREIGHT WAYBILL	
TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD	
CAR INITIAL SP	CAR NUMBER 90873
AAR CLASS OF CAR ORDERED LO	LENGTH/COPY OF CAR ORDERED
TO STATION STATE WEED CA	FROM STATION STATE MONOLITH CA
CONSIGNEE AND ADDRESS CALIF. DIV. OF HIGHWAYS	SHIPPER MONOLITH PORTLAND CEMENT
ROUTE Show in route order SP	Indicate how weights were obtained for L.C.L. Shipments only. S-Shipper's Tested Weights. T-Tariff Classification or Minimum. R-Railroad Scale. E-Estimated.
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Milling, Weighing, Etc. If Iced, Specify to Whom Icing Should be Charged). & EXCEPTIONS	
STOP THIS CAR AT	
AT	
NO. PKGS.	DESCRIPTION OF ARTICLES
C/L	CEMENT

Figure 16

Figure 15a: Waybill for a tank car load, 2 x 4-inch format. “C/L” means “carload.”

Figure 15b: Waybill for returning empty tank car, paired with the load Waybill of Figure 15a, 2 x 4 inches. Notation “Record rights . . .” directs car to return on its service route when loaded; “L/C” means “last contained.”

Figure 16: Waybill for loaded car, opposite movement of that shown in Figure 14, 2 x 4 inches.

**Table 1**

**AAR Code Number, for Selected Railroads**

3 - Akron, Canton & Youngstown	400 - Kansas City Southern
10 - Ann Arbor	444 - Louisville & Nashville
22 - ATSF (Santa Fe)	479 - Minneapolis & St. Louis
28 - Atlantic Coast Line	490 - Missouri-Kansas-Texas
50 - Baltimore & Ohio	494 - Missouri Pacific
56 - Bangor & Aroostook	540 - New York Central
69 - Boston & Maine	541 - Nickel Plate Road
103 - Canadian National	543 - New York, New Haven & Hartford
105 - Canadian Pacific	550 - Norfolk & Western
125 - Chesapeake & Ohio	558 - Northern Pacific
129 - Chicago & Eastern Illinois	620 - Pennsylvania
131 - Chicago & North Western	626 - Pittsburgh & Lake Erie
133 - Chicago, Burlington & Quincy	623 - Reading
140 - Chicago, Milwaukee, St. Paul & Pacific	693 - St. Louis-San Francisco
145 - Chicago, Rock Island & Pacific	694 - St. Louis Southwestern
195 - Delaware & Hudson	712 - Seaboard Air Line
196 - Delaware, Lackawanna & Western	724 - Southern
197 - Denver & Rio Grande Western	721 - Southern Pacific
208 - Detroit, Toledo & Ironton	728 - Spokane, Portland & Seattle
238 - Elgin, Joliet & Eastern	749 - Texas & New Orleans
263 - Florida East Coast	760 - Texas & Pacific
299 - Georgia	802 - Union Pacific
308 - Grand Trunk Western	823 - Virginian
310 - Great Northern	825 - Wabash
317 - Gulf Mobile & Ohio	839 - Western Maryland
351 - Illinois Central	840 - Western Pacific. ■

This brings us to the matter of how Waybills are filled out. An important point in the transition era is that most Waybills were filled out with what were known as billing typewriters, and these machines only had uppercase letters. Thus practically all Waybills one can find prior to 1960 were filled out in all capitals.

But naturally not every make of billing typewriter had the same typeface, and other methods of preparation and transmittal were used, such as Teletype. Accordingly, realistic Waybills should have a range of typeface appearances. After looking carefully at SP documents I have seen, I concluded that a fairly close match to the appearance was a typeface called Bell Gothic. That is the typeface used to fill out figures 14 through 16 (previous pages), as well as figures 8 and 10 (previous pages). A digital Teletype font was used for figure 11 (previous pages).

One possible criticism of these and many other typefaces in electronic form is that they are far too clean and pristine. Typewriters in service develop worn or even broken letters, and accumulate dirt on the keys. There happen to be a fair number of digital typefaces based on “in service” typewriters, and I have found a couple of these to be very realistic.

One of the best is called “Mom’s Typewriter” (the fellow who digitized it claims it really is from his mom’s typewriter). It is available free at [fontspace.com](http://fontspace.com) and an example of its

appearance is in figure 17 (next page). Other typical typewriter faces might include the widely available face called “American Typewriter,” shown in figure 18 (next page).

More examples of “working” typewriter faces can be suggested, and many are available cheap or free on the Internet, but beware the so-called “grunge” faces, which are heavily distorted or disrupted, as these go beyond what is credible in a working typewriter.

While on the subject of typefaces, I have been asked what typeface I used on my waybills for the form itself, in the AAR portion of the document. My answer is that I didn’t choose any typeface; what you see in these Waybills is simply the scanned appearance of the actual Waybills themselves.

Given a group of suitable typefaces for this task, how are the model waybills (still in electronic form as Photoshop files at this point) filled out? I simply use the Type tool in Photoshop to type in whatever is needed in each Waybill. All right, you say, but what do I write?

There was considerable formality in the various types of information which were filled in on a Waybill, and I won’t take space here to discuss the various parts of the document. However, I did publish awhile back a magazine article on that exact topic, in the Operations SIG (NMRA) magazine, *The Dispatcher’s Office* (see Bibliography).

A corrected version of the printed article is available at: [modelingthesp.blogspot.com/2011/09/my-article-in-dispatchers-office.html](http://modelingthesp.blogspot.com/2011/09/my-article-in-dispatchers-office.html).

A major point about Waybill content is the identity of shippers and consignees, which you can think of as pairs of locations. One option is to use layout business names as one half of each pair, and some off-layout name, perhaps made up, such as "Acme Steel," as the second half. But many modelers may prefer to try and use actual industries.

I personally enjoy research on this topic, and have located many industrial concerns in my modeled area through old telephone books (available at local libraries) and some railroad documents such as the very useful "Shipper Guides" issued by many railroads. One source of reprinted versions of these is the Rails Unlimited shop, which can be visited at: [railsunlimited.ribbonrail.com/Books/shippers.html](http://railsunlimited.ribbonrail.com/Books/shippers.html).

A major source of this information is the OpSIG industry database,

accessible on-line at: [opsig.org/reso/inddb](http://opsig.org/reso/inddb). It contains around 40,000 entries, but be careful with this information: it may be from an era ranging from 1935 to 1995, and thus some information in the database may not fit your modeling. As my research continues, I maintain a "pairs list" of shipper-consignee pairs I have identified. It is sometimes useful to be able to review the pairs so far used, to help see what may still be needed.

Once the individual Waybills are filled out, I save each one with a name

corresponding to its industry, and maintain these in a file. Next they will be printed out, which I will discuss in a moment, but I like to retain the original files so a damaged or lost bill can be easily replaced.

There are further considerations about the documentation for some specialized kinds of freight handling, such as LCL, or mine tickets for coal loading. The latter has been very well described in a recent article by Ted Pamperin, listed under Further Reading, and for those interested in that topic, I highly recommend Ted's article.

## Producing the Physical Waybills

Now that you have a set of electronic files, in Photoshop or some application (some modelers are using Microsoft Excel), what is next? In my case, I lay out the waybill files in a page layout application (I use Adobe InDesign, but there are several others which will work), placing as many on an 8.5 x 11-inch page as possible. I use heavy paper, a bit short of what would be light cardstock, but there are those who prefer a little sturdier material like the cardstock.

I show such a layout in figure 19 (next page) for the 25 x 3.5-inch Waybill

626—THE PITTSBURGH & LAKE ERIE RAILROAD COMPANY—626					
FREIGHT WAYBILL					
TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD					
TO	STATION	STATE	FROM	STATION	STATE
BALLARD		CA	MUNHALL		PA
CONSIGNEE AND ADDRESS			SHIPPER		
JUPITER PUMP & COMPRESSOR			MESTA MACHINE CO.		
ROUTE Show in route order			AAR CLASS OF CAR ORDERED		
P&LE-YNGS-NYC-BI-RI-CO BL-UP-OG-SP			XM		
			LENGTH/COPY OF CAR ORDERED		
			WEIGHED T		
			E—Estimated S—Shipper's Tested Weights R—Railroad Scale T—Tariff Classification		
ON C.L. TRAFFIC - INSTRUCTIONS (Regarding Icing, Ventilation, Etc.) & EXCEPTIONS					
NO. PKGS.	DESCRIPTION OF ARTICLES				
2	PUNCH PRESS, COMPLETE				
<b>BOX CAR</b>					
SP 30366					
AAR XM					

Figure 17

69 - BOSTON AND MAINE RAILROAD - 69					
FREIGHT WAYBILL					
TO BE USED FOR SINGLE CONSIGNMENTS. CARLOAD AND LESS CARLOAD					
TO	STATION	STATE	FROM	STATION	STATE
BALLARD		CAL	S. BOSTON		MASS
CONSIGNEE AND ADDRESS			SHIPPER		
JUPITER PUMP & COMPRESSOR			BOSTON GEAR COMPANY		
ROUTE Show in route order			AAR CLASS OF CAR ORDERED		
B&M-ALB-NYC-CHI-RI-CO BL-UP-OG-SP			XM		
			LENGTH/COPY OF CAR ORDERED		
			WEIGHED		
			E—Estimated S—Shipper's Tested Weights R—Railroad Scale T—Tariff Classification		
ON C. L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Etc.) & EXCEPTIONS					
SL&C - EWIB					
NO. PKGS.	DESCRIPTION OF ARTICLES				
124	BOXES GEAR TRAIN ASSYS.				
<b>BOX CAR</b>					
NP 29563					
AAR XM					

Figure 18

Figure 17: P&LE bill filled out with Mom's Typewriter face, 2.5 x 3.5-inch format.

Figure 18: Boston & Maine Waybill filled out with American Typewriter face, 2.5 x 3.5-inch format.

format. You can see that there is very little waste material in this arrangement. With the 2 x 4-inch format turned to run across the sheet, two

five-high columns of bill images can be placed, making a total of 10 Waybills per sheet for that format.

<p>721 SOUTHERN PACIFIC COMPANY 721 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SACRAMENTO CA</td> <td>SHUMALA CA</td> </tr> </table> <p>CONSIGNEE AND ADDRESS MATERIALS YARD, SP SHOPS</p> <p>SHIPPER SP, SHOP TRACK</p> <p>ROUTE Show in route order SP</p> <p>AAR CLASS OF CAR ORDERED GB, GS LENGTH/CAPY OF CAR ORDERED WEIGHED</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES C/L SCRAP FOR RECLAIM N/R</p>	TO STATION STATE	FROM STATION STATE	SACRAMENTO CA	SHUMALA CA	<p>721 SOUTHERN PACIFIC COMPANY 721 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SHUMALA CA</td> <td>CARSON CA</td> </tr> </table> <p>CONSIGNEE AND ADDRESS SP, OIL TRACK</p> <p>SHIPPER RICHFIELD OIL COMPANY</p> <p>ROUTE Show in route order SP</p> <p>AAR CLASS OF CAR ORDERED TM LENGTH/CAPY OF CAR ORDERED WEIGHED</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES C/L LOCOMOTIVE FUEL</p>	TO STATION STATE	FROM STATION STATE	SHUMALA CA	CARSON CA	<p>79</p> <p>NICKEL PLATE ROAD SH- THE NEW YORK, CHICAGO AND ST. LOUIS RAILROAD COMPANY-SH <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SHUMALA CAL</td> <td>MARION IND</td> </tr> </table> <p>CONSIGNEE AND ADDRESS SP STORES, SHOP TRACK</p> <p>SHIPPER SUPERIOR CAR DOOR CO.</p> <p>ROUTE Show in route order NKP-ST L-SSW-COR-T&amp;NO-ELP-SP</p> <p>AAR CLASS OF CAR ORDERED XM LENGTH/CAPY OF CAR ORDERED WEIGHED</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES 75 LBS. RY. CAR FORGINGS</p>	TO STATION STATE	FROM STATION STATE	SHUMALA CAL	MARION IND
TO STATION STATE	FROM STATION STATE													
SACRAMENTO CA	SHUMALA CA													
TO STATION STATE	FROM STATION STATE													
SHUMALA CA	CARSON CA													
TO STATION STATE	FROM STATION STATE													
SHUMALA CAL	MARION IND													
<p>811 - UTAH RAILWAY - 811 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SHUMALA CA</td> <td>SPRING CYN UT</td> </tr> </table> <p>CONSIGNEE AND ADDRESS SOUTHERN PAC., SHOP TRACK</p> <p>SHIPPER SPRING CANYON COAL COMPANY</p> <p>ROUTE Show in route order UCR-PROVO-UP-LA-SP</p> <p>AAR CLASS OF CAR ORDERED GS LENGTH/CAPY OF CAR ORDERED WEIGHED S</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES C/L HOUSEHOLD COAL</p>	TO STATION STATE	FROM STATION STATE	SHUMALA CA	SPRING CYN UT	<p>526 - The Nashville, Chattanooga &amp; St. Louis Ry. - 526 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SHUMALA CAL</td> <td>DALTON GA</td> </tr> </table> <p>CONSIGNEE AND ADDRESS CHAMISAL FLOOR &amp; TILE, HS TK</p> <p>SHIPPER PIEDMONT CARPET CO.</p> <p>ROUTE Show in route order NC&amp;STL-ATL-SOU-NO-IC-AVD-T&amp;NO-ELP-SP</p> <p>AAR CLASS OF CAR ORDERED XM LENGTH/CAPY OF CAR ORDERED WEIGHED</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES 24,400 LBS. INTERIOR CARPET</p>	TO STATION STATE	FROM STATION STATE	SHUMALA CAL	DALTON GA	<p>721 SOUTHERN PACIFIC COMPANY 721 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SHUMALA CAL</td> <td>SELBY CAL</td> </tr> </table> <p>CONSIGNEE AND ADDRESS NIPOMO HARD-WARE, HOUSE TK.</p> <p>SHIPPER SELBY SMELTING &amp; LEAD COMPANY</p> <p>ROUTE Show in route order SP</p> <p>AAR CLASS OF CAR ORDERED XM LENGTH/CAPY OF CAR ORDERED WEIGHED R</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES 11,400 LBS. LEAD SHEET, PIPE &amp; BAR</p>	TO STATION STATE	FROM STATION STATE	SHUMALA CAL	SELBY CAL
TO STATION STATE	FROM STATION STATE													
SHUMALA CA	SPRING CYN UT													
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<p>620 THE PENNSYLVANIA RAILROAD 620 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SHUMALA CA</td> <td>PITTSBURGH PA</td> </tr> </table> <p>CONSIGNEE AND ADDRESS B&amp;B FOREMAN, SP, SHOP TK.</p> <p>SHIPPER PITTSBURGH PAINT COMPANY</p> <p>ROUTE Show in route order PRR-ST L-SSW-COR-T&amp;NO-ELP-SP</p> <p>AAR CLASS OF CAR ORDERED XM LENGTH/CAPY OF CAR ORDERED WEIGHED S</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS SHIPPER LOAD &amp; COUNT</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES 48 DRUMS BRIDGE PAINT</p>	TO STATION STATE	FROM STATION STATE	SHUMALA CA	PITTSBURGH PA	<p>400 - THE KANSAS CITY SOUTHERN RY. CO. - 400 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SHUMALA CA</td> <td>FORT SMITH AR</td> </tr> </table> <p>CONSIGNEE AND ADDRESS PISMO VETERIN-ARIAN SVC., HS TK</p> <p>SHIPPER RUSSELL DISTRIB. CO.</p> <p>ROUTE Show in route order KCS-HOWE-RI-TUCUM-SP</p> <p>AAR CLASS OF CAR ORDERED XM LENGTH/CAPY OF CAR ORDERED WEIGHED</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS SHIPPER LOAD &amp; COUNT</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES 48 BOXES ANIMAL HEALTH PROD.</p>	TO STATION STATE	FROM STATION STATE	SHUMALA CA	FORT SMITH AR	<p>721 SOUTHERN PACIFIC COMPANY 721 <b>FREIGHT WAYBILL</b></p> <p>TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD</p> <table border="1"> <tr> <td>TO STATION STATE</td> <td>FROM STATION STATE</td> </tr> <tr> <td>SERRANO CA</td> <td>SHUMALA CA</td> </tr> </table> <p>CONSIGNEE AND ADDRESS FOREMAN, TRACK FORCES</p> <p>SHIPPER WESTERN ICE CO.</p> <p>ROUTE Show in route order SP</p> <p>AAR CLASS OF CAR ORDERED RS LENGTH/CAPY OF CAR ORDERED WEIGHED</p> <p>ON C. L. TRAFFIC-INSTRUCTIONS (Regarding icing, Ventilation, Etc.) &amp; EXCEPTIONS</p> <p>NO. PKGS. DESCRIPTION OF ARTICLES 22,000 LBS. ICE N/R</p>	TO STATION STATE	FROM STATION STATE	SERRANO CA	SHUMALA CA
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SERRANO CA	SHUMALA CA													

Figure 19

Once printed, these are cut out with a good quality paper cutter. (I like the accuracy of the rolling-trimmer type of cutter, instead of the traditional guillotine style; one good brand is Dahle.)

For any clear sleeves which need to receive car information labels, I use clear Avery labels. These are intended to be printed on either inkjet or laser printers. I use the No. 5660 labels for my 2.5 x 3.5-inch sleeves. Their

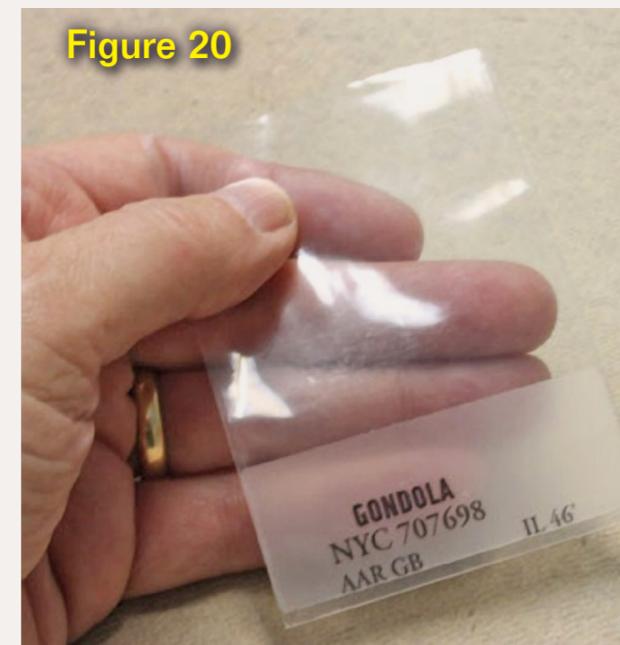


Figure 20: Example of a nine-up layout of Waybills to be printed on 8.5 x 11-inch sheet. These are 2.5 x 3.5-inch format bills. The horizontal and vertical guidelines help position the individual items but are removed prior to printing. Figure 20: The clear plastic baseball-card sleeve, with clear Avery label attached to show car information. This then functions as a “car sleeve.”

appearance when attached to the sleeve is shown in figure 20. The labels are easy to apply, and the sleeves are easy to work with when complete.

For any type of sleeve or waybill, there are a variety of options for filing and storing the bills. I like to use hardwood filing boxes of the type familiar for use with 3 x 5 index cards, but larger to accommodate these various Waybill designs. One good source on line is at this link: [successimage.com/cat--Card-Files--CardFiles](http://successimage.com/cat--Card-Files--CardFiles).

## Operating with These Waybills

Operation, of course, proceeds much as it would with any type of car card or waybill system, but it is useful to observe that multiple inclusions in a sleeve can pay dividends. Obviously, a car with a load-empty cycle, such as the covered hopper of figures 14 and 16, or the tank car of figures 15a and 15b (all previous pages), might as well have both bills in the same sleeve, and they can be reversed from session to session.

Inserting an Empty Car Bill behind a load bill works equally well in any of these formats. figure 21 (next page) shows this for the 2.5 x 3.5-inch format, and the convenient side-entry sleeve for the 2 x 4-inch format is shown in figure 22 (next page). Of course, additional cycles, expressed as pairs of load Waybills in two directions, or pairs of Empty Car Bills, or simply paired Waybill-Empty Car Bill

sets, can be added to the sleeve for further variety.

A point often raised in connection with the Waybill designs shown here is that the Empty Car Bill does not specify where the empty is to be spotted, only its destination town. On the prototype, the conductor would consult with the agent upon arrival at a town, to find out what switching was to be done.

In layout operation without an agent position at a particular town, the communication can be accomplished with messages left for the crew, exactly as was done on the prototype when agents were not on duty when a local arrived. A bill box or comparable receptacle was provided on the outside of the depot, locked with a switch lock, for both agent and conductor to leave Waybills and Empty Car Bills for each other.

Finally, I depict an example of a model Waybill doing its job, with the corresponding load being delivered to the correct siding on my layout. This is shown in figures 23 and 24 (next page). For me, with my core enthusiasm for freight cars and freight operations, these two figures encapsulate what can be achieved with more prototypical Waybills in model form.

## Concluding Remarks

The various Waybill designs shown in this article are really only illustrations of different approaches which are possible toward a more prototypical

Waybill for model operations. Size and details of content can be varied to suit the individual modeler's needs and desires. And best of all, these documents really look like the Waybills used by the prototype, not like some variety of game cards which might suit a board game of one kind or another.

## Recommendations for Further Reading

### Prototype Waybills and Freight Operations

John H. Armstrong, *The Railroad: What It Is, What It Does* (Revised Edition), Simmons-Boardman, Omaha, 1982.

E.W. Coughlin, *Freight Car Distribution and Handling in the United States*, Car Service Division, Association of American Railroads, Washington, 1956.

John A. Droege, *Freight Terminals and Trains* (2nd Edition), McGraw-Hill, New York, 1925. [NMRA reprint, 1998]

Grover G. Huebner, *The Fundamentals of Traffic*, The Traffic Service Corporation, Chicago, 1926.

*Railway Accounting Rules*, Accounting Division, Association of American Railroads, Washington, 1950. [numerous editions]

Lawrence W. Sagle, *Freight Cars Rolling*, Simmons-Boardman, New York, 1960.

*Text continues on page 46.*

Figure 21



Figure 21: Inserting an Empty Car Bill, which will move a refrigerator car after it carries the load shown in the pink Perishable Waybill on top, with the 2.5 x 3.5-inch format. The car involved is shown by the label on the sleeve. The pink bill directs the car off-layout to Pittsburgh, PA, which means staging, and the Empty Car Bill returns it from staging to the layout to be loaded.

Figure 22: The same kind of process shown in Figure 19 is equally easy in the 2 x 4-inch format, with the side-entry sleeves, which are more convenient than top entry, given this relatively long and slender document.

Figure 22

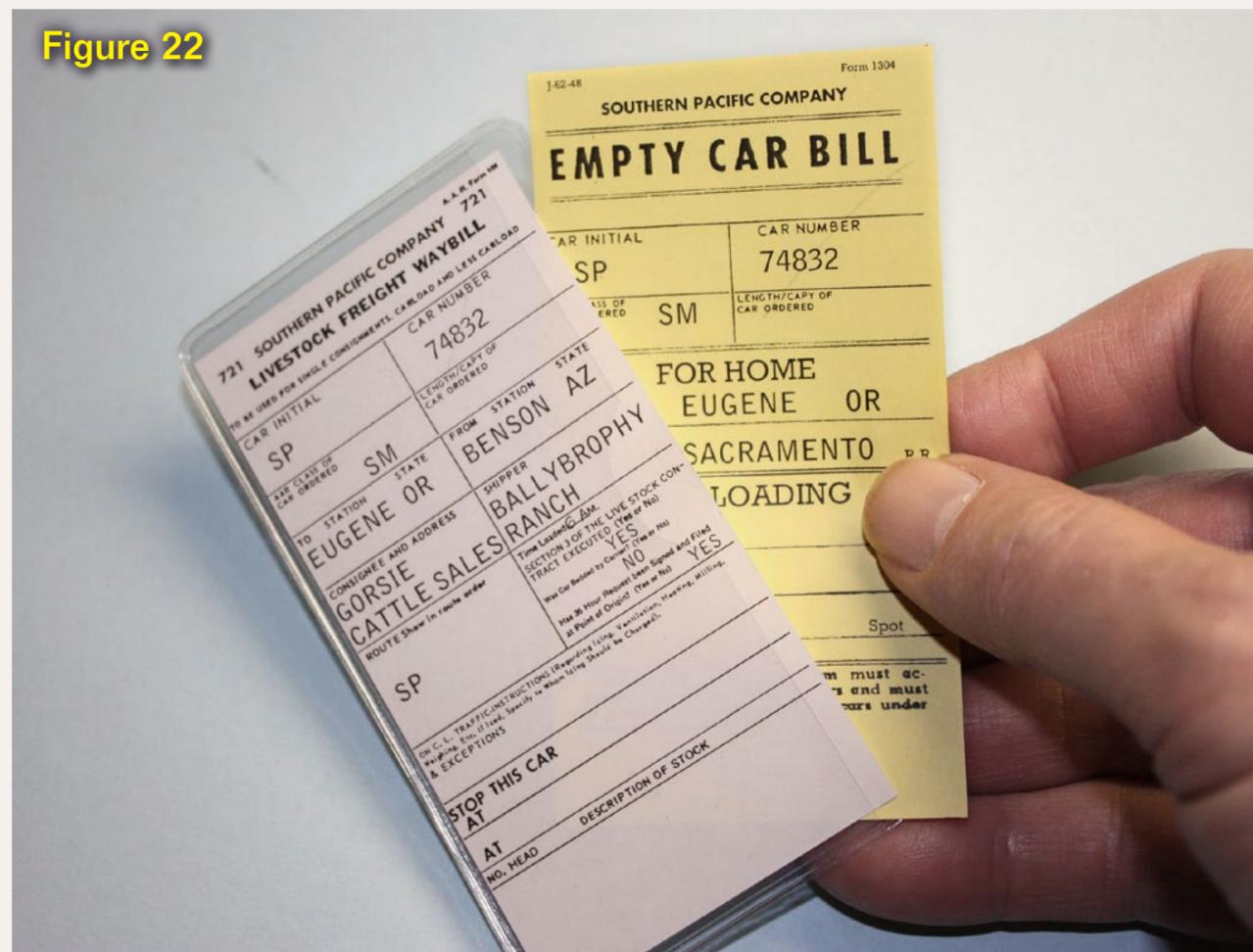


Figure 23



Figure 23: Here is that lumber load, being spotted at the team track in my town of Shumala.

Figure 24



Figure 24: Waybills in the 2.5 x 3.5-inch format are shown here in use, to determine the next move for this Union Oil Company tank car on the author's layout.

Article continues on the next page.

Text continued from page 44.

**Model car cards and waybills: history**

“Boomer Pete,” *Model Railroader*, May 1940, p. 264.

Frank Ellison, “The Art of Model Railroading: Part 6,” *Model Railroader*, August 1944; reprinted January 1965, p. 52.

Many articles in the 1950s, primarily in *Model Railroader*; reviewed by:

Douglas Smith, *Model Railroader*, Oct. 1957, p. 24; and “Card Operations,” *Model Railroader*, Dec. 1961, p. 52.

**Model Car Cards and Waybills: Modern**

George Berisso, “Prototype Car Forwarding Practice with Car Card Applications,” *Layout Design Journal*, Nov. 1988, p. 20.

Bruce Chubb, *How to Operate Your Model Railroad*, Kalmbach, 1977 [out of print; available used].

Byron Henderson, “Variations on a Waybill Theme,” *The Dispatcher’s Office* (Operations SIG), July 2007, p. 13.

Dan Holbrook, *Model Railroader*, July 1987, p. 91.

Steve King, “Car Cards and Waybills,” *Railroad Model Craftsman*, February 1968, p. 68.

Tony Koester, “Enhanced Car Forwarding on the Midland Road,” *Model Railroader*, March 1993, p. 75.

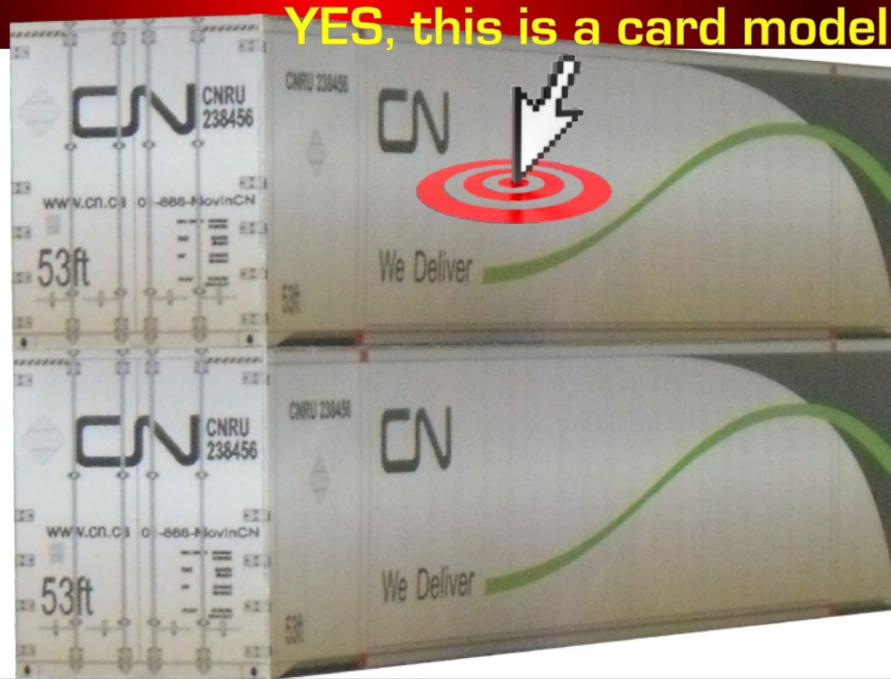
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Tony Koester, *Realistic Model Railroad Operation*, Kalmbach, 2003.

Don McFall, *Model Railroading*, Vol. 13, Fall 1982; see also “Pre-printed Car Cards,” *Model Railroading*, April 1987, p. 14.

Bill Neale, “Plastic pocket car cards,” *Model Railroader*, February 2009, p. 62.

Ted Pamperin, “Upgrade your car routing with Realistic Waybills,” *Model Railroader*, February 2012, p. 45.

Anthony Thompson, “Prototypical Waybills for Car Card Operation,” *Railroad Model Craftsman*, December 2009, p. 71.

My follow-on articles: “Contents of a Waybill,” *The Dispatcher’s Office* (Operations SIG): April 2010, p. 17 (corrected version available on line at: [modelingthesp.blogspot.com/2011/01/waybills-2.html](http://modelingthesp.blogspot.com/2011/01/waybills-2.html)).

also: “Freight Car Handling and Distribution,” *The Dispatcher’s Office*

(Operations SIG): October 2011, p. 28 (corrected version available on line at: [modelingthesp.blogspot.com/2011/09/my-article-in-dispatchers-office.html](http://modelingthesp.blogspot.com/2011/09/my-article-in-dispatchers-office.html)).

Extensive discussions of waybills are part of my blog, at: [modelingthesp.blogspot.com](http://modelingthesp.blogspot.com).

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## About our N-scale columnist



**David L. Salsbery** is our guest N scale columnist.

A Portland, Oregon native, David's been modeling trains since he was 12.

David got more serious in the '90s when he discovered N scale. After building some small layouts, David discovered modular and club railroading. His current Stevens Pass oNetrak layout models the Great Northern.

David owns his own painting contracting business.

# COMME-N-TARY: Single Track Modular Railroading in N Scale

## Modeling in the hobby's most eNgaging scale



### Building a home layout using single-track modular techniques in N scale ...

**O**Netrak is a design concept of modular type N scale train layouts that use standards of Ntrak. Ntrak has been around for a long time, and uses three main tracks toward the front of modules that are a minimum of 24 inches deep. Some have an optional 'mountain' line toward the back of the modules; it is elevated three inches higher than the three main tracks. Some of these modules can get very large and heavy. The three tracks are not very realistic for most prototype areas that people wish to model, but provide a lot of action for spectators of display layouts. They also provide fun and fellowship for modelers who participate in building and running them, usually as members of a group or club.

ONetrak is an Ntrak-compatible single track, branch line or main line platform that can complement Ntrak layouts by extending the outside

mainline or 'red line,' providing a branch line or alternate route plus extra mileage for more realistic look and operation

According to the oNetrak manual, the main goals are lightweight, simple-to-build modules that provide an alternative to three-track modules that can be connected to an Ntrak layout. Additional benefits include: easy integration into a home layout; potential for a branch line; switching operations; and an easy way to model scenes with a single track and tight curves.

ONetrak modules may be connected with Ntrak layouts, or the modules can be used to build separate stand-alone layouts with emphasis on operation and more realistic scenery. The standard measurements and practices are used to allow all the modules to work together to form a layout.

A junction will be necessary for integrating oNetrak and Ntrak modules together. Some ideas can be found in the Ntrak manual and the oNetrak manual found at [ntrak.org](http://ntrak.org) or Google oNetrak manual. There are many



**Figure 1: Ntrak-compatible single track opens up greater possibilities for scenic treatments.**

possibilities for a working junction design, including ones that make use of other tracks.

Figure 3 shows the WYE at Skokomish, Washington. The tail of the wye at the top of the photo becomes the oNetrak connection. With the wye, a train can go either direction, choose the blue or red line, or just stay within the yard and service area without interfering with Ntrak mains, or with locomotives using the wye. All of the Ntrak mains are electrically isolated. This junction was built in three four foot pieces. It can work with just the two ends, but

all three make it 12 feet long with some long sidings and yard tracks.

ONetrak modules are smaller, lightweight and easy to build. They provide an alternative to the three-mainline-track modules as a platform for single track main or branch line for more realistic scenery and operation. oNetrak modules do not use scenic dividers, and backdrops are optional. The scenery contours are flat where the modules connect making the scenery flow very nicely from one module to the next. I LOVE this standard practice defined in oNetrak guideline # 14. All modules look like



Figure 2: These photos show Ntrak modules with the three main tracks and the mountain line. These are photos of Columbia River N scale club modules.

they go together, no matter how they are rearranged.

I chose not to use backdrops on my modules. There is a enjoyable view from the operator's side, and very nice access for derailments and other issues that may come up while operating. The operator side of the modules has controls for turnouts and other electronics mounted in the painted fascia.

oNetrak was introduced by Bernard Kempinski, in March 1999 Model Railroader Magazine. Along with

some other articles about oNetrak modules, Bernard's influence and inspiration have led me to build several modules following oNetrak standards. I like the design concept of oNetrak. The design of these modules makes it possible to arrange them into many different configurations. Sometimes they are set up to fit into a specific space provided, which is great for integrating into home layouts. An all-module home layout may be moved, if needed, to a new space. Everything may be used if the space changes.



Figure 3: This is one of three modules that make up the Ntrak junction with oNetrak connection at the top of the wye. When used for oNetrak layout there is a wye tail module that connects here. The Ntrak mainlines are on the bottom of this photo. The Blue line is at the bottom, then yellow, then red.

Most of my modules were built to model a prototype scene or location. These scenes were on Great Northern's Stevens Pass crossing of the Cascade Mountains in Washington State. Several of my first modules

are generic track and scenery modeled from pictures of the area. These generic modules provide flexibility for setup and could be used in almost any location needed.

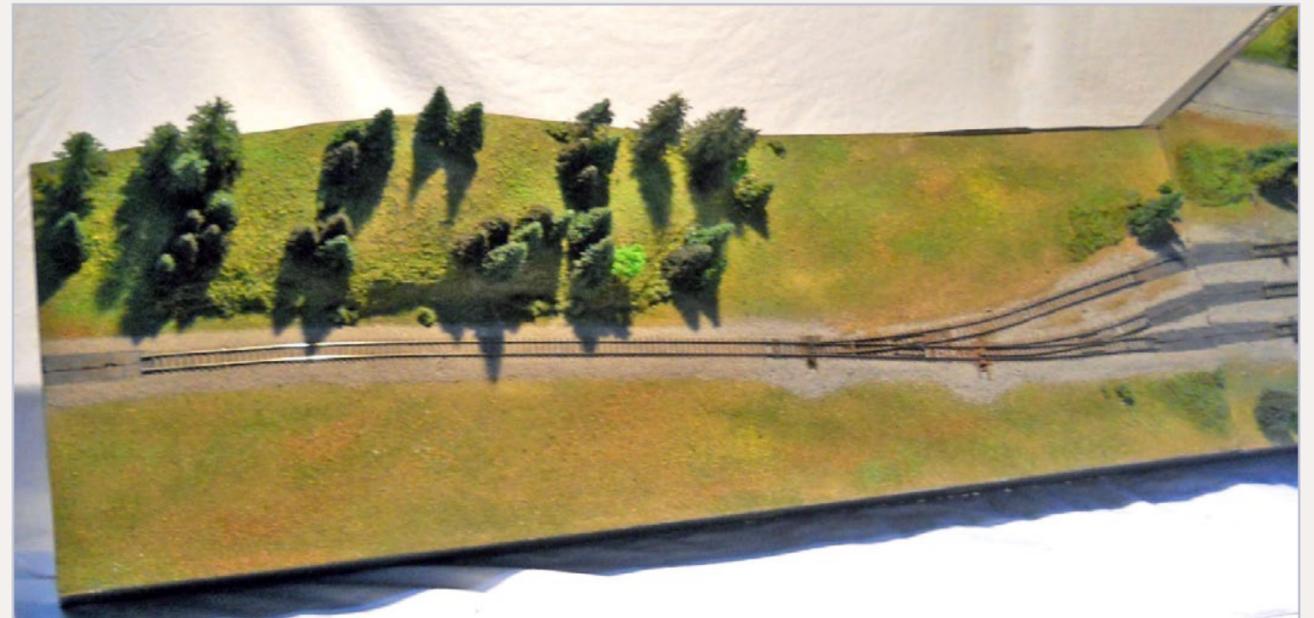


Figure 4: This photo shows a 3' long x 1' wide module that returns the three Ntrak mains to oNetrak on 6" centerline.

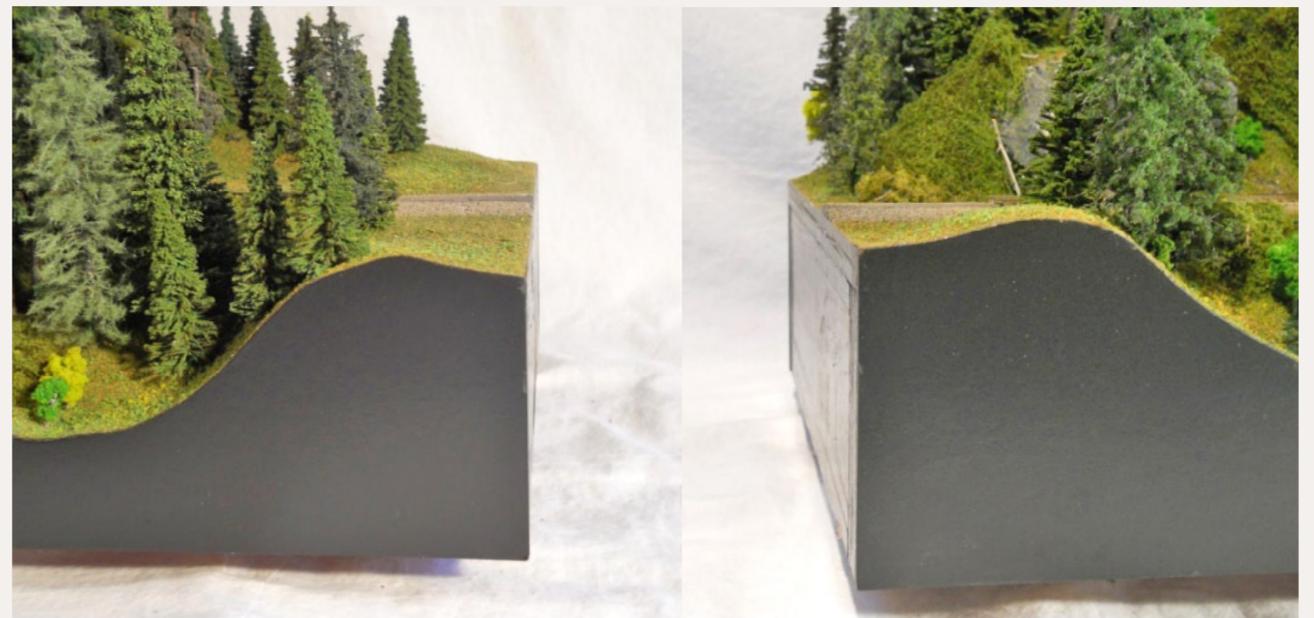


Figure 5: These pictures show the end elevation of the scenery returning to zero.

They include an outside and inside 90° corner, a 4' straight and a couple of 3' transition modules to go from 6" centerline to 4" centerline, one in each direction. These transition modules provide a clean flow of the front fascia for modules with 4" centerline option to connect.

I did a lot of research on my prototype Great Northern. It was fun and interesting to learn about the history of the railroad and study some great men who changed the world.

I used books, the internet, and many other sources to gather information about the railroad and the area I wanted to model. I found tons of

photos and maps to help model the Stevens Pass.

My approach has mostly been to plan and build one module at a time. I do have some "sets" of modules that were built at the same time. Skykomish WA consists of seven modules that were planned and built together, (a big project). One at a time is good way to go at it. Most modules are small, so construction time can be fast, and progress will help maintain interest and motivation. Several of the first modules were corners. Two 3', 90° corners and a 3'x6' 180° curved steel trestle made up a 5' circle of track to run

trains on. Added mostly one at a time over the past six years, these have built up a collection of about 30 modules, some with ongoing modeling of structures and other features. I have seen very few other oNetrak modules, and have talked to only a few people who said they were doing or interested in oNetrak. I was invited to display modules at the N Scale Collector convention 2009 in Portland, Oregon where I connected with a large Ntrak layout as a branch line.

Modules from all over the Northwest were connected as one huge layout. Another club had a oNetrak junction

for Ntrak and a walk thru bridge that we used to connect our modules.

That was a lot of fun connecting and running trains on a huge layout, but my modules are mostly set up as a standalone layout in a point-to-point configuration.

I have found some interesting things about oNetrak on the Internet.

Back when I started this project, I researched some other modular systems, and came across Free-mo. At the time it was a single-track modular platform for HO Scale modelers that is a very similar concept to oNetrak.

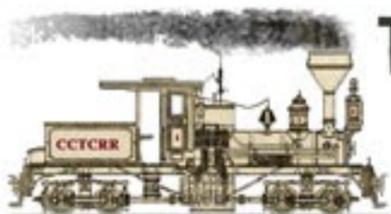
*Text continues on page 51.*

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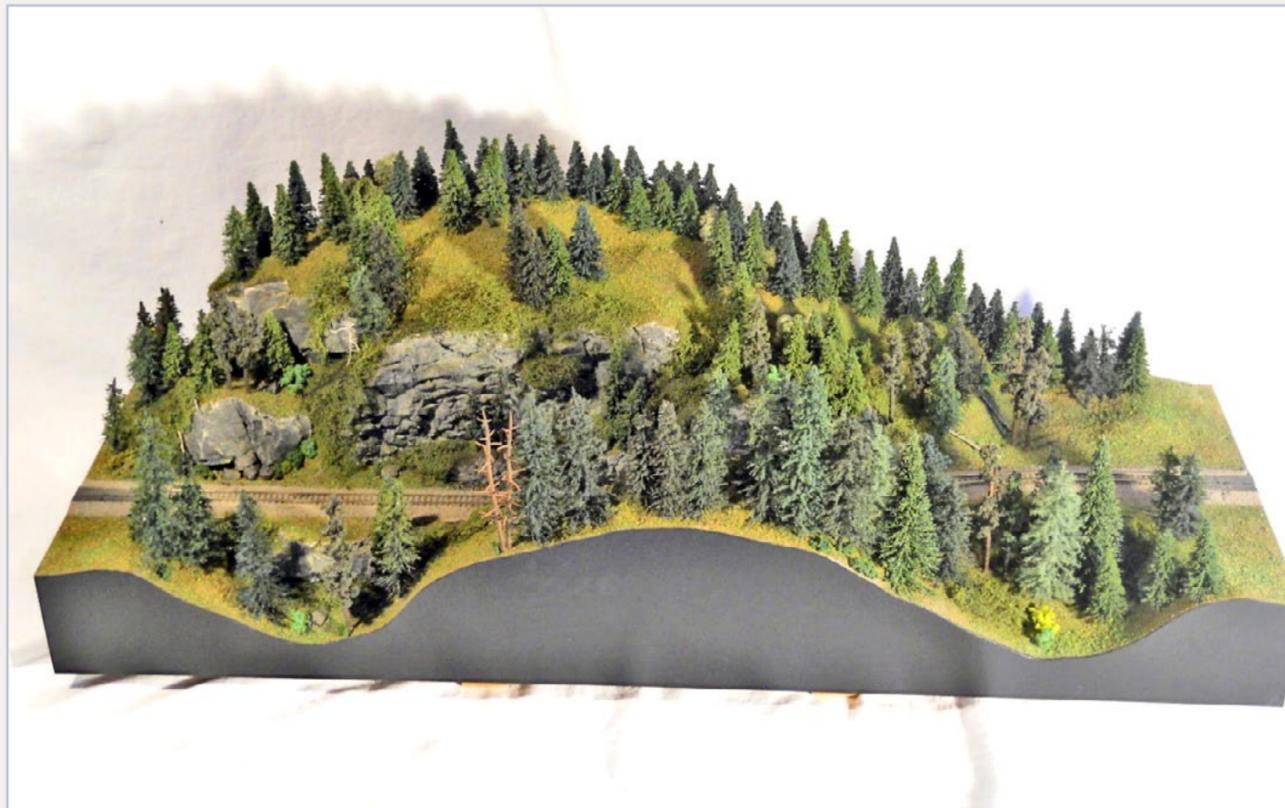


Figure 6: This transition module is 12" x 36" and provides a lot of scenic impact in a small area. When used in the layout, the hill and the cut really add to the "mountain crossing" effect, even though my modules have a level track grade.



Figure 7: Outside corner 36" x 36" 90° curve with a deep cut, large fill and curved front fascia



Figure 8: This is a small 24" x 24" corner I have been working on for tight space

*Text continued from page 49.*

I was recently shown how some N Scale modelers have adopted some Free-mo standards for N Scale and have built some modules.

I saw these at: [mnfreemo.org](http://mnfreemo.org) under the N Scale tab

If you want to learn more about Free-mo visit: [free-mo.org](http://free-mo.org).

I thought this was cool. I always liked the Free-mo philosophy. [siliconvalleylines.com/freemon/FreeMoNClinic09.pdf](http://siliconvalleylines.com/freemon/FreeMoNClinic09.pdf).

The Free-mo-N modules are larger than oNetrak, with a recommended 18" to 24" module interface point, and a centered mainline. They could possibly interface with oNetrak modules with some adjustment, mainly leg height. The 18 inch width allows

## The Free-mo Philosophy – More than just a standard

The majority of the Free-mo Standards specification as we know it is the physical standard itself – track/benchwork specifications and wiring/connector specifications - to ensure that there is seamless interoperability between modules not only within ONE group, but between different groups as well.

Quoting the standard: [free-mo.org/standard](http://free-mo.org/standard).

S1.1 The objective of the Free-mo Standard is to provide a platform for prototype modeling in a flexible, modular, environment. Free-mo modules not only provide track to operate realistic models, but also emphasize realistic, plausible scenery; realistic,

reliable track work; and operations. Free-mo was designed to and continues to push the envelope of modular model railroading to new heights. It goes beyond the traditional closed-loop setup by creating a truly universal 'free-form' modular design that is operations-oriented and heavily influenced by prototype railroading.

Free-mo simply boils down to realism, excellence and elegance. Aspire to accurately simulate the reality of railroading to the highest fidelity that is reasonably practical with module engineering/construction, scenery, rolling stock and operations.

This philosophy has influenced the design and quality of the Stevens Pass

modules from the track work and scenery above, to the wiring and electronics below. While I have followed oNetrak standards for building the modules and track work, the Free-mo philosophy shows in the linear point-to-point operating scheme as well as the quality level of the track and scenery. This makes it fun to share and operate. ■



Figure 8: Inside corner 36 x 36 inch, 90 degree curve with curved front fascia.

for some large modules to be built, which has both pros and cons. I like keeping most of my modules smaller; this makes it manageable for one person. I can move and set up most of the Stevens Pass modules by myself which makes it nice for my friends

who help move, set up and clean up when the layout goes out in public.



**Figure 9: The smaller size modules of oNetrak make building and moving a layout much more manageable and flexible than using Ntrak modules, Free-mo modules or built in place type layouts .**



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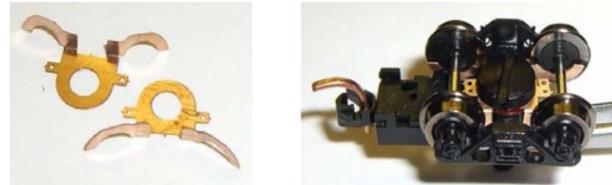
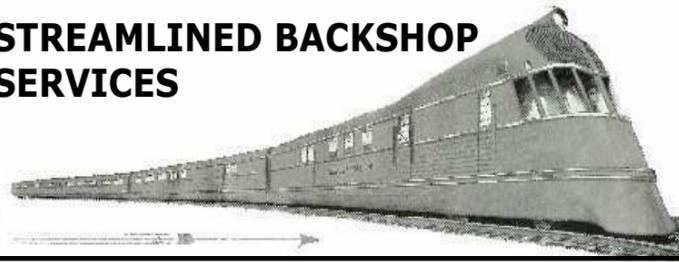
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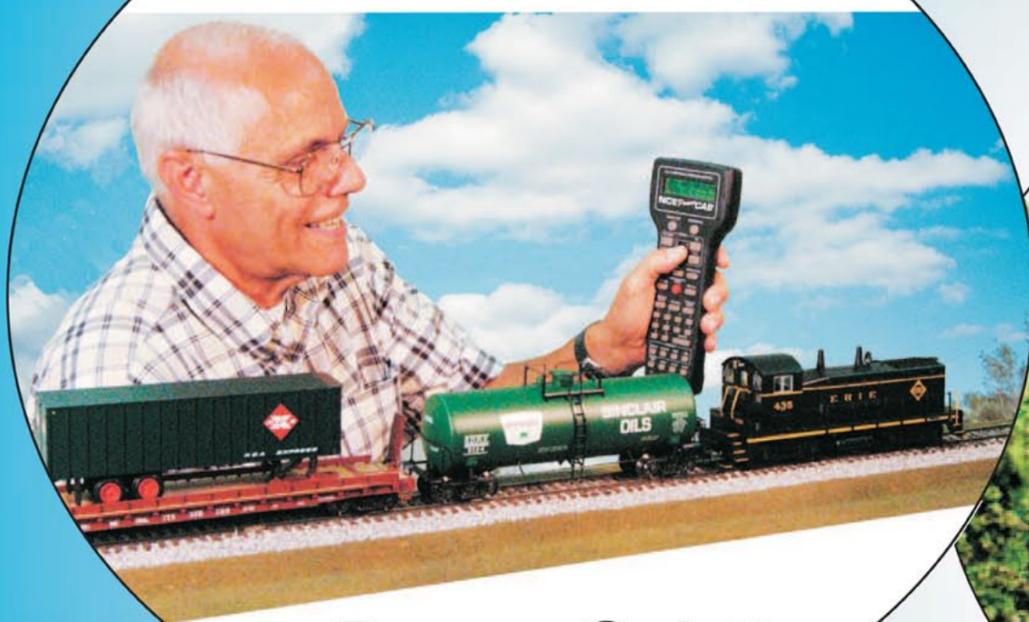
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# The Joys of Kids and Model Railroading



– by M.C. Fujiwara  
(and his little helpers)  
Photos by the author

## Getting kids excited and involved without sacrificing your sanity or your layout...



Ask model railroaders how they got into the hobby, and most will start stories of a first three-rail circle around the Christmas tree as a child, or of spending hours with Dad around a 4'x8' (or larger) layout in the basement.

The genesis of my own love of model railroading began around nine years old while helping my Dad build the 4'x4' table-top layout upon which the Christmas Tree towered over the N scale trains running their DC double loop with a TimeSaver tacked on. Holding plywood while Dad guided it through the table saw, spreading rubber cement to tack down cork roadbed, tapping nails through Atlas Code 80 ties, speeding trains through toggled power blocks, all wonderful childhood recollections of modeling railroads. The time shared with my father, and the skills and life lessons he shared with me, remain some of my most treasured memories.

Now, twenty-plus years later, I have kids of my own. By two years old, my son Ko was well into Thomas the Tank Engine, my then-six-year-old daughter

Uki (pronounced "Oo-kee") liked doing whatever Dad was doing, and together we enjoyed visiting the local HO club layout, and rode the same live steam trains in the Berkeley hills I rode on as a kid.

The model railroading bug started to bite again.

I started building a small 1'x4' N scale shelf switching layout, but so focused on developing my modeling skills, I found myself spending more time saying "don't touch" to my kids than working with them. Trains were becoming a barrier rather than a bonding experience.

After a year of changing jobs and homes, I was finally settled enough

to begin model railroading again, and started in on a 23" x 41" 1900's Pacific Northwest layout. Uki and Ko (then 8 and 4) would peek their heads into the garage and hesitantly ask, "Dada, can we help you with your trains?"

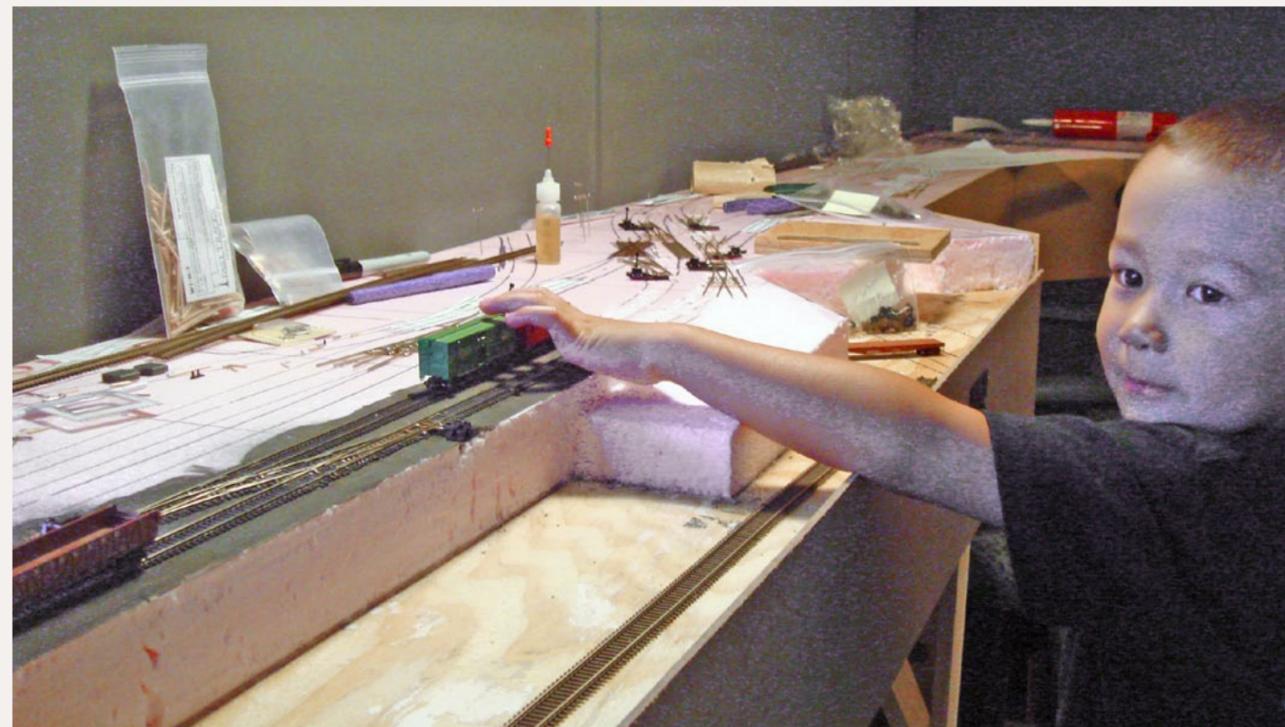
I looked at the layout I promised myself that I would scratchbuild as many turnouts, structures and scenery as possible....

"I'd love to! Come on!"

### Finding the interest

So the kids want to help working on the railroad.

I'm in the middle of filing ME code 55 rail to build a three-way turnout on PC board ties.



**Figure 1: On a previous, dearly departed layout, then-3½-year-old Ko tests the recently laid track work with an "Inspection Car" while also demonstrating the "One Finger Rule" for safe handling of rolling stock.**

Am I going to have them stand there while I show them the foundations of fine filing techniques? Or have them back up while I solder rail?

Maybe later.

I give my 4-year-old son Ko some rubber rock molds and an old toothbrush, and send him to the sink, saying, "Brush these better than your teeth." My 8-year-old daughter Uki gets the carton of lightweight Hydrocal® and some paper cups. She says, "Two cups of powder and then stir while slowly pouring in a cup of water, just like how we make pancakes."

After laying down some paper towels on the workbench and a quick check on Ko cleaning the rock molds, I see Uki has the Hydrocal® almost ready. One kid stirs while the other sets a timer for 10 minutes. We'll have a little more time than that to work with the Hydrocal®, I've learned from watching action movies that anything is more exciting when time is counting down.

While Uki pours first, I give a piece of scrap Masonite® to Ko. I tell him, "If Uki pours too much or it spills over, your job is to scrape the plaster into the next rock or off onto the paper towel."

Uki first pours too little, then spills over the edges a little. Ko swoops in and shovels the slop into the next mold. They take turns, excited, both hoping the other will spill more than before, but each taking more

and more care to pour just the right amount.

Soon we have all four rubber molds filled with Hydrocal® with very little splattered on the floor or clothing. They set the timer for 30 minutes, and then go to get pajamas and teeth brushed before bed (careful not to use Dada's Train Toothbrush). The timer beeps, I show them how to hold the mold while pushing out a rock, and then they pop out the rest. Half of the rock casting break coming out of the molds, but that just produces twice as many rocks they've made for the evening.

We climb up to story time and bed excited that tomorrow we can paint some rocks.

## **All aboard!**

As with so many things in life beyond model railroading:

Kids want to learn.

Kids want to be actively involved.

Kids want to do both *with their parents*.

Standing back to watch you solder or holding the flashlight while you fish around the tangle of wire under the layout really isn't "doing things together" (though I've done my share). Model railroading is a perfect opportunity to teach, talk and spend quality time together with your kids, and with a little planning, you can

work on projects that are fun, teach skills ranging from painting to soldering to switch-list problem solving, all without sacrificing the quality of your own layout.

The first step is to figure out what *they* like.

Then set up projects that they can do.

Show them how to do it.

Then do it together.'

## **What kids like**

Many think that kids like to watch trains run round and round. Heck, who doesn't? But continuous running usually holds a youngster's attention for mere minutes.

Even little ones aged three or four want to get involved and actively participate, such as stopping the train at certain points to load and unload freight, people, or dinosaurs. By five or six, they want to move cars from one location to another (with maybe a circuit or two around the layout. They also want to show people (usually Mom) what they can do, whether it is painting, sprinkling dirt or ground foam, or gluing rocks. And by age seven, eight and nine, kids' main focus is to do, but—and here's the great thing—they want to do all that other stuff, but they want to *do it with you*, their parent or grandparent.

Table 1 shows a list of projects and tasks kids like to do at various ages.

Notice that while older children are able to use more "adult" tools like the Chopper or a soldering iron, all children enjoy the very tactile, artsy-fartsy aspects of modeling. Paint, plaster, dirt, ground foam, and whatever else allows them to "get their hands dirty." So while you might have wiring or decoder installation next on your list, it's good to be prepared to have a few "helper-friendly" tasks as ready alternates. And really, can you ever have enough rocks, trees or building sections primed and ready to go for later?

But don't mistake a child's willingness to share in an activity with you for free license to dump all the onerous tasks upon helping yet ignorant hands. Slipping a ton of replacement ties under rails, painting a wall of window sills, drill-spinning hundreds of wire-and-twine pines... these are all tasks which we adults find (relatively) dull and would love to share with someone else. But remember, the worst thing we can do with kids in terms of model railroading (besides electric shocks and loss of limb) is make it boring.

That said, I've asked my daughter to cut and place replacement ties, paint tiny N scale window sills, and she's made over a hundred drill-spun floral-wire and ground-foam conifers (many better than mine), but the key is that 1) I prepped things ahead of time so we could "just do it," 2) I figured out which parts she enjoyed,

## **Table 1**

### **Stages of Development – Age Appropriate**

#### **Running Trains**

3-5: roundy-round

6-9: switching

#### **Projects at 3-4 yrs.**

Painting base coat

Pouring and painting rocks

Bamboo skewer & scrub pad trees

Spreading ground foam

#### **Projects at 5-7 yrs.**

Spray painting building walls

Mortar washes

Stains

Planting bushes

Poking holes for trees

Touching CA with a toothpick to walls for windows

Spreading caulk for track

Forming foam (with forming tool and mask)

Painting glue, spreading dirt, ground foam, basic ground cover

#### **Projects at 8-10 yrs.**

Cutting / Chopping stripwood (Chopper II)

Painting window / door details

Replacement ties

Soldering wire

Soldering rails / building turnouts (with jig)

Weathering with powders

Painting Modge Podge for water and/or waves

Spreading and fixing ballast

Making / Using switchlists

and Tom Sawyered the rest, and 3) *we did it together.*

As you've been able to figure out, the key to successful shared modeling time lies squarely with you, and how you are able to prepare the job so they have fun doing it. I want my kids to be excited about modeling, not standing around waiting for paint to dry, or, for me to use a soldering iron or other dangerous tools while they just sit there. So I prepare the project ahead of time, which usually only takes the time they take to run

to the bathroom to "get ready" for some modeling.

## **The fun is in the doing (together!)**

Let's look at some projects and see how you can prep, and what tasks the kids can do.

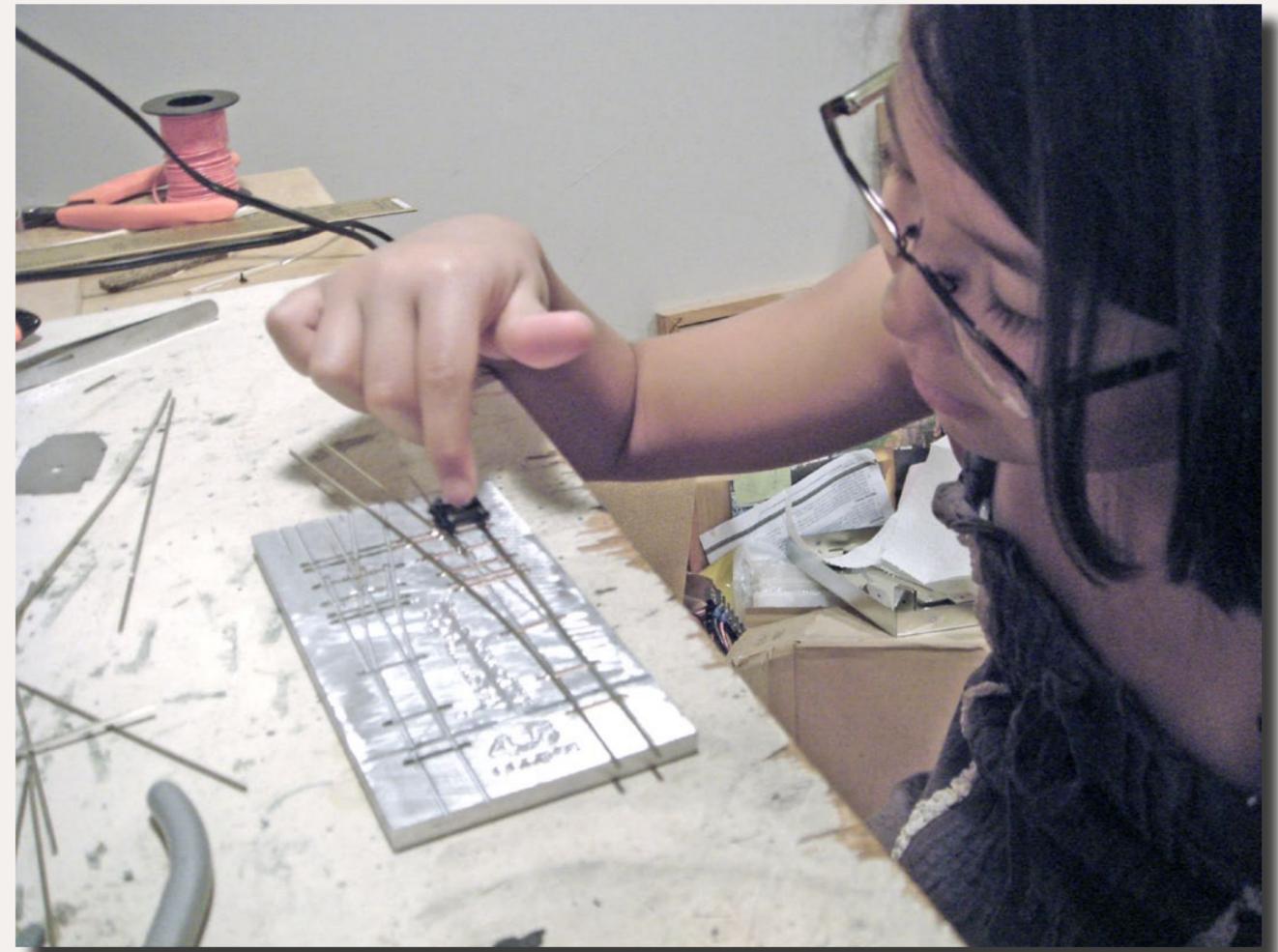
**For laying track:** You can hold the track along the centerline (which you've already carefully laid out), or the kids can push the T-pins into the foam to secure the track, so the kids

can use a marker to trace the outlines of the ties. This does not have to be exact, as the outline serves as a guide for spreading the caulk later.

Have the flextrack sections already cut to size and, if necessary, soldered together. You can even have the feeder wires soldered on, and the holes for the feeders pre-drilled, or you can do that later (after the kids have finished helping). Have the caulk in the gun primed and ready to go, with plenty of paper towels

around to cover other areas and to be readily at hand.

Younger kids under age seven with smaller hands might have trouble squeezing the caulk gun, but they can hold it while you squeeze and then help guide the tip over the track centerline. At almost any age, kids can use a putty knife to spread a bead of caulk into a thin layer between the track outlines. Have a putty knife for each person so you're working together instead of grabbing the child's tool to "fix" his or her work.



**Figure 2: Uki (age 9½) uses a Fast Tracks jig to hold the PC board ties and ME C55 rail alignment while she solders a turnout together and then tests it with some trucks. Older kids can do some advanced modeling when shown proper technique and safety practices, and they are very proud of the skills learned, the project built, and the quality time spent with Mom, Dad or Grandparents.**

As caulk has a good 10-15 minutes before beginning to become tacky, any caulk slathered outside the area intended can be easily wiped or scraped up. After double-checking the smoothness of the curve, you can hold the track in place with your fingers so the track spiker can push the T-pins in to secure the track while the caulk cures (usually a day).

For older kids, soldering rails together at the rail joiners is a fairly safe, easy

way to learn basic soldering techniques. A dab of flux with a micro brush, holding the tip at the joint in the space created by two joining rails and rail joiner, they heat the three sections involved while you (or they) feed a little solder into the area. After using a small triangle file to remove any excess solder, they can use one finger to push the “Track Inspection Car” (an older, finicky piece of rolling stock works well) over the rails to test

the smoothness of the joints (figure 1 page 59). Sometimes attaching a power pack to the rails with alligator clamps is necessary to test the track-work with a live locomotive.

**For handlaying turnouts:** I am a firm believer in handlaying custom turnouts. Not only are you freed from the layout design limitations of the fixed frog sizes and curve radii of manufactured turnouts, the handlaid fixtures are also less expensive and (with practice) of better quality. Most important, I’ve found there’s nothing more satisfying than watching your trains roll through turnouts that you handlaid.

Except, perhaps, watching trains run through turnouts your 9-year-old daughter handlaid. Since the multiple-curved-turnout fixtures I build from drawings and templates might be a bit much for a kid, I dusted off the Fast Tracks jig I used when starting out, and we sat down at the workbench together. She trimmed the PC board ties to fit in the jig, and used the rail cutters for the rail sections (and learned another meaning of the word “flush”). I filed the point notches in the stock rails in a vise while she used a Fast Tracks Forming tool to file the points and the frogs.

We took a break while I showed her how a soldering iron works and how to use it safely. Then I showed her how to dab flux on top of the frog, place a small-cut section of solder on top, heat the rails, and then watch the

solder melt into the joint. “But Dada, won’t the solder stick the rails to the jig? It’s metal too!” she said, and then we had a nifty discussion about hard and soft metals, density, and temperature. Trains are a great trigger for teachable moments.

I already had a small container full of small (1/16”ish) sections of solder, so she could use tweezers to place them at the juncture of the rail and PC board tie. For the first attempt at soldering the rail, I guided her hand to show again the technique of heating the rail and tie, letting the solder melt and wick into the seam. From then on, she was able to solder the rest of the stock, frog and point rails herself. She was always mindful of the hot tip, and I stood next to her throughout, softly calling out the steps in order. Soon she had a couple of well-built turnouts completed (figure 2 page 61).

I did the throw bar and isolated the frog with a Dedeco Thin Separating Disc on the Dremel, and the turnouts were ready to install on the layout. I know that she could have used the Dremel as well, but I wanted to keep the session “skill focused” on the soldering as well as an enjoyable length of time for her (I could, and have, hand-built turnouts all night). And now she teases my brother, “What! You don’t know how to solder?”

**For replacement ties:** The other tool I reserve only for the older child is The Chopper II. While my 6-year-old son



**Figure 3: Uki uses the Chopper II to cut stripwood into replacement ties. She knows to keep the blade down when removing the cut sections and that her fingers are not allowed past the grid line near the blade. Sharp tools such as the Chopper II are not for younger kids, and older kids must be constantly supervised.**

has the concentration and respect for the tools, fine motor skills in his fingers are still developing (though you wouldn't believe it watching him whomp me in Wii™), and I don't want his nickname to be "Stumpy."

I set up the stopper on the Chopper, show Uki how to hold five or six pieces of 1/32" x 3/64" stripwood together, as well as the grid line on the mat near the blade that her fingers are not allowed to cross. I show her the separate steps of placing the wood, cutting, leaving the blade down while removing the ties, raising the cutting arm, and then repositioning the wood. I also guide her hands for the first couple sequences to reinforce the technique. Then I stand near by while she cuts a large quantity of ties (figure 3 previous page).

When finished, we drop the wood into the "Big Jug O' Stain" (70% alcohol, India ink, various browns and black paints and whatever else has been thrown in there over the two years it's been sitting on the workbench), then spread out the stained ties on foil to dry.

After the ties dry, we place them in one small yogurt container and then squeeze some white glue in another. Using a small cotton swab, she dabs some white glue along the center line between the rails and then uses tweezers to slide the replacement ties under the rails (figure 4). While you can use a piece of scrapwood as a spacer, she was able to eyeball it

pretty well (part of the game), and any slight angle just adds "character."

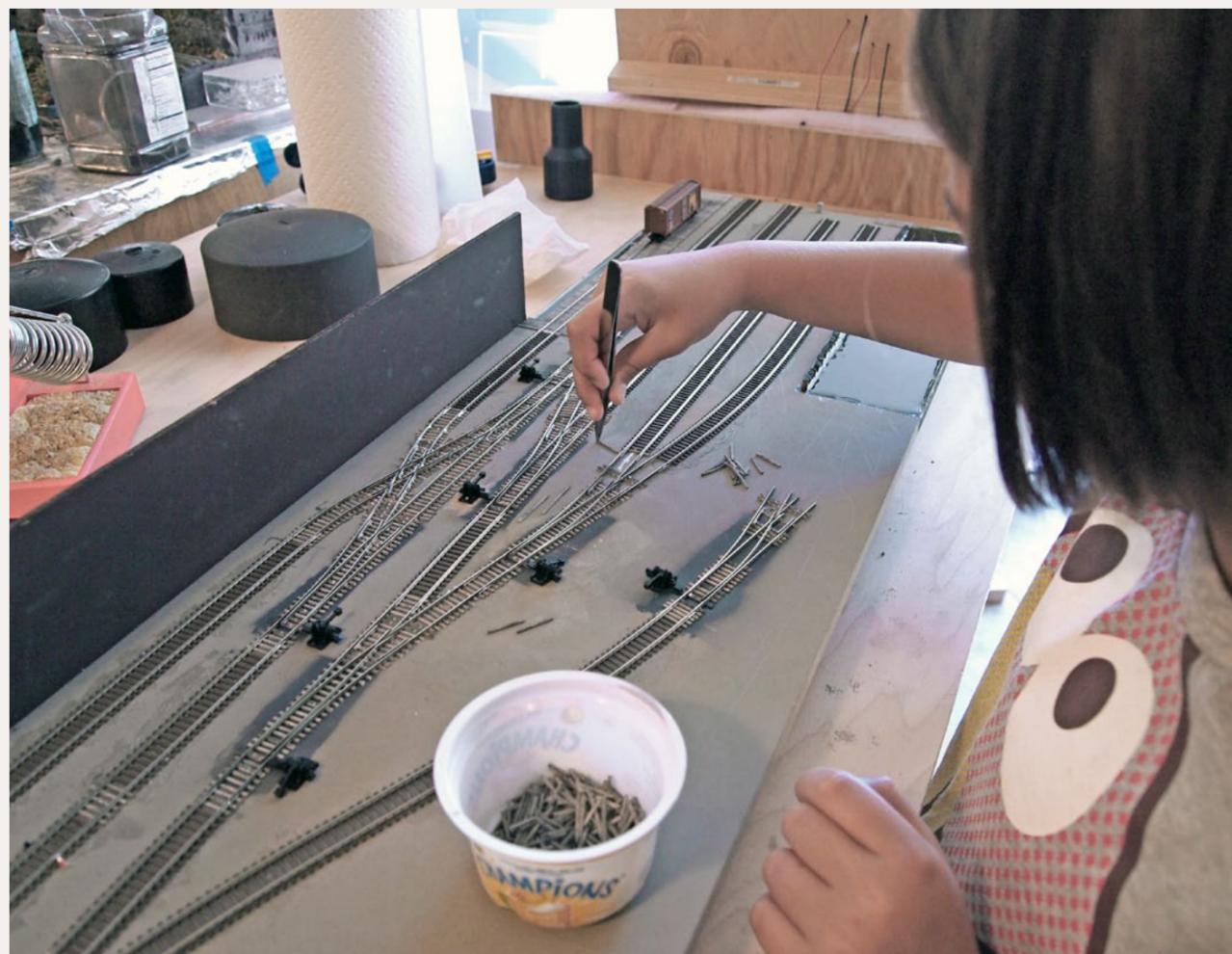
**For ballasting:** Think about your own experiences trying to wrangle the little bits of ballast into position, and plan accordingly. Mask off any track and lay paper towels over any sections you don't want affected ahead. Have the ballast in sturdy, low bowls to prevent accidental knocking over, and have several small, narrow spoons and some small brushes at the ready in case one gets wet. I've found that the old-fashioned sugar

spoons for tea work well and effectively limit the load. Prepare one cup of the slightly-diluted white glue (10% water) for brushing sloped roadbed sides as well as one cup of 50-50 diluted white glue for eye-dropping over the ballast, and place them on a safe, secure surface (i.e. not on your river) and over paper towels. Have 70% isopropyl alcohol ready in a fine-mist spritzer.

Older kids can brush the thicker glue along the sides of the roadbed and then lightly sprinkle the sides with

ballast. Don't worry if it's too thin. After everything's dry you (or they) can go back and add a second layer. Better to go lighter than a big dump (the size of the small spoon helps limit that). Kids of almost any age are able to tap small amounts of ballast in the flat, dry space between the rails. They can use a small, dry brush to spread out the ballast among the ties, and then a toothpick to clear any bits against the rail or between guard rails and frogs. You did remember to tape off the throw bar and points, didn't you? I've found focusing on a two-foot section works well in terms of time and interest.

After showing how to hold and direct the spritzer, they can mist the area with alcohol, starting from about a foot away, so as not to blow the ballast out of place, and then move closer to wet the whole area. Feel free to use a finger to guide their hands if needed, but it's usually not since you've masked off everywhere else. Using the eye-dropper or pipette, they begin to soak the ballast between the rails, where a little bit of over-flooding won't matter (if you do get milky track pans forming, touch the edge of a paper towel to wick off the excess). By doing the center first, you can point out how the diluted glue wicks from under the rails and down the sides, and usually only a few drops more on the sides will do. After the ballast is dry (at least a half a day), you both can go back and



**Figure 4: Uki uses tweezers to slip stained replacement ties under the hand-laid turnouts. Having a helper turns a tedious task into quality family time.**

touch up bald spots with a little ballast, a brush, and just the eye-dropper for controlled application of the alcohol and diluted white glue. Don't forget to include clean-up. They can wash brushes and bowls in the utility sink and run the shop vac over the dried sections. And it's never too early to work on track-cleaning skills with the bright boy.

**For building landforms:** Whether you use plaster-and-cloth or pink foam to shape your countryside, the preparation is the same. Old clothes,

masking tape, paper towels and a drop cloth. Even with an experienced hand, plaster will get everywhere you don't want it to, and foam shavings will magically drift around the world, only to reappear and attach themselves onto your layout, your walls, your clothes, your sheepdog named Timesaver, and cats called Switchback and Crossbuck. If you use pink (or blue) foam, the kids and you need to put on a face mask and safety goggles (which they think are really cool in a mad-scientist way). A shop vac is a

must, and manning it could be one "job" during the project.

Kids can definitely help stack pre-cut blocks of foam to test out various shapes, spread caulk between layers, and then T-pin the layers together to hold while the caulk cures (figure 5). I do not recommend having kids use an expanding foam-filler like "Great Stuff." It gets everywhere. When I used it by myself, I could have sworn I didn't get any on my hands, yet somehow I had yellow, insulated "gloves" for the

following week until massive amounts of scrubbing scraped them off.

While you can use a fine-tooth razor saw to carve chunks out of the foam to get the rough shapes, kids can use a forming tool with ease to scrape out the hillsides and washes, and then fingers and foam sanding blocks to smooth things out (figure 6 next page). Carve away too much? No problem, foam is forgiving and you can always caulk on another piece later. Vacuum as you vote, early and often. Having some pictures of the



**Figure 5:** Uki uses T-pins to secure blocks of 2" pink foam to each other. Safe, simple tasks like these also allow time to talk about school, sports, or just have some shared silliness together.

target landscape near by will help guide the work.

If working with plaster and building a shell out of cardboard strips, the kids can help hot-glue strips by putting the clothespins on the overlapping sections (you can have them wear latex gloves if worried about the hot glue coming in contact with skin), and then they can lay the strips of masking tape over the framework. A paint roller or low, wide plastic tray allows easy paper towel dipping. A team effort works well. You dip the paper towels and use your fingers to remove excess

plaster and they lay it over a section of shell. You can show them how to fix any bunching or wrinkles with your already-plastered fingers. As plaster begins to set rather quickly (less than 10 minutes), it's best to work in smaller sections predefined by pen marks or pins. Remember not to pour any plaster down sink drains, and part of the fun is letting the plaster start to dry on your hands, then watching it crack.

For painting the base coat, kids of all ages should have no problem slathering latex paint all over (the size of brush you give them will control the



Figure 6: Kids can shape foam into hills with a forming tool, the model railroader's version of the "safety razor." Any foam work should be done with a mask and with a shop vac close at hand (a great job in itself for a youngster).



Figure 7: Smaller installation pieces such as retaining walls, rock castings and tunnel portals are perfect projects for kids to develop and show off their painting skills.

slop), and using water-based paints is good for the foam as well as for the cleanup of hands (and arms and clothes and face). Did I mention to wear old clothes and lay down drop cloths everywhere?

**For making rocks:** Earlier I described how I made rock castings with my kids. Again, when plaster or Hydrocal® is involved wear old clothes and, even though making rock castings is hypothetically less

messy than plastering mountains, work over a space protected by drop-clothes and paper towels.

Once the rock castings are out of the molds and dry, they are no problem for kids as young as three or four to paint. A smaller brush helps limit the splatter, and any castings that break are now either smaller rocks or an excuse to make more. As you need to wait for the rocks to dry between base coat and weather washes,

this is a good project to have on a tray so you can bring it out for the next wash at a moment's notice or between other projects.

After installing the rock casting on the layout with caulk or hot glue, the kid's smaller fingers work better than ours to fill and smooth the seams with tinted lightweight spackle or sculptamold. Just be watchful for itchy noses.

Other "installation pieces" such as retaining walls and tunnel portals are also great opportunities for kids to show off their painting skills (and are easy to fix or repaint later – Figure 7 previous page).

**For ground cover work:** Why buy "dirt," gravel, and talus when you can take a hike and gather it yourselves? Uki and I took a walk around the neighborhood and scooped up some dirt and gravel that was fairly "clean" (no pine needles, roots, dog logs, etc.), put it in separate buckets, and brought it home. We baked the dirt and the gravel (separately) in the oven to kill off anything that would grow or grow stinky later, and then sifted it, once with a nylon mesh and then again with a fine tea strainer to get our coarse, fine and super-fine grades of N scale dirt and gravel (figure 8). One trip was enough to collect all the dirt and gravel we would need for this project as well as for the next three or four layouts.

Tape off the sections of track in the area in which you're going to work. Pour out the dirt, gravel, ground foam, etc., into low, wide bowls (if you don't already keep these materials in cottage cheese or Cool-Whip containers). Have the slightly diluted white glue, 50-50 mix, alcohol spritzer, and several small spoons at the ready. Lay down plenty of paper towels around the edges of the layout section and place newspapers or a drop cloth on the floor.

Again, before starting, it's a good idea to discuss briefly what kind of scene you're attempting to create, and having a reference photo of the type of landscape you're mimicking is a great way to both communicate the "vision," as well as instill the solid modeling foundation of working from reality. If it's their own layout and they want wacky, then break out the Dr. Seuss books (and good luck with the Truffula trees later).

The kids can brush the 10% diluted white glue on the ground and use a spoon to spread / sift the thin layers of dirt, gravel and ground foam over the area. A smaller spoon is useful for spots of gravel, cinders or talus. Double check the direction of the spritzer nozzle and have the kids first mist, then dampen the area with 70% alcohol. (You are, of course, working in a well-ventilated area.) After letting the alcohol soak, kids can use the eye dropper to apply 50-50 diluted white glue over the ground cover.



**Figure 8: After baking the gravel, we sifted it into coarse, fine and super-fine grades. Model railroading doesn't have to be expensive: we found the gravel and dirt on a walk through the neighborhood, and most of the track, buildings and scenery materials were left over from previous layouts. A shared project can be a great excuse to clean out the shelves and the scrap bin!**

Allow a day to dry, then vacuum (or touch up bald spots). Don't forget to show kids how much fun it is to flush out the eye dropper in the utility sink. Squirt-squirt.

**For making trees:** Furnace-filter/scrub pad and bamboo skewer conifers might seem more fun and safe for younger kids than drill-spun floral-wire and twine pines, but kids of all ages can participate in both. As the adult doing the drill-spinning presents a bottleneck in production, building a hand-crank rig for twisting the wire takes the power tool out of the picture (and a lengthy rig allows multiple trees spun at once). Lay out newspaper to catch the spray paint, hairspray, and fleeing foam, and have some

cookie sheets or tinfoil over which to catch excess "foliage" for reuse.

Other than sizing the skewers and cutting and separating the scrub pads into "branch layers," kids can do most the steps to build the bamboo-skewer trees. They can place the skewers into clothespin bases, spray paint the skewers a dark gray (we like "grimy black"), slip the scrub pad layers onto the skewers (with the larger pieces at the bottom), spray with hair spray, sprinkle ground foam, spray with hair spray again, set aside to dry, and then poke holes in the foam base with another skewer to install. You can also assign jobs to produce in an assembly line, with you manning the hair spray and handing the trees to the kids to apply the ground foam. They do like

the magic of a tree suddenly appearing after their sprinkling. We've made about 20 of these trees in 30 minutes (figure 9).

My 9-year-old daughter, like her father, likes the creation and finer finished quality of the spun-wire-and-twine pines, and has no trouble operating the variable-speed drill (laid on its side) I use to make them. (Although, as I pass the 400-tree mark on my 2'x4' Pacific Northwest layout, and begin planning a 6' x 6' Freemo-N module based on the Feather River Route in the Sierra Nevada, I might just go ahead and build that tree-making jig to ease production for the both of us. Having her make 10,000 trees before earning her driver's license at 16 seems reasonable to me.

Over six years, that's only 139 trees a month, or less than five a day. Hmm...

As having a single drill does slow down production; usually I twirl about five tree "skeletons" ahead of time, though there are plenty of tasks for both of us. Older kids can cut pairs of floral wire with nippers and sections of twine to length with small scissors while you place the wires in the drill and chuck it. Then they can operate the drill while you pinch off first the trunk and then the top for twirling (so you can quickly release if there's a sudden bust of speed), use scissors to trim the twine on the spun skeleton into tree shape (over the trash can), spray the skeletons grimy black, repeat the previous steps while the paint dries (usually 10-15 minutes),



**Figure 9:** Scrub-pad-and-bamboo-skewer conifers are easy and safe for kids ages four and up to make, especially if you cut and separate the scrub pad layers into "branches" ahead of time and then man the Hairspray Station during the ground foam application process. Low, wide containers (such as cottage cheese or whipped cream containers) help collect excess and prevent knock-overs. Twenty skewer trees in 30 minutes is a good time for everyone involved: after a chunk of building go play outside, have a snack, or (at the very least) run trains.

spray the skeletons with hair spray, apply the ground foam, spray hair-spray again to fix, and then, after the trees are completely dry (1/2 day), poke holes into the base foam with a T-pin, and use tweezers to install the trees onto the layout. Twenty twirled trees in an hour proved to be an enjoyable session length (figure 10).

**For making buildings,** kids can kitbash / create multiple buildings when you break the process into smaller steps. Trying to build Rome in a day results in a Leaning Tower of Pisa (which might be fine for their own layout).

So as buildings require multiple paint/wash coats and corresponding drying times, setting up building projects on trays allows them to be at the ready for short sessions.

To prepare, use a hobby knife to cut the building panels off the sprue and file the side flush. You can glue panels together to ensure alignment or they can apply the adhesive with a toothpick and then fit the flat sides together (working on an old, flat cookie sheet helps pop the sections off when the glue seeps underneath – figure 11, next page). The

kids can spray the brick wall sections red oxide or the wood wall sections a gray primer and then (later) a matte white or whatever color you want. Allow to dry. The kids can use gray and white craft paint to mix a mortar wash and then paint or slop it all over the bricks. Allow to dry. Then the kids paint on a coat or two of “grime” using the multi-purpose “Big Jug O’ Stain.” Allow to dry.

At this point, older kids can help paint window sills and doors using a small, fine brush. For our long cannery flat with over 40 windows and doors, we

took turns painting groups of four windows apiece, as I’m positive that having a kid paint that many N scale windows by herself in one sitting violates some Child Labor Law (figure 12 next page). Did my daughter paint perfect trim? No. Some blue bled into the bricks, but much of it was fine, and the rest she and I touched up with red paint and wash later.

By pouring some thick CA in a plastic tray, kids can easily use a toothpick to apply the adhesive to wall section ends and bottom to install flats and buildings on the layout. For installing

“glass” in the windows, I used a pen to mark spots on the back of the wall section, and then my five-year-old son used a toothpick to apply the CA (figure 13 next page). We both placed the pieces in place. I intentionally cut the plastic wide to allow for more room for five-year-old fingers to find the target area without getting CA’ed to walls, windows or together. Older kids can paint tan window shades on the back of the plastic, but kids of all ages can cut shades from manila envelopes or folders, and tape them in place.

If building 90-degree corners, older kids can use a magnetic jig and/or Legos® to hold the sides in place while the glue cures (figure 14 page 70). For the custom-fit angle on our switching layout, I just went ahead and did it. Kids



**Figure 10: Older kids (and adults) enjoy the craftsmanship and higher quality of drill-spun floral-wire and twine pines. A batch of 20-25 in an hour is a good session of quality trees and quality time.**

can brush white glue on flat roofs and sprinkle cinders to replicate a rough roof, or can brush on weathering powders (while you hold the building over the trash to contain excess powder).

Older kids can use tweezers to place figures and details around the buildings. By breaking the building into steps, having a little patience, and doing some of the difficult motor-skill tasks yourself (aligning awkward angles and corners), the kids are able to produce some quality structures that really sell the scene on any layout (figure 15 next page).

### The Importance of Protection:

Notice that almost all of the prep-work involves masking off track, using drop-clothes, and having plenty of paper towels handy. Be ready for the mess. (And the one the kids make, too.) Even older children are still developing their motor control skills, and just because my 6-year-old son can beat me nine times out of 10 in Super Mario Brothers on the Wii™, doesn't mean he's going to paint perfect N scale window sills or spread dirt evenly between two tracks with a teaspoon.

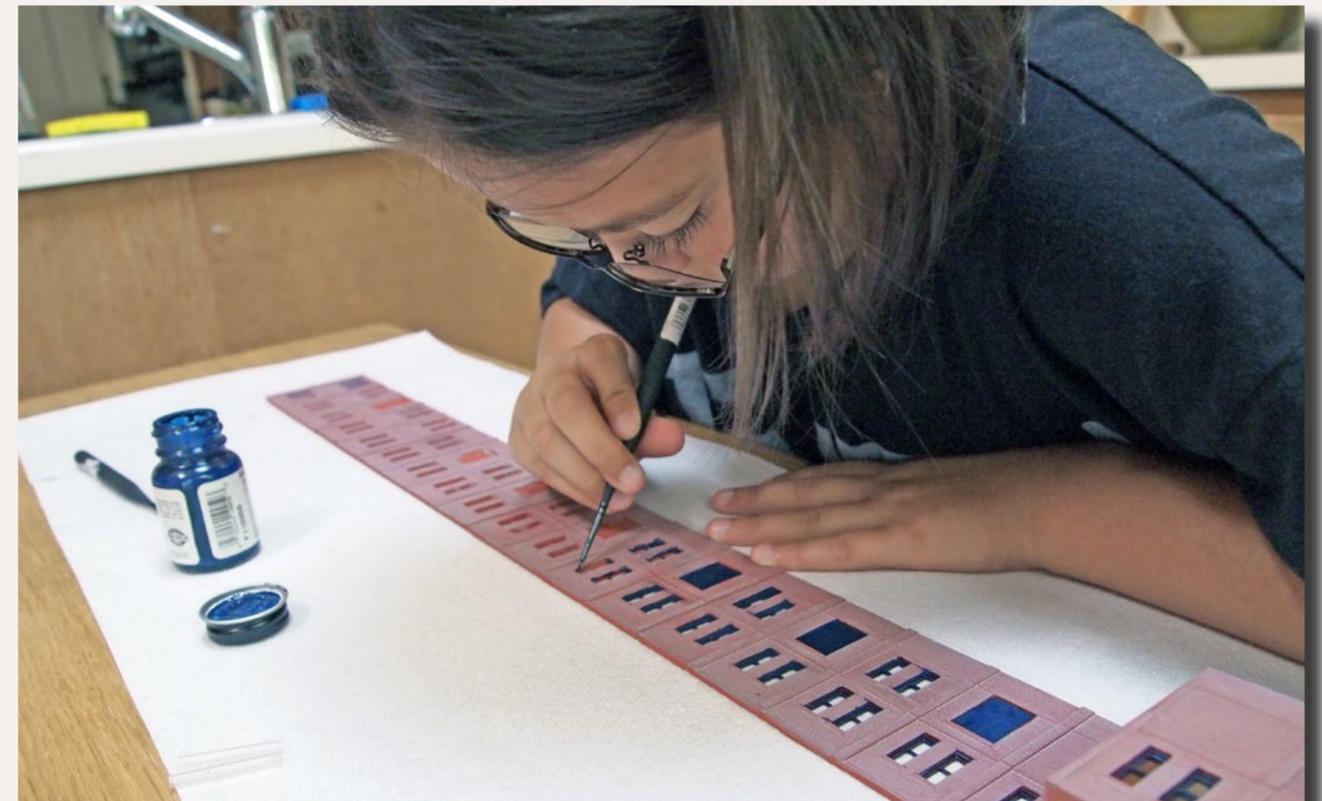


Figure 12: Uki uses a small brush to paint window sills and doors. I used the brush to put paint into the lid, which reduces the chance of spills when dipping in the bottle.

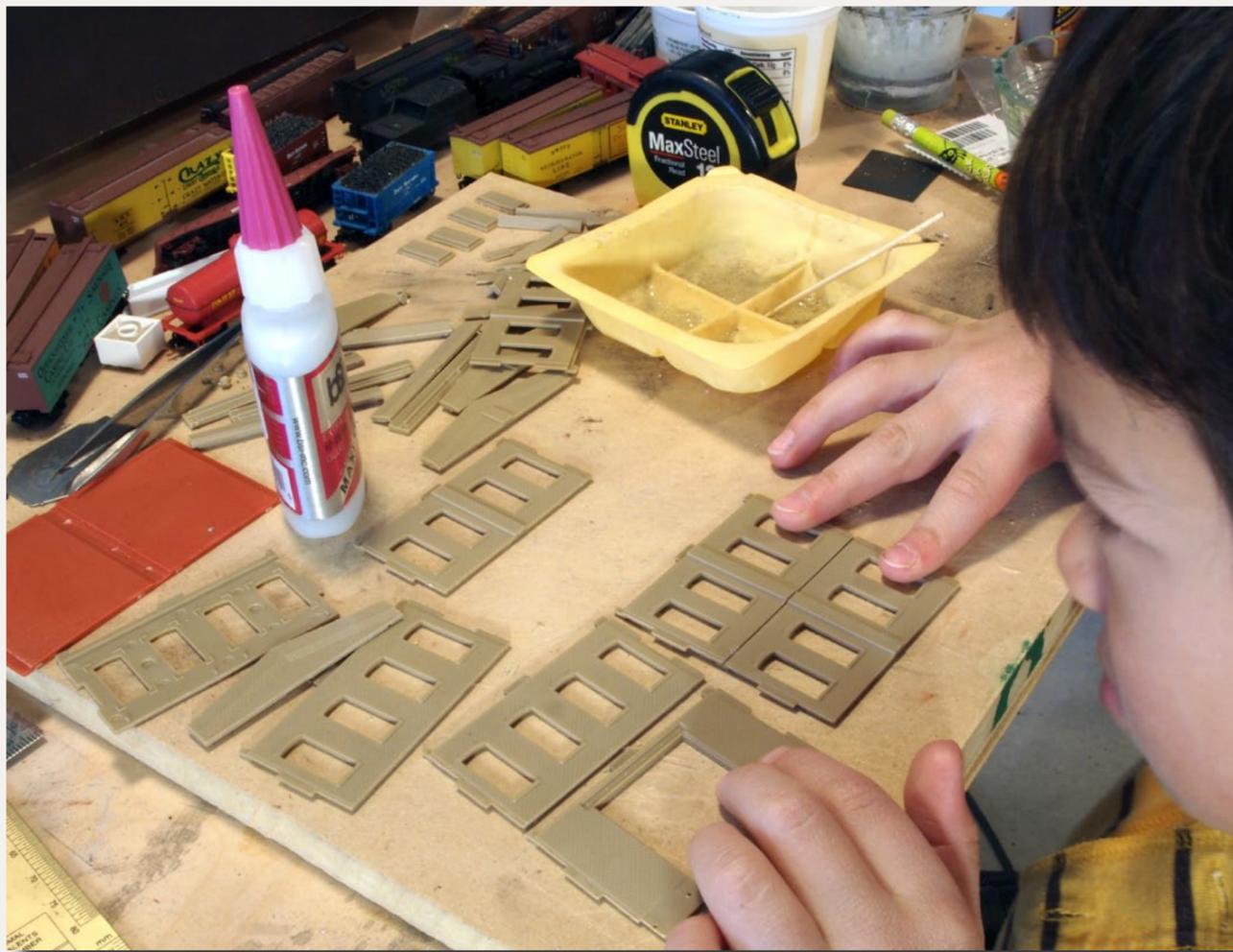


Figure 11: Ko test-fits modular wall sections before using a toothpick to apply CA. (which I poured into a small plastic tray).

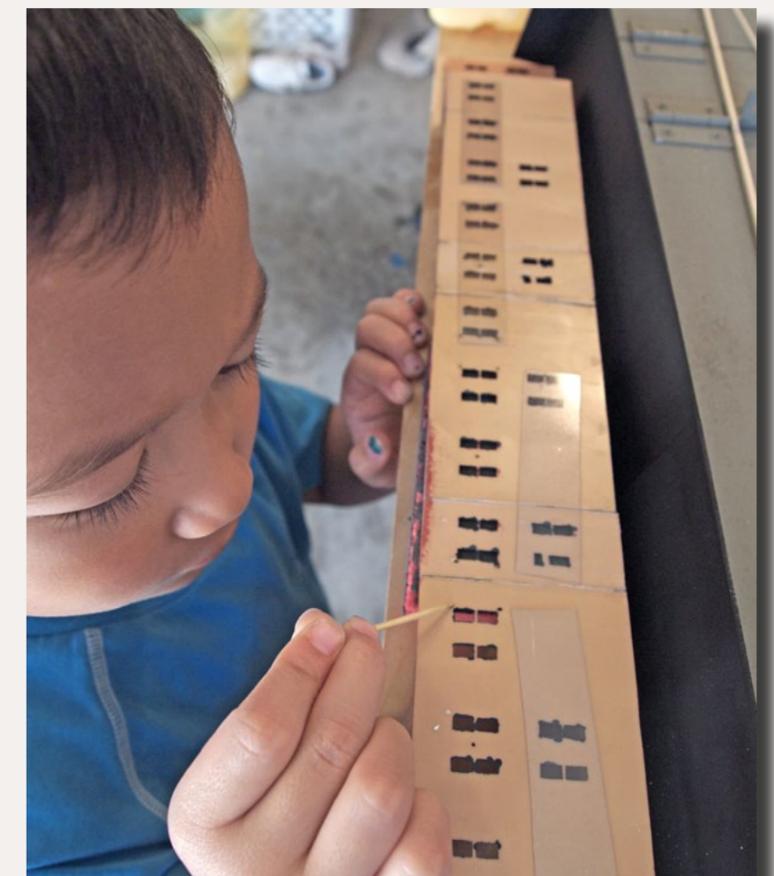
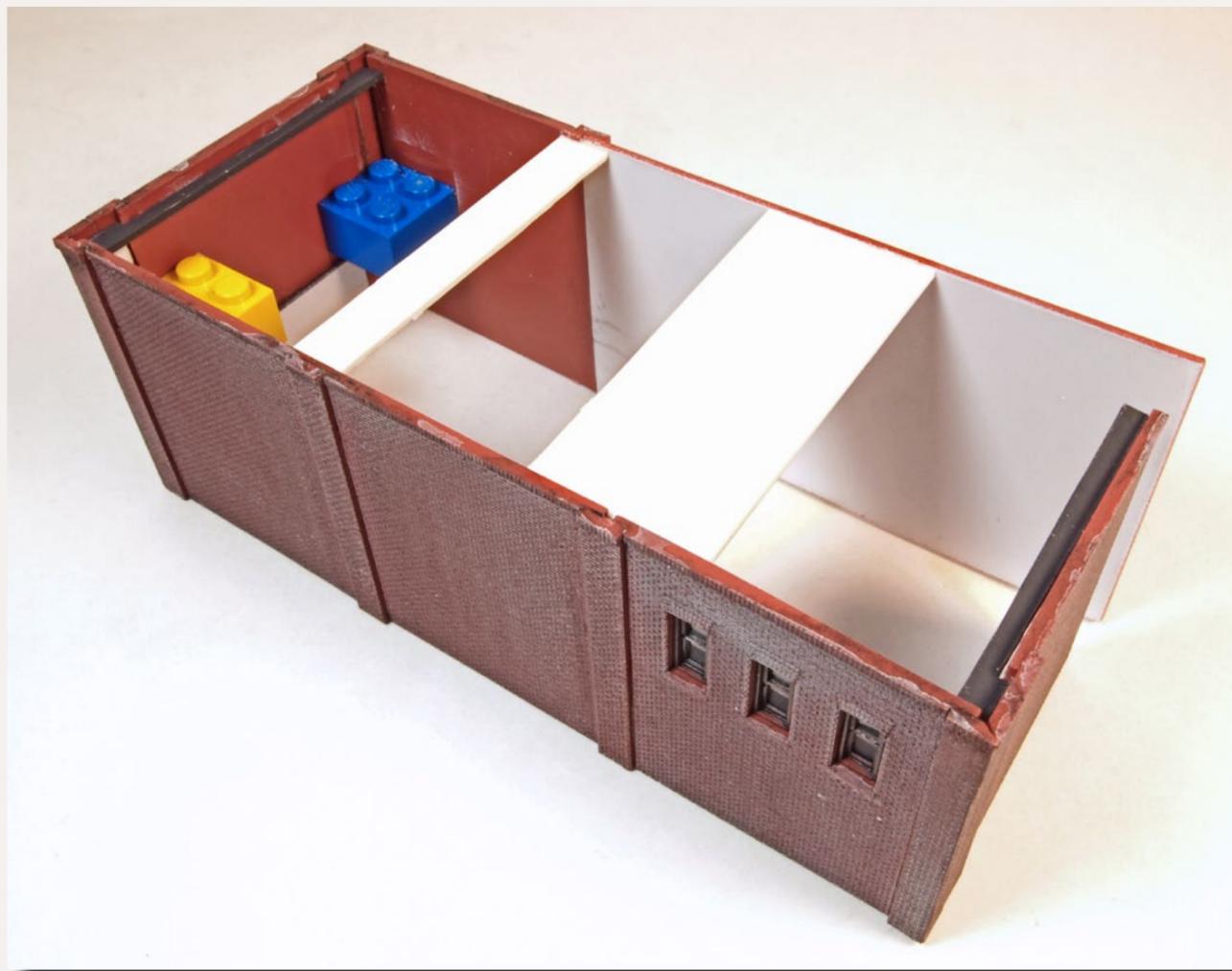


Figure 13: Ko uses a toothpick to apply CA for window glass on the backside of a building flat. I drew dots to help guide his aim.

All power tools and sharp objects must be age- and skill-appropriate, carefully explained and demonstrated, and closely monitored. While my 10-year-old daughter can use a hobby knife, Chopper II, and variable speed drill for certain tasks in controlled situations, neither of us is ready for her to use a drill for benchwork construction, so I'll do that while she helps with the measuring tape, glue, clamps, and electric screwdriver. The sharpest tool I'll let my 6-year-old

son use is a forming tool on foam, and never unsupervised.

*Power tools such as circular saws, chop saws, Sawzall™, table saws, etc., are not appropriate for the children in the 4-10 age group that are the focus of this article. Injuries resulting from you irresponsibly letting them use these tools will result in physical and emotional scars, a visit to the hospital and from Child Protective Services, and, least of all, a damaged layout. If they absolutely **need** a "saw," then*



**Figure 14: Kids' toys can help, too. Legos® make great reinforcements, especially since they're a perfect 90-degree angle and easy to glue.**



**Figure 15: Most of this scene was done by Uki, with help from Ko and Dad. Summer is a great time for a project like this, when you have the opportunity to work a little bit each day.**

*have them help move the sawhorses or clean up the sawdust (with a mask, of course), or take a break from modeling and go to the park to play on the see-saw together.*

**For handling and running trains:** Many of us "serious modeler railroaders" (and especially us N and Z scalers) balk when younger kids ask, "Can I play with the trains?" Even though we know the child's intentions are good, we can't help but envision crumpled cars and smashed structures. I've found that the "One Finger Rule" works wonders in minimizing

mishandling and also teaches respect for the model, one finger resting lightly on top, to move boxcars back and forth, One Finger to touch the "water," One Finger to flip the ground throw, and so on (figure 16 next page). The only other rule with "Dada's Trains" is "Ask First!" When I got back into model railroading a few years ago, the kids (then 3½ and 7½) were just as excited as I was, and wanted to be involved in everything. So I told them, "You can run

*Text continues on page 72.*

Figure 16



M.C. Fujiwara is a writer and editor, as well as the model railroad layout designer of Yardgoat Layout Designs ([www.yardgoatlayoutdesign.com](http://www.yardgoatlayoutdesign.com)). He lives in his native San Francisco Bay Area with his wife and two children, who enjoy helping their dad build his 23"x 41" Mt. Coffin and Columbia River N-scale layout by making trees, painting rocks, and running trains.

Figure 16: Once learned, the "One Finger" Rule becomes habit and reduces the accidental mishandling of trains. The skewer is used to manually uncouple cars.

Figures 17a and 17b: The Stonebridge Models e-Z Throttle (9VDC) is just the right size for both small layout and operator, and both kids enjoy using the NCE PowerCab for the DCC layout. The speed-control wheel and headlight are used most often, but sometimes, when running more than one train, the big red "Emergency Stop" button suddenly becomes the most useful.

Figure 17a



Figure 17b



*Text continued from page 70.*

the trains and help build the layout, but you have to Ask First, because some things are sharp or fragile and I don't want you to get hurt." It took a couple times for my then-3½ year-old son to remember to Ask First, but soon, after a few (verbal) reminders, it became habit, and even now they Ask First, especially because most of the time the answer is, "Sure! Let's do it together!"

It's never too early to introduce some realistic operations. Even on a simple roundy-round, my then three-year-old son could crank the throttle up to "10" on the main, but he also knew to slow down to "6" through the stations and "4" through the yard. (Of course, breaking those rules was fun, too). If you're worried about some fragile scratch-built rolling stock then set up a train just for the kid using the gaudy fantasy cars left over from the 1980's (kids seem to like those better anyway).

Older kids, like my daughter, usually prefer switching ops. At the beginning a simple verbal-switchlist is enough to suffice. I say, "Drop these cars at A, B and C, and pick up those cars for the outbound." Later, working together to create switchlist forms on Excel or another program allows you both to learn computer, typing, and spreadsheet skills. Now my daughter is 10 and loves to take pictures with her iPod Touch, so I'm looking forward to

putting my light box to use and create some car cards with easy-to-read photo IDs.

The Caboose Industries ground throws I've used so far are easy and fun for kids to flip, and they quickly figure out to check the points before

For our 1' x 6' "Alameda-Belt-in-a-Box" switching layout, the Stonebridge Models "e-Z Throttle" is just the right size. It fits well in small hands, is easy to operate, and the 9V battery is fine for this one-iron-horse town. While operating on my



**Figure 18: While Uki enjoys building a layout with Dad, she really loves running trains. Smaller layouts allow both to happen in a "fun" amount of time for everyone.**

running trains through turnouts. I like to do everything as manually as possible, so we use long bamboo skewers for uncoupling. Hold above, place the tip gently between the coupler-hands and slowly rotate the skewer. Easy-peasy.

2'x4' Mt. Coffin & Columbia River layout, both my kids find the DCC NCE PowerCab easy to hold, and use the throttle wheel and the headlight button (figure 17 previous page). DCC also allows, with another throttle,

much smoother group ops sessions, as each kid can control their own train without worrying about toggles and power blocks, and although head-on collisions and rear-ending do sometimes occur, I can count on one hand how often it happened over the last couple of years.

## **The importance of ownership**

If you're the type of perfectionist who gets nervous when people begin to get near enough to breathe on your layout, then letting your kids work on your masterpiece probably won't be much fun for you or them. You either can have kids work at the workbench on projects that you install later, or start a small layout just for them. When I began working on my 2' x 4' Mt. Coffin & Columbia River layout, my kids helped with building up the rough blocks of foam, laying flextrack, making rocks and trees at the workbench, and running "test" trains, but all the scratch-built structures and bridges, handlaid curved and three-way turnouts, and other fine details I saved for myself. At that point, I sat down with my then nine-year-old daughter and we started planning and building a 1' x 6' fold-up switching shelf layout *just for us*, and for which the goal was to create a project that we could work on every aspect together, regardless of the resulting modeling quality. And while I'll admit to building, with her permission, a few

etched-brass details myself (like a brass TrainCat Oil Unloading Platform), by breaking down all the other tasks into manageable sessions we've been able to produce a pretty decent-quality layout that's fun to operate (figure 18 previous page).

But all the separate steps spread out over a long time (six months) led to an interesting situation in which she's forgotten all the work she's done on it. When I point out all the painting, gluing, weathering, turn-out soldering, ground texturing and detailing she's done, she says, "Oh, yeah. I remember that," but she still sometimes sees the layout as something she "helped Dad do," rather than "ours." She was proud, however, to see her picture in the "How to Scratchbuild A Carfloat For Under \$10" article in the January 2012 Model Railroad Hobbyist, and taking the shared experience beyond the building—saying "we" in articles and when discussing the layout with family and friends—helps reinforce the sense of ownership and of pride in the work and time spent together.

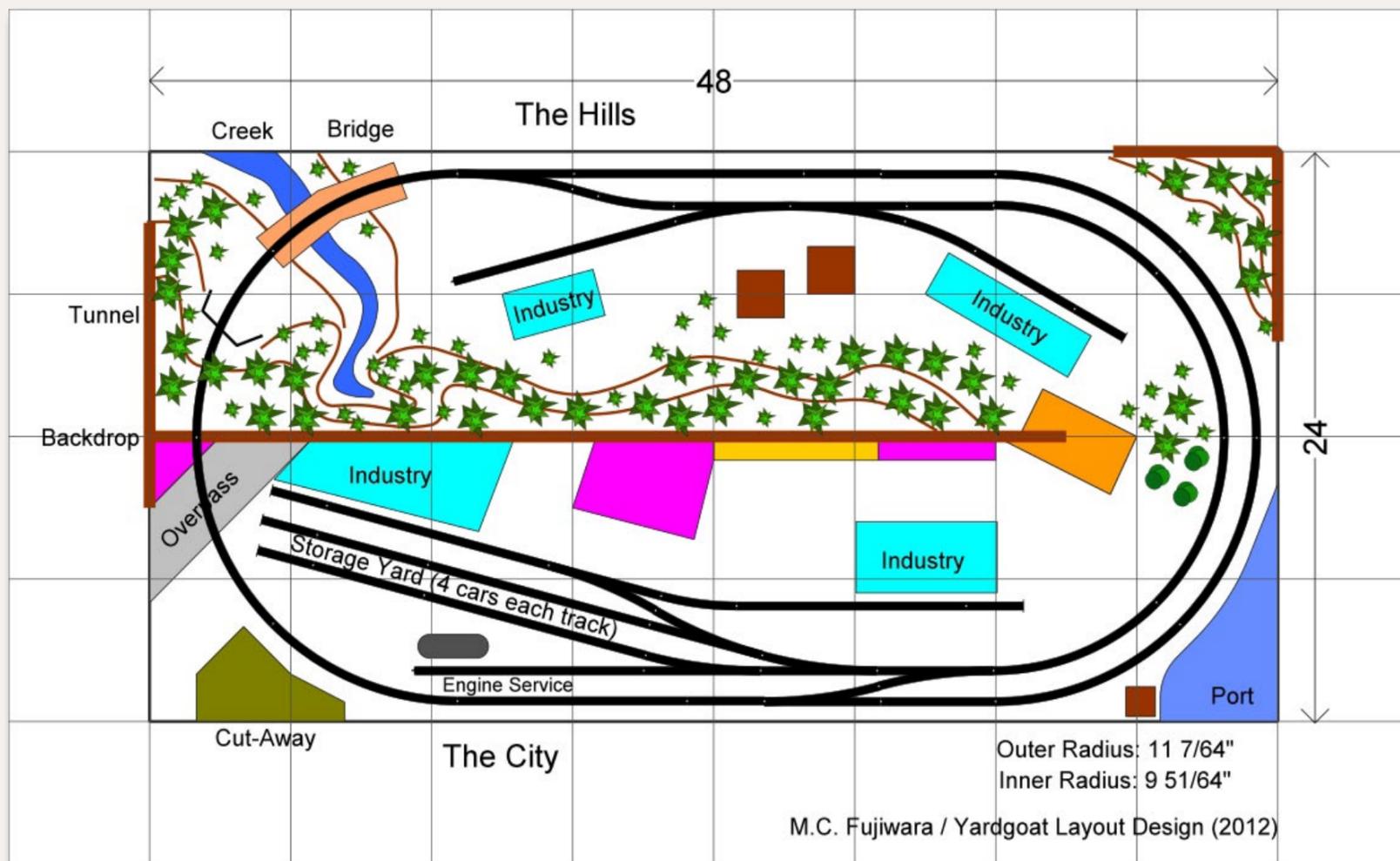
So the next step is move from "our" layout to "her" layout, and for me to switch from co-worker to mentor / advisor. This requires us adults to

take a step back and keep our hands off, something the model railroader in our blood can find surprisingly difficult. But when we remember that the goal is for the kids have the experience of planning, building and running a layout rather than Dad have

home improvement stores) and Kato's Unitrack system is great. The "bullet-proof" sectional track simplifies layout design, as you can easily take apart and snap together the sections to try different arrangements, as well as allowing kids to run trains right away. The 2'x4'

(like the "Heart of Georgia" layout) and Bachmann's E-Z track can be used to achieve the same results.

Given the skills that my daughter has already shown, she would probably be able to start her own N scale hollow-core door layout using code 55 flextrack and some manufacturer's turnouts, though Unitrack would work great as well. The problem now is to find a place to build and keep it. Soon, though, I expect karate, soccer, sleepovers and socializing with friends, reading japanese comics and her favorite book series (again), weekend Japanese school, and all the whole mess and magic of the middle school experience will leave little time for trains. So for now, I'm just happy to be able to spend time with her and share my love of model railroading, just like my dad did with me.



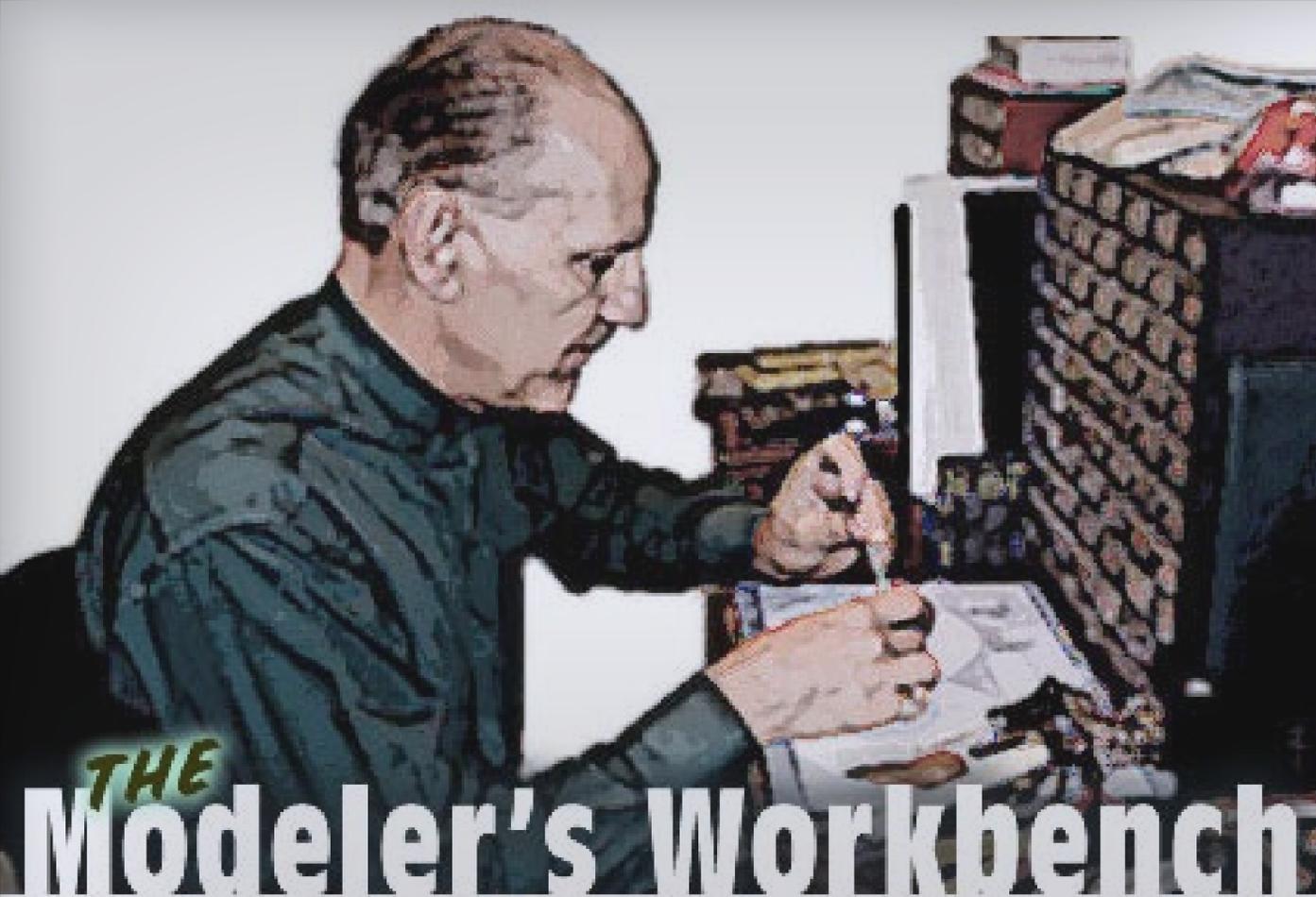
**Figure 19: A 2' x 4' "Handy Panel" of sanded 1/2" plywood is readily available at most hardware stores and, with Kato's Unitrack system, enables getting trains running quickly. A layout like the one above includes many types of projects to learn a variety of modeling skills.**

a photo-realistic prototype-faithful museum piece, then the time shared together becomes truly wonderful.

For N scale, 2' x 4' "Handy Panels" (pre-cut sanded plywood readily found at

panel limits the scope of the whole project to a manageable allotment of tasks and time (see figure 19). For HO, four hollow-core doors arranged into a doughnut for continuous running

**Reader Feedback**  
(click here)



# THE Modeler's Workbench

# Station Strips

Helping engineers find their way around an unfamiliar layout

▶ **Reader Feedback**  
(click here)

– by Jerry Boudreaux

It's your first time operating at a layout. The host tells you "Run west as far as Red Rock, meet #20 at Rufus, and set out three at Granite Creek." The five-minute layout briefing that was supposed to give you all this information seems an eternity ago, and you're remembering very little of it. Which way is west? How far is it to Red Rock? Where's Rufus? Do I have enough time to make the setouts at Granite Creek?

Old hands on the layout know this stuff (at least they should!), but a new crewman trying hard to make a good impression can find it difficult to keep

track of all this information. A user-friendly layout shines here, letting even the newest crew members enjoy themselves without stressing out.

How can we as layout owners provide the information inexperienced train crews need in a compact and easily-understood format, while not boring the old hands? Part of my answer was a series of fascia-mounted diagrams I call station strips (figure 1).

I've been using station strips on my Pasquinel Division for about 18 months. I've had lots of new operators in that time and most really like them. Even

**Figure 1: Through train No. 20 passes a yard switcher as it heads through Lakeside on the eastbound main. Its engineer, a newbie on the author's Pasquinel layout, uses the fascia-mounted station strip to see direction and which towns are next.**

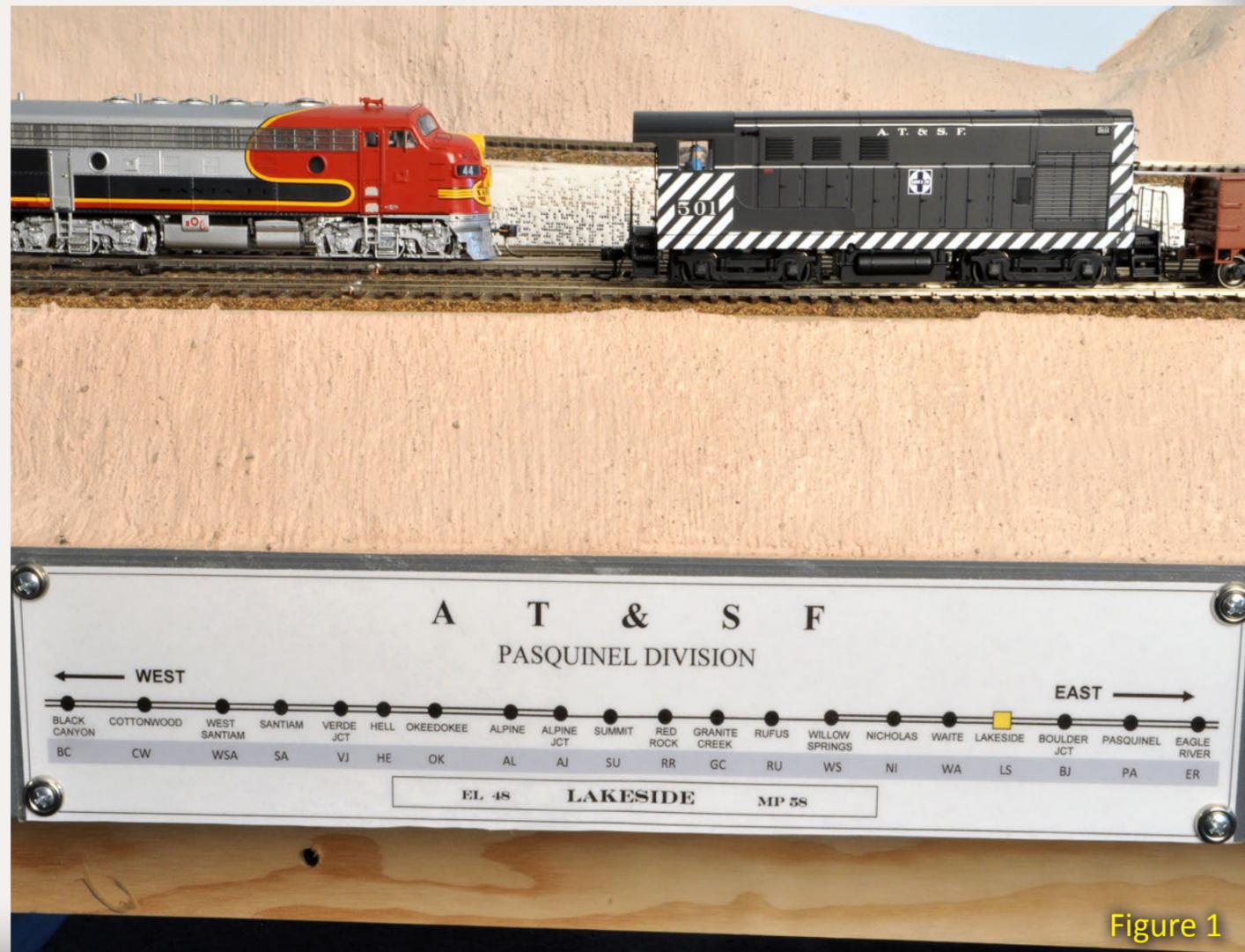
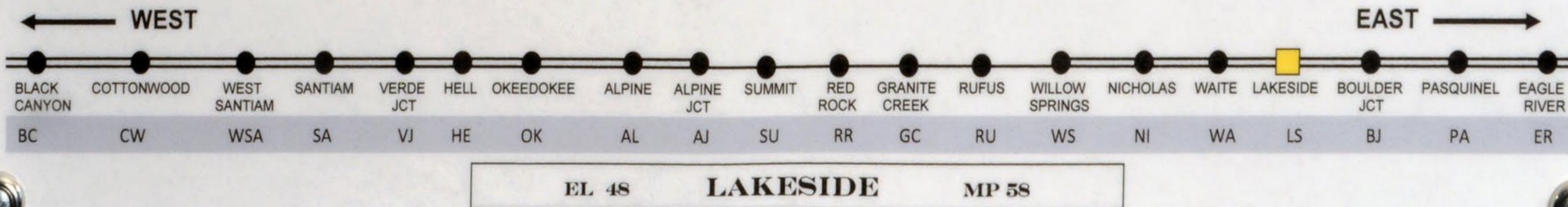


Figure 1

# A T & S F

## PASQUINEL DIVISION



my experienced operators use them from time to time.

### Basic information

Crews need some basic information:

- The name of the station at the current location
- Which way is railroad east and west
- Location on the layout relative to other stations
- A key to place-name abbreviations
- The station elevation (I use inches above the floor)
- Milepost marker for the station

The last two items are not required, but lend a bit of railroad atmosphere to the signage. Your layout may need different information.

### Making station strips

I used MS Word to create these 3-1/2" high by 14" long strips. Two functions that proved really handy are "insert object" for lines, dots, and arrows and "text box" for titles, sta-

tion names and abbreviations. I'm just barely computer literate so I mooch off others who have more expertise than I, or fool around with the software using "Dummies" books until I get what I want.

As I said, I'm not a computer wiz. If I can make these signs, you can too. If worse comes to worst, show this article to the kid who lives next door, and he'll be able to show you how to make the signs.

I print them out on my inkjet printer, then head over to a local office supply store to have them laminated and cut to size. I use commercial lamination because my station strips are printed on legal size paper (8-1/2" X 14") paper that's too big for my home laminator.

If you want some extra strength, mount the laminated station strips to a styrene backing strip using contact adhesive. Screwing them to the fascia makes them removable if your layout changes in the future. I used finish washers under the screws (figure 2).

Figure 2: I take the paper station slips to a local office supply store and have them laminated in plastic, making them impervious to spilled liquids or accidental bumps from shoulders or hips. Once laminated, they're easy to attach to the fascia – I add styrene backing and use four screws to hold mine in place.

The yellow square is a "you are here" indicator. East is to the right and west is to the left. The elevation (48") and milepost (58) are nice touches, but not absolutely necessary. Include what seems appropriate on your signs, but try to avoid clutter which makes them hard to read.



### Jerry Boudreaux

Jerry Boudreaux has loved trains since his early years in Central Arizona's ranch country. He loved chasing trains in the back of his dad's ancient pickup. Warbonnets, zebra stripes, and blue-and-yellow diesels became a way of life as they twisted their way over the mountains to the desert floor.

Working 33 years as an educator brought Jerry and his wife, Jeanne, to retirement on a ranch in Corvallis, Oregon. Jerry gets to work on his railroad AFTER the ranch chores are done.

This is Jerry's second MRH article. His first, [Temporary Bridges](#) was published in the [December 2011](#) issue.

## Layout Diagrams

My layout is linear. This makes it easy to create a station strip track diagram that looks a bit CTC-ish.

If your layout has branchlines and junctions it may be trickier to come up with a good arrangement for the track diagram.

If you have a double-deck layout you'll need to decide whether to provide a station strip for each deck.

If your layout has multiple main tracks on a deck, but some tracks

are railroad-west on the left, while on others west is to the right, you'll need to be really clever. I've seen this issue solved by color coding the directions for each track.

Station strips have been well-received on the Pasquinel Division of the Santa Fe. I have operated twice per month for 18 months with two different groups, and several clubs have come over to run at other times. I often see engineers with their finger on the strips figuring out where they are and where that other guy is. Try it; your new operators will appreciate it.



Figure 3



Figure 3: A fascia-mounted station strip at Cottonwood on my Pasquinel Division layout.

Figure 4: The tools and materials needed to install a station strip.

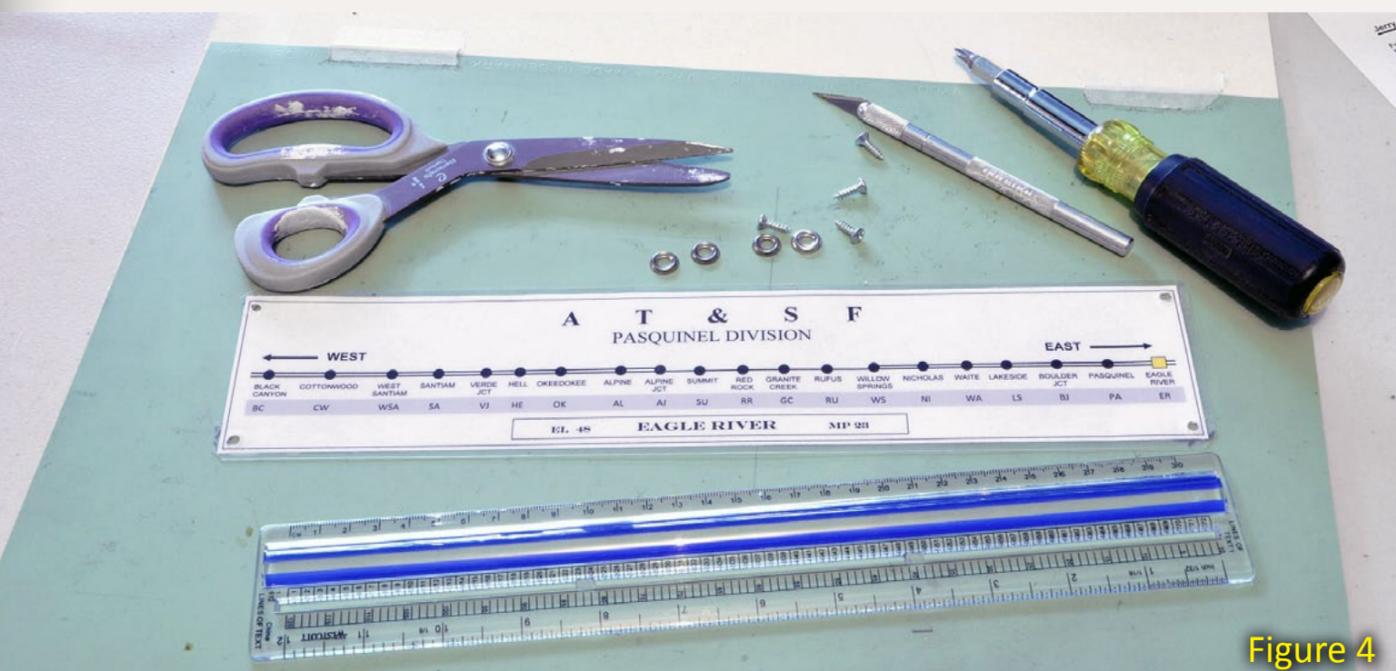


Figure 4



**Reddy  
Kilowatt**



**Click  
each  
sign to  
see it in  
action!**



**Texaco**



**Budweiser**



**OK Used  
Cars**



**Also see our other neon  
sign offerings ...**

**Click for more - lots more!**

ADVERTISEMENT

# Building the St. Regis Pulp & Paper Mill Part 2

– by Mike Confalone

Photos by the author



Expert model railroader Mike Confalone shows you how to model outside the box in novel new ways with his proto-freelanced St. Regis paper mill scene. Let's continue this journey in Part 2...



Last issue, I prepared the alcove space on my Allagash Railway for my St. Regis Paper Mill scene by installing a photo backdrop, painting the bare plywood and installing the road crossings. By using a high resolution photo of a real paper mill for the scene's backdrop, I saved the effort of building most of the paper mill complex.

In this issue, we continue the construction of the mill by installing the road system, parking lot, and scenery contours.

## STEP 7: Building the Employee Parking Lot and Road System



To complete the road system and employee parking lot, I needed to use a material that did a good job simulating asphalt. There are many materials to choose from, including joint compound, but I like to use a product called lightweight spackling from Ace Hardware. The lightweight spackling is inexpensive, easy to apply, and more importantly, easy to sand and shape, and makes little to no dust when sanding. I didn't want the road system to look like it was freshly paved, especially considering the time of year. A long, cold winter was just giving way to spring, and the parking lot needed to reflect this battle with the elements.

Figure 30: I needed to define the edges of the road and parking lot so I could neatly apply or 'screed' the lightweight spackling asphalt material onto just the areas I wanted to cover. I bordered the road using scrap pieces of Midwest Products cork roadbed with the straight edge facing in toward the center of the road. I secured the pieces with oversized spikes that I tapped in using a tack hammer. The great thing about using cork for this is that you can radius it and make a nice smooth curve for roads. Using cork also ensures a uniform depth to the spackle – approximately 1/8".

Figure 31: For "asphalt" I use Lightweight Spackling Compound from Ace Hardware. To get it to look like asphalt, I colored the Spackling using Tints-All, a very potent universal tinting agent. Just a few drops were all I needed to tint a full bucket of the lightweight spackling. I used two colors to tint the spackle – lamp black and raw umber. The combination of these two colors gives a nice medium gray, weathered asphalt look. After the spackle was thoroughly mixed to a nice medium gray with a paint stick, I divided it into two containers for easier application.

## STEP 7: Building the Employee Parking Lot and Road System *Continued ...*

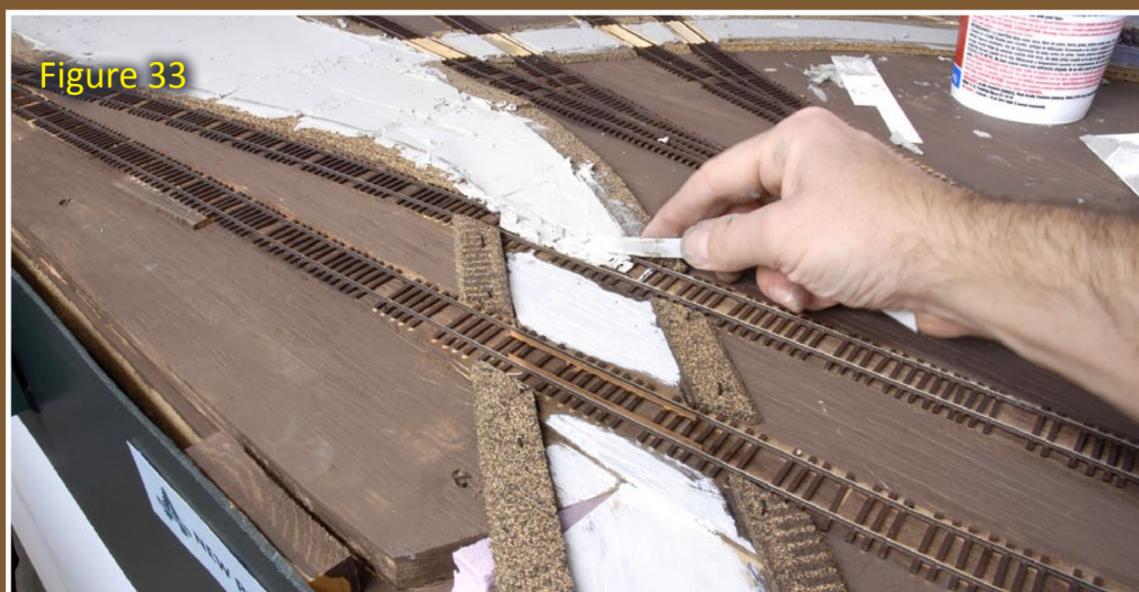
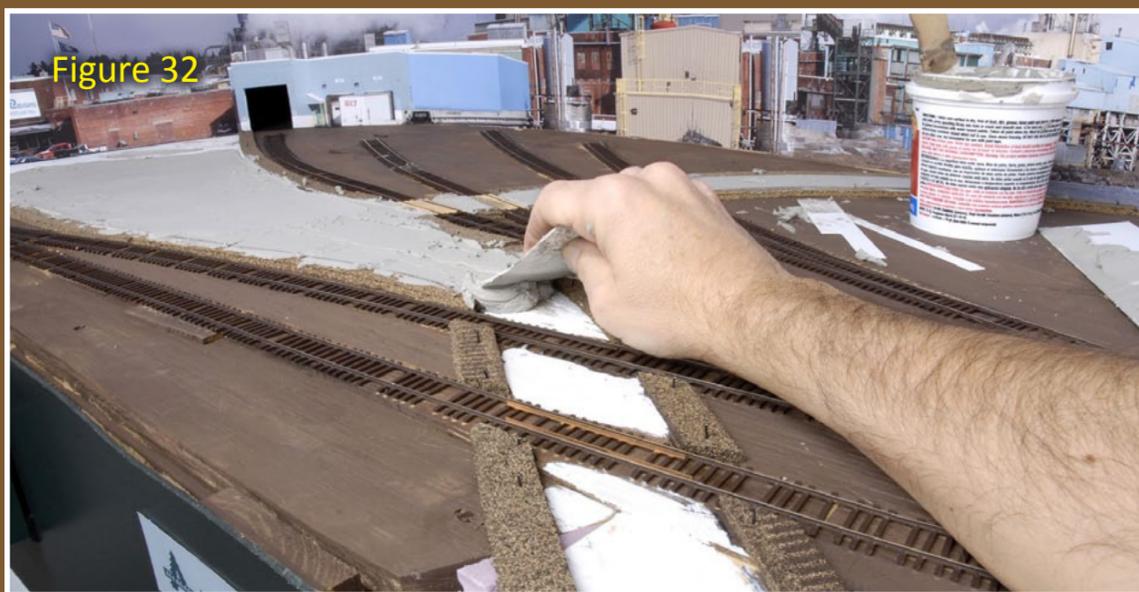


Figure 32: Using a putty knife to apply the spackling works fine, but I find that a better way is to grab a few scrap pieces of .060 styrene and cut them to the width of the road. The styrene bends easily and makes it easy to screed down a nice even coat of the material between the cork borders. Be careful not to use too much asphalt material or you'll end up with a real mess. In this process, less is more.

So using my road-width styrene scrap, I began to spread, or 'screed' the Lightweight Spackling "asphalt" into the employee parking lot and road system, taking care not to use too much of the material. Some small imperfections are OK. They will represent pot holes from the hard winter weather. Also keep in mind, we'll be sanding the road later to smooth it up, so total smooth perfection is not necessary when spreading the spackling.

Figure 33: On the asphalt crossings, I used a smaller piece of styrene, cut to the width of the space between the rails. I took my time and tried to spread just enough spackle into each crossing, and no more.

Figure 34: After screeding the spackle between the inner rails at each road crossing, I cleaned each flangeway by running the styrene strip back and forth between the inner and outer rails. I once again employed that trusty 40' Lehigh Valley boxcar, this time to clean out the flange ways of any stray spackle.

## STEP 7: Building the Employee Parking Lot and Road System *Continued ...*



Figure 35: I spread the material right up to the edge of the fascia where the road leaves the layout surface. With this I declared the roads and employee parking lot paving project to be complete. I let the entire thing dry for several days.

Figure 36: After several days of drying, the roads and parking lot were ready for sanding. I removed the spikes and carefully pulled up the cork. This left a 1/8" - thick asphalt surface. Now it was time to sand the surface of the road and parking lot.

Figure 37: I used a sanding block to lightly sand down the surface of the roads and parking lot. I sanded with slow, easy movements and took care to go easy here. Sanding too vigorously could create deep ruts, which is not what's desired – some pot holes or small imperfections are fine, just don't overdo it. Along the edges of the parking lot, a smooth, I sanded to create a beveled edge, transitioning between the parking lot and the surrounding ground.

## STEP 7: Building the Employee Parking Lot and Road System *Continued ...*

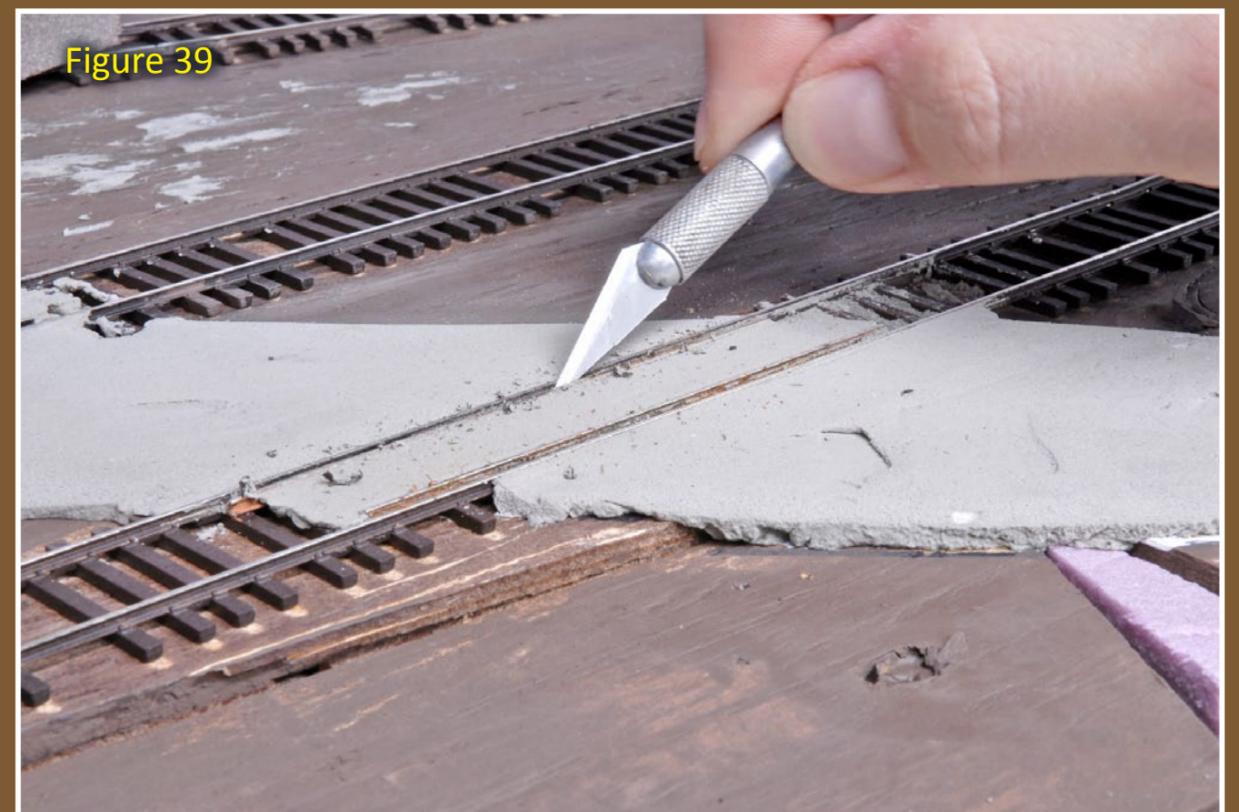
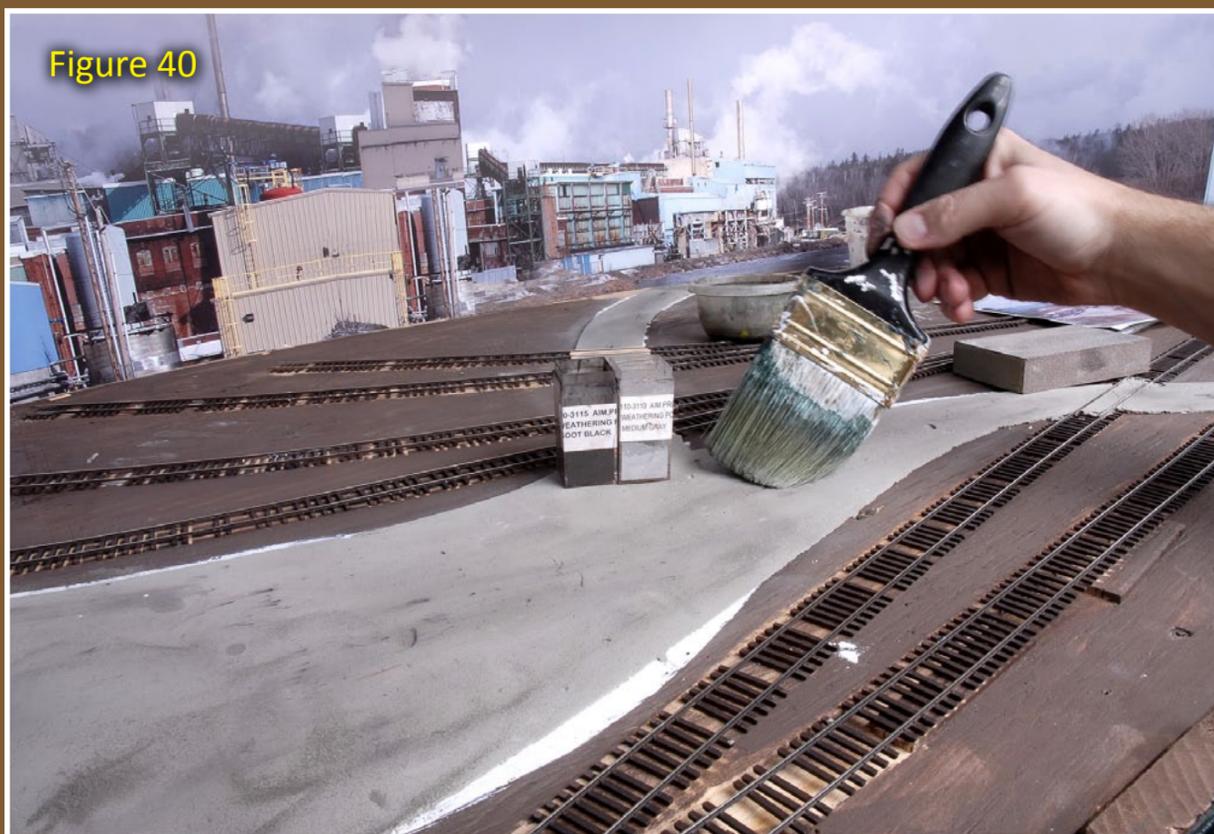


Figure 38: The lightweight spackle doesn't create dust, but rather peels up into a nice, neat pile when sanding. I vacuumed up the excess and continued this process until the road was down to about 1/16" thick, with the edges beveled down to the surrounding ground. I sanded the area in stages, using a vacuum to remove the loose material before sanding some more. After the sanding was complete, the final thickness of the parking lot and road was about 1/16".

Figure 39: I used a sharp X-acto knife to do a final cleaning around the flange ways. Unlike joint compound or plaster, the Lightweight Spackle remains flexible and is easily removed from the rails after it has fully dried.

## STEP 8: Weathering the Parking Lot and Road Surface



The next step in the process was to weather the surface of the road and parking lot. The goal here is to create the look of a parking lot that shows the effects of a long winter. The look of accumulated road salt and sand, as well as an overall discolored appearance was achieved by adding dry weathering products to the surface.

Figure 40: AIM weathering powders came first. I worked weathered soot black and medium gray powders into the surface of the parking lot and road using a large, soft-bristled brush. I vacuumed up any excess powder and reapplied more until a nice, varied color was achieved. These colors were then further embedded into the surface by sanding them in, and then vacuuming up the excess. I repeated this process several times until I attained a varied gray-toned surface.

Figure 41: Next came the road salt and the dirt. Accumulated, dried road salt is common in late winter / early spring in parking lots and on roads. To achieve the look of road salt, I crushed and sifted actual road salt until it was very fine, and mixed it with white tile grout. The finely crushed and sifted road salt maintains a granular quality, while the grout is extremely fine and powder-like. The combination of the two yields a realistic material that looks like scaled down road salt. I simply took pinches of this material and rubbed it into the surface of the road, especially on the shoulders where this material might be more likely to accumulate.

## STEP 8: Weathering the Parking Lot and Road Surface *Continued ...*



Figure 42: I also added a few pinches of sifted dirt to the surface of the parking lot and rubbed that in. I alternated between the road salt material and ordinary finely-sifted dirt, rubbing both materials into the surface of the road. I left loose material in the shoulder area, and repeated this process several times over the course of a week until I was satisfied with the final result. This alternating salt and sand procedure suggests recent snow removal and surface treatment and looks very believable as road weathering for the colder winter climates.

## STEP 9: Weathering the Railroad Ties

After the parking lot and road were complete, I turned my attention to the track. As mentioned earlier, I had already painted the Micro Engineering code 70 flex track with a base coat of Krylon's dark brown Camouflage paint. This provided a dead-flat base brown tie color, but there was much more to do.

For me, track is as important as any other scenic element on a model railroad, and is, in fact an integral part of what I'd consider scenery. To make the railroad right-of-way really come to life, I invest a lot of time and effort into weathering the track. This starts with the ties – I like to paint the ties individually.



Figure 43: I hand paint ties using three different colors by Poly Scale – Concrete, Mud and Dirt.

Figure 44: I dilute these with water to create a wash that and then I paint it onto individual ties in a random pattern. These colors, especially the Concrete and Mud, age the ties by taking the edge off the dark brown, uniform surface color of the ties. With the exception of brand-new track, railroad ties typically display a range of colors, from brown to light gray. I find the process to be relaxing, with outstanding results.

## STEP 9: Weathering the Railroad Ties *Continued ...*



Figure 45



Figure 47

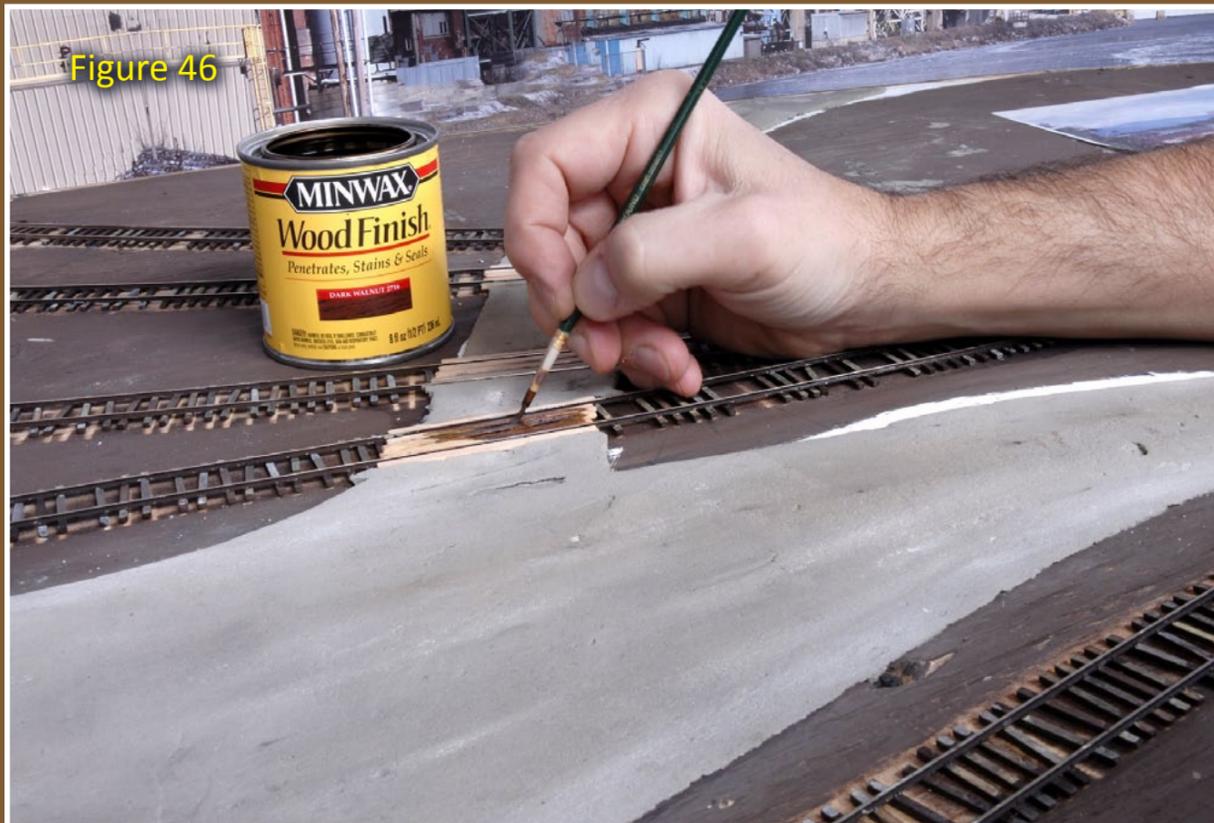


Figure 46

Figure 45: This is how the scene looked after all of the ties were weathered. The only way to achieve this effect is to get a small paint brush and start painting. There are no shortcuts here. Not only do the ties need to be weathered, but also the rails (We'll tackle that later).

Figure 46: With the roads and ties weathered, I went back and stained the wood plank crossings using a small brush and a can of Minwax Special Walnut stain. A light coat is all that is needed. I rub the excess stain off with a rag or paper towel.

Figure 47: All four of the wood plank crossings were now complete. They wouldn't look this brand new for very long!

## STEP 10: Making and Applying Ground Cover "Mud"

The next step was to create a universal ground cover material that could be used to fill gaps and create a bit of undulation on the terrain surrounding the rails in the mill area. My universal mud mixture is something that master modeler Lou Sassi calls "Ground Goop." It consists of Celluclay (paper mache), flat brown latex paint, water, vermiculite and white glue. For my mud, I skip the white glue, and only add vermiculite if I happen to have some on hand. The Celluclay, water and flat brown latex paint are sufficient to create a terrific mud that is versatile.

Figures 48 and 49: There were still big gaps between the edge of the plywood and the fascia. I went ahead and cut some scrap pieces of ½" pink extruded Styrofoam and installed them with hot glue. Now, I had a sealed surface to which I could begin to apply mud and ground cover.



## STEP 10: Making and Applying Ground Cover "Mud" *Continued ...*

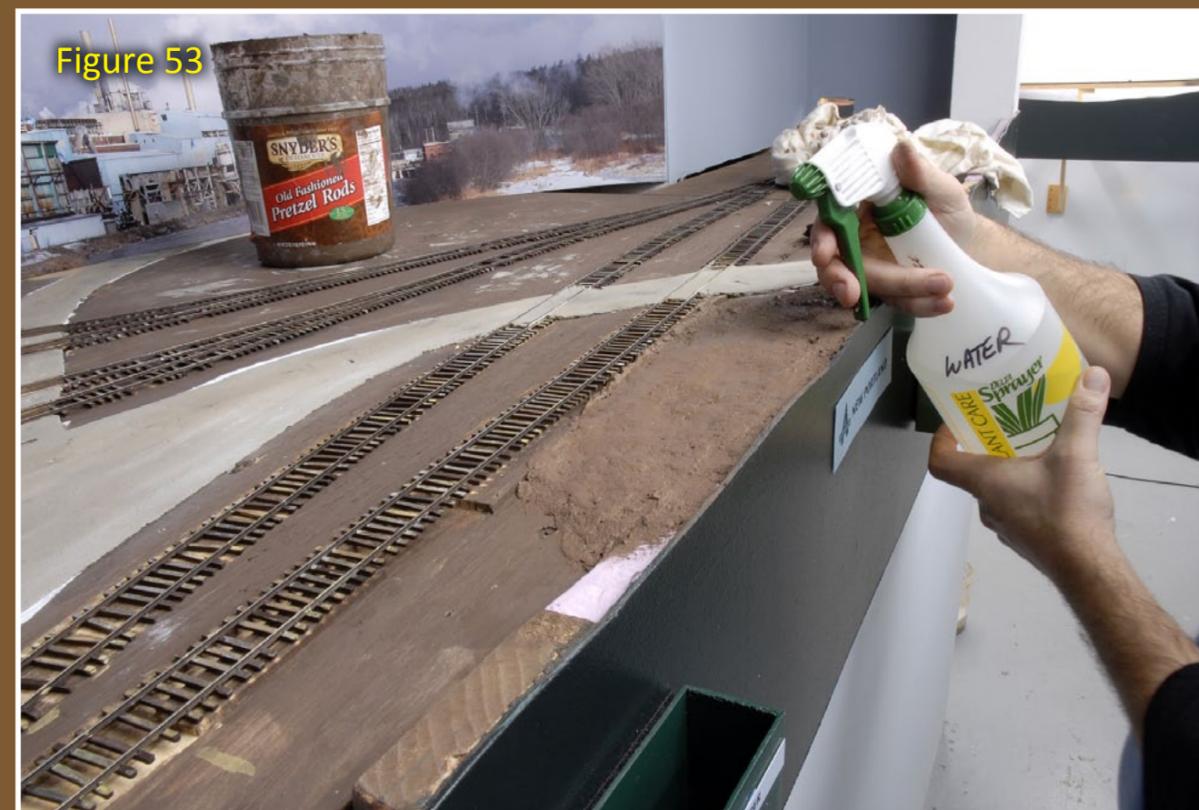


Figure 50

Figure 50: These are the key ingredients for making my universal mud mixture. From left, an empty bucket, a package of gray Celluclay, and a gallon of earth-brown flat latex paint. You'll also need some water. I mixed the mud ingredients on the floor. This can get messy, so take precautions if you are concerned about your floor looking pretty! I use a turkey baster to add the water in small, controlled amounts. Too much water yields a runny mixture that will not set up quickly, and can shrink over time. I made the mud mixture very thick and stiff. I used just enough water to moisten the Celluclay.

I have no set formula for making this stuff, I just mix it until it's nice and stiff, like stiff putty. I generally take three fists-full of the Celluclay and add a splash or two of water with a turkey baster and a good amount of the brown latex paint. You can apply the mud with a spoon, or butter knife. I prefer to use my fingers. I apply the mud no thicker than 1/8 or 1/4" thick.

## STEP 10: Making and Applying Ground Cover "Mud" *Continued ...*



Figures 51 and 52: You can use a spoon or other utensil to apply the mud. I prefer to use my fingers, so I can feel how it is going on. As you can see, it is extremely stiff. Depending on the particular need, I generally apply the mud between 1/8-1/4" thick. With my bucket of mud in hand, I went ahead and filled the gaps between the edge of the plywood and the fascia, and along the ground near the road that leads off the bench. I always keep a spray bottle or cup of water handy in order to smooth the mud. I spray just a bit of water, or dip my fingers in a cup of water and rub the surface of the mud to take away any divots or other imperfections that might result.

Figure 53: To smooth the surface of the mud after it has been applied, I spray just a bit of water and rub it in. This smooths just the surface and does not compromise the structural integrity of the mud.

## STEP 11: Making Landforms from Florist Foam



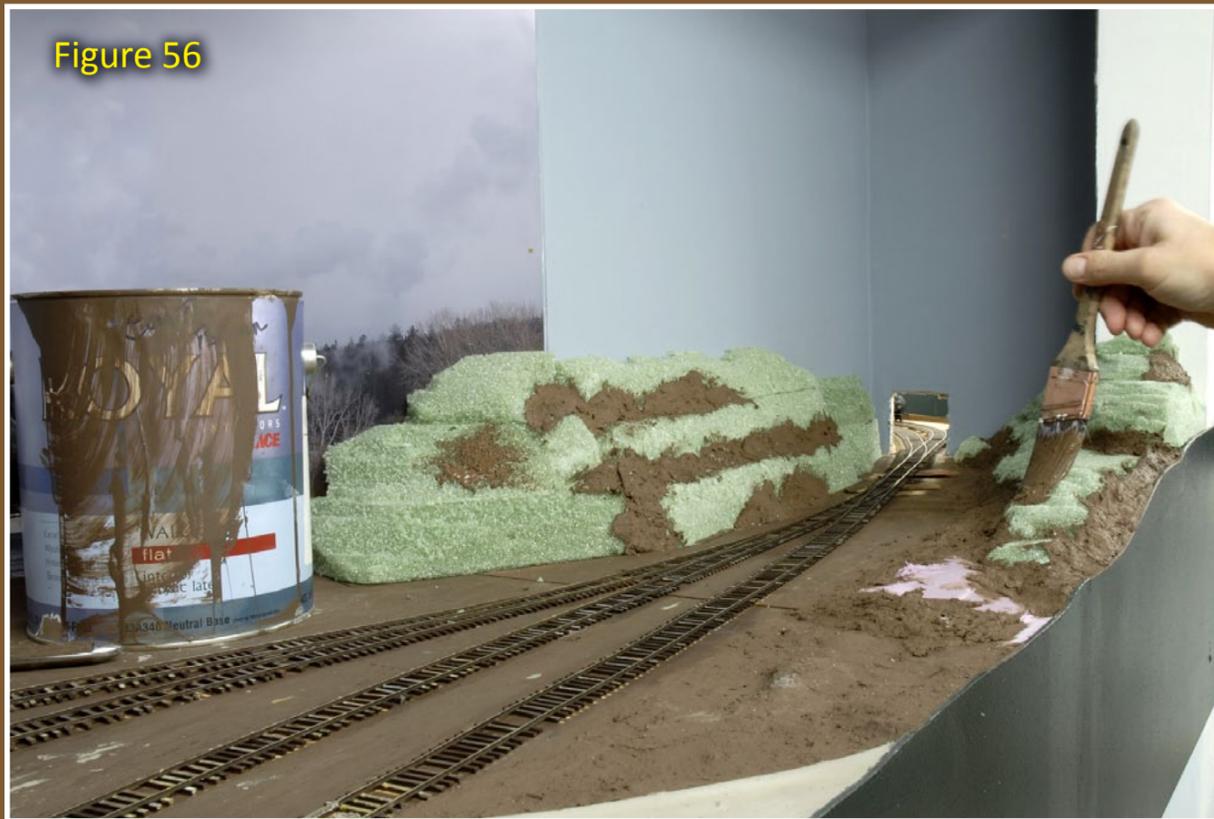
The combined mill project actually consists of two separate scenes. The first is the primary mill area, with the mill trackage, employee parking lot and road system. The second is the area that transitions from the mill out into the woods and through a wall to the next town. To make an effective transition from mill to woods, I needed to create landforms that suggested a wooded cut, where the mainline emerges from deep woods and onto the mill property.

To create landforms, I like to use two kinds of Styrofoam. For general structural build-ups, and in areas that don't have lots of trees (fields for example) I use the standard pink extruded foam, in various thicknesses. But for wooded areas that require lots of trees to be planted, I prefer to use green florist foam. This material is designed to hold floral arrangements, so there is no need to drill holes for trees. Simply push them into the foam and they are firmly held in place.

**Figure 54:** To begin my landform building process, I cut pieces of green florist foam with a X-acto razor saw and stacked them, securing them with hot glue.

**Figure 55:** After the initial rough foam forms were in, I further carved the foam with my razor saw to the desired final contour. This created a steep hillside, beginning where the photo backdrop ended, around the corner and all the way to the wall where the tracks disappear.

## STEP 11: Making Landforms from Florist Foam *Continued ...*



Figures 56 and 57: After the foam was secured and carved to the desired shape, I filled the transition gaps between the pieces of foam with my mud mixture. When mixed properly (stiff) the mud works as a universal scenery material for filling in the gaps between the pieces of florist foam and to cover the foam. After I had applied the mud, I painted the green florist foam surfaces with my earth-brown flat latex paint. The scene is now ready for ground cover.



PLAYBACK PROBLEMS? [Click here to play the video on YouTube](#)

## STEP 12: Creating and Applying Realistic Ground Cover

Now it's time for me to create a realistic ground cover for the mill area, specifically the track and area around the track and mill buildings. I prefer to use natural materials for ground cover. This not only nets a cost savings, but yields a far more convincing result than commercial products like ground foam.

There are four primary materials I like to use. The first is ordinary sifted dirt. Any old dirt or topsoil from the backyard works fine. I use dark loam from our garden. The second material is what I call loose gravel. This has a bit more grit to it. It is a bit more coarse than regular sifted dirt and has more "aggregate" or stones in it. A good source for this is traction grit or other sandy gravel-type materials that you can find at just about any hardware or home improvement store. I sift this brownish/gray material down to scale size with ordinary kitchen strainers.

The third material is what I refer to as compacted gravel. I make this from a combination of gray, white and brown grout, which is used for floor tiling. This is an extremely fine, powdery-like material that works great for simulating compacted gravel parking lots or road surfaces. The fourth material is railroad ballast. Some commercially-available products are fine, but I prefer to make my own. I use a product called "leveling sand." This product is the second step in a two-step process for laying in paving stones in garden walkways. In actuality the leveling sand is crushed granite, and is a near-perfect bluish-gray color for ballast in my area. Depending on your region, the actual material, and color may vary.

These commercially-available sand, gravel and crushed granite products can be found at your local hardware or home improvement store and can serve a multitude of purposes for making realistic, inexpensive ground cover and railroad ballast.



Figure 58



Figure 59

Figure 58: Here are the ingredients needed for effective ground cover. From left: sifted dirt, loose gravel, compacted gravel and railroad ballast. In addition I have a spray bottle of 90% isopropyl alcohol, a dish of diluted white glue and several different-size brushes.

Figure 59: After applying the gravel, I brushed it in with a medium-sized, soft-bristled paint brush. For the passing track I brushed on mostly loose gravel, while on the main line I added a bit more railroad ballast to give the appearance of more maintenance on the main (the track closest to the fascia).

## STEP 12: Creating and Applying Realistic Ground Cover *Continued ...*



Figure 60



Figure 62



Figure 61

Figure 60: To get excess material off the rails and ties, I lightly tap the rails with a spoon. I added some sifted dirt to the area between the main line and the passing track. This process was completed for the entire mill complex. I was careful to keep the gravel and ballast away from switch points.

Figure 61: A close view of the track after application of gravel and ballast. This highlights the difference between the mainline (more ballast) and passing track (mostly gravel). Also note that the ties are dusty, softening the tie weathering I had done earlier. This dust will wash off with application of alcohol and glue, bringing back the varied color palette of the ties.

Figure 62: A broad view of the main line and passing track with gravel and ballast applied.

## STEP 12: Creating and Applying Realistic Ground Cover *Continued ...*



Figure 63: I sprayed 90% isopropyl alcohol over the entire surface, being careful not to disturb the gravel and ballast. I soaked the surface thoroughly, and then grabbed the diluted white glue.

Figure 64: Using a pipette, I carefully applied white glue to the areas previously hit with the alcohol. At this stage, things look like a real mess, but in a couple hours the glue will fully soak in and dry clear. By tomorrow morning, the surface will be rock hard.

Figure 65: With the mill track complete with gravel and ballast, I needed one more step to complete the ground cover portion of the project. I applied a light coating of compacted gravel (blended grout mixture) near the mill building and rolled it with a wooden wallpaper seam roller. The roller smoothed and compacted the material into the existing surface and created the look of a well-used gravel lot where truck traffic is common.

## STEP 12: Creating and Applying Realistic Ground Cover *Continued ...*



Figure 66



Figure 67

Figures 66 and 67: I also applied the compacted gravel to a small area near the asphalt road crossing where a section building would later be placed. A road also leads away from this spot toward the wall opening. The same alcohol and glue process was repeated for these two areas to affix the gravel. I let the entire scene dry for a couple of days.



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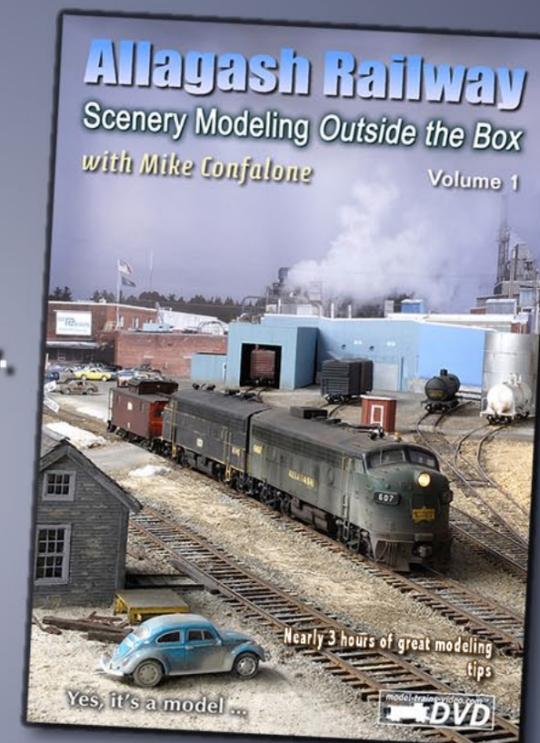


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# *Build a Diesel Fuel Storage Tank*

– by Tom Patterson  
Photos by the author

**PVC pipe and rivet decals are combined in an easy, well-detailed project ...**



**M**ost diesel engine service facilities have a diesel fuel storage tank somewhere on the premises. These tanks serve as interim storage facilities to hold diesel fuel from the time it is delivered until it is pumped into the engines. While a number of commercial kits are

available, and some of them are quite nice, I wanted to build a storage tank that would fit the available space on my layout and would be appropriately sized for my modest engine servicing facility.

The inspiration for this project came from an article in the October 2005

issue of the C&O Historical Magazine. Russ Haas constructed a diesel fuel storage tank based on the plans of the tank at Rainelle, West Virginia. He used the tanks in the Grandt Line Midwest Petroleum kit as the basis for the project. That kit is currently unavailable, so I decided to scratch

build the structure using PVC pipe for the basic tank shape. The primary difference in the C&O structure and my tank is the length: the C&O tank was 50' long and mine is 40'.

## Building the Tank

For the basic tank, cut a piece of 3/4" PVC pipe (which actually measures just over 1" in diameter) to a length of 40 scale feet. The hacksaw I used left the edges in pretty rough shape, so I cleaned up the ends with a series of progressively finer files. To make sure the ends are square with the sides, slowly rotate the pipe on the edge of the work bench while working the files perpendicular to the side and across the entire face of the end.

Next, cut two 8' x 8' square pieces of .020 styrene to cover each end of the pipe. Figure 2 shows the basic materials for the tank. Apply a thick bead of gap-filling ACC to the end of the pipe and attach the .020 styrene as shown

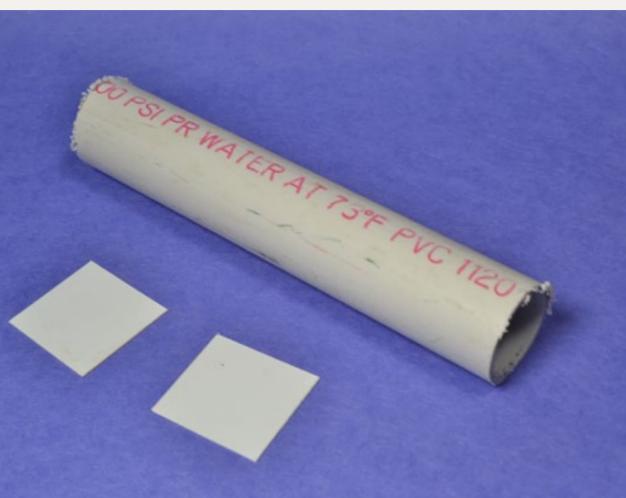


Figure 2: 3/4" inside diameter PVC pipe and .020 styrene make up the basic tank.

in figure 3. After letting the ACC set, trim around the ends of the tank (figure 4). File the remaining edges to the contour of the pipe. In order to get a smooth surface for decaling, sand the entire tank with 400 grit sandpaper followed by wet-sanding with 600 grit sandpaper.

For the manway on top of the tank, cut a piece of 1/4" styrene tube approximately 4 scale feet long. Next, drill a 7/32" hole in the center of the tank. I wanted to make sure the styrene tube fit snugly into the opening, so I drilled a hole slightly smaller than the diameter of the tube and used a round file to enlarge the opening. After inserting the tube, place a small amount of gap-filling ACC around the joint between the tube and the tank. I make a small puddle of the ACC on a flat surface, dip the head of a pin in the glue and then run the head of the pin around the joint. For the top to the manway, cut a circle of .010 styrene using a hole punch and glue it in place with styrene cement. Figure 5 (next page) shows the tank with the addition of the manway.

One of the keys to success in this project is getting a good, glossy surface on which to apply the rivet decals. To prepare the tank for painting, wash it with soap and warm water in order to remove any residue left from sanding and any oil from your hands. I sprayed Testors Glosscote lacquer with an airbrush and took care to cover the entire surface of the tank. Let the clear coat dry for several days before moving to the next step.

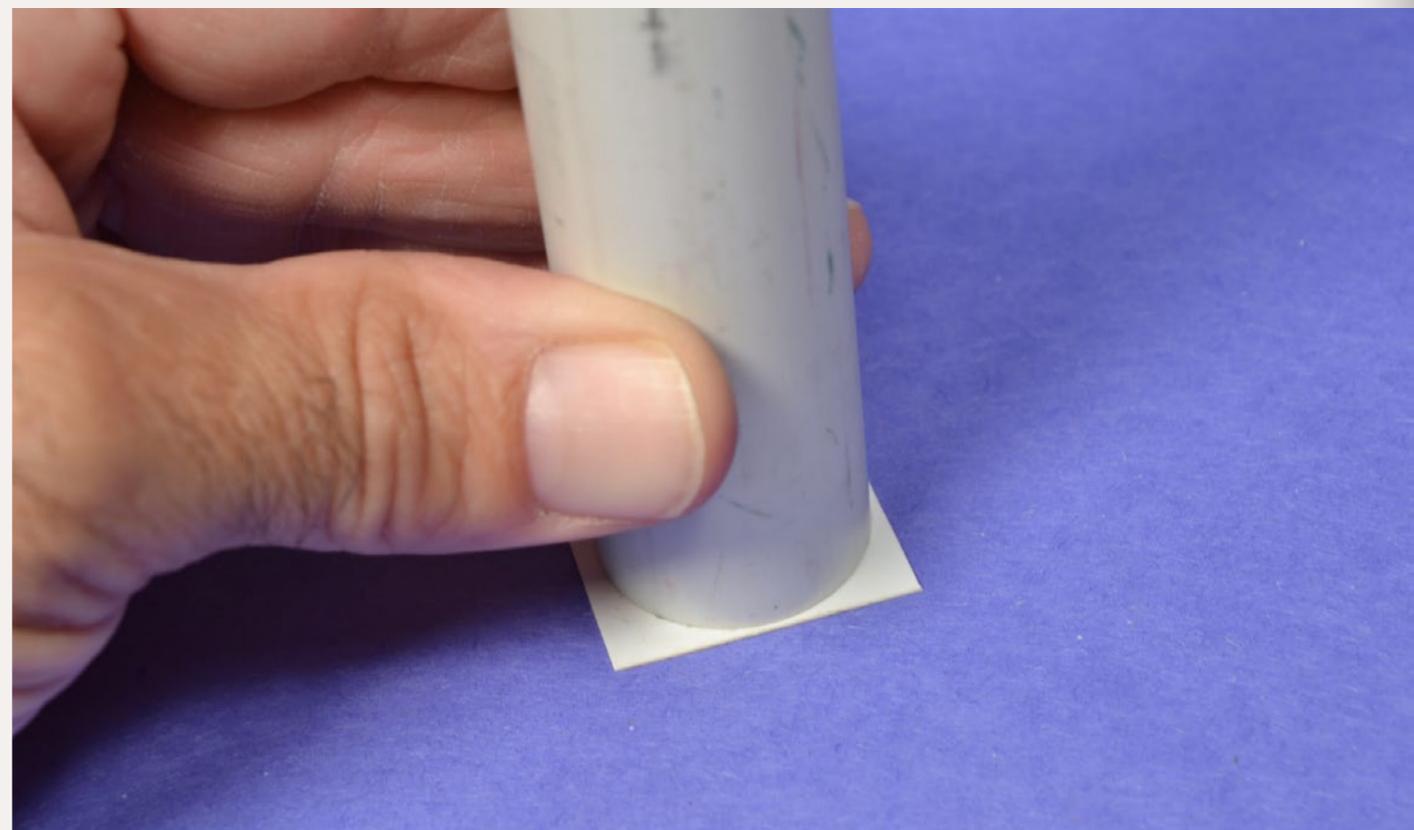


Figure 3: Glue the styrene to the ends of the PVC pipe using gap-filling cyanoacrylate glue.



Figure 4: Trim the styrene close to the edge of the PVC pipe.

## Adding Rivets

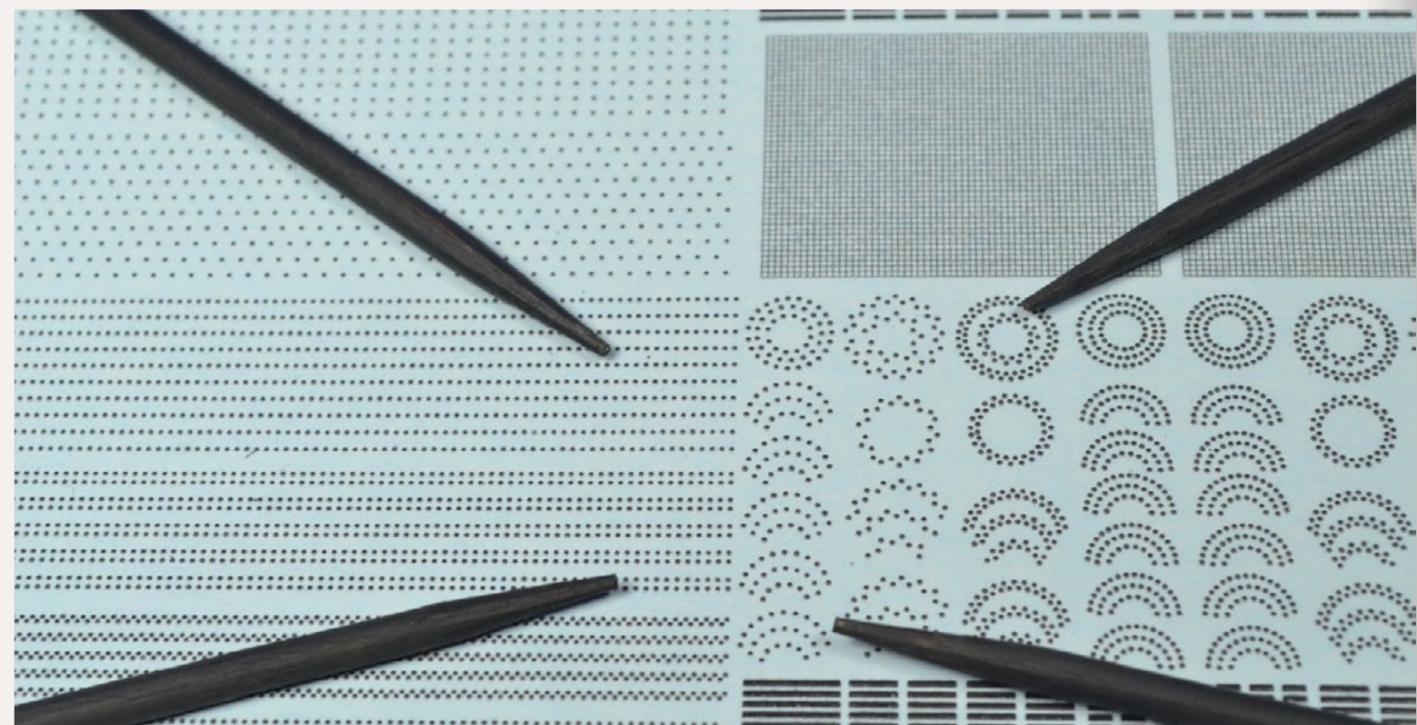
For rivets, I used Micro-Mark's Rivet Detail decals but the rivet decals made by Archer would work just as well. Figure 6 shows the decals used for this project, including the single row of rivets, the double row of rivets, the circular ring of single rivets used at the base of the man way and the circular ring of double rivets used on the man way cover.

Begin by cutting two of the rows of double rivets to a length equal to the circumference of the tank and apply these to either end. I applied a generous amount of Microscale Industries Micro Set around the ends of the tank and then carefully wrapped the decal strip around the tank. These long strips are a bit difficult to maneuver from the cup of water to the tank, and difficult to line up correctly on the tank. It might be easier to cut the strip in two pieces and add the decals

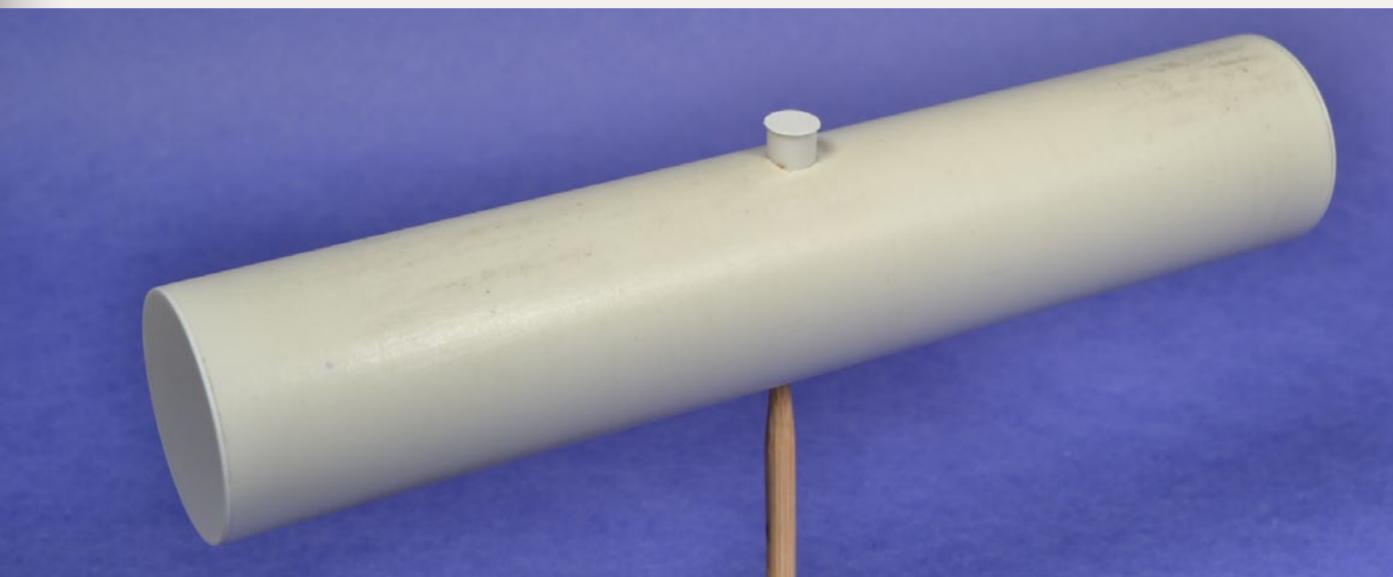
in two steps rather than all at once. After the Micro Set dried, I applied Walther's Solvaset to get the decals to adhere to the tank and to eliminate any air bubbles under the decal. I used these two steps to apply all of the decals.

Next, measure the distance from each double row of rivets to the edge of the manway. Cut two rows of single rivets to these lengths and apply along the top. Cut out and apply the circular row of double rivets and apply this to the top of the manway cover. Figure 7 shows the tank after this group of rivets has been applied.

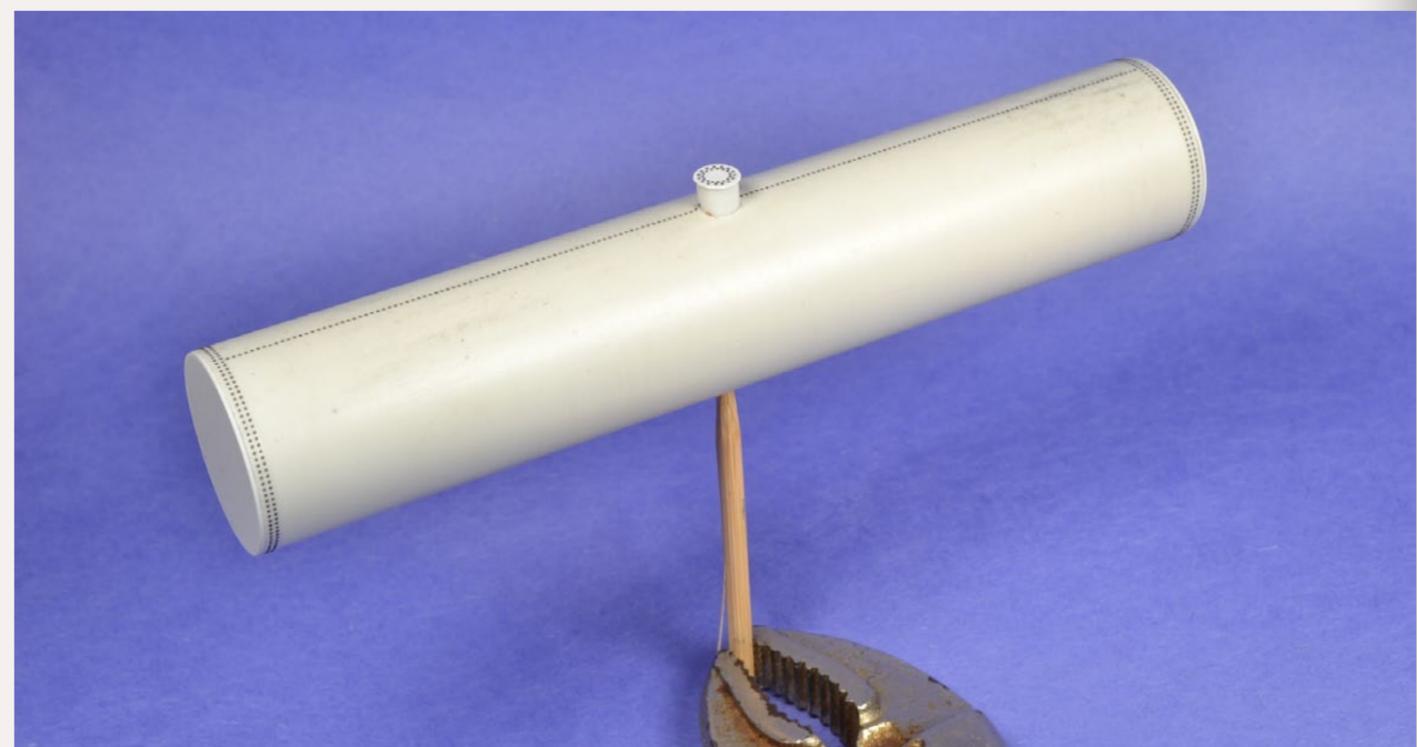
The vertical rivets on the side of the tank are spaced at 8' intervals. Start at one end of the tank and make light pencil marks at 8' intervals near the top row of rivets on either side (figure 8 next page). Make similar marks at 8' intervals along the lower half of the tank on each side. Next, measure the



**Figure 6: Decals used for the tank. Starting in the upper left-hand corner and moving clockwise: 1) single row of rivets; 2) double circular row of rivets used for the top of the manway cover; 3) single circular row of rivets used for the base of the manway; and, 4) double row of rivets.**



**Figure 5: The basic tank with the manway added to the top and ready for decaling.**



**Figure 7: Apply double row of rivets to each end and a single row of rivets along the center line of the tank.**

distance from the top row of rivets to the bottom of the tank and cut 8 strips of single row rivets to this length. Using the pencil marks, install these rivets on the tank. The last step is to cut two pieces of the circular row of single rivets and apply them to either side of the manway. Figure 9 shows the tank with all of the rivets applied.

## **Pipe and Valve Fittings**

The prototype tank had a fill line with a shut-off valve at one end, a drain line with a shut-off valve at the other end and a fuel gauge pipe and vent on top. I used Williams Brothers HO scale pipe fittings and valves to make these pieces. Figure 10 shows, from left to right, the tank vent, the fuel gauge

pipng, the fill valve and the drain valve. Figure 11 (page 94) shows the placement of these parts on the tank. For the fill valve, cut the lever off one of the Williams Brothers parts. Next, drill a #76 hole where the lever was and insert a short piece of .020 brass wire. I added a small brake wheel to the end of the brass wire to represent the valve handle. Attach a short section of pipe from the Williams Brothers kit to one end of the valve and insert this assembly in into the bottom of the tank as shown in the photos. The bottom piece of the fill pipe will be added once the tank has been placed on the piers. For the drain valve, attach a short section of pipe to one end of the valve and



Figure 9: Single rows of vertical rivets have been applied to each side and the single row of rivets has been applied to either side of the manway.



Figure 8: Mark 8' increments along each side of the top of the tank and near the bottom. Use these marks to line up the single rows of vertical rivets.

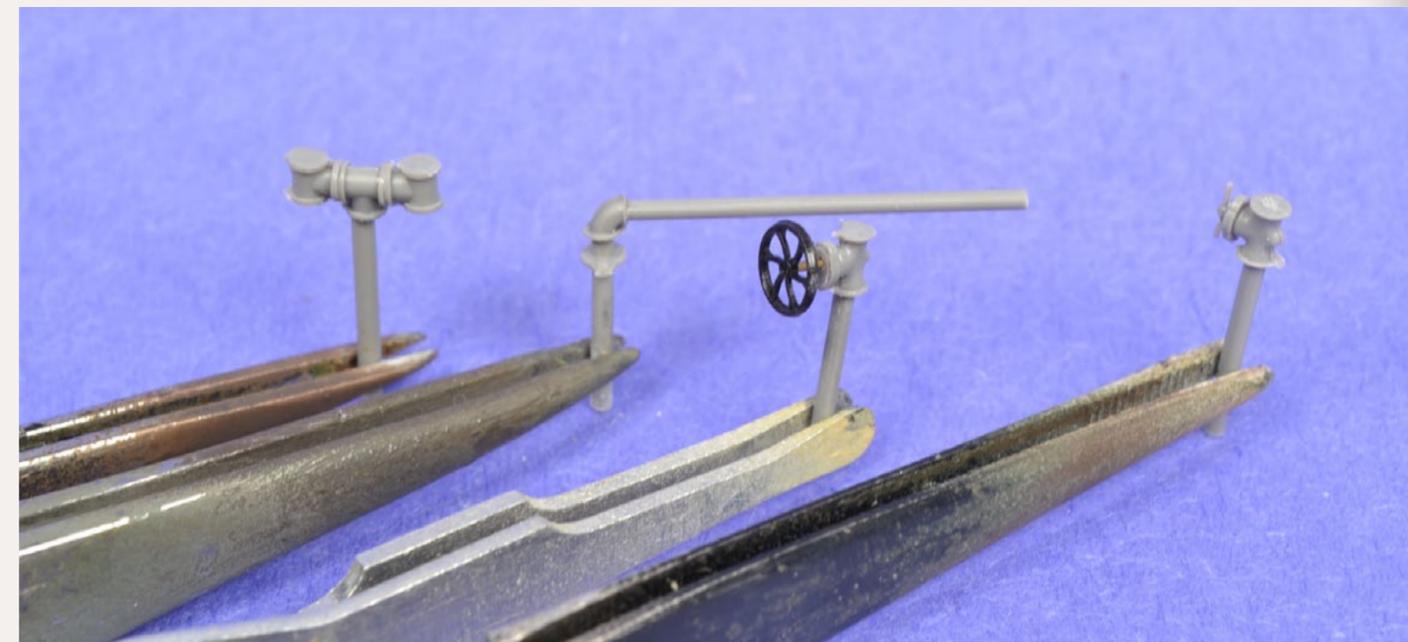


Figure 10: From left to right: 1) Tank vent; 2) fuel gauge; 3) fill valve and line; and, 4) drain valve.

insert it into the tank at the opposite end from the fill valve. For the fuel gauge pipe, attach two pieces of pipe to either end of a 45 degree elbow. The section of pipe that connects to the top of the fuel gauge should extend out past the edge of the tank. Insert this assembly into the top of the tank as indicated in the photos. We will add a piece of styrene channel later to represent the fuel gauge. Assemble the vent pipe from three of the tee fittings and a short length of pipe. Install this assembly on top of the tank next to the fuel gauge pipe. Now the tank is ready to be painted.

## Painting and Weathering

Wash the tank again to remove any oils and dust that may have accumulated during the addition of the pipes and valves. I have seen photos of these tanks painted both black and silver, so pick which ever color suits you. I used Floquil Platinum Mist and once this had dried for several days I applied a coat of Testor's Dullcote. I then lightly weathered the tank using artist's acrylics.

## Concrete Piers

The prototype had poured concrete piers for support. I cut out a scale 9 1/2' x 5' piece of a C.C. Crow retaining wall as the starting point. File each corner on the top of one of the supports until you get an angle you like. Next, take a piece of the 3/4" PVC pipe, place it in the center of the pier and mark the outline with a pencil. Remove the material using a round file and test fit with the pipe once you

get close to the pencil marks. Then use this first pier to mark the others and repeat the process. Paint the piers with a concrete color and then weather with your favorite medium. I used Woodland Scenic's concrete color stain, a wash of India ink and isopropyl alcohol, and artist's acrylics on mine as I like the effect of these on the Hydrocal® of the C.C. Crow castings. Once the piers are complete, fasten them to the bottom of the tank using your favorite adhesive.

## Fuel Gauge

For the fuel gauge, use a small piece of styrene to represent the foundation for the channel used for the gauge. Next, cut a piece of styrene channel equal to the distance between the gauge pipe coming from the top of the tank and the styrene foundation. I used a piece of 1/8" Evergreen I-beam and removed the flanges on the back as I didn't have a suitably sized piece of channel on hand. Figure 12 (next page) shows the gauge foundation, the gauge numbers and the channel.

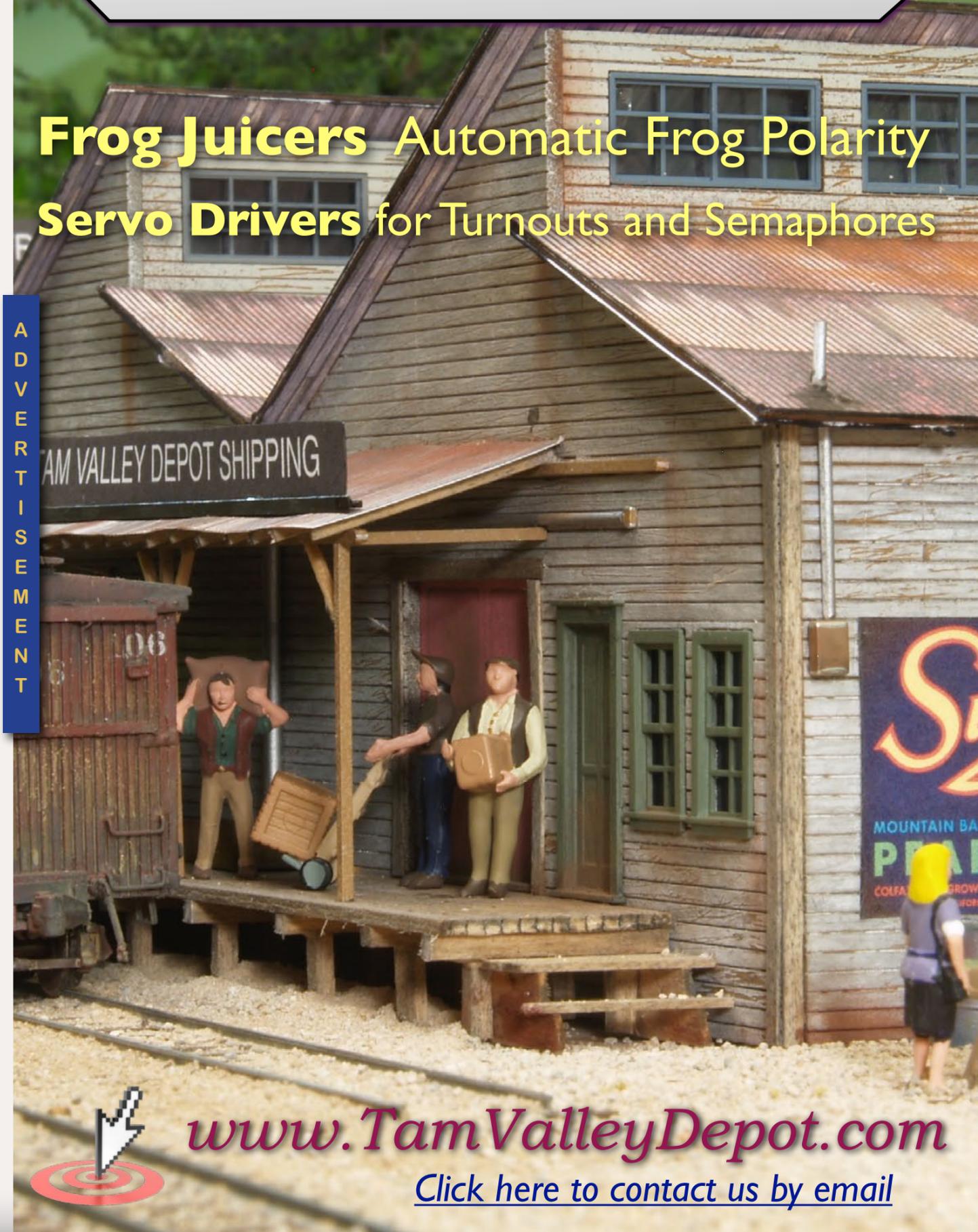
After painting the channel and the pier, install the gauge numbers. Make sure that the top of the gauge numbers are level with the top of the tank, not the top of the channel. I made the gauge numbers using Excel and then printed them on regular copy paper. After installing the numbers, glue the styrene foundation to the base of the channel. Cut a small piece of .005 styrene for the gauge indicator and paint it red. Cut a piece of .008 brass wire and fasten it to the back of the gauge indicator. The piece of brass wire should extend from the top of

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the indicator to the top of the channel. Figure 13 (next page) shows the completed fuel gauge.

*(article continues on next page ...)*

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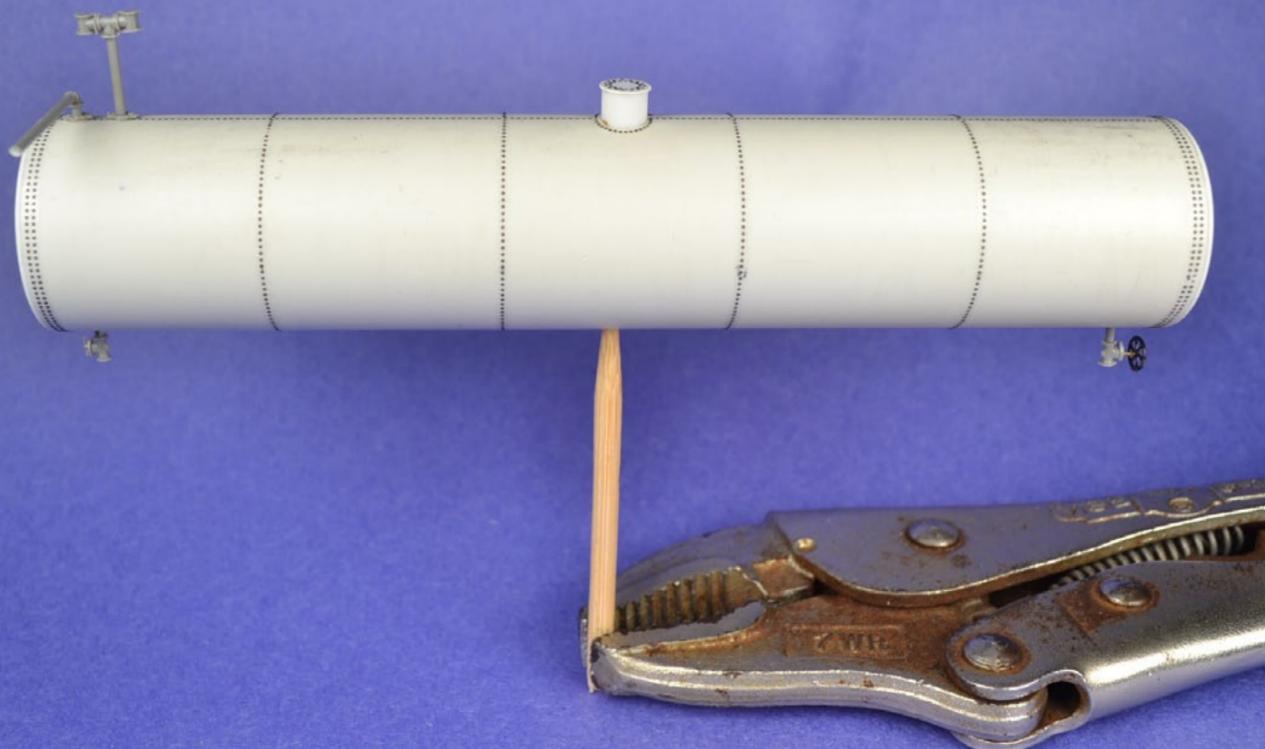


Figure 11: Completed tank ready for painting with fuel level gauge pipe, tank vent, drain valve and fill valve installed.

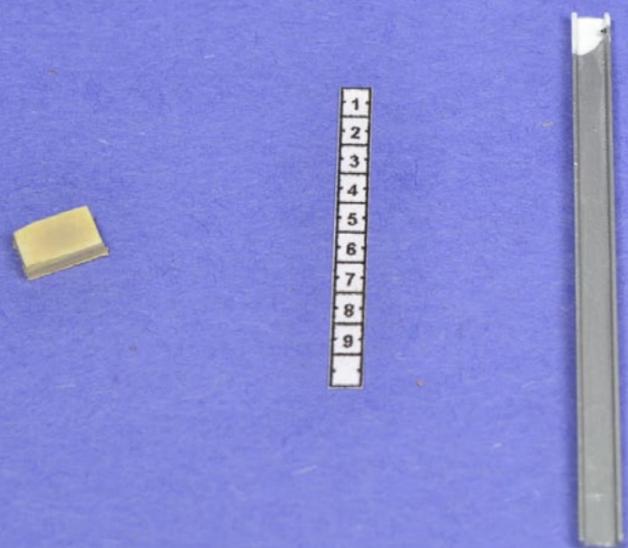


Figure 12: The gauge foundation, gauge numbers and channel.

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## Final Touches

Cut a piece of the Williams Brothers piping equal to a length from the bottom of the fill valve to the base of your scenery. Paint the pipe and glue it to the bottom of the fill valve. Find an appropriate location on your layout and add scenery materials around the base of the piers. Finally, locate the fuel gauge so that the top of the channel lines up with the fuel

gauge pipe on the top of the tank (figure 14).

Note: This issue's [Subscriber bonus extras](#) includes fuel gauge graphics.

PVC pipe is a great source for tanks of all sizes. With a little time and effort, and using the rivet decals that are available today, it's possible to create a wide variety of realistic looking tank structures for your layout.

## Bill of Materials

3/4" PVC pipe (home improvement store)

Evergreen Scale Models

.125 styrene channel. [www.walthers.com/exec/productinfo/269-264](http://www.walthers.com/exec/productinfo/269-264).

.250 styrene tube. [www.walthers.com/exec/productinfo/269-228](http://www.walthers.com/exec/productinfo/269-228).

.005 sheet styrene. [www.walthers.com/exec/productinfo/269-9005](http://www.walthers.com/exec/productinfo/269-9005)

Detail Associates

.008 brass wire. <http://www.walthers.com/exec/productinfo/229-2502>.

C.C. Crow concrete retaining wall.

[www.cccrow.com](http://www.cccrow.com).

Micro-Mark Rivet Detail decals, Item number 48985. [www.micromark.com](http://www.micromark.com).

Microscale Industries Micro-Set Decal Solvent, Item number MI-1. [www.microscale.com](http://www.microscale.com).

Walthers Solvaset. [www.walthers.com/exec/productinfo/904-470](http://www.walthers.com/exec/productinfo/904-470).

Williams Brothers pipe fittings. <http://www.williamsbrothersmodelproducts.com/buildings.html>. ■



Tom Patterson got his start in model railroading with a Lionel train set at Christmas back in the '60s. That train set eventually became part of his first layout. Tom has been working on his current layout, the HO scale Chesapeake, Wheeling and Erie Railroad, a free-lanced coal hauler set in West Virginia, for almost 20 years.

Tom and his wife have two grown children and live in Cincinnati, Ohio. Tom's "Kitbashing a Central Valley Truss Bridge" was published in the November 2011 MRH.

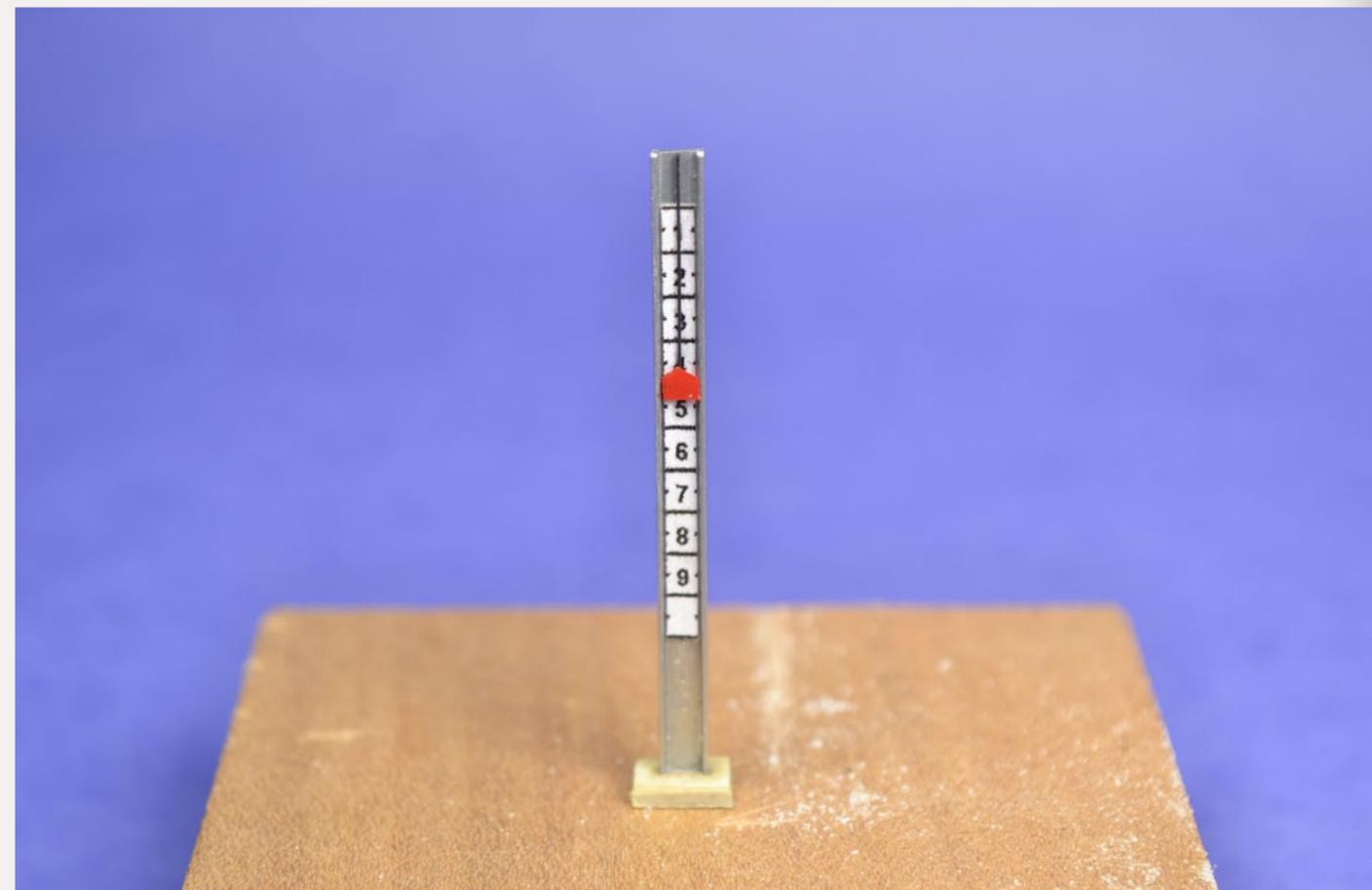


Figure 13: The completed tank gauge showing the location of the gauge indicator.

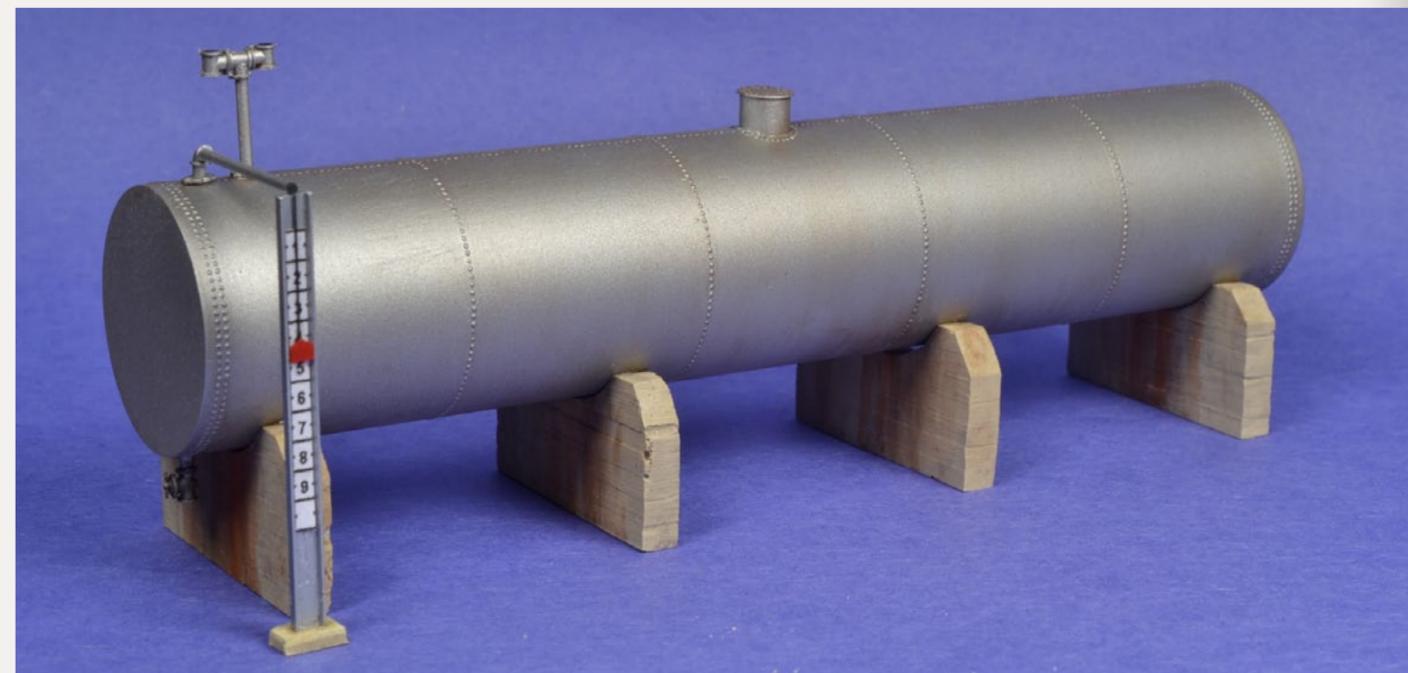


Figure 14: The completed diesel fuel storage tank with the gauge indicator located beneath the pipe from the top of the tank.

# Build a 9'x11' HO Shelf Layout of the Trona Railway



– by **Bruce Petty**  
Photos by the author

Take a lesser-known prototype shortline, add in a bit of the SP plus some heavy industry, and you've got a great setting for a spare bedroom layout ...

The Trona Railway's Baldwin diesels rumble across the Mojave Desert basin ringed by distant mountain ranges. Soon the heavily laden potash train pulls into the Searles Station interchange, midway along Southern Pacific's Jawbone branch running from Mojave to Lone Pine, California. An old pair of Baldwin diesels pulls into one of the yard tracks to drop its string of loaded hopper cars. The crew then makes a runaround move to pick empties and

Figure 1: You can hear them long before the old Baldwin diesels are seen crossing the desert basin with a train load of phosphates. This train is leaving Trona for Searles Junction, the Kerr-McGee Plant is in the background.

their caboose for the 30-mile trip back to the Kerr-McGee plant at Trona, California. This is one of my nostalgic memories of how it was on the Trona Railway when I photographed the line in 1973.

The mammoth Kerr-McGee, owned by American Potash & Chemical

Company before 1971, sits along the old shore line of dry Searles Lake. The crusted white surface gives little indication of what lies a few feet below. Brine, rich in chemical salts is pumped from the lake bed into the plant for processing into soda ash and other industrial chemicals.



## HO Layout Design

The Trona Railway makes a fine shortline to model for any time period from its construction date in 1914. However, the layout I've designed here is modeled during the late 1960s through early '70s. At this time, Trona was still running their three Baldwin AS-616s and the two huge double-ended Baldwin DT-6-6-2000's. The Baldwins were a sight to watch at work.

This 9'x11' layout is designed as a small linear walkaround (shelf type), for primarily a switching operation. The track work is level and sits 54 inches above the floor. This is a good height for my viewing angle of the layout and the #6 turnouts will not look as sharp as they really are. Keeping the center of the room open provides ample space for visiting modelers. With an average shelf width of 18", the room then allows about 6 x 7' for standing space. This is not a lot of space, but it will work for visitors.

Modular frames are constructed, using 1x2" pine, with a 3/8" plywood surface to be set on standard metal book shelf brackets mounted to the wall. I built a shelf layout in sections so the cutting of lumber and messy scenery work can be done outside the house. This outdoor work really helps to keep the train room clean, especially with furniture, book cases and the modeling desk placed under



the layout. Modules can also be taken down and turned over to do electrical wiring work on the underside. This is a really good idea for us older modelers! The second reason is mobility. The layout can be expanded with additions to the SP, Jawbone branch to run both

the Lone Pine Local and Trona Turn to Searles Junction.

## Track

I can say from experience, that doing any sort of switching work on track

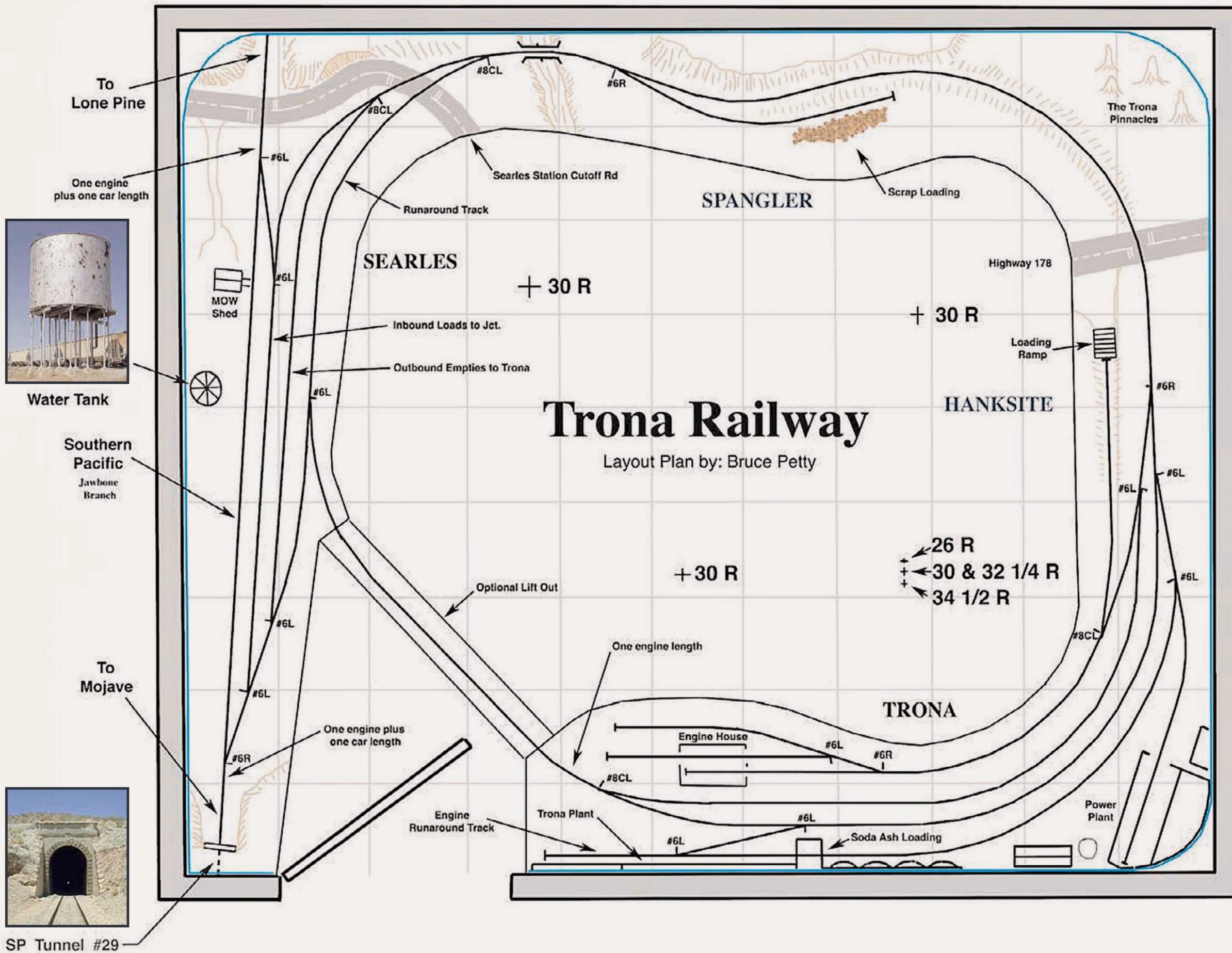
with a grade can set free-rolling cars (such as made by Atlas) to go their own way. Most freight cars used on the Trona for my modeling period were 50-foot covered hoppers, so 30" radius curves are used to give a train a better look when running. Walthers code 83, #6 standard and #8 curved turnouts with Micro Engineering code 83 flex track are used on SP's Jawbone and on the Trona main.

Yard tracks between turnouts at Searles and at the Trona plant can be code 70. I added a lift section to connect across the doorway from Trona to Searles for continuous running. This feature can be used to add scale miles to a small layout and for visitors who just like to watch a train run.

Hand throw turnout control is done by using a simple method from under the layout. An .030" diameter steel wire that is used to operate the switch points comes through a brass tube under the layout and is bent to a 90 degree angle allowing 4 inches to be left over. I glue a ceramic jewelry bead with a hole onto the end of the wire. Two sheetrock screws are screwed on each side of the wire's throw to hold the switch points in place. This method has worked well for my shelf layout and easy to install within a few minutes. This also allows for detailed switch stands to be used.

## Scenery

Scenery can drop and rise for fills and cuts on the right of way so to give an illusion of grade. Desert scenery is



fairly easy to model by using light desert type earth colors. I also wanted to maintain some open space between the track and the backdrop to give the illusion of distance (“Painting Distant Mountains”, Model Railroader January, 2008). Another MR article (April 2006) “Landscaping a Layout with Live Cactus Plants” would help to scenic this layout.

Midway between Trona and Searles, the railroad passes a unique geological feature, the Trona Pinnacles. This unusual landscape consists of primarily calcium carbonate tufa spires, some as high as 140 feet, rising from the bed of the dry Searles Lake basin. I placed a few of these geological features in one

corner of the layout plan using a few small spires for the effect.

## Control System

For this size of layout, I prefer using DC, with an MRC Control Master 20, power supply with several on/off switches placed in areas of the layout power for engines parked at the diesel shop and the SP trackage at Searles.

## Operating Concept

I’ve already modeled the SP’s side of this potash train known as the “Trona Turn” for running at our model railroad club. The SP operated this train from Searles to the Port of Los Angeles and back. Most of this



Figure 4: Trona’s Baldwins await their next run in front of the four bay diesel shop. Selective compression can be used to model this structure as a two bay diesel shop on the layout.

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Figure 3: Modeling this huge potash plant can done as a low relief structure with a lot of selective compression. This would give the desired overall monolithic effect along the wall of the layout with the doorway. Using the Walthers, Valley Cement kit, #933 - 3098, would be a good start for kitbashing. The diesel shop at the left side of the picture is made of corrugated metal, and could be scratchbuilt easily using Evergreen styrene.



Figure 5: Trona's only caboose sits alongside the diesel shop ready for the next run. An Atlas HO scale modern International caboose makes a good start.

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*(Photo from our N-Scale layout)*



potash was loaded onto ships heading overseas.

On the Trona layout, the yards are small, holding 6 to 8 cars per track, so only one Baldwin AS-616 is needed for an operating session. Time "On Duty" starts at the engine house as the crew leaves with one of the Baldwins and caboose to make up their train. The crew then leaves the caboose on the main track as the engine moves to the top of the yard before it backs into the power house spur to pick up the empty coal hoppers. It backs up again to pull the potash hoppers at the plant's loading track. All the cars are pulled ahead to clear the switch and backed down the main to the caboose. The train is now ready to leave Trona for Searles.

The doorway crossing can be used to extend the running time by racking up some scale miles to Searles and back.

Pulling into one of the empty yard tracks at Searles, the crew drops the loads and runs around the train to pull the empty hoppers for the return trip. Any cars other than potash hoppers are now switched to the end of the train for later set-out at Trona. The caboose that was left at the end of the loaded cars is picked up for the return trip to Trona.

Back at Trona, the train pulls into the potash loading track and the engine runs around against the caboose. The hoppers are pushed forward and the coal loads are cut off to be switched into the power plant. Other switching include switching a flat car with

heavy machinery for the plant to the end loading dock spur, and a gondola to the scrap track spur at Spangler. At the end of the shift, the caboose is set back next to the engine house where the Baldwin is serviced.

As you can see, a layout with 19 turn-outs can provide plenty of operating time for switching work. A day's work could take an hour or more to complete.

## Trona's Diesels

Bowser manufactures a Baldwin AS-616 (originally by Stewart) that can be painted black with silver ends and lettered with Microscale's #HO-87-209 decal sheet. Brass models of an AS-616 and the double-ended Baldwin DT-6-6-2000 were made years ago, but they do come up for auction on Ebay occasionally.

I would suggest replacing the brass loco junky motors with a modern can motor and plastic universal drive shafts. This improves running considerably for slow speed switching work. Also on the Trona roster during the time period modeled are an EMD SW1200, SD9, SD40R and a GE 80-ton switcher used within the plant area.



*Article continues on following pages.*



**Figure 6: A 1973 meet at Searles Junction with the Lone Pine Local, Trona's Baldwins pull into a yard track with loads to be later picked up by another SP train called the Trona Turn.**



**Figure 7: At the road crossing at Searles Station the Baldwins run light back to Trona.**

# Freight Cars to Trona



Many styles of two- and three-bay covered hoppers that were seen running on the Trona Railway during the '60s and '70s are now available and can easily be found at the local hobby shop or on eBay.

## Accurail

SP & SSW, 3-Bay Center-Flow covered hopper

## Athearn and Walthers

Kerr-McGee 50-foot, plug door box cars.

## Atlas Model Co.

### ACF 3-bay Cylindrical Hoppers

SP #1033 & 1050

ACFX #62012, Kerr-McGee

SHPX #60514, FMC Chemicals

ACFX #60741, Stauffer Chemical Co.

SHPX #62016 & 62017, TRONA CHEMICALS

### 2-Bay Standard Side Covered Hoppers

NAHX #31244 & 31242, TRONA, American Potash & Chemical Co.

NAHX #31050, Kerr McGee.

## MDC Co.

### 2-Bay Standard Side Covered Hoppers

NAHX # 31014 & 31050

## Proto2000

### PS2-CD High Sided Covered Hopper

NAHX 47057 & 47086

## InterMountain

Cylindrical Hopper, TRONA CHEMICALS

A few other types of cars to include in trains to Trona:

- Two or three open top D&RGW and UP hoppers carrying coal for the power plant.
- Tank cars are needed for diesel fuel for the railroad and heavy equipment.
- An occasional SP gondola is needed for scrap iron loading.
- Standard 50-foot box cars are used for bagged product loading. ■



**Figure 8 (All 4 cars):** Loading potash is a dusty business. It settles on all parts of the car including the trucks. With rain and weather on the road, streaks form on the sides and seal potash coating of the white chemical to the car. I use a wash of flat white latex indoor house paint, mixed with a little alcohol to give this effect. A flat edged brush can be used to pull white streaks down the car side.

## Lightweight Shelf Layout Construction Tips



Figure 9: Cabinet grade 1"x 8" lumber can be cut down on a table saw into 1"x 2" material to build the frame work for each module unit. Each frame can be overlaid with 1/2" plywood, then glued and screwed.

Figure 10: Make sure the frame is square while sitting on a flat surface while putting the screws.

Figure 11: A handy laser level can be used to mark the height placement of where each metal book shelf bracket will be mounted to each stud in the room. On top of the bracket is screwed a 1"x 2" x a half inch longer than the module's width. Adding a short block to the back will keep the module frame from sliding forward. Once the modules are all screwed together, they are allowed to float on the bracket assemblies.



Bruce Petty has been a model railroader for 50 years, starting off with Lionel, then later HO-Scale in high school. In 1972, he started a model railroad company called "Century Foundry & Metal Works" that made white metal castings. His first product was a old time Gas Pump, followed by Signal and Passenger car detail castings that are still available today from Showcase Miniatures. He has an HO layout modeling the LA area, Los Angeles and San Fernando Valley Railroad. It can be seen in the 2006 Great Model Railroads publication.

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## PRODUCT SHOWCASE

### Glacier Park Models: NP S-4 class 4-6-0

→ [Visit glacierparkmodels.com](http://glacierparkmodels.com)

Glacier Park Models imported this exquisite O scale Northern Pacific class S-4 ten-wheeler in 2011. The model was handcrafted in brass by Boo Rim Precision of Seoul, Korea. Although they sold out immediately, previously owned models are occasionally offered by specialty brass dealers.

The NP purchased 40 of the Vaucrain compound 4-6-0 locomotives to handle passenger service in the mountainous territory at the western end of the railroad. Baldwin Locomotive Works began delivering the class S-4 ten-wheelers in 1902.

The prototypes received several modifications over their long life span. This model replicates the real 1369 as she appeared in the 1950s with a pilot flanger and a class 11C tender.



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## PRODUCT SHOWCASE

# San Juan Car Company: D&RGW Drop Bottom Gondola

→ [Visit sanjuancarco.com](http://sanjuancarco.com)



San Juan Car Company will soon begin delivery of this **On3/On30** D&RGW drop-bottom gondola represented by the first production sample shown here (final details may vary). Special features of the detail-laden classic Colorado narrow gauge model include new 3' 7" arch bar trucks, and SJCC Evolution™ couplers.

Each car comes with On3 wheelsets installed, plus an extra set of On30 wheelsets. Cars in the first production run will have four sideboards and be available with a D&RGW herald or with the Flying Rio Grande scheme. The ready-to-run models have an MSRP of \$94.95 each.

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## PRODUCT SHOWCASE

### Blackstone Models: D&RGW K-27 2-8-2

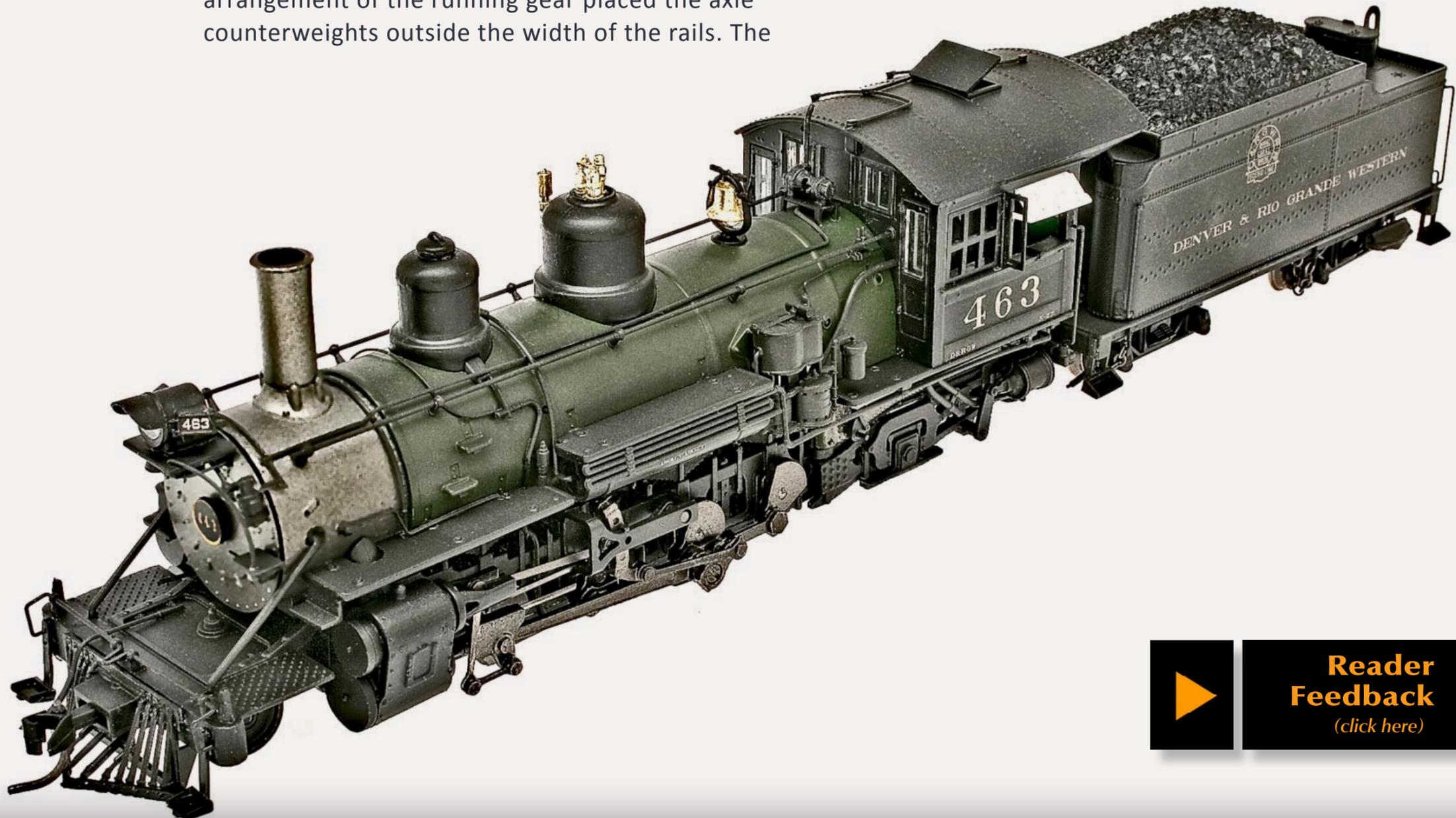
→ [Visit blackstonemodels.com](http://blackstonemodels.com)

Blackstone Models has released the second run of their highly-rated HO<sub>n3</sub> D&RGW K-27 2-8-2 locomotive. Shown here is No. 463 featuring a green boiler, aluminum-bronze lettering and a Royal Gorge Route herald on her tender.

Baldwin Locomotive Works delivered 15 of the prototype locomotives to the D&RG in 1903. The outside frame arrangement of the running gear placed the axle counterweights outside the width of the rails. The

low-slung appearance of the counterweights turning just above the ties gave the engines the appearance of waddling down the narrow gauge track, thus giving rise to the affectionate nickname, Mudhen.

Non-weathered versions of the Blackstone model list at \$475.00. Weathered versions are \$530.00. All are equipped with SoundTraxx DCC sound decoders.





## About our News & Events Editor



Richard Bale writes our news column under the byline of *The Old Yardmaster*. He has been writing about the model railroad trade for various hobby publications since the 1960s.

He enjoys building models, particularly structures, some of which appeared in the June 2006 issue of *Model Railroader* magazine.



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# MRH News Desk: The Latest Model Railroad News, Products, and Events

## May 2012

**Art Dominy 1921-2012.** Captain Arthur L. Dominy II, Chaplain Corps, USN (RET), died in San Diego March 22, 2012. His active duty spanned World War II, the Korean War, and the Vietnam War. He was Chaplain aboard the USS Midway while the ship was active in the early 1960s, as well as the Honorary Chaplain for the ship during its tenure as a museum. Dominy was an active model railroader most of his adult life and was widely known and respected among the modeling community. Hundreds of visitors including NMRA sanctioned tours visited the HO empire he built with his oldest son Lew in the basement of his Del Mar home. He was a life-long member and supporter of the NMRA and an inveterate collector of railroad memorabilia. In 1987 Dominy co-authored "Silver at Your Service," the definitive book on railroad dining car flatware. Captain Dominy was buried with full military honors at Fort Rosecrans National Cemetery in Point Loma. Those wishing to remember him may do so through contributions to the Alzheimer's Association...

**Korber Models** has acquired the name, tooling, and manufacturing rights for the old Korber product line of HO, O, and G scale structures. The recently formed company is asking hobbyists to visit its web site ([korbermodels.com](http://korbermodels.com)) and vote for the models they would like to have produced first, as well as give some ideas for new products...

**Gene Fusco, founder of Rail Yard Models**, is selling off his inventory of decals, and has suspended all other operations as of March 1, 2012. The firm was established in March 2002 with products targeted for prototype hobbyists building models of the post-1960 period. Production of some items in Rail Yard Models line were out-sourced to firms such as Plano and Rail Graphics, but all of the masters, tooling, and art work were created in-house by Fusco. In response to an inquiry from MRH, Fusco said, "Selling the business is a possibility, but I haven't given it serious

thought yet. There are no plans to expand the decal line, only to sell off the inventory to capture some of the investment" ...

**BLMA will hold open house** on May 5 and 6 during the Railroad Days celebration in Fullerton, California. The festive family-oriented event is centered at the Fullerton Train Station at 120 E. Santa Fe Avenue. The location is one of the most active rail junctions in the West with BNSF mainline traffic and up to 30 Amtrak and Rail Link passenger trains arriving and departing daily. Equipment open to visitors will include Disneyland Railroad's presidential coach Lilly Belle, a vintage caboose, and a modern BNSF freight locomotive. BLMA headquarters is located one block from the station at 302 District Court. For full details visit [blma.com](http://blma.com) or [scrpa.net](http://scrpa.net)...

**To help celebrate its 50th Anniversary, Con-Cor** is conducting a contest for photos and videos that illustrate various Con-Cor products on home, club, or portable layouts. Jim Conway, who founded the business in Chicago in 1962, says both new and old photos from way-back-when are eligible. Over \$2,000 in merchandise prizes will be awarded. The deadline to enter is September 30, 2012. For complete details, including rules, visit [con-cor.com/PhotoContest2012.html](http://con-cor.com/PhotoContest2012.html) ...

**The Rocky Mountain Railroad Club** has chartered two narrow gauge photo shoots this fall. The first event is aboard the Cumbres & Toltec Railroad on September 24-25, the second on September 27-28 will be on the Durango & Silverton. To provide optimum opportunity for photos and videos, each charter will be limited to 35 ticket sales. The C&T two-day charter will be a freight consist behind #463 double-headed with #484 to Cumbres Pass. The tour will overnight in Antonito. Cost is \$865 per participant. The two-day round trip from Durango to Silverton will feature a K-28, lettered as-delivered in 1923, with a green combine and several maroon coaches. Cost is \$995 per person. Thirty ticket sales, no later than sixty days prior to each event, are needed to declare the charters a go. For full details visit [rockymtnrrclub.org/Fall%20Photo%20Trip.htm](http://rockymtnrrclub.org/Fall%20Photo%20Trip.htm) ...

**Norfolk Southern's Heritage Anniversary** program, that includes decorating 19 brand new locomotives in special heritage schemes of

its predecessor roads, has generated considerable interest among model manufacturers. Athearn reports that it is eager to offer an NS heritage locomotive but is waiting until it has had an opportunity to compare the new prototypes with their Genesis models to determine their ability to produce an accurate model. For example, the GEVO unit Athearn acquired from Tower 55 is an early version of the prototype while the new NS heritage units are a much later variation. ...

**The Fort Wayne Railroad Historical Society** reports that its restored Nickel Plate Road 2-8-4 Berkshire steam locomotive No. 765 will help celebrate Norfolk Southern's 30th Anniversary by leading a special business train between Fort Wayne, Elkhart, and Muncie, Indiana, and Bellevue and Toledo, Ohio. More details are available at [fortwaynerailroad.org/765-norfolk-southerns-30th-anniversary/#content](http://fortwaynerailroad.org/765-norfolk-southerns-30th-anniversary/#content) ...

**Atlas Model Railroad Company** is now selling all Branchline car parts including freight car ends, roofs, doors, and frames, as well as passenger car sides, roofs and other components...

**Early last month, ExactRail** announced that starting May 1, all discounts given to dealers would be eliminated. ExactRail said they have raised the standard for authenticity on future models and that preliminary manufacturing cost estimates for these new products would demand substantial price increases. A spokesperson for the Utah-based firm said the majority of their sales have been to internet related businesses (rather than traditional local hobby stores) in which case the merchandise usually moves directly from the factory to the internet operator to the consumer with a 20-30% mark-up that provides little or no value other than an increased cost that the consumer bears. Because of the desire to raise the bar on authenticity and keep prices reasonable, the company decided that selling direct to consumers will work best for the future of their business...

**MRH contributor Josh Baakko** attended the recent Western Prototype Modelers meet in San Bernardino, California, and filed the following report: The 24th annual meeting of the WPM (aka RPM West Coast) was held on April 14th at the historic Santa Fe/Amtrak Depot in San Bernardino, California. Bad weather was blamed for slightly lower attendance than prior years, but there were an ample number of outstanding models and raffle prizes. Vendors present included Blaine Hadfield of ExactRail; Jimmy Simmons, owner of Monster Model Works; Dave Hussey of Cannon & Co; Craig Martyn of BLMA Models; Jeff Smith of RailMaster Hobbies; Jere Ingram representing JRMI's SPROG II decoder programming interface; Paul Federiconi from Details West; and Joe and Michelle D'Elia of A-Line Proto Power West. Joe also hosted the event. Speakers included Blaine Hadfield, who presented the story behind ExactRail's decision to discontinue its dealer program and go direct to consumers on all sales. Jack Rich, from Amtrak's product development group, reviewed current and future equipment needs for various Amtrak districts. The event concluded with a manufacturers Q&A panel. BLMA Models showed its new HO and N scale ACI boards, and ExactRail displayed samples of their new exterior post 60'

double-door boxcar, as well as their recently announced Thrall 2743 gondola, which should be released from the factory by the time you read this report. Monster Model Works was promoting their laser etched products including their new HO and O scale tie plates were shown. JB

Thanks Josh. Now let's take a look at what's new...

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## NEW PRODUCTS FOR ALL SCALES

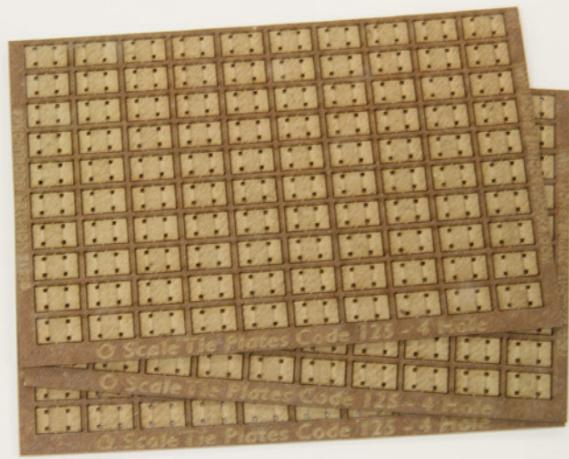
**The Underground Railway Press** continues to expand its impressive selection of prototype drawings of structures and rolling stock. The latest addition includes detailed drawings of the Crowell Lumber Mill complex formerly located in Longleaf, Louisiana. The portfolio consists of 30 pages of 11" x 17" drawings that include several views of the Sawmill Building, Boiler/Turbine Building, Planer Mill, Machine Shop, and Engine House. Several detailed views of a McGiffert Log Loader, and a Clyde Skidder are also in the collection. The sheets are available individually at \$2.00 each or \$20.00 for all 30 sheets. Please add \$2.50 for postage and handling. Order from The Underground Railway Press, PO Box 814, Brevard, NC 28712-0814.

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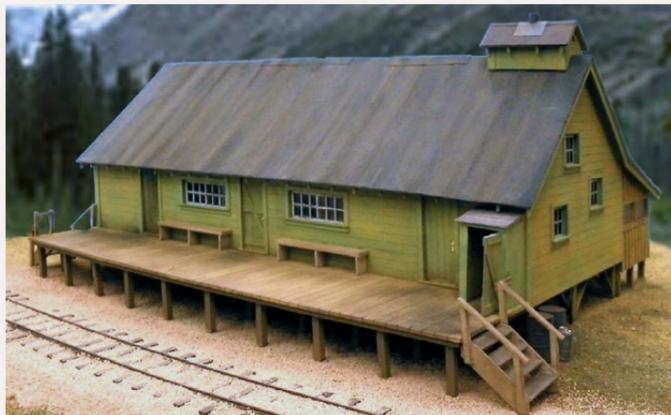
## O SCALE PRODUCT NEWS



**Atlas O ([atlaso.com](http://atlaso.com))** has scheduled the release of an O scale California Zephyr ten-roomette, six-double bedroom passenger car for the fourth quarter of 2012. Decorating schemes will include nine variations of the CZ cars assigned to Chicago, Burlington & Quincy (Silver Point, Silver Falls); Denver & Rio Grande Western (Silver Summit, Silver Glacier); Pennsylvania Railroad (Silver Rapids); and Western Pacific (Silver Arroyo, Silver Mountain). Completing the mix is an Amtrak car (Silver Shore, Silver Valley). Features of the corrugated streamline cars include interior details with LED lighting (both self-contained battery and track power will be available), sprung diaphragms, and knuckle couplers. The ready-to-run models will be available for 3-rail operation at \$149.00, or 2-rail operation at \$154.95.



**Monster Models** ([monstermodelworks.com](http://monstermodelworks.com)) has introduced realistic laser-etched tie plates for authentic appearing O scale track work. They can be used in laying track or painted rust and piled near trackwork as a scenic item. The tie plates are available with either four or eight spike holes for code 100, 125, and 138/148 rail. They are priced \$15.00 for 300 plates.



**B.T.S.** ([btsrr.com](http://btsrr.com)) continues to expand its series of O scale kits based on prototype structures of West Side Lumber Company. The newest release is the Camp Reynolds Cook House shown here. The model replicates the unique curved deck of the prototype. The kit consists of laser-cut basswood and plywood components, and tar-

paper roofing material. Details include urethane and brass parts, individual battens, peel-and-stick window sash, and positionable doors. The completed model has a footprint of 40' x 52'. The kit sells for \$129.95. B.T.S. has also released a kit for the Camp Reynolds Tank Shed. It is priced at \$19.95.

As noted in our Trackside Showcase this month (see page 110), **San Juan Car Company** ([sanjuancarco.com](http://sanjuancarco.com)) has received the first production sample of their On3/On30 D&RGW drop-bottom gondola. Cars in the initial release will have four sideboards and be available in three numbers each for either the D&RGW herald or with the Flying Rio Grande scheme. The ready-to-run models have an MSRP of \$94.95 each.

**Wiseman Model Services** ([wisemanmodelservices.com](http://wisemanmodelservices.com)) is selling cast resin kits for On3/On30 D&RGW and C&S passenger car bodies previously made by Star Models. Ten kits are available for open platform baggage, combine, coach, RPO/baggage, and a parlor car. A closed vestibule passenger car is also available as well as several shorty cars. The resin car body and roof components in the Wiseman kits are cast from new molds made from the original patterns created by Sam Halter. The kits include white metal, brass, and plastic details needed to complete the car body. Prices range from \$89.95 to \$99.95 each. Couplers, decals,

and trucks are not included. Information about various trucks available from Wiseman, plus photos of finished models, are available at the above web site.

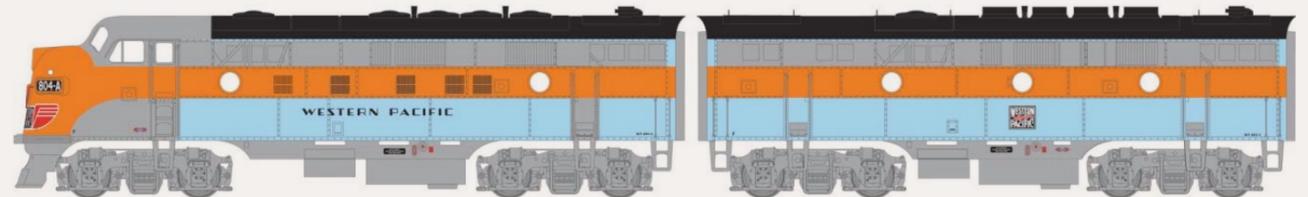
## HO SCALE PRODUCT NEWS



**Accurail** ([accurail.com](http://accurail.com)) is selling an HO scale kit for a Lehigh New England 50-ton offset-side twin hopper car. It is available as a single kit at \$14.98 and in a three-pack with different road numbers at \$42.98.



Also new this month from Accurail is a kit for a 40' Fruit Growers Express steel refrigerator car with a plug door for \$15.98. The easily-assembled kit comes complete with trucks and couplers.



**Athearn's** ([athearn.com](http://athearn.com)) delivery schedule for December includes a number of new details and new liveries applied to established products including Genesis series Western Pacific FP7 and F7B units decorated in the striking scheme of the 1950s-era California Zephyr. Athearn is including an F3B-C in this release since WP often mixed F3s and F7s in the same set. The HO scale model features several WP details including eyebrow grab irons, sunshades, nose-side ladder grab irons, and ladder rest grab irons. Models with SoundTraxx Tsunami and DCC sound decoder have an MSRP of \$519.98 for A units and \$219.98 for F7B or F3B units. Standard DC models without sound will be priced at \$359.98 and \$169.98 respectively.

Also coming from Athearn in December are Santa Fe, Pennsylvania, and Northern Pacific GP9s, and a Maine Central GP7. Three NP versions will be



offered with differences in the location and size of the roof fans. The PRR model will come in three slightly different paint schemes representing different eras of prototype between 1957 and 1968. All units will have Celcon handrails, wire grab irons, etched-metal grilles for the radiator intake and radiator fans, nub-style walkway tread, separately applied air tanks, and window glazing. Sound units with factory installed SoundTraxx and DCC sound decoders will have an MSRP of \$289.98. Non-sound DC models will be priced at \$189.98. They will be DCC-ready using Athearn's Quick Plug™ technology.



Athearn's December schedule also lists a Genesis series GP15-1 decorated in Chicago & North Western's Safety-Yellow scheme. It will be available in three different road numbers at \$189.98 for standard DC non-sound versions. Models equipped with Tsunami SoundTraxx and DCC sound decoder will have an MSRP of \$289.98.



More Athearn Genesis motive power is due in December including a Union Pacific-CNW Heritage SD70ACe, and a Florida East Coast SD70M-2. Special features include HTCR or HTSC trucks appropriate to the prototype road, metal grab irons, and operating ditch lights. Non-sound DC models and SoundTraxx units with a DCC sound decoder will have suggested list prices of \$199.98 and \$299.98 respectively.

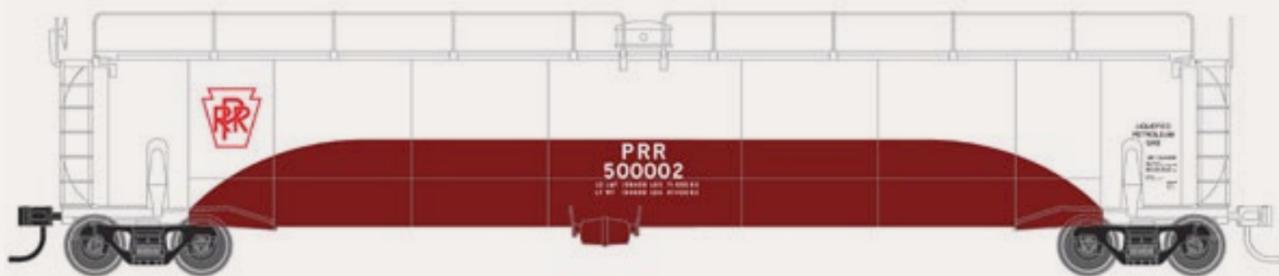


Athearn has scheduled two steam locomotives for delivery in April, 2013. They include a 4-8-8-4 Big Boy, and a 4-6-6-4 Challenger. Both of the Genesis series models will have Tsunami SoundTraxx and DCC sound decoders. The Big Boy will be available in seven numbers including road number 4019 shown here with smoke lifters. The Challenger will come in six numbers including three fitted with smoke lifters. Road number 3977 also has smoke lifters and will be decorated in two-toned gray for passenger service. The MSRP on the HO scale ready-to-run steam locomotives will be \$649.98 for the Big Boy, and \$599.98 for the Challenger. Early dealer orders are suggested since production quantities are expected to be limited.



Atlas Model Railroad Company ([atlasrr.com](http://atlasrr.com)) has released its Masterline® Coalveyor Bathtub gondola with new road names as well as new numbers for previously released roads. Introduced by ACF in

the 1980's the Coalveyor Bathtub gondola operated in unit train service to deliver coal to power plants with many still in service. New road names include AIGX-AIG Rail Services, NDYX-First Union Rail, DJJX- David J. Joseph, EAMX-Sullivan Scrap Metal, MWCX-Midwest Railcar, and TLAX-Transload America. New numbers are available for RTPX-Wheelabrator Coal Service, UFIX-Utility Fuels, WPSX-Wisconsin Public Service, and KCLX-Kansas City Power & Light. The ready-to-run models feature a die cast chassis, interior bracing, removable loads, and 100-ton roller bearing trucks. The cars have an MSRP of \$27.95 each. An undecorated version is available at \$19.95.



Pennsylvania is among the road names Atlas will apply to its HO scale version of the 33,156 gallon whale-body tank car that ACF introduced in the 1960s for liquefied petroleum gas (LPG) and anhydrous ammonia service. Additional new road names scheduled for release this fall include Petrolane, Shippers Car Line, AAMX, and GLNX. The ready-to-run model will have an MSRP of \$34.95 each. An undecorated model will be priced at \$27.95.

By the end of the 1930s, many USRA double-sheathed boxcars had been rebuilt with steel sides. More rebuilds followed and by 1950 some 14,000 of the original 24,500 USRA cars had been rebuilt with several variations in ends and doors. Atlas has released an HO scale ready-to-run version of the rebuilds decorated for Atlantic Coast Line, Grand Trunk Western, Rock Island, Santa Fe (El Capitan), Santa Fe (Super Chief), Nickel Plate Road, and Pennsylvania Railroad. The ready-to-run models have an MSRP of \$34.95. Undecorated versions with 5-5-5 ends are available with 10 panel sides, ladders, and either a standard or fishbelly sill.



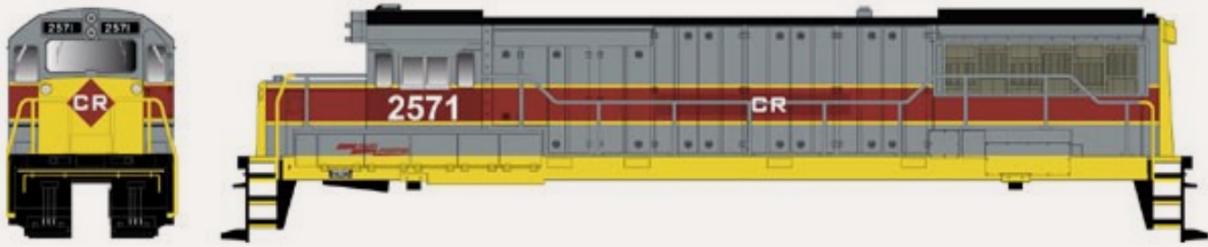
Undecorated models with 8-panel sides and fishbelly sills are available with either ladders or grab irons. All undecorated cars have an MSRP of \$27.95.



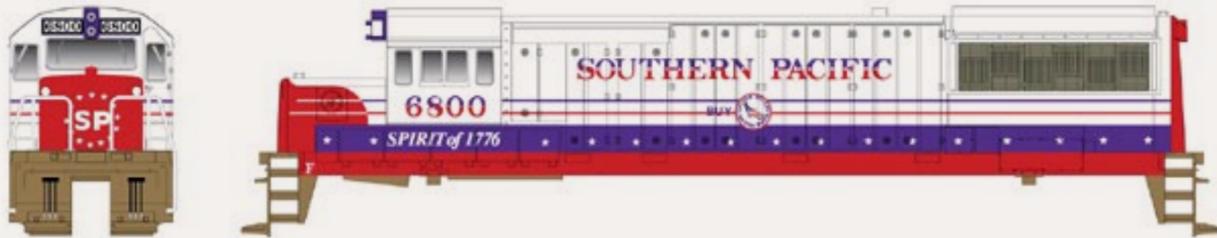
BLMA ([blamamodels.com](http://blamamodels.com)) is now selling ACI (automatic car identification) plates for HO scale freight cars. The plates are pre-printed on etched brass that can be easily cut from the fret and glued on a car side. The plates are particularly helpful in applying an ACI to a flat car since the plate may be taller than the width of the flat car side. All freight cars that operated during the first half of the

1970s were required to have ACI plates and many retained them well after the requirement was abandoned in the late 1970s due to poor readability resulting from lack of maintenance. BLMA's HO scale ACI Plates are priced at \$8.95 for a package of 10.

Bowser Manufacturing ([bowser-trains.com](http://bowser-trains.com)) is accepting reservations until May 30 for the next release of its HO scale General Electric U-25B diesel locomotive. Two different road numbers will be available for GE Demo; EL (as delivered); EL (Conrail patch); Maine Central (green stripe); Rock Island (maroon cab); NdeM;



Burlington Northern (green); C&O; and Oregon, California & Eastern. One road number will be available for Southern Pacific Bi-Centennial, Maine Central (pumpkin scheme with zebra pilot), Rock Island (The Rock, blue), Maine Central (ex-The Rock, blue), and Weyerhaeuser. A Santa Fe version in blue and yellow will be available in three road numbers.

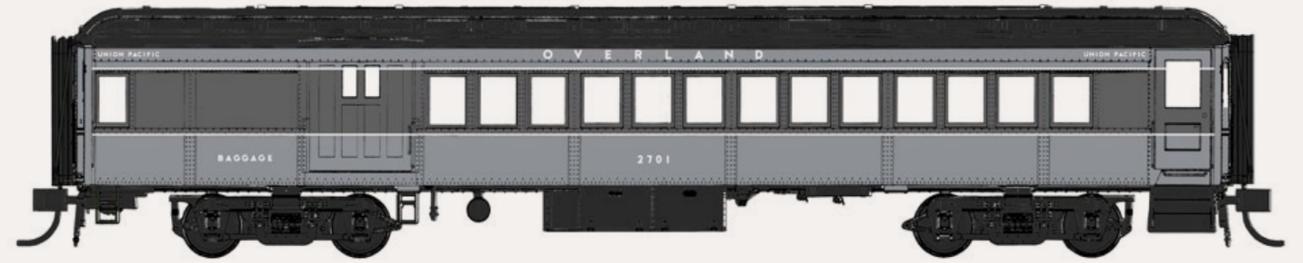


The ready-to-run Executive Line model has been upgraded with new handrails, an improved gearbox, and new 9' 4" wheelbase AAR type-B trucks. Additional details include metal MU hoses, windshield wipers, grab irons, uncoupling bars, operating headlight, and window glass. The U-25B will be available for DC (with a DCC-ready 8-pin plug) at \$199.95, and with SoundTraxx® DCC sound decoder at \$299.95. Delivery is scheduled late this year.

**Concept Models** ([con-sys.com](http://con-sys.com)) has an HO scale kit for a DUPX 12405 eight-axle 'whale tanker' used to haul ethylene glycol for the DuPont Company. This is a basic body kit (trucks, couplers, hand grabs, ladders, and related detailing part are not included) consisting of PVC and resin castings. Decals and photo-illustrated instructions are included. The kit is priced at \$39.99.



**Con-Cor** ([con-cor.com](http://con-cor.com)) is selling HO scale 72' smooth-side streamline passenger cars decorated for Northern Pacific (two-toned green), and Amtrak phase V (blue and silver as originally introduced on the Acela train). Equipment available includes an RPO car, baggage, coach, sleeper, dome, diner, and observation car. The MSRP is \$29.95 (see top picture next column).



Also new from Con-Cor is a series of 65' BCS (branchline-commuter-suburban) cars decorated for Union Pacific (two-toned Overland gray), Northern Pacific (Pine Tree two-toned green), and Santa Fe (two-toned SF Scout grey). The release includes a baggage-mail combine, baggage-passenger combine, coach, and a solarium car. The heavyweight cars feature complete underbody and interior details, and sprung diaphragms. They are priced at \$69.98 each (solarium car is \$77.98) and include built-in DC/DCC compatible interior car lighting.



**ExactRail** ([exactrail.com](http://exactrail.com)) is selling an HO scale version of a 2743 cu ft steel gondola decorated for NS, DJLX, CW-OSM (Oregon Steel Mills), UP/CTRN, and Union Pacific. The 1:87 scale model is based on a 52' 6" prototype introduced by Thrall Car Manufacturing in 1995. ExactRail's Evolution series model features wire grab irons, etched-metal Morton brake platform, Kadee® couplers, and ASF 100-ton

Ride-Control trucks with 36" metal wheels. The ready-to-run model has an MSRP of \$25.95.



**Frenchman River Model Works** ([frenchmanriver.com](http://frenchmanriver.com)) has a kit for a HO scale three-track carfloat. The model is based on a 169' carfloat built in the 1950s. The kit consists of a resin casting with weld lines, scuttle hatches, cleat bases, and toggle pockets cast in place. Micro Engineering code 100 nickel silver rail is also cast in the deck. Rope and chain, along with nicely detailed metal castings of

cleats, bridge hooks, and tire bumpers, are included. The kit sells for \$125.00 plus \$5.00 shipping and handling. A 64' extension to lengthen the float is sold separately at \$42.00.



Frisco, P&LE, DME, AOK (CNW restencil), and BNSF (small image). The ready-to-run car will have an MSRP of \$32.95.

InterMountain Railway ([intermountain-railway.com](http://intermountain-railway.com)) has scheduled a July/August arrival date for a 4750 cu ft three-bay rib-side hopper car. The HO scale model will be available decorated for Soo Line, CSX, NS,



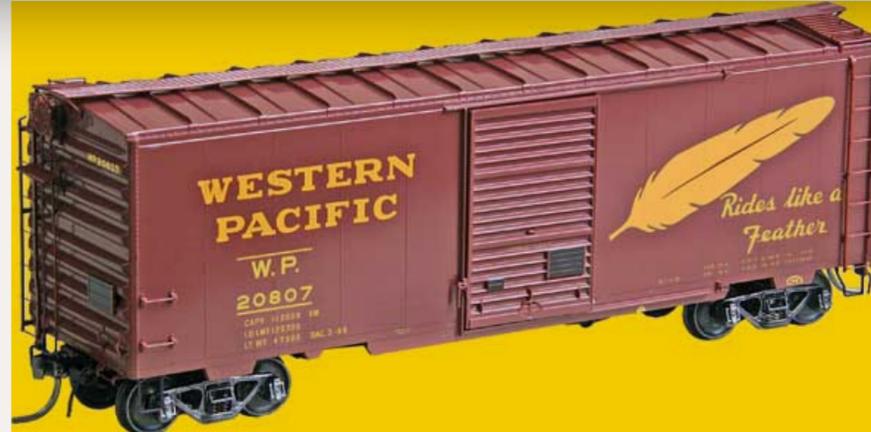
CP Rail, ALNX Alberta (Take A Break), ALPX Alberta, SKNX-Saskatchewan, CNW, Government of Canada, and Ferrocarriles Nacionales de Mexico. Cars equipped with round hatches will be available for Procor (black lettering), Potash, CSX, Canadian Pacific (script), CNIS, and CNLX. The HO scale ready-to-run models have an MSRP of \$31.95 and come with etched metal roof walks, wire details, metal wheelsets, and Kadee® couplers.

Four-bay cylindrical covered hoppers coming from InterMountain Railway next month include cars with trough hatches decorated for Procor (blue lettering),

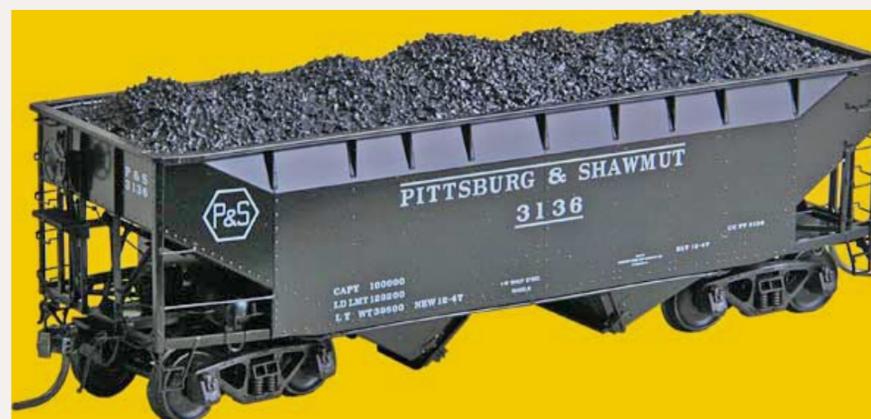


InterMountain Railway is selling an undecorated 5277 cu ft boxcar with an MSRP of \$19.95.

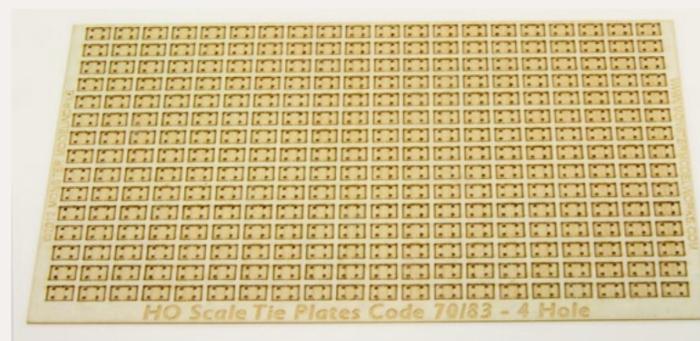
Kadee Quality Products ([kadee.com](http://kadee.com)) has released a Western Pacific 40' PS-1 box car with a 7' Youngstown door. Although the prototype was delivered in 1951, Kadee's HO scale ready-to-run version reflects a 1966 repaint in boxcar red with WP's feather herald. The model has an MSRP of \$33.95 and comes with HGC trucks and Kadee #2100 couplers.



Kadee has released a Pittsburgh & Shawmut 50-ton AAR open-top twin-bay hopper with Wine latches and HGC trucks. The P&S model is decorated in the original 1947 black paint. It is priced at \$42.95 and comes with a coal load.



Next month, Kadee will begin delivery of this Duluth, South Shore & Atlantic 50' PS-1 boxcar that features double-doors over a 15' opening. The HO scale DSS&A model will be priced at \$33.95.



Monster Models ([monstermodels.com](http://monstermodels.com)) has introduced laser-etched tie plates to enhance the appearance of HO scale track work. The realistic plates can be used in laying track or painted rust and piled along side track as a scenic item. The plates are available with either four or eight spike

holes for code for code 70/83 rail. They are priced at \$10.00 for a package of 300 plates.

NKP Car Company ([nkpcarco.com](http://nkpcarco.com)) has scheduled a limited production run of an HO scale kit for a Clover series 8-section 5-double bedroom heavyweight Pullman sleeper (Pullman plans 4036A, 4036B, 4036C, and 4036F/I). The kit consists of .020" etched brass sides with separate window sashes and doors, plus a resin roof and a blind-end cast from masters created by Bill Stauss.

Additional items include Branchline detail parts and trucks with InterMountain 36" wheelsets. The Clover kit is priced at \$77.00 plus \$6.00 shipping and handling. Delivery is scheduled for this summer. Paid orders placed before June 1

will receive a 10% discount. A special cast resin vestibule to convert the pedimented-top end to a round-top end is available separately for \$6.00. To order or for additional information contact Tom Schneid at [bnsf739@aol.com](mailto:bnsf739@aol.com) or call 847-702-0968. NKP's new mailing address is 739 Juniper Dr., Palatine, IL 60074.



**N.J. International** ([njinternational.com](http://njinternational.com)) is selling a standard two-aspect type-D signal. The HO scale signal features all-brass construction with two LEDs. The item is priced at \$17.99.



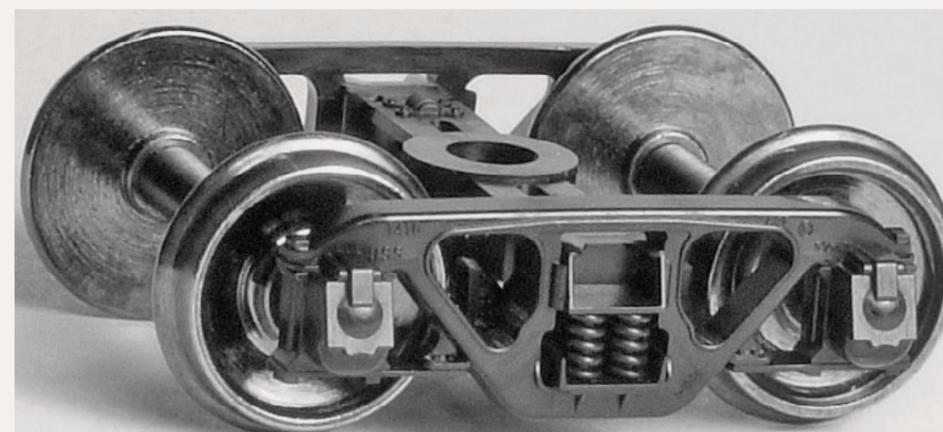
**Summit USA** ([summit-customcuts.com](http://summit-customcuts.com)) has introduced a kit for an HO scale Shamrock Gas Station & Convenience Store. The building is typical of modern structures found throughout the nation. This kit includes all building parts, vending machines, pumps, signs, and acrylic window glazing material, plus a decal and self-adhesive signage. The structure components are milled from white and black styrene plastic. The finished structure has a footprint of 6.75" x 5.5" x 2.75" high. The kit is priced at \$54.95. A built-up version is available at

\$160.00. Also new from Summit USA are one and two-lane version of a cantilever highway sign, and a modern four-bay brick fire station.



**Red Caboose** has an HO scale Evans 100-ton coil car scheduled for release in June or July. The ready-to-run model has an MSRP of \$37.95 and will be available decorated for Detroit, Toledo & Ironton; Chesapeake & Ohio (blue and gray); Chesapeake & Ohio-Chessie System; Southern Pacific; New York Central; Rock Island; Chicago North Western; Pittsburgh & Lake Erie; ATSF, and BNSF (new image). Intermountain Railway is responsible for marketing Red Caboose products. For additional information visit [intermountain-railway.com](http://intermountain-railway.com)

**ROCO-USA** ([roco.com](http://roco.com)) has added the RSM brand of kits to its line of products. The first item available is an HO scale switch tower based on the prototype Grasselli Interlocking Tower once located in East Chicago, Indiana. The kit includes an eight-page assembly guide and precision laser-cut components that are engraved with a wood-grain texture like the prototype structure.



**Tahoe Model Works** continues to expand its impressive line of prototypically accurate HO scale freight car trucks. The newest item is a USRA 50-ton Andrews truck.

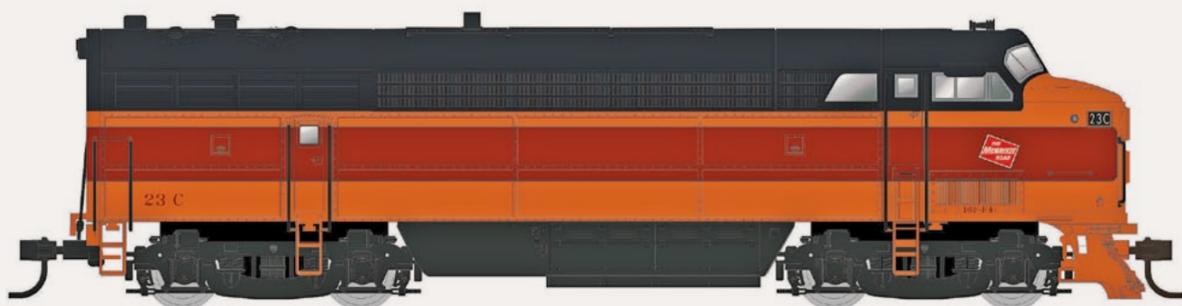
The Andrews design used a cast sideframe fitted with separate journal boxes. Many of the journal boxes were recycled from out-dated arch bar trucks. A bar stabilized the journal box by linking it to the cast frame. The design was popularized in 1918 when the United States Railroad Administration (USRA) ordered 67,000

freight cars with Andrews 50-ton trucks. The cars were of various types and eventually went to 53 American railroads. Tahoe's one-piece HO scale truck is cast in black acetal plastic (a stiff, low friction engineering thermoplastic) with separate brake shoe detail, and non-magnetic, insulated metal RP-25 contour wheelsets. The truck is also available with .088" wide semi-scale wheels. The trucks have an MSRP of \$7.25 pair. Add \$3.00 shipping and handling when ordering direct from Tahoe Model Works, 5801 Sheep Drive #7, Carson City, NV 89701-1420. Visit [sunshinekits.com/tahoe.html](http://sunshinekits.com/tahoe.html) for a list of all Tahoe trucks currently available.

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York Central, Erie, and Southern Railway. Features include traction tires and full cab interior detail including positionable windows. DC versions will be priced at \$299.98. DCC models with DCC SoundTraxx® sound decoder will have an MSRP of \$399.98.



True Line Trains ([truelinetrains.ca](http://truelinetrains.ca)) has scheduled a production run later this year for its HO scale Fairbanks Morse C-Liner 4-axle diesel locomotive. Road names of the ready-to-run model include Milwaukee Road, New York Central, and Pennsylvania Railroad – the latter version equipped with a train-phone antenna.



Walthers December delivery schedule also includes a WalthersProto™ 40' Ortner 100-ton open-top aggregate hopper. Road names will be C&O, CR, NS/SOU, and Golden West/GVSR. Each road name will be available in three numbers at \$31.98 each.



The models will be produced from upgraded tooling with corrected grilles as well as newly tooled trucks. DC versions will have an MSRP of \$164.99, DCC models with ESU LokSound decoder will list for \$279.99. This production run is committed to US dealers and distributors, although Canadian dealers can order from Walthers or other US distributors. In addition, no-obligation pre-orders can be made direct to Randy Hammill at [randy@truelinetrains.ca](mailto:randy@truelinetrains.ca).

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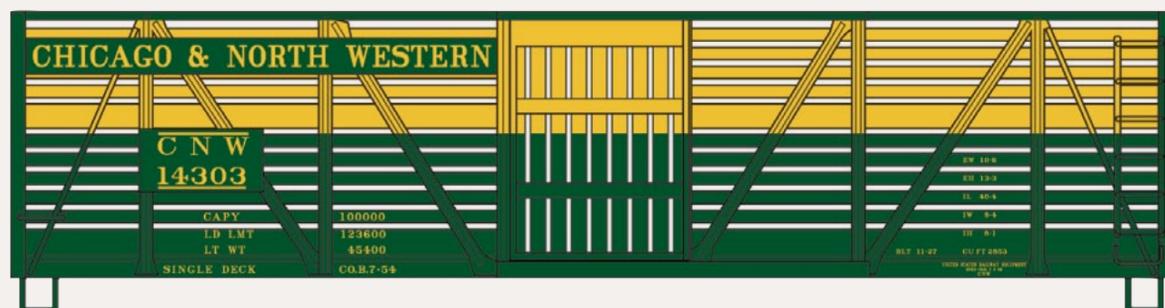
Walthers ([walthers.com](http://walthers.com)) has scheduled another run of its WalthersProto™ USRA 0-8-0 steam locomotive for arrival this December. The HO scale ready-to-run model will come decorated for CB&Q, Nickel Plate, Northern Pacific, New

Other new items coming in December include WalthersProto™ 50' Pennsylvania Railroad class R50b express reefer cars in four different liveries including PRR (1939 scheme), PRR (postwar scheme), PRR (Keystone herald), and PRR

(Summer 1945, shown previous page). The last car mentioned has a Tuscan red body, black roof, and buff lettering based on a short-lived scheme applied to cars serviced between June and August of 1945. PRR owned over 500 class R50b express reefers all of which were part of the Railway Express Agency (REA) car pool that travelled throughout the nation. Walthers HO scale ready-to-run models will be equipped with PRR-type 2D-P5 four-wheel trucks with 36" metal wheelsets. The MSRP is \$44.98 each.



Walthers Mainline™ series ALCo RS-2 1500 hp diesel locomotive is scheduled for release in December decorated for Lehigh Valley, Union Pacific, and Ontario Northland. The HO scale ready-to-run model will have an MSRP of \$124.98.



Also due at the end of the year are Walthers Mainline™ series 40' stock cars with steel Dreadnaught ends. The HO scale ready-to-run models will be available in two road numbers each for CB&Q, CN, CNW, and Swift Livestock Express. They stock cars will have an MSRP of \$19.98 each. They will also be available in 6-packs with different numbers at \$119.98.



Walthers is booking dealer orders now for November delivery of a Mainline® series 50' four-bay covered hopper. Road names selected for the HO scale model are ADMX-ADM Milling Co, ATSF, Illinois Central, and RI-Route Rock. The ready-to-run model has an MSRP of \$24.98.



This Grocery Distribution business has been added to Walthers Cornerstone® line of HO scale structures. When assembled the building has a footprint of approximately 13" x 9". The kit has an MSRP of \$39.98. It is available now.

## N SCALE PRODUCT NEWS



As a companion to its Pickle Works structure kit, **American Model Builders** ([lasercut.com](http://lasercut.com)) has introduced a Pickle Car Conversion kit for 40' N scale flat cars. The conversion kit includes four open-top vats with scribed laser-cut Birch plywood sides and simulated brine inserts. The superstructure is also of plywood with optional rooftop hatch positions and access ladders. Signage for G. R. Dill & Sons is included. Although specifically designed to fit a Red Caboose 42' flat car (sold separately), the conversion adapts equally well to early Atlas/Rivarossi 40' flats. The MSRP is \$19.95.



Atlas ([atlasrr.com](http://atlasrr.com)) has introduced a model of a classic American 4-4-0 steam locomotive. From the Civil War until the late 1800s, wood burning 4-4-0 locomotives dominated North American rails with some 25,000 produced by all principal locomotive builders of the day. Atlas has patterned their new N scale model after a Virginia & Truckee prototype with allowances for different stacks that significantly change the appearance of the basic 4-4-0. The model will be available in the third quarter decorated for Pennsylvania Railroad, New Haven, Canadian Pacific, and Santa Fe. It will also be available painted but unlettered. All versions will have an MSRP of \$119.95. According to Atlas COO Paul Graf, installing a DCC decoder will be a challenge, even for experienced modelers, since the motor fills the tender and a gear tower is located above the drive wheels.



BLMA ([blamamodels.com](http://blamamodels.com)) is now selling ACI (automatic car identification) plates for N scale freight cars. The plates are pre-printed on etched brass that can be easily cut from the fret and glued on a car side. All freight cars that operated during the first half of the 1970s were required to have ACI plates and many retained them well after the requirement was abandoned in the late

1970s due to lack of maintenance which resulted in poor readability. BLMA's N scale ACI Plates are priced at \$7.95 for a package of 10.



ExactRail ([exactrail.com](http://exactrail.com)) is selling an N scale version of a 2743 cu ft steel gondola decorated for NS, DJLX, CW-OSM (Oregon Steel Mills), UP/CTRN, and

Union Pacific. The model is based on a 52' 6" prototype introduced by Thrall Car Manufacturing in 1995. ExactRail's model features wire grab irons, Micro-Trains #1015 couplers, and ASF 100-ton Ride-Control trucks. The ready-to-run model has an MSRP of \$24.95.



Fox Valley Models ([foxvalleymodels.com](http://foxvalleymodels.com)) has confirmed its intention to create N scale versions of the Norfolk Southern Heritage series of General Electric ES44AC locomotives. Heritage schemes will include Conrail, Southern, Nickel Plate Road, and Central of Georgia. Fox Valley says it will upgrade the shell with a high headlight and a notch in the distinctive GEVO nose. The models will have an MSRP of \$130.00. Delivery is expected late this year.



Kato USA ([katousa.com](http://katousa.com)) reports that although many items in its line of N scale Chicago Metra and Virginia Railway Express equipment have sold out, most items will be back in stock by early May. This includes both Metra and VRE bi-level coaches and cab-coaches. Both the VRE and Metra versions of the MP36PH locomotive and the VRE 4-unit commuter train set are still available. The VRE set (item 106-8705) shown here has an MSRP of \$185.00.



**Micro-Trains Line** ([micro-trains.com](http://micro-trains.com)) has paired-window coaches decorated for Baltimore & Ohio, with blue and gray side bands, gold pin striping and a black roof. The heralds and road numbers are also in gold. This is a welcome addition to previously released road names that included Great Northern, Pennsylvania, Canadian Pacific, Union Pacific, Southern Pacific, and Pullman. The N scale model is based on Pullman plan #2882-B with a seating capacity of 80 people. Features of the ready-to-run model include well-executed rivet detail, plastic diaphragms, complete underbody detail, and six-wheel drop-equalizer trucks. Two road numbers are available at \$31.40 each.



Other new items from Micro-Trains include this 40' Hy-Cube CNW boxcar. The decorating scheme includes CNW's Chicago System slogan and special black and white excess-height markings on the ends. Although quickly overshadowed by longer and bigger cars, the short-lived 40' mini hi-cube phase represented by this car introduced a unique and interesting look to North American railroad equipment. The ready-to-run N scale model is priced at \$27.65. Other new models recently introduced by from Micro-Trains include a 40' drop-bottom gondola with wood side extensions and a wood-chip load decorated for Northern Pacific at \$23.70; and a 40' standard boxcar with a single sliding door decorated for Norfolk Southern Railway at \$20.50. Also a 40' Frisco steel boxcar at \$18.50. Although the

running board was removed and the ladders shortened during a 1969/70 reconditioning, the car still displays its 1957 as-built 'Ship it on the Frisco' slogan.

**Trainworx** ([train-worx.com](http://train-worx.com)) has created an N scale Rio Grande Woodpacker boxcar by adding etched metal waffling to a Fox Valley FMC 5283 double-door boxcar. The ready-to-run model will have trucks with Fox Valley metal wheelsets and Micro-Trains body-mounted couplers. Twelve road numbers will be available at \$28.95 each. Delivery is expected by the third quarter.



**Walthers** ([walthers.com](http://walthers.com)) will release an N scale version of a USRA 0-8-0 steam locomotive in December decorated for CB&Q, Nickel Plate, Northern Pacific, New York Central,

Erie, and Southern Railway. Special features include traction tires, all-wheel electrical pickup on both locomotive and tender, constant intensity and directional LED headlights, DCC-ready socket in tender, RP-25 contour wheels, and Micro-Trains® knuckle couplers. The ready-to-run model has an MSRP of \$219.98 each. (Walthers HO model is illustrated).



Also due from Walthers in December is an N scale ALCo RS-2 diesel locomotive in two numbers each for Lehigh Valley, Rock Island, Union Pacific, and Ontario Northland. Features include all-wheel drive, all-wheel electrical pickup, constant intensity and directional headlights, a DCC-friendly mechanism with Clip-Fit circuit, RP-25 contour wheels, and Micro-Trains couplers. The ready-to-run models will have an MSRP of \$99.98 each.

## Z SCALE PRODUCT NEWS

**Stonebridge Models** is selling a laser-cut Z scale kit for the historic Baby Doe Tabor Cabin, which still stands at the Matchless Mine in Leadville, Colorado. The kit is priced at \$7.00 and includes a resin-cast ore car. For additional information contact Stonebridge Models, 1325 Ramada Ave., Medford, OR 97504.

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## NEW DECALS, SIGNS AND FINISHING PRODUCTS

**Aberdeen Car Shops** ([aberdeencarshops.ca](http://aberdeencarshops.ca)) has released HO scale decals for Toronto, Hamilton & Buffalo Maintenance of Way equipment. The set will authentically letter a wide selection of TH&B equipment including an X-755 30-ton American crane, X-756 boom car, X-766 250-ton Brownhoist crane, X-765 boom car, X-764 truck car, and X-786 Russell snowplow. The set also includes special artwork to decorate TH&B MOW vehicles from the 1940s to the 1980s. Item THB-8716 has an MSRP of \$17.00.

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**Archer Fine Transfers** ([archertransfers.com](http://archertransfers.com)) offers a series of five on-line tutorials with tips and techniques on successfully applying both dry transfers and wet decals. MRH readers can click on the following URLs and go directly to the tutorials.

# 1: Basic dry transfer application, suggested tools and overview.

<http://www.youtube.com/watch?v=dvoS9R2SYbQ>

#2: Advanced dry transfer application techniques including how to apply over uneven surfaces, working with tiny lettering and how to align separate characters on a straight line.

<http://www.youtube.com/watch?v=ZJNm0DaKLYs>

#3: Applying dry transfers with Archer's Wet Medium Paper.

<http://www.youtube.com/watch?v=tHIBDQmv1pl>

#4: How to make a realistic flag using foil and Archer's dry transfer flags.

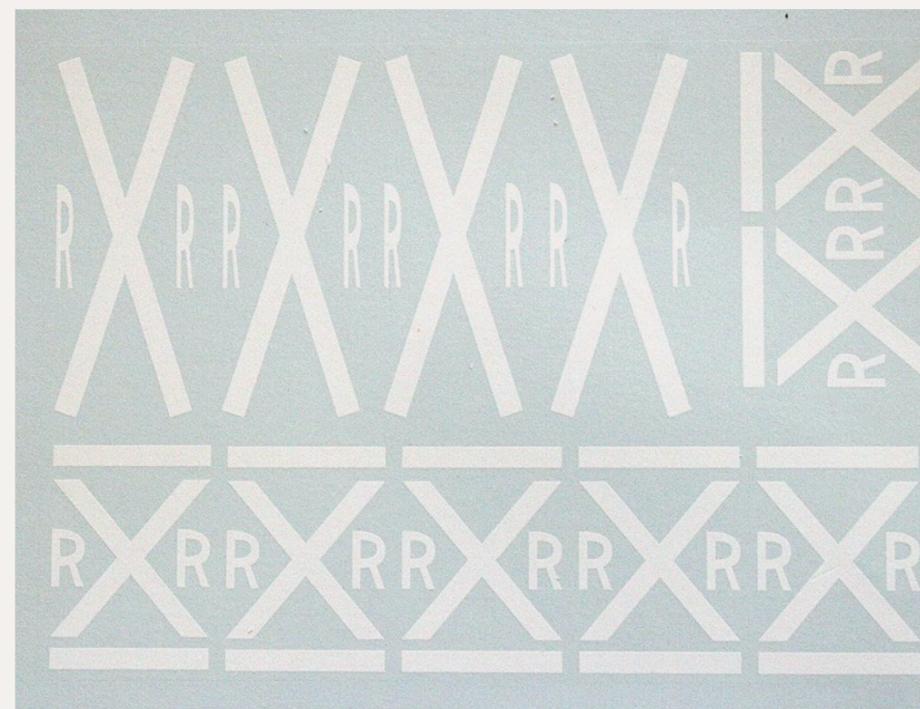
<http://www.youtube.com/watch?v=5WwTq0G4kx4>

#5: Working with surface details including rivets, louvers, and weld lines.

<http://www.youtube.com/watch?v=aptnvFeEqio>

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**Custom Cuts by Summit** ([summit-customcuts.com](http://summit-customcuts.com)) has introduced HO scale decal sets for various road and highway markings. One set, as seen here, has both short and elongated railroad crossing marks. Also available is a decal set



for white side lines, yellow broken lines, yellow solid lines, white stop lines, and various turn arrows. The decals are produced for Summit by Microscale. They are priced at \$8.00 each. Visit the above website for additional details including full illustrations.

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Slim the Cowboy Silhouette is now available from **Great Lakes Models** ([greatlakesmodels.com](http://greatlakesmodels.com)). The iconic symbol is patterned after a sign frequently seen throughout the west. The etched brass sign is priced at \$2.25 each.

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**Microscale** ([microscale.com](http://microscale.com)) has released a large selection of new and re-reissued decals for HO scale locomotives including Louisville & Nashville cab diesels from 1942 through 1963 in blue, black, and cream; Union Pacific for black steam locomotives after 1930; Penn Central diesels from 1968 to 1976; Chesapeake & Ohio steam locomotives from 1924-1961; New York Central medium size steam locomotives; Soo Line hood and cab diesels the yellow and maroon scheme; Santa Fe SD40-2 'snoot' diesels; Pennsylvania Railroad E-unit diesels from 1953-1968; Great Northern hood diesels from 1950-1967 in the green and orange scheme; Chesapeake & Ohio cab and hood diesels; Norfolk Southern 'horsehead' diesel scheme beginning in 2002; Great Northern steam locomotives; Burlington Northern Santa Fe (BNSF) cab hood diesel repaints from 2005; and VIA Rail Canada rebuilt F40PH-2 locomotives.

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**San Juan Decals** ([sanjuandecals.com](http://sanjuandecals.com)) has several new decal sets for a 15mm scale D&RGW 40' reefer at \$12.95 each, a 15mm D&RGW long and short cabooses in either 1926 or 1939 paint schemes at \$12.95, and for an On3 D&RGW class OD, OE, and OH Flanger at \$7.95. The flanger set has red with white lettering and grey with black lettering. Detailed instructions and drawings are included. An additional On3 set contains lettering for the remaining eight D&RGW flangers, and an HOn3 set with all eleven versions, are expected to be announced shortly. Sets for 15mm flangers are also on the drawing board.

**Smoky Mountain Model Works** ([smokymountainmodelworks.com](http://smokymountainmodelworks.com)) has a limited number of HO decals to accurately decorate the former Tennessee Central two-bay PS-3 hopper cars that migrated to the Southern Railway following TC's 1968 dissolution. According to Jim King, the unique combination of Roman style lettering of the Tennessee Central Roman and Southern block font is based on images from Howard Ameling's photo collection. Walthers/Train Miniature HO scale hopper is the basis for such a project. The decals and a pair of L&N/CRR/TC heap shields are available for \$10 per one-car set. Add \$3 for 1st class shipping to the lower 48 states.

#### DISCLAIMER

The opinions expressed in this column are those of the writer and do not necessarily reflect the opinion of *Model Railroad Hobbyist* or its sponsors. Every effort is made to provide our readers with accurate and responsible news and information, however, neither *Model Railroad Hobbyist* or the writer of this column can be held responsible for any inaccuracies or typographical errors that may inadvertently appear in this column.



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## Briefly noted at press time...

... **Jerry Glow** has advised that due to mechanical problems with his printing service, sales of all decals has been suspended effective immediately. Glow is attempting to fill orders on-hand with existing inventory, but no new product can currently be produced. Progress reports on solving the production problem can be followed at [home.comcast.net/~jerryglow/decals](http://home.comcast.net/~jerryglow/decals).

... **According to Atlas CEO, Tom Haedrich**, the Atlas Model Railroad Forum will be discontinued effective May 1, 2012. In making the announcement, Haedrich said, "The decision was necessary due to the ever-increasing amount of time and other valuable resources expended to monitor and administer the forums. Besides the monthly costs of bandwidth, software, and service

providers, we dedicate a significant amount of R&D staff time responding to forum based issues. It's time that we reestablished these limited resources, in particular valued R&D employee time, toward increased efforts at developing new model railroad products. We intend to remain active on other social media sites including Facebook, Twitter, and YouTube." Atlas began its popular forum pages some 15 years ago. The announcement indicated that archive section of the forums will remain available to users for the near future. ■



## Selected Events

### May 2012

**AUSTRALIA, NEW SOUTH WALES, ALBURY**, May 26-27, Murray Railway Modellers Annual Show, featuring N, HO, and O scale layouts, model displays, vendor tables, and Thomas the Tank Engine. Mirambeena Community Centre, Lavington. Info at [murrayrailwaymodellers.com](http://murrayrailwaymodellers.com), or contact John Harvey at [mrmshow@gmail.com](mailto:mrmshow@gmail.com).

**CANADA, ONTARIO, OTTAWA**, May 5-6, Ottawa Train Expo, featuring layouts, models, displays, clinics, demonstrations, and tours. Billed as the largest train show in Eastern Canada. Carleton University Fieldhouse. Info at [ottawatrain-expo.wordpress.com](http://ottawatrain-expo.wordpress.com).

**COLORADO, COLORADO SPRINGS**, May 12, NMRA Rocky Mountain Region Pike's Peak Division train show, Trinity United Methodist Church, 701 N. 20th Street.

**COLORADO, DENVER**, May 4-5, National Z Scale Convention, with clinics, contests, and tours of Colorado Railroad Museum and Caboose Hobbies. Red Lion Hotel, Denver Southeast, 3200 S. Parker Road. Info at [nzsc.org](http://nzsc.org).

**MINNESOTA, ALEXANDRIA**, May 5, 16th Annual Model Train Show & Sale sponsored by Alexandria Model Railroad Association, at West Ice Arena, Runestone Community Center, in Douglas County Fair Grounds at County Road 82 and County Road 22. Info from Tom Skuza at [tomatdalake@gctel.net](mailto:tomatdalake@gctel.net), or phone 612-219-8699.

**MISSOURI, SUNSET HILLS (ST. LOUIS)**, May 30-June 3, NMRA Mid-Continent Regional Convention, hosted by Gateway Division with displays, contests, and special clinics by Bill Darnaby, Tony Koester, and Mont Switzer. Also tour of American Model Builders factory, and UP car shops at Desoto. Southwest Convention Center in Holiday Inn, Sunset Hills. Info at [gatewaynmra.org](http://gatewaynmra.org).

**NEW HAMPSHIRE, BARTLETT**, May 19, Bartlett Roundhouse Preservation Club Train Show with operating layouts, vendors, and raffles. Bartlett Elementary School.

**OREGON, MEDFORD**, May 2-5, Joint Medford Oregon-Siskiyou Summit PCR/PNR Convention, with clinics, contests, LdSig and OpSig meetings, layout and prototype tours, plus special Train Mountain outing. Red Lion Hotel. Details at [pcrnmra.org/conv2012](http://pcrnmra.org/conv2012).

**OHIO, HILLIARD**, May 18-20, 4th Annual Ohio N-scale Weekend, hosted by Central Ohio N-Trak. Franklin County Fairgrounds. Info at [centralohiontrak.org](http://centralohiontrak.org).

**SOUTH DAKOTA, SIOUX FALLS**, May 18-20, NMRA Thousand Lakes Region Convention. Info at [thousandlakesregion.org](http://thousandlakesregion.org).

### June 2012

**CANADA, SASKATCHEWAN, REGINA**, June 28 - July 1, Living Skies Express, a joint CARM National/PNR 6th Division Convention, at University of Regina Campus. Info from Tyler Smith at [smithtyler@sasktel.net](mailto:smithtyler@sasktel.net).

**CALIFORNIA, ONTARIO**, June 2-3, The Big Train Show, Ontario Convention Center, 2000 E. Convention Center Way. Info at [bigtrainshow.com](http://bigtrainshow.com).

**CALIFORNIA, RICHMOND**, June 23, Bay Area Prototype Meet, St. David's School Hall, 871 Sonoma Street.

**CONNECTICUT, COLLINSVILLE**, June 1-2, 10TH Annual New England/Northeast RPM, featuring clinics, model displays, and vendor displays. Attendees are urged to bring models. Layout open house tours on Sunday June 3. Canton Community Center, 40 Dyer Avenue. Info at [neprototypemeet.com](http://neprototypemeet.com).

**KANSAS, MERRIAM (Shawnee area)**, June 23, 10th Annual Narrow Gauge Meet, sponsored by Kansas City Area Narrow Gaugers. Includes clinics and layout tours. Johnson County Library, Antioch Branch, 8700 Shawnee Mission Parkway. Inquiries to Larry Alfred at [captlalfred@gmail.com](mailto:captlalfred@gmail.com).

**MARYLAND, TIMONIUM**, June 23-24, The Great Scale Model Train Show, with more than 350 vendor tables. 30th year hosted by Howard Zane. Maryland State Fairgrounds. Info at [gsmts.com](http://gsmts.com).

**NEW MEXICO, CHAMA**, June 8-10, NMRA Rocky Mountain Region Big Horn Convention, on board chartered narrow gauge mixed freight train on the Cumbres & Toltec Railroad. Limited to 200 participants. Visit web site [big-hornmixed.com](http://big-hornmixed.com) for details.

**OREGON, MEDFORD**, June 27-July 1, 20th Annual National N Scale Convention, with auctions, more than 100 tables of N scale items, clinics, model contests, operating layouts, and home layout tours. Also tours of Micro-Trains plant, Medford Railroad Park, and live steam at Train Mountain. Red Lion Hotel. Info from Dick Ollendorf at 610-923-7535 (evenings, Eastern time) or visit [nationalscaleconvention.com](http://nationalscaleconvention.com).

**TENNESSEE, GATLINBURG**, June 1-3, NMRA Southeastern Region 'Tracks to the Smokies' Convention, at Glenstone Lodge. Info at [ser-nmra.org](http://ser-nmra.org).

## Future 2012

**CANADA, BRITISH COLUMBIA, SQUAMISH**, July 13-15, Pacific Great Eastern Railway 100th Anniversary Convention, sponsored by PGE-BCR Modellers Group. Clinics, operating layouts, displays, model contest, prototype displays, and rides on 7.5" gauge Mini Rail. CN Roundhouse & Conference Centre, West Coast Railway Heritage Park, 39645 Government Road. Info including registration fees and options available from Brian Clogg at [bcclogg@shaw.ca](mailto:bcclogg@shaw.ca) or phone 604-588-2194.

**ILLINOIS, COLLINSVILLE (St Louis area)**, July 27-28, 6th Annual St Louis RPM Meet, hosted by Lonnie Bathurst, John Golden, and Daniel Kohlberg, with clinics, local and national vendor displays and sales tables, representatives from railroad historical societies, Freemo display, and more. Gateway Convention Center, One Gateway Drive. Info available from John Golden at [Golden1014@yahoo.com](mailto:Golden1014@yahoo.com) or Dan Kohlberg at [paducah@mindspring.com](mailto:paducah@mindspring.com).

**MICHIGAN, GRAND RAPIDS**, July 29-August 4, NMRA National Convention and National Train Show. Info at [gr2012.org](http://gr2012.org).

**MICHIGAN, GRAND RAPIDS**, July 29 - August 3, Operations Road Show, a hands-on clinic learning time table and train order operating techniques while operating on the Wabash 2nd Division modular railroad. Extended clinic sessions Monday through Thursday in conjunction with the NMRA Grand Rails 2012 National Convention. No fee but clinic reservation and convention preregistration is required. For details contact John Young at [cdjhyoug@yahoo.com](mailto:cdjhyoug@yahoo.com).

**NORTH CAROLINA, BREVARD**, October 12-13, Narrow Trak 12. Details pending.

**OHIO, CLEVELAND**, October 11-14, iHobby Expo, annual hobby industry trade show, IX Center.

**PENNSYLVANIA, STRASBURG/LANCASTER**, October 11-13, Fine Scale Model Railroader Expo, with manufacturers displays, clinics, dioramas, display layouts including Muskrat Ramble On30 layout, plus others activities at the Strasburg Railroad, and The Pennsylvania State Railroad Museum (PSRM). HQ at Lancaster Host Hotel & Conference Center, Strasburg, with special awards dinner at PSRM. Info at [modelrailroadexpo.com](http://modelrailroadexpo.com).

**PENNSYLVANIA, LEESPORT**, August 10-12, Greater Reading Narrow Gauge Meet. With operating displays, dealers, clinics, and demonstrations. Leesport Farmers Market Banquet Hall, Arlington Drive. Info at [nateslightironhobbies.com/narrowgaugemeet.htm](http://nateslightironhobbies.com/narrowgaugemeet.htm).

**SOUTH CAROLINA, MYRTLE BEACH**, October 13-14, Grand Strand Model Railroaders 3rd Annual Model Train Show, at Lakewood Conference Center, 5837 S. Kings Hwy. Info at [isfans.com/gsmrrc](http://isfans.com/gsmrrc).

**WASHINGTON, BELLEVUE**, September 12-15, 32nd National Narrow Gauge Convention. Meydenbauer Convention Center. For info visit [seattle2012.com](http://seattle2012.com).

## Future 2013

**AUSTRALIA, MELBOURNE**, April 12-14, 2013, 13th National Australian N Scale Convention, Rydges Bell City Event Centre, Preston, Melbourne. Info at [convention2013.nscale.org.au](http://convention2013.nscale.org.au) or send email to [nscale2013@bigpond.com](mailto:nscale2013@bigpond.com).

**CALIFORNIA, PASADENA**, August 28-31, 2013, 33rd National Narrow Gauge Convention. Hilton Hotel, 199 S. Los Robles St. Info at [33rdnngc.com](http://33rdnngc.com). Send inquiries to Jeff Smith at [jeff@railmasterhobbies.com](mailto:jeff@railmasterhobbies.com).

**MINNESOTA, BLOOMINGTON**, April 25-28, 2013, 28th Annual Sn3 Symposium. Ramada Mall of America Hotel. Info at [Sn3-2013.com](http://Sn3-2013.com).

**NEW MEXICO, ALBUQUERQUE**, June 6-9, 2013, Rails Along the Rio Grande, NMRA Rocky Mountain Region, Rio Grande Division 6, convention with clinics, layout tours, train show, OpSig sessions, UPRR and BNSF modelers showcase night, and banquet. Marriott Pyramid North. Info from Al Hobey at [alhovvey@comcast.net](mailto:alhovvey@comcast.net). ■

# REVERSE RUNNING: The Awful Truth

## Stepping outside the box with a contrary view



— by Joe Fugate

While lurking on a model railroading web forum shortly after I released my first Siskiyou Line DVD back in 2004, I ran across this comment:

“Why, some of his locos don’t even have hand rails!”

I found this comment mildly amusing, because it was clear to me this modeler’s main experience in the hobby was likely reading hobby publications and little layout building experience.

In the last few decades, model railroad publishers have shied away from showing unfinished modeling.

Instead, the focus almost exclusively has become highly detailed model scenes and super-detailed models of locos, rolling stock, and structures.

If you’ve ever attended some hobby events and visited layouts, you quickly discover unfinished modeling is the norm. When you do encounter a completely finished-looking layout, it’s a rare, memorable event!

In fact, the Railroad Prototype Modeler’s movement has yielded many events every year where unfinished models get proudly displayed. To that I say: hooray! That’s a trend I heartily support.

The “no handrails” remark came from some footage of my helix that connects the Siskiyou Line’s upper and lower decks. For that shot, I just grabbed a couple Kato SD45s that

were sitting on the layout, and ran them down the helix.

Keeping interest high on a large layout project often means running trains as soon as you can. To get some locos on the layout for such trains, I just took some Kato SD40s and SD45s, put Kadee couplers on them, and put them in service. I didn’t take the time to install handrails or to add any extra details like horns, snowplows, cut levers, or air hoses.

If you think the Kato example I showed on video was sacrilege, then my Proto 2000 SD9s were even worse.

Keith Thompson, who has been on the *Model Railroader* editorial staff in years past, came to visit a Siskiyou Line op session a few years ago. I had found a real deal on Proto 2000 SD9s from M. B. Klein, but the dozen or so locos were all numbered 3900. I didn’t let that deter me, though.

I put the proper cab numbers on little yellow stickies and put every one of the SD9s in service, bearing their proper cab number on the yellow sticky attached to their cab!

After that op session, Keith Thompson sent me the prototype SD9 photo you see here on this page, with the caption, “Well what do you know, there’s a prototype for everything!”

Keith was obviously having way too much fun with Photoshop! (At least the Katos in my video had cab numbers ...)

This is what you do when you understand your hobby priorities and do what’s needed to keep a large layout project moving forward. I was not ashamed to show on video this “work in progress” nature of my large layout project. It’s the real world.

The fact that some modelers feel it’s somehow “forbidden” or “poor practice” to openly present unfinished modeling shows the disservice hobby publishers have done by trying to be too slick in their presentation. It’s not the real world, and it creates unrealistic expectations.

This ultra-slick presentation philosophy may even discourage some hobbyists enough they’ve left the hobby. Focusing on only the highly finished scenes, on just the superdetailed locos, rolling stock, and structures may sell magazines, but if it ultimately discourages the “mere mortals” from doing the hobby, then it’s hurting more than it helps.

Welcome to the hobby’s dirty little secret: the “awful truth” of unfinished modeling!

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# Model Railroad Hobbyist magazine™

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STANDARD Edition  
June 2012

HAVING FUN WITH TRAINS

## Scratchbuild a steam loco in styrene



- Small layout track plans
- Building Frisco's PB Tower
- Modeling a pipe load
- St. Regis paper mill wrapup

... and lots more!

From this ...



To this:









### For the love of model trains

### Coming in the June 2012 issue

- Scratchbuilding a steam loco in styrene
- Mike Confalone's Modeling a realistic paper mill scene, final installment
- Building Frisco's PB Tower
- Small track plan extravaganza
- Modeling a pipe load

... and lots more!

## Derailments, humor, and Dashboard on next page ►

# D e r a i l m e n t s

humor (allegedly)



You ain't foolin' me, I saw those Toy Story movies!

As the train was about to pull out of the station, a young man swinging a large bag managed to just reach the train, throw his bag in and climb aboard. He stood there gasping for air as the doors slid shut.

Seeing him, the conductor said, "Young man, you should be in better shape! At your age, I could catch the train by a gnat's whisker and still be fresh. Look at you, panting away!"

The young man took a deep breath. "Well, old timer, it happens I missed *this* train at the *last* station."

## Railroad Terms Glossary

- **Yard goat** - Critter used by the railroad to keep down weeds within yard limits.
- **Feed water** - What they mix the yard goat's chow with when he runs out of weeds.
- **Crummy** - How you feel after the yard goat butts you.
- **Yard master** - Nickname for that dad-gum yard goat. Thinks he owns the place!

If you're the first to [submit a bit of good humor](#) and we use it, it's worth \$10!



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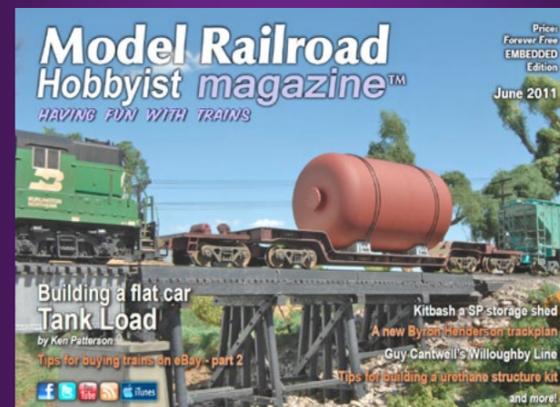


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