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Model Railroad Hobbyist magazine™

October 2014

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*Andrew
Castle
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Pan-Am Railways SD45



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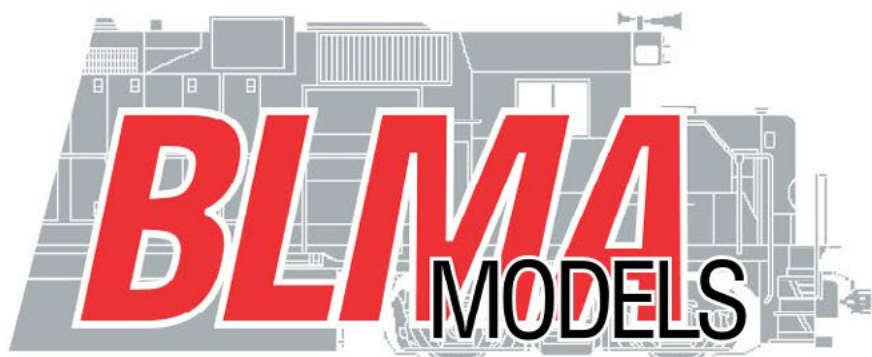
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contents



index



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Issue 56

Front Cover: Andrew Castle presents his SD45R kitbash into a Pan Am Railways diesel in this issue's cover story. Leverage some of these contest-quality techniques with any diesel kitbashing project on your to-do list.

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contents



index



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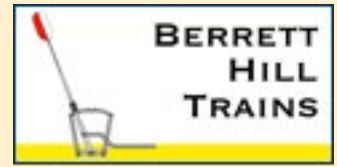
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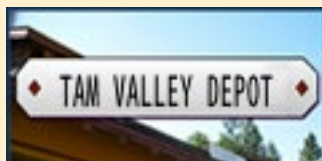
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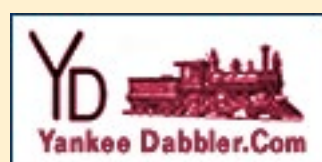
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Table of Contents - 1

Main Features

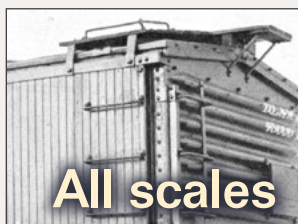
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Build a Pan Am Railways SD45R

Techniques for building a contest-quality model

by Andrew Castle



Modeler's guide to box car ends

A brief history of 20th Century box car ends

by Richard Bale



Logging cabooses kitbash

Kitbashing a pair of backwoods cabooses

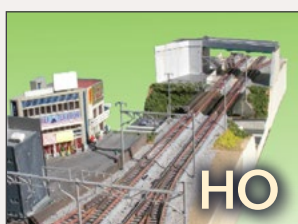
by Jeff Johnston



Build a simple portable workbench

Make this workbench you can take anywhere

by Kenneth Rickman



\$500 layout design contest - 3rd place

How about layout design thinking *above* the box?

by Thomas M. Tuerke



Layout design assessment formulas

Find out if that design works before building it

by Joe Fugate



October Hobby News

Industry news, product announcements, and events

by Richard Bale & Jeff Shultz



Table of Contents - 2

Other Features

*Click title
to view*

[Designing for ops redux](#)

[Publisher's musings](#)
by Joe Fugate

[MRH Staff Notes](#)

[Looking toward Portland 2015](#)
by the MRH staff

[MRH Q - A - T](#)

[Questions, Answers, and Tips](#)
compiled by Joe Brugger

[Yes, it's a model](#)

[Great modeling photo feature](#)
compiled by the MRH Staff

[Hobby Marketplace](#)

[Vendor ads](#)

[Derailments](#)

[Bizarre facts / humor \(allegedly\)](#)

Columns

[MRC DCC System test drive](#)

[DCC Impulses](#)
by Bruce Petrarca

[Create a realistic timetable](#)

[Getting Real](#)
by Tony Thompson

[Modeling a coal tipple, part 3](#)

[Lite and Narrow](#)
by Larry Smith

[Words and music](#)

[What's Neat](#)
by Ken Patterson

[Model what's common](#)

[Reverse Running](#)
by Don Hanley

[Subscriber-only extras](#) (*subscribers click here to access*)

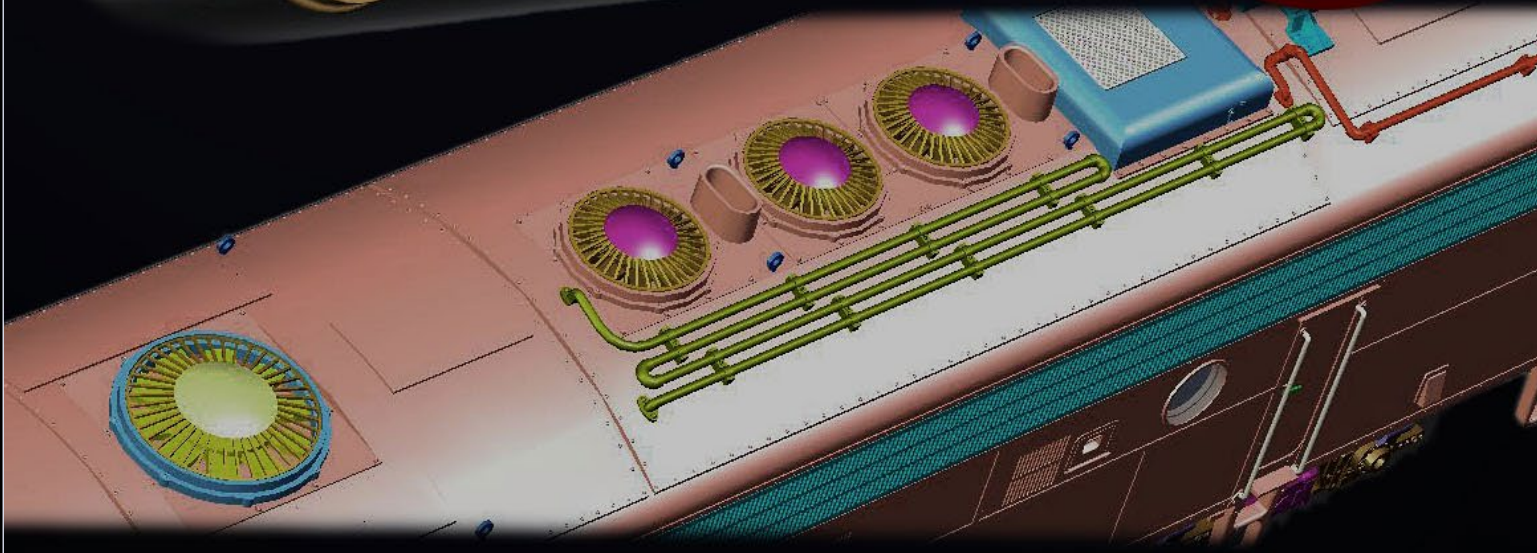
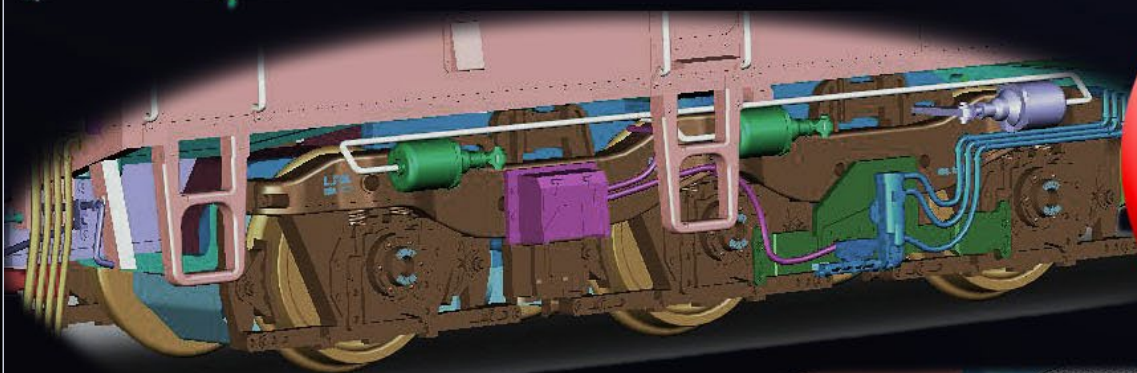


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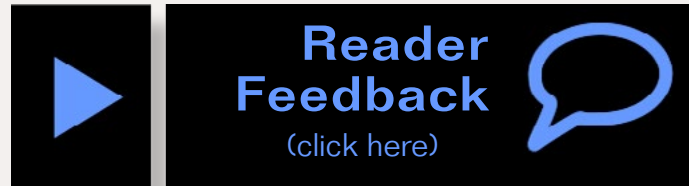
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Designing for ops redux

Continuing the discussion of how to design for good operation



Publisher's Musings

by Joe Fugate

Last issue in my editorial, I talked about the importance of designing for operations and how that implied, among other things, the need to know the purpose of each track on your plan. Real railroads don't add track just because it looks cool or adds operational variety. So if realistic operations is a priority for you, then you need to know why those tracks are there, and know the prototype's reasons for them.

One helpful method I discovered in my track planning pursuits started with an article in the June 1968 *Model Railroader* by Dr. Roy F. Dohn called "Layout plans by formula." Dr. Dohn studied a number of serious operating model railroads of that day and derived some formulas you could apply to any trackplan to get operational insight about how that plan might work in practice.

Dr. Dohn's formulas are based on what was model railroad track planning state-of-the-art in the 1950s and '60s. Since that time, model railroad track planning has evolved to include a major new kind of trackage Dr. Dohn did not consider: staging.

Staging tracks were first discussed in some depth by Allen McClelland in his "V&O Story" circa 1980. The Layout Design Special Interest Group (LDSIG) took the staging idea and refined



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contents



index

it further. As a result, modern layout planning best practice is to include staging trackage on your layout plan.

Staging tracks represent the rest of the greater railroad network your layout connects to, and it's where trains come from and where trains go to. It's "offstage trackage" if you will, which is where the term "staging tracks" comes from.

I took Dr. Dohn's formulas and updated them with staging, and adjusted them a bit for other more modern track planning concepts. You can find the result in my article this issue: "Layout design assessment formulas".

I've found these formulas to be quite helpful during layout design. One memorable example comes from when I designed my HO Siskiyou Line.

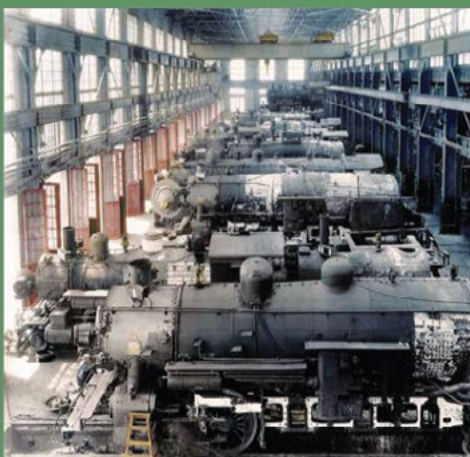
I've based my Siskiyou Line on the Southern Pacific's southern Oregon Siskiyou Line, an alternate route between Eugene

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contents



index

and northern California to the more modern and less steep Willamette Pass route.

My Siskiyou Line also includes the Coos Bay coast branch. I wanted this branch to have two 24-car trains per day, one each direction. If you do the math, that's 48 cars coming and going on the branch every op session.

The track planning formulas told me that 48 cars moving per op session was about 40% of the total cars the line should hold. Doing the math, 48 cars is 40% of 120 cars.

This told me I needed, first of all, a yard capacity in Coos Bay yard of about 120 cars. My design didn't anticipate anywhere near that many cars.

Second, I also needed 120 cars worth of industry on the branch for this to work. Otherwise we were just moving cars around with no real reason to be going down the branch!

The formulas further told me the 120 cars parked at industries needed just a bit of wiggle room, so the 120 would be 80% of the total industrial capacity of the branch. That means the total industrial capacity of the branch needed to be 150 cars.

Thanks to these formulas, I could "back in" to the operational behavior I needed for the Coos Bay branch. No longer was I just drawing lines on my plan because they looked cool. I went on a mission to get the needed car capacity into Coos Bay yard (120 cars).

Once I got the yard capacity up to 120 cars, then I went on a crusade to add enough industrial spurs to the branch to get 150 cars of storage capacity at industries. I did manage to get this amount of industrial capacity on the branch, hooray!

I find it's really helpful to have these formulas to work with, because they take track planning from being a black art built on lucky guessing, or cramming in as much as you can "just in case,"



Ken Peterson

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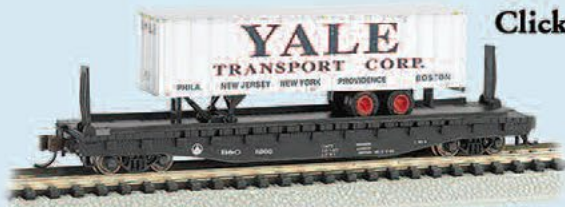


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contents



index

to knowing what you need and then designing for it in a very deliberate fashion. Talk about getting a much better sense of what's needed on a track plan and why! This kind of track planning is like night and day compared to my "by guess and by golly" track planning when I started in the hobby.

It pays to study these track planning formulas, understand the relationships, and then apply the insights you get to track plans you're developing. Once you've got some experience operating and designing track plans, you'll develop a seat-of-the-pants insight that's similar to what these formulas convey. But if you're not at that point yet, these formulas capture a lot of expert track planner insight – putting this insight at your fingertips!



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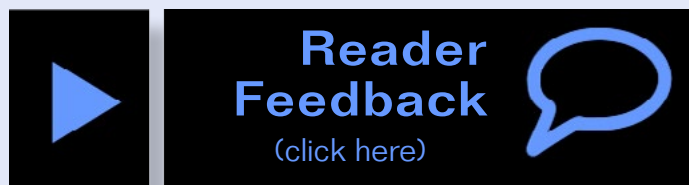
contents



index

Notes from the MRH STAFF

Looking toward Portland 2015, preparing an article for publication and more ...



Looking toward Portland 2015

The NMRA National Convention is right next door to MRH in 2015, which is Portland, Oregon. The MRH headquarters is in Woodburn, Oregon, about 30 miles south of downtown Portland. The official convention dates, including the National Train Show, are August 23-30, 2015 (that's from Sunday to Sunday). For more, see the convention website at: nmra2015portland.org.

Some MRH staffers' layouts that will be on tour during this convention. Charlie Comstock's Bear Creek & South Jackson will be open, as well as Joe Fugate's Siskiyou Line. Charlie and Joe are not only expecting to be open for layout tours, but they're also planning to host some operating sessions as well, for those who want to try their hand at a realistic op session or two.

Joe Fugate will be doing a blog on the MRH website about his layout preparations for the NMRA National. Not only will you get a preview of the layout, but you'll see what it takes to get a layout ready to show. Joe's layout has been dormant for the last couple years as he dedicated most of his free hours to growing MRH's eBook capability and launching TrainMasters TV.



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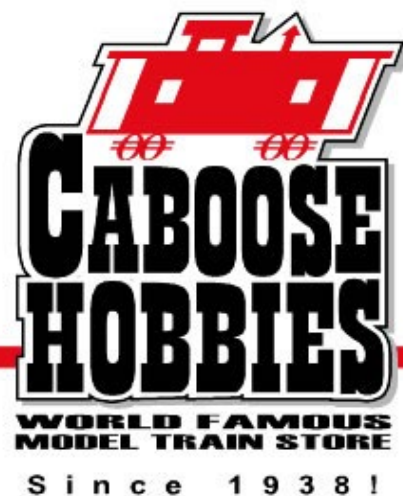
The five top-rated articles in the [September 2014](#) issue of MRH are:

- 4.8 Modeling an Agway mill
 - 4.6 DCC Impulses: SoundTraxx SoundCar decoder
 - 4.6 Up the Creek: Benchwork, roadbed, and track
 - 4.5 Getting Real: Layout building productivity, part 2
 - 4.6 Southern Pacific GP9 commuter loco
- Issue overall: 4.5

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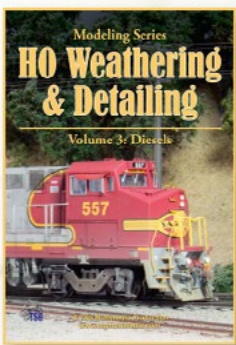
Joe is eager to get back to working regularly on his Siskiyou Line, and to getting regular operating sessions going again. Follow along as Joe gives you regular blog journal entries about the process of moving the Siskiyou Line out of dormancy back to full operation again.

Even though the Siskiyou Line was dormant, we still used it to do product tests and Joe did some small projects for the layout that became articles in MRH. But other than using the layout for an occasional MRH “work” project, the Siskiyou Line pretty much just sat.

That’s all changing. Joe’s rearranged his schedule to give him more evening and weekend time to work on the layout and as he says, “to just be a model railroader again.” Joe’s looking forward to dealing with some deferred maintenance on the layout and starting to work on his wish list of projects for the layout.

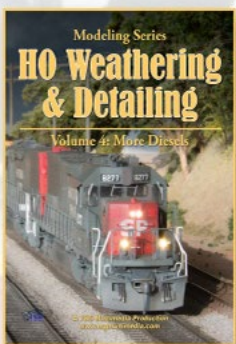
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contents



index

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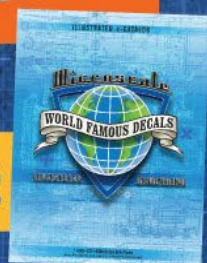


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If you're thinking of coming to Portland in 2015, you won't be disappointed. Charlie's making great progress on the peninsula on the Bear Creek, and Joe getting back to working on the Siskiyou Line means the layout should look and operate better than ever!

Preparing an article for publication

For any of you preparing or thinking of preparing an article for MRH, we've got some suggestions on how to best format it for easiest use here on our end.

Use Microsoft Word or the free Open Office application to build your document. As for images, we prefer at least 2400 x 1800 pixels. Go ahead and paste them right into your document just above the captions.

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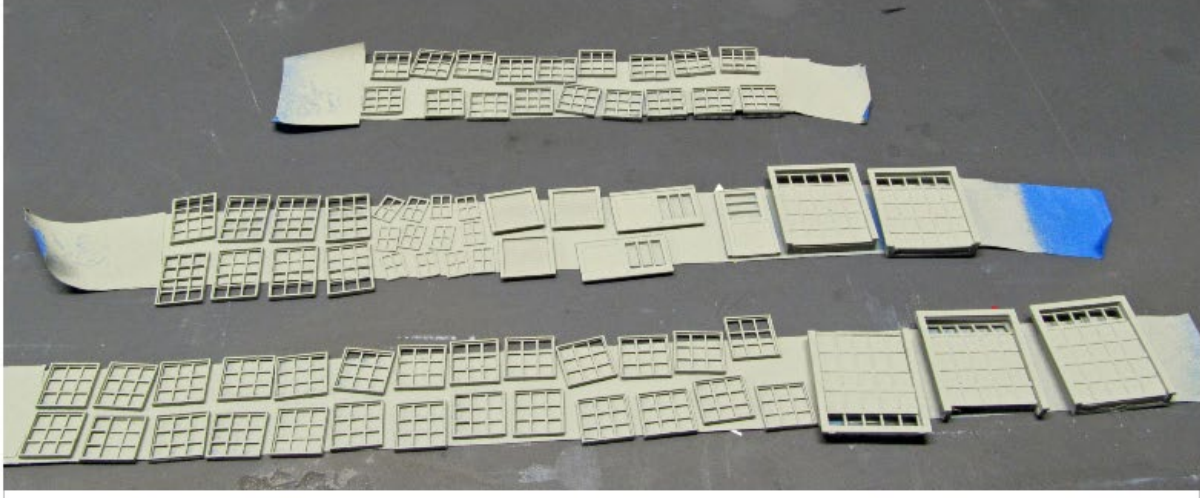
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4: The completed windows and doors were stuck on masking tape and airbrushed with Floquil CN gray. The tape was held sticky side up by placing small pieces, sticky side down at the ends. No, I never counted the number of windows.

The windows I had purchased were rectangular in shape. The windows in the Allied Mills tower appear to be square. I made my windows almost square by cutting out one sash row and gluing the two pieces back together.

Next decision was to decide on the size of the structure. The building is still standing so I could

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What's new on the MRH website!

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O-27 to S scale car conversion
mrhmag.com/node/19614

Industry Ave – modular switching layout example
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One modeler's approach to multi-deck benchwork

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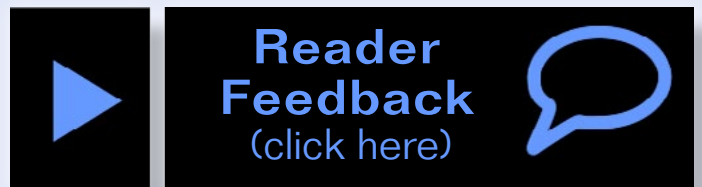
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contents



index

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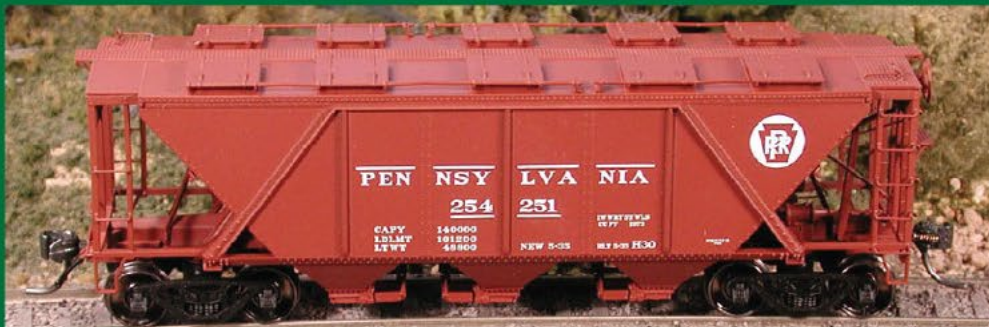
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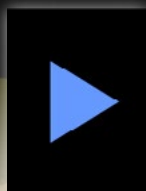
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MRH

Questions, Answers and Tips



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QUESTIONS AND ANSWERS

Gaining height without a helix

Q. Could someone point me in the direction of a layout plan, preferably in HO for a double deck or upper deck that does not have a helix? I have searched the MRH site with no success.

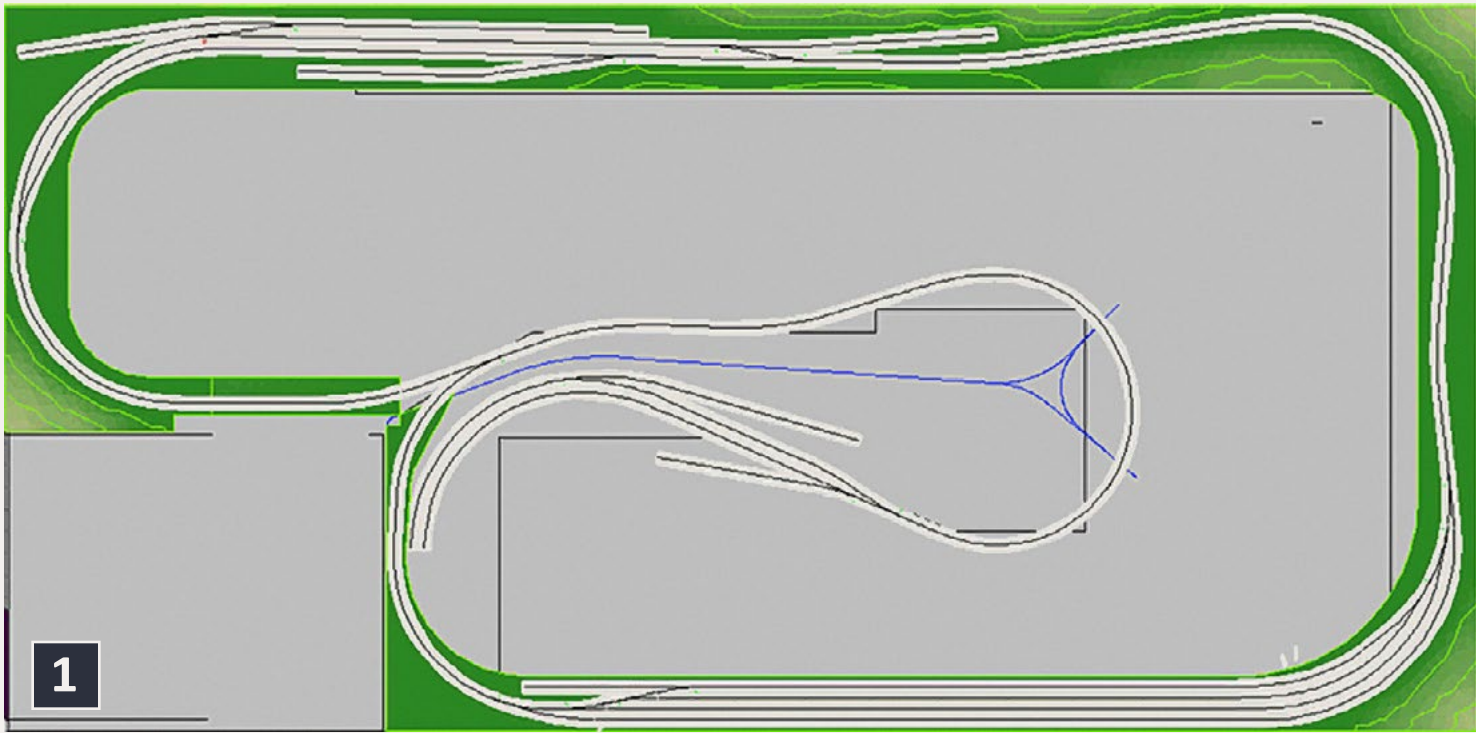
– mt813

A. The solution to your problem is a “nolix,” an around-the-room kind of layout design with steady grades to make the vertical separation between upper and lower levels.

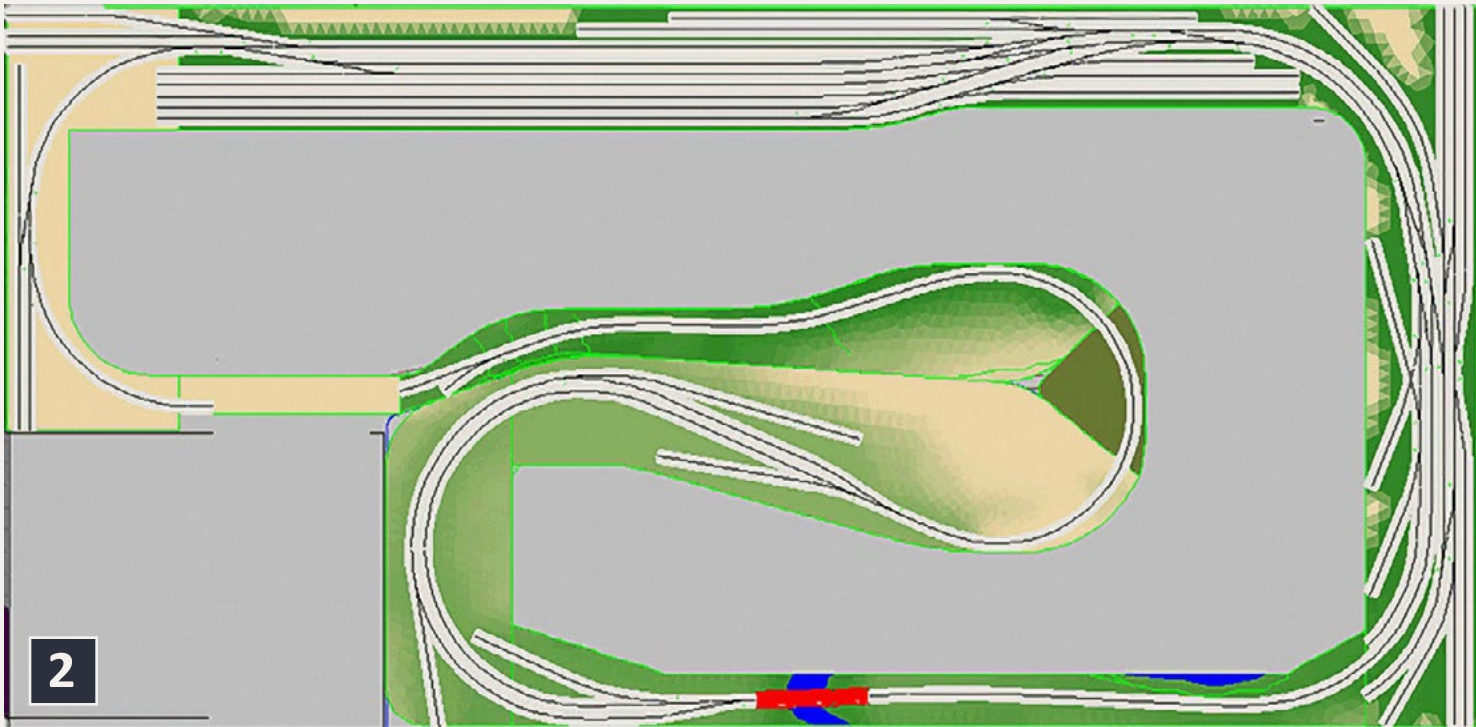
Many automobile parking structures are “nolix” designs. The ramp is continuous but yields multiple levels. Some of them are even built around a helix ramp for descending traffic.

KnuT: My dream layout plans call for a 1½-lap climb along one wall, and out and back on a peninsula. You can find some screenshots from 3rdPlanIt on my blog at mrhmag.com/node/781.



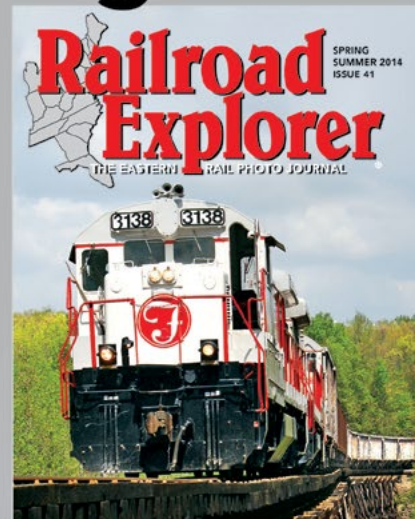
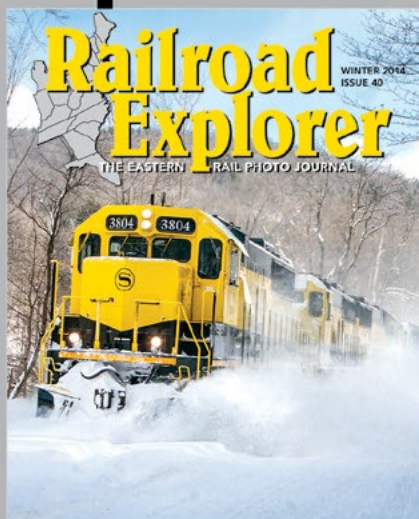
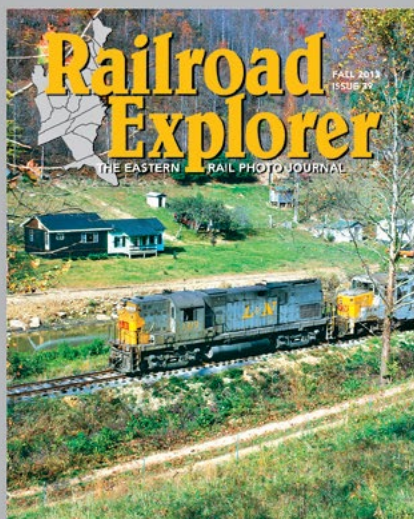


1. KnuT's room is roughly 22' long and 10' 9". This is the upper level.



2. The rails start at a lower level yard and climb along the top and right side walls. The grade peaks at 3.5% but a larger room would allow an easier climb. The distance between decks is pretty tight at 13".

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Building a nolix layout is more exacting than slapping flex track down on a sheet of plywood and hooking up the power. Because much of the track is on a grade, care has to be taken with spur tracks where cars are spotted. Unless some kind of a brake is provided, or the spur is built to be level, cars can roll away. A large switching area like a factory or sawmill would almost certainly have to be level. If the switching area has several connections to the main, that flatness can eat up a lot of main line length that could otherwise be used to gain altitude.

Passing sidings are less of a problem, as long as the locomotive remains connected to the cars at all times.

The original discussion, with more photos and plans:

mrhmag.com/node/18005.



contents



index

A “nolix” layout: shendiv.com/index.html.

More discussion at: mrhmag.com/node/2860.

KnuT’s Peavine & Santa Fe: peavineandsf.blogspot.com/.

Q. Satellite maps have led me to a neat woodchip loading spur. There are six cars present. Two have been loaded (and are coupled together), one is being loaded and isn’t coupled to anything. Behind them are three empties, one solo and two coupled together. How does this operation work? Who moves the cars under the loader, the railroad or the customer?

– Titus

A. Here are the maps and street views Titus saw:

google.com/maps/@40.468642,-122.327862,3a,42.1y,24.51h,86.59t/data=!3m4!1e1!3m2!1sjZD0zemvsXMhf687h6tEZw!2e0.

and google.com/

maps/@40.4678764,-122.327774,177a,35y,39.46t/data=!3m1!1e3

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An aerial view at goo.gl/maps/kRXEQ shows a Trackmobile handling center-beam flats at the site (partly hidden under trees with a couple of freight-car-red cars) and reveals a boxy object along the rails near the chip loader that looks like a car-puller system for moving cars.

With that data in hand, Titus “remembered seeing these wood-chip cars on a Flickr group ... I found the answer to my original question. On one of the photos the photographer added a note: ‘At this spot they load these guys up with wood chips from overhead while a tractor pulls them back and forth with ropes on a pulley system to evenly fill the cars.’ ”

There is a good photo of a loader at flickr.com/photos/freight-graffiti2/3885248622/in/pool-2130346@N22 but none of a car puller.



3. A Union Pacific freight rolls under a signal bridge on the nine-mile stretch of two main tracks at Blaser, ID in 1990. The bridge carries signals for traffic in both directions on both tracks. Josef Brugger photo.

But Titus found one of those too. “I did a little more searching around and found a second woodchip loader visible from street view in Prineville, OR. This one has the pulley system in clear view.”

[google.com/maps/@44.348309,-120.905172,3a,15y,235.55h,79.78t/data=!3m4!1e1!3m2!1sWwvujdjO6Sms0mqUAPNv6w!2e0](https://www.google.com/maps/@44.348309,-120.905172,3a,15y,235.55h,79.78t/data=!3m4!1e1!3m2!1sWwvujdjO6Sms0mqUAPNv6w!2e0).

or: tinyurl.com/nlf8e7z.

“There is a pulley on both sides actually,” he said. “I believe the mint green ‘thing’ near the loading tower is most likely a winch that is used to position the car in both directions.”

Woodchip pickup:

mrhmag.com/node/18321.

– MRH

Q. This sounds dumb, but where do I put the signals on my model railroad?

A. The only dumb question is one that isn’t asked. You don’t say whether you plan an automatic block signal (ABS) or a more-sophisticated centralized traffic control (CTC) system.

The General Code of Operating Rules (GCOR) is used by many western U.S. railroads, and this is what it says:

Rule 300. Location of signals: Block and interlocking signals when viewed in direction of movement are located generally to the right of the track, but may be located to the left or above such track. Two signals may be bracketed and located on a supporting mast for displaying indications for two tracks. When viewed in the direction of movement, the signal to the right governs the track to the right, and the signal to the left governs the track to the left.

You didn't ask about spacing, but many model railroaders space their ABS or CTC signals about twice the length of their usual train – if most trains are about 10 feet long, then a 20-foot block length is a good starting point. High-traffic lines might benefit from shorter blocks, and low-density lines can use longer blocks and still remain fluid.

Signals need to be placed where locomotive crews can see them clearly from a reasonable distance – around a tight curve on a tree-lined right of way would be a bad idea. Union Pacific specs in the mid-1950s required signal masts to be located with a minimum eight foot clearance from the nearest rail. Seven feet of clearance had been allowed in the 1930s. – MRH



TIPS

Brake line repair

Every year, train models become more detailed, with smaller and smaller parts. Some kits are harder than ever to build. Things like safety chains and brake lines have become so thin and fragile that removing them from parts trees has become difficult to do without breaking them, even with a razor blade or clipper-bladed tweezers.

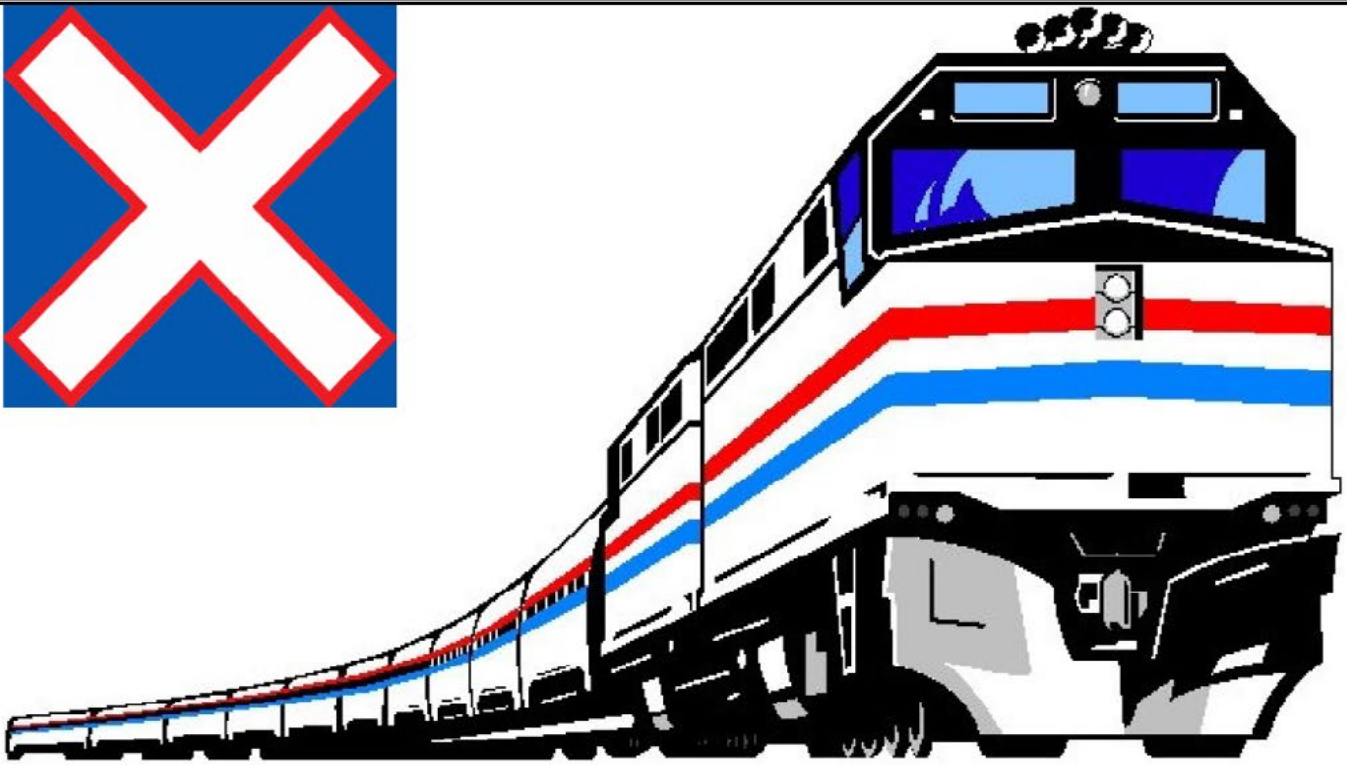
When I was assembling an InterMountain kit of a cylindrical grain hopper, I had a brake line that shattered about $\frac{1}{2}$ inch from the end. The normal solution is to contact the



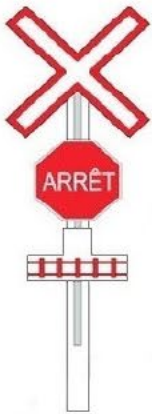
contents



index



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company that made the kit and beg for a replacement part. Intermountain is good at supplying parts, but I didn't want to wait on this one, and I wanted to try something different.

What would a railroad have done to repair the line? One possibility is to replace the damaged line and weld it in place. Another type of repair is to wrap a leaking line in a sealant material.

The second solution gave me an idea, so I got some black thread from the sewing kit. The thread was just a tad larger in diameter than the original line. With sharp scissors, I cut a piece of thread to length. Taking liquid model cement like Testors Plastic Cement, I let the thread soak up the glue, put

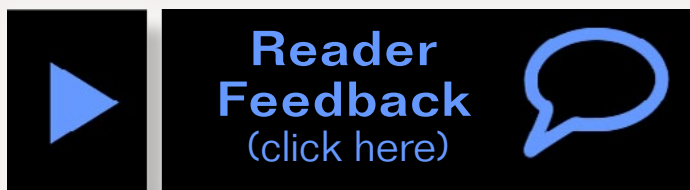


4. Glued black thread replaces a damaged brake line on an InterMountain covered hopper kit. James J. Eager photo.

the glued thread into place, and held it for a few minutes with tweezers. Once the glue set up, it stayed in position [4], and within a very short time hardened to shape. The solvent glue bonds it to plastic pieces on either side.

I chose black thread, but you can choose whatever color suits your fancy or matches the model. I learned this technique while doing a large sailing ship model many years ago. The attached lines got stiff and hard, but retained the rough line look.

– James J. Eager



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index

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The screenshot shows the NCE website interface. At the top, there's a navigation bar with links for Information, How To Video, Online Store, Dealer List, and Login/Sign up. A Facebook icon is also present. Below the navigation bar, there are two main links: "Go to the NCE Information Station" and "What is DCC?". The main content area is a grid of product categories, each with an image, a title, and two buttons: "Information" and "Buy Now".

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contents

index



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contents



index



MRC DCC System test drive

DCC tips, tricks, and techniques



DCC Impulses column

by Bruce Petrarca

Photos and illustrations by author

A look at DCC systems from Model Rectifier Corp ...

Model Rectifier Corporation (MRC) has long been known as a supplier of DC power packs. With the rising popularity of DCC, they seemed to sense a coming reduction of sales in power packs and looked to move into the DCC world.

Until now MRC has relied entirely on their internal resources for computer control. This summer they changed their philosophy and have released information to the JMRI folks about their computer interface. Since JMRI is an open-source project, this data allowed the volunteers to write the necessary code to support the MRC system. This support started with JMRI version 3.9.1. For the latest information, see the JMRI web site jmri.org/help.

With this recent change, I felt it was time to review their systems for the MRH readers. Jack at Litchfield Station was kind enough to loan me units for evaluation.



All of the current MRC DCC systems include the “Prodigy” moniker. The following words differentiate the various systems. The number 2 as part of the name is really a superscript 2. As such it reads “squared,” as in “Prodigy Advance Squared”.

Specifications

Table 1 summarizes the specifications of the current MRC systems.

1. MRC Prodigy system comparison, from the MRC website.

System	Express ²	Advance ²	Elite
MRC part number	1420	1414	1417
MSRP	\$230.00	\$440.00	\$550.00
Street price	\$158.00	\$290.00	\$390.00
DCC amps	1.6	3.5	1 to 10 adjustable
DCC volts	14.5	14.5	14.5
Power supply	Included	Included	Included
Power mains	110 V 60 Hz	110 V 60 Hz	Worldwide
Number of throttles	32	99	99
Short addresses	1 - 127	1 - 127	1 - 127

System	Express ²	Advance ²	Elite
Long addresses	1 - 9999	1 - 9999	1 - 9999
Non-decoder loco	Not supported	Not supported	Not supported
Functions	28	28	28
Speed steps	14 / 28 / 128	14 / 28 / 128	14 / 28 / 128
Write CVs, where?	Program / Main	Program / Main	Program / Main
Read CVs, where?	Program	Program	Program
Wireless	Upgrade available	Upgrade available and available as a complete radio system (higher price)	Upgrade available

Look and feel

Let me comment on system operation. The current MRC line [1] has two different throttles with three paint schemes. The Prodigy Advance² and the Prodigy Elite share a similar button layout with a bit different graphics, as can be seen in photos [3] and [4]. The Prodigy Express² throttle [2] face is identical, except for the functionality of the six buttons just below the display.

Here come the differences: The Prodigy Advance² and the Prodigy Elite throttles have a blue back-lit display.



contents



index

Disappointingly, this display is almost illegible when viewed straight on, or from above. The best contrast occurs when viewed from about 45 degrees below.

The less expensive Prodigy Express² throttle has no backlighting and is visible over a very wide range of angles above and below straight-on.

At first glance, there is a strong resemblance between the Prodigy series throttles and NCE's ProCab. However, in my hand, the MRC controls are more difficult to use.

To hold the throttle in my hand and operate the knob with one hand, I have to hold the bottom of the throttle, which is uncomfortable to me and has me concerned that I'll drop it.



2. MRC Prodigy Express² 1.6 amp system. MRC photo.

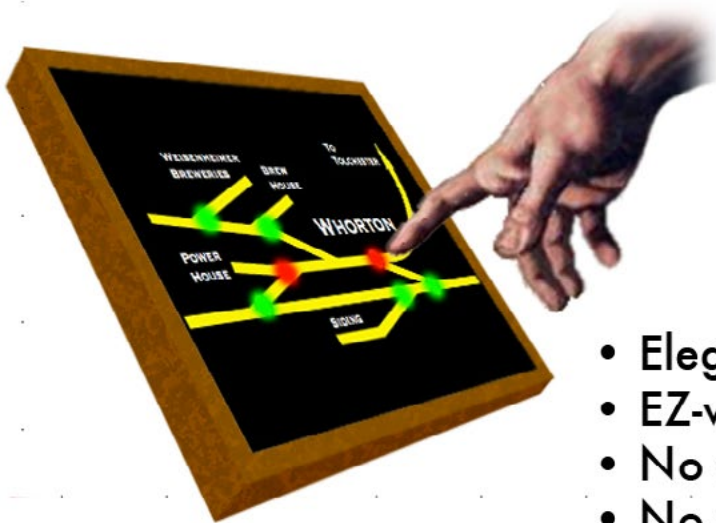
To be comfortable, I need to hold the throttle in one hand and turn the knob or press buttons with the other.

While this two-handed operation may be acceptable for mainline running, it becomes a bit difficult for yard operations or switching. Trying to adjust speed while holding a throttle in the one hand and a coupler pick in the other just doesn't work for me.

The Prodigy Express² throttle will work with the Advance² or the Prodigy Elite system. However, the upper six-button panel has different functions, which I find confusing. If I had multiple sets, I'd keep specific throttles with their original systems. Actually, I'd consider ditching the Prodigy Elite throttle and using the Prodigy Express² throttle throughout. Yes, I'd give up backlighting for readability.

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3. MRC Prodigy Advance² 3.5-amp system MRC photo.

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- ✓ E. All of the above!

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SOUNDTRAXX

MRC has printed instructions on the back of their throttles. There is so much information there [5] that I find it useless. The most legible piece of text is “Made in China”. I do admit that I’m a “paragraph and bullet” sort of guy; I eschew freeform text.

The entry-level Prodigy Express² is competitive price-wise with the NCE PowerCab. The MRC offering has the command station and booster in an external box. The NCE offering is more portable, being a complete system in the handheld. I was unable to read a Tsunami decoder with the MRC Prodigy Express² without using a Programming Track Booster (mrdccu.com/curriculum/ptb). If you need this ability, this makes the MRC system about \$50 more expensive than the NCE, which can read Tsunamis.

The next level entry is the Prodigy Advance². It has the same power rating as the less expensive Digitrax Zephyr Xtra. The MRC product will handle more throttles than the Zephyr.

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contents



index

The up-to-10-amp Prodigy Elite system has a street price a few dollars lower than the 5-amp Digitrax Super Chief Xtra when both include a power supply. These systems compete well on price and power level. However, the fixed voltage of the Prodigy Elite is too low for many O-scale and most G-scale systems.

So, let's look deeper into the Prodigy Elite system as the backbone for a bedroom-sized layout in S-scale or smaller.

Hands-on with the Prodigy Elite

The throttle, power supply and interconnecting cords are all included with the Prodigy Elite system – everything you need is included in the box. The instruction book is small, but rather concisely written, packing a lot into only 20 pages.

From the factory, the Prodigy Elite is set for 6 amps maximum. My load resistors easily apply about a 5-amp load. The track voltage,

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as displayed on the Prodigy Elite, is about 15.6 volts with no load, dropping to about 15.4 at 5 amps. This is higher than the specified 14.5 volts, with acceptable regulation.

Full shorts shut the entire system down, just as if you had unplugged the unit. Overloads (10 to 20% over the stated amperage) leave the system on but with track voltage shut down and a flashing red LED on the front panel. Thus, I would NOT use the system without at least one high-quality circuit breaker like the NCE EB1 or the DCC Specialties PSx. Otherwise, I fear, you will be chasing shutdowns in all but the most benign situations.

The system current can be adjusted from 1 to 10 amps with a few button presses on any throttle. I can see this being an issue on a system with many throttles and some operators who aren't fully cognizant of the system. When the system was set for 5 amps or more, the fan in the system box came on, regardless of load. I did not push the unit hard enough to activate the power supply fan.

The Prodigy Elite power supply will work with any power main voltage and frequency that I know of anywhere in the world.



4. MRC Prodigy Elite 1 to 10 amp system. MRC photo.

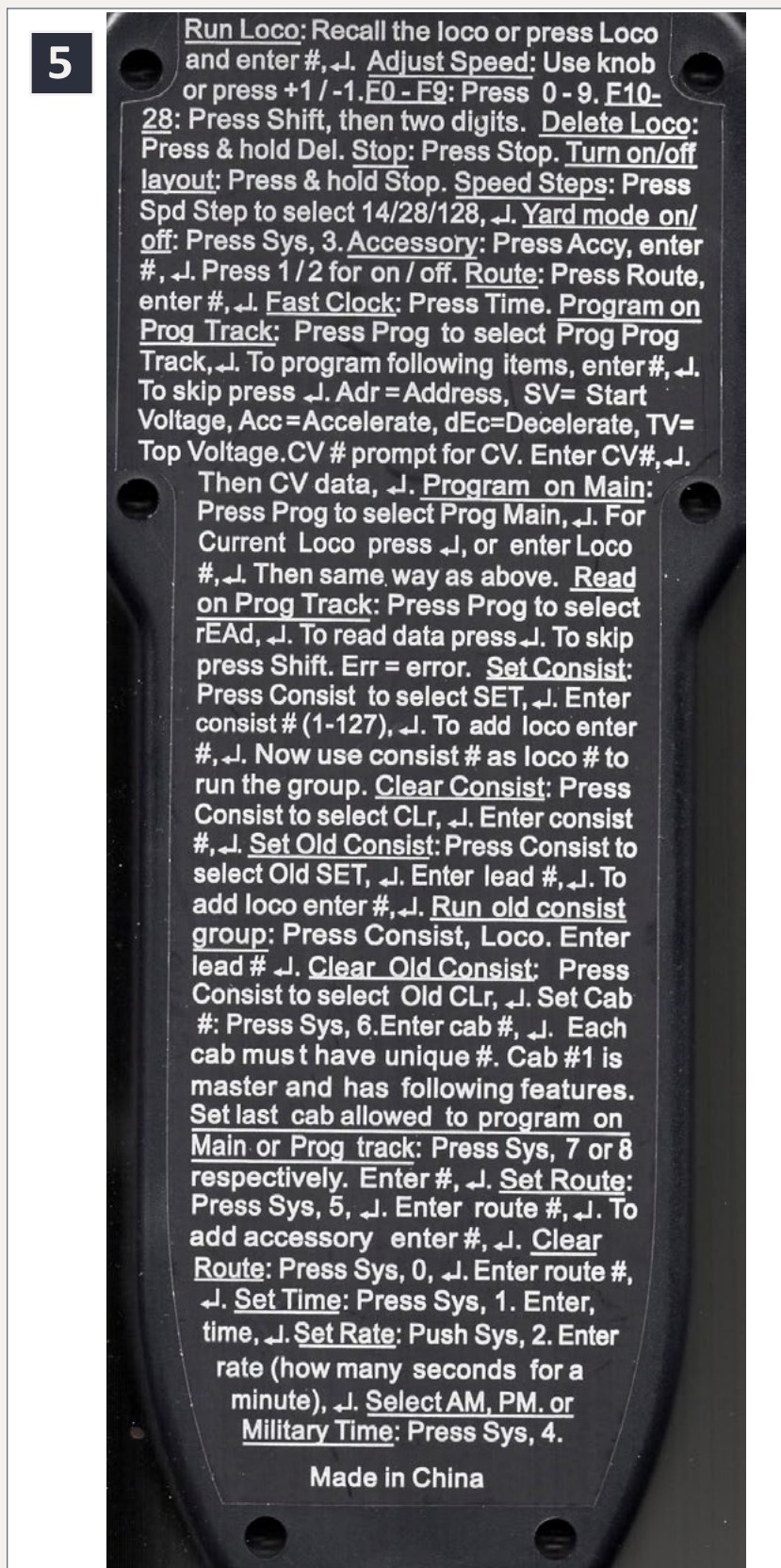
The power supply utilizes a 3-pin input connector. The system is shipped with a power cord appropriate for the USA-

style power mains. Replacing the power cord will have you moving trains anywhere in the world.

Programming is not as straightforward as I am used to with my NCE system. However, it is not as obtuse as many find Digitrax to be. It kind of hits a middle ground here.

The system fast clock display is nice, but it seems to reset every time you turn the system off and back on. I imagine that you would get very good at setting the fast clock if you used it regularly.

The throttle, system box, and power supply all seem very lightweight and a bit on the flimsy side.

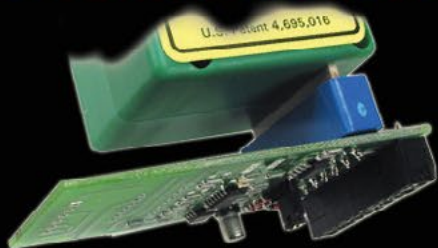


5. Instructions on the back of MRC Prodigy Elite throttle. Bruce Petrarca photo.

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Programming

I didn't have the opportunity to spend enough time programming to become comfortable with the MRC system. I found that I was confused programming with it. That said, I use JMRI's DecoderPro almost exclusively to program decoders, so am becoming less and less conversant with button pushing to program.

However, currently JMRI is only supported on the Prodigy Advance² unit, so I couldn't test it with the Prodigy Elite that I had available. Within the limits of the functions supported on JMRI, I am sure that programming with the MRC system would be very similar to what I've become accustomed to with Digitrax, Lenz or NCE. Such simplicity is my goal.

Expandability

Wireless (radio) and computer control interfaces are available for all of the Prodigy series systems.

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Conclusions

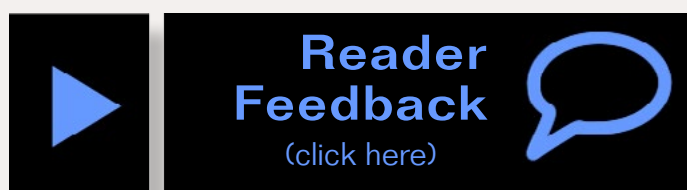
On a recent trip, I had a rental car that is a model that directly competes with the sedan I recently purchased. The ability to drive this competitive car showed me a few things that worked better than the same features on my car. However, close to a week of driving the competition, which is one of the best-selling models in the USA, reaffirmed my decision to buy the car I did.

This is how I feel about the MRC Prodigy Elite. It is a nice unit with a lot of power and some neat features. I believe I could like it if it were the only system I had worked with. However, I am not ready to trade my NCE system or the club's Digitrax system for one. The MRC offerings seem to be oriented to folks who want a DCC system to run a few locos about. They miss the mark for serious operators, as I discussed in this column.

I hope that MRC trades the low-price moniker for a solid-feeling system that really does what a serious operator needs in the future. It is so close and yet still not there.

Please join the conversation after the column on the MRH web site. A lively discussion frequently ensues. If you liked the column, please rate it awesome. You can do both with the reader feedback links at the beginning and end of the column.

Until next month, I wish you green boards. There is no **Mr. DCC's Workbench** this month. Check back next month. 



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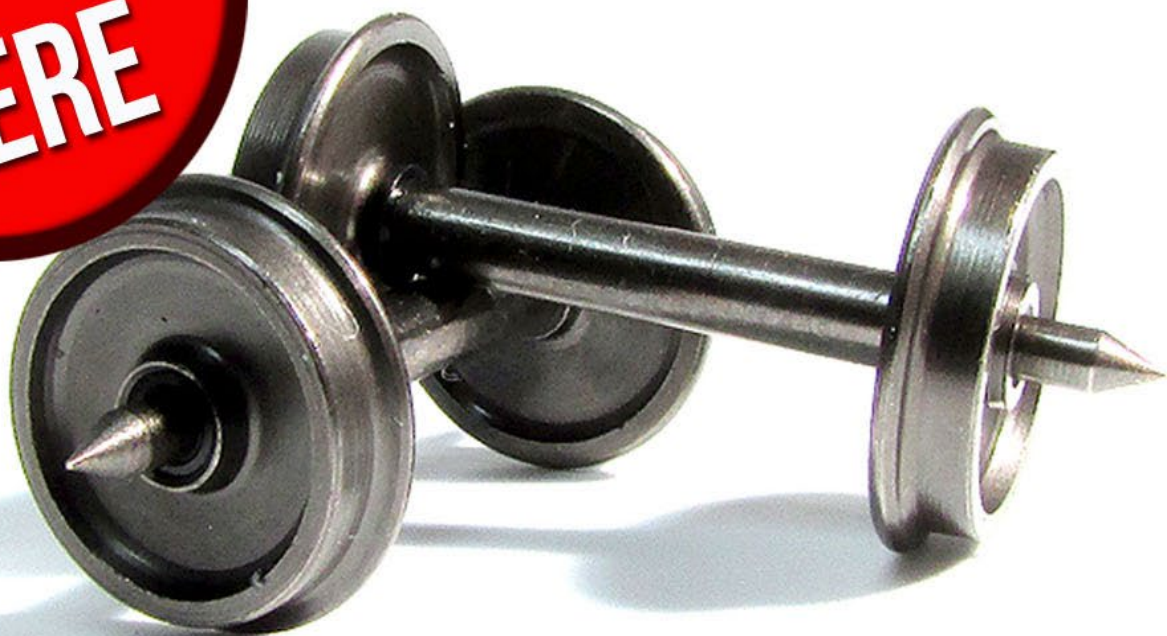
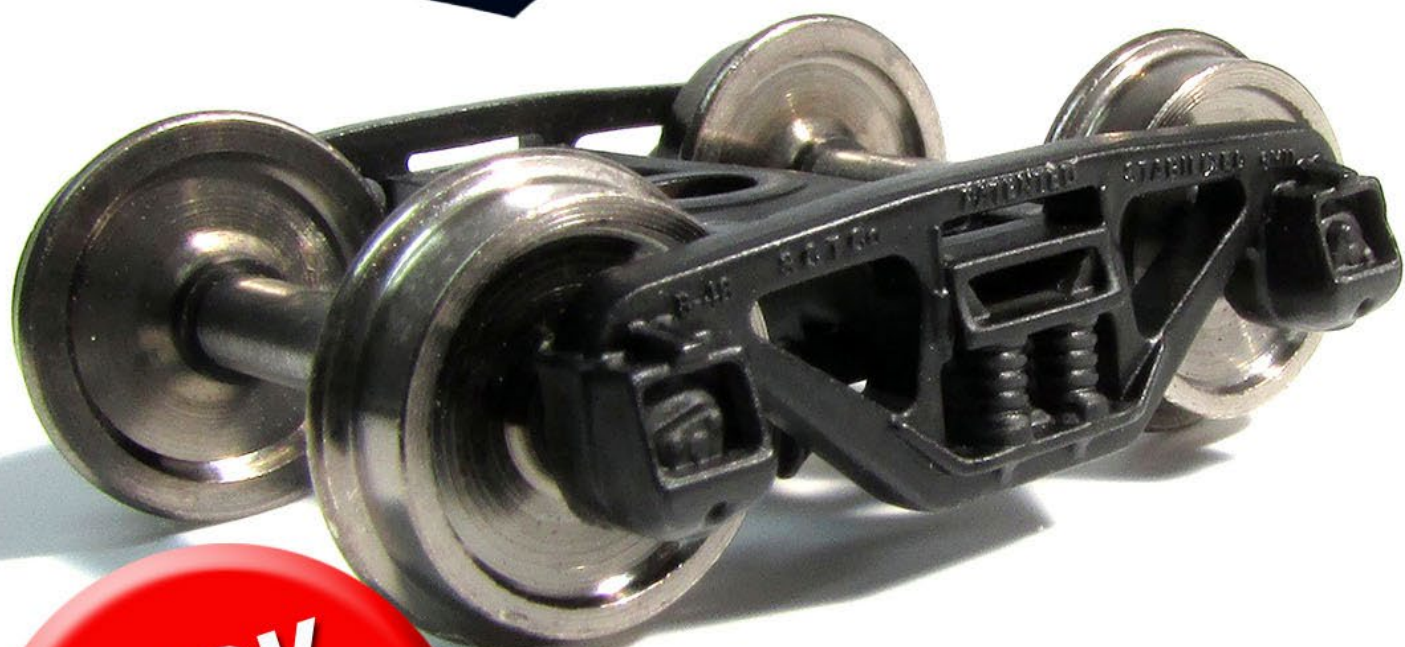
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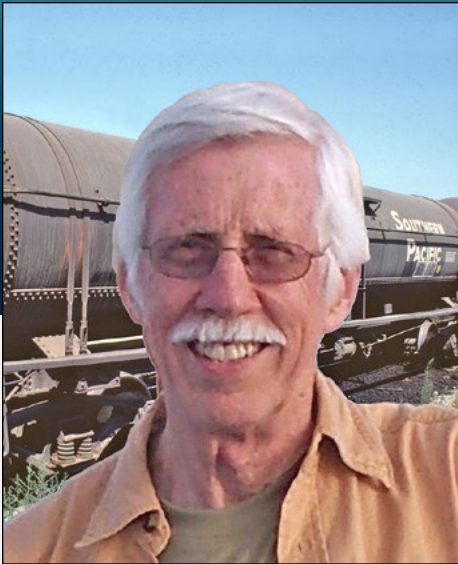
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Creating a realistic model timetable

Modeling real railroads and what they do



Getting Real column

by Tony Thompson

Timetables, a part of realistic operation ...

Almost since the first model railroad layouts, modelers have created timetables as part of the visual, as well as the operational, environment of the layout. Why do I say “visual?” Al Kalmbach, writing a column as “Boomer Pete” in 1940, called some parts of his timetable “typographic scenery,” and that is one aspect I want to touch on here. But of course there is much more to it than that.

I should begin by identifying the elements I believe may be usefully included in a model timetable. First, of course, are train schedules, that is, train arrival and departure times at stations, along with the class and direction of these trains. This becomes essential if operation is to follow “timetable and train order” (TT&TO) procedures, but can also be useful for other operating modes – anything from simple lineups to complete CTC or Track Warrant dispatching.

I won't spend more time on TT&TO or other operating aspects, partly because they have been covered so well elsewhere, notably in the recent book from the Operations SIG of NMRA,

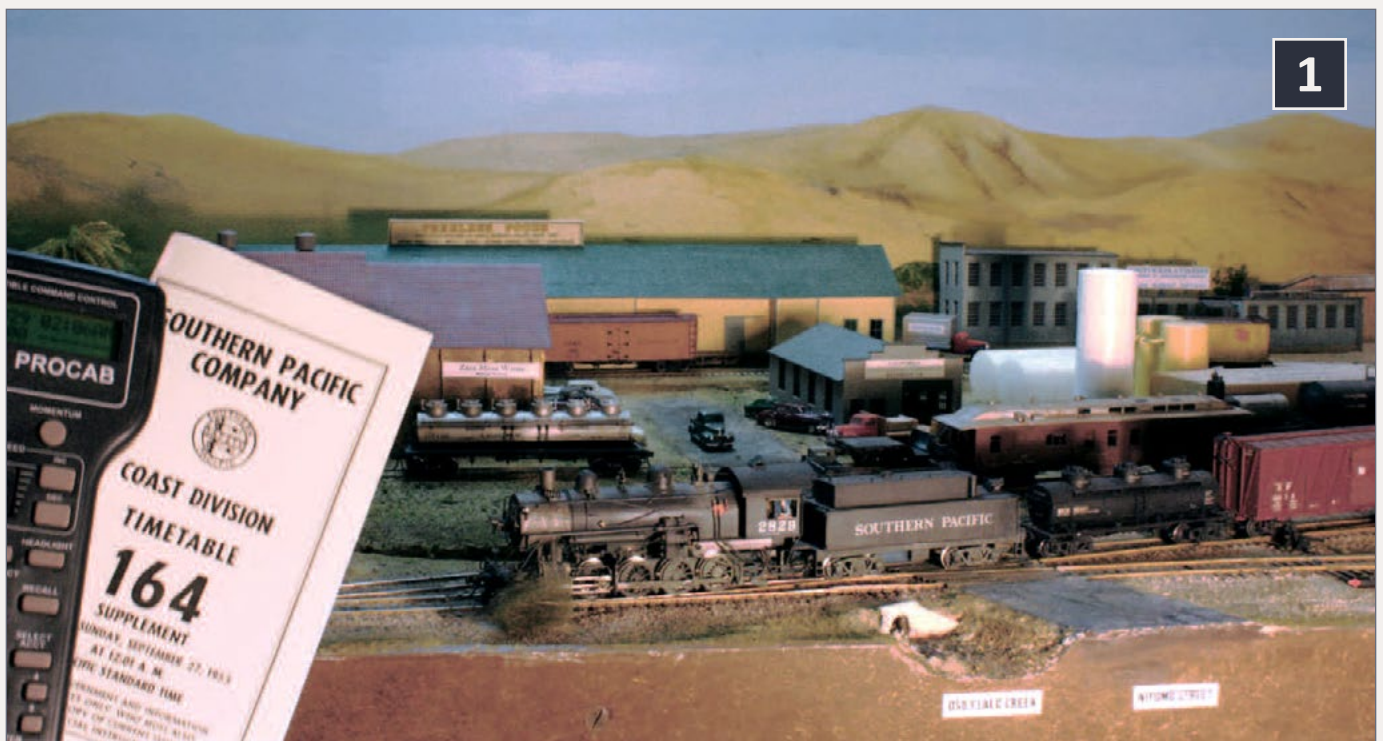


entitled 19 East, Copy Three. It is sold out at the OpSig website, but copies may be found by searching at abebooks.com.

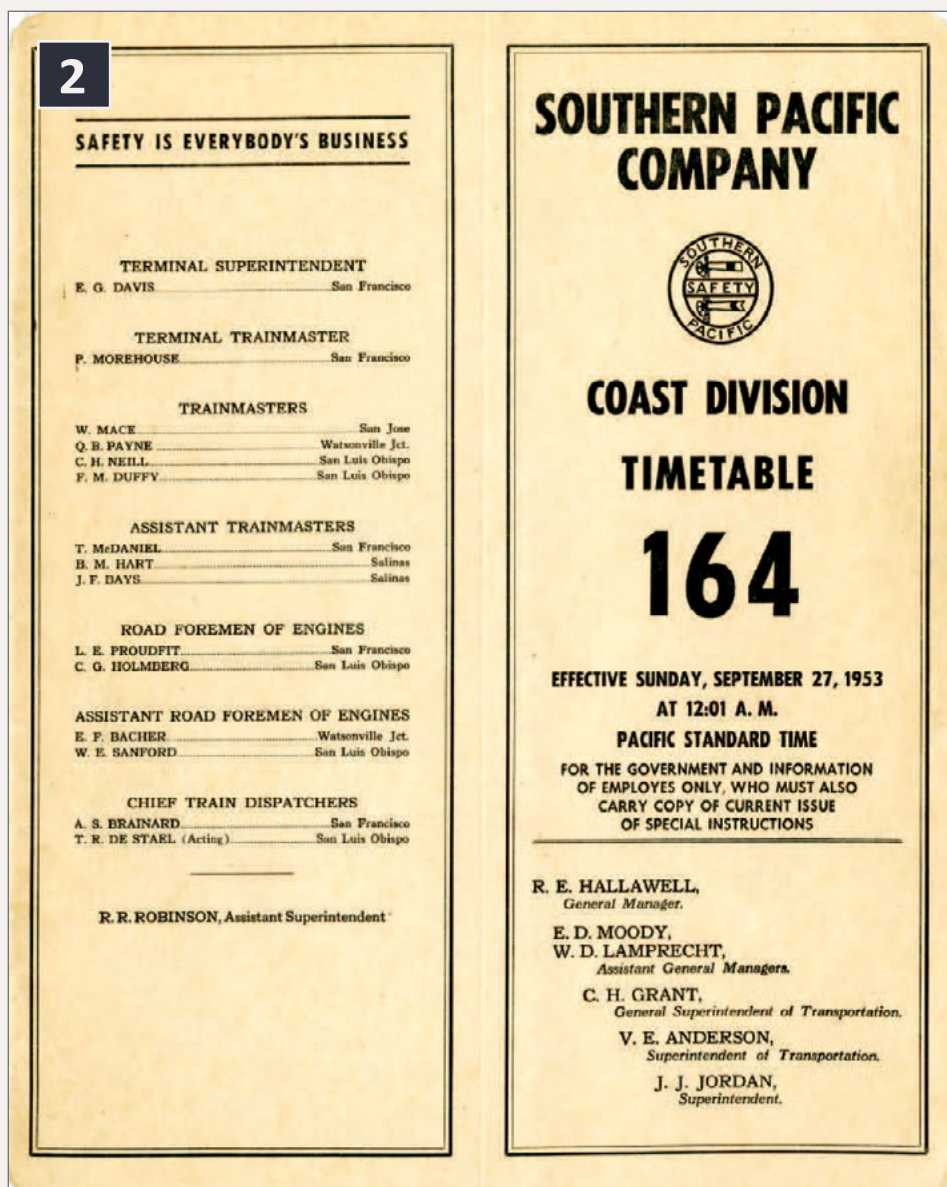
Second, ancillary rules and special instructions may be included, in addition to schedules. These added features are often present in prototype employee timetables, and are an opportunity to acquaint operators with various special conditions on the layout.

Third, other information may be present, at least in model timetables, such as switching diagrams for yards or towns, as an aid to operators.

And fourth, it may be desirable to make the timetable look like a document from the prototype railroad on which the layout is based.



1. SP Consolidation 2829 has finished its day's work on the Santa Rosalia Branch and as the sun sinks in the west, is headed back through Ballard to the junction with the SP main line at Shumala. The timetable and throttle are among the tools the operator needs to manage the train.



The ways to construct a model timetable to provide working train times are hardly mysterious, and some rather sophisticated aspects of this topic have been explored in print over the years. I won't address them, but for those who wish to learn more, I suggest perusing one of Tony Koester's clear and concise descriptions of the process.

2. Front cover, SP employee timetable No. 164, 1953.

There are at least two places to look: one is the Kalmbach special issue of *Model Railroader* magazine, "How to Operate Your Model Railroad," Summer 2012 (Tony's piece is on pages 51 to 53), and second, Tony's book, "Realistic Model Railroad Operation, 2nd Edition, Kalmbach, 2013." As of this writing, both are available for purchase at Kalmbach's website: kalmbach.com.

Another reason I won't be discussing the details of constructing time schedules is that they are not very important on my own layout. That stems from two things. One is that I, like most layout owners, often operate by myself. Many more owners operate with



contents



index

only one or two additional people, so mine is not an unusual situation. And two, my layout mostly models an SP branch line, so I only have one station on my main line. Obviously, precision timing of trains at that single station is not exactly vital.

Instead, I discuss realistic timetable appearance, and I will emphasize the various kinds of material that one might wish to include, other than times themselves. I begin with prototype sources.

A starting point

I recommend starting with a real employee timetable of the railroad and era you are modeling or, if you are free-lancing, a similar

3. The back cover of the SP Coast Division Timetable 164 contains this detailed division map, though it has substantially more detail than you may need. I only used part of this map.



GUADALUPE SUBDIVISION

EASTWARD

Table with columns for Second Class (926, 924, 914, 912, 98, 72, 76, 374, 94) and First Class (94). Includes station names like San Luis Obispo, Grover, Oceano, Callender, etc.

RULE 5. Schedule time and train-order time at Concepcion and Naples apply at No. 1 siding. Schedule time and train-order time at Tangair for eastward trains apply at No. 1 siding, and for westward trains at No. 2 siding.

GUADALUPE SUBDIVISION

WESTWARD

Table with columns for First Class (71, 99, 373, 95, 75) and Third Class (911, 913, 915, 917). Includes station names like San Luis Obispo, Grover, Oceano, Callender, etc.

RULE 5. Schedule time and train-order time at Concepcion and Naples apply at No. 1 Siding. Schedule time and train-order time at Tangair for eastward trains apply at No. 1 Siding, and for westward trains at No. 2 Siding.

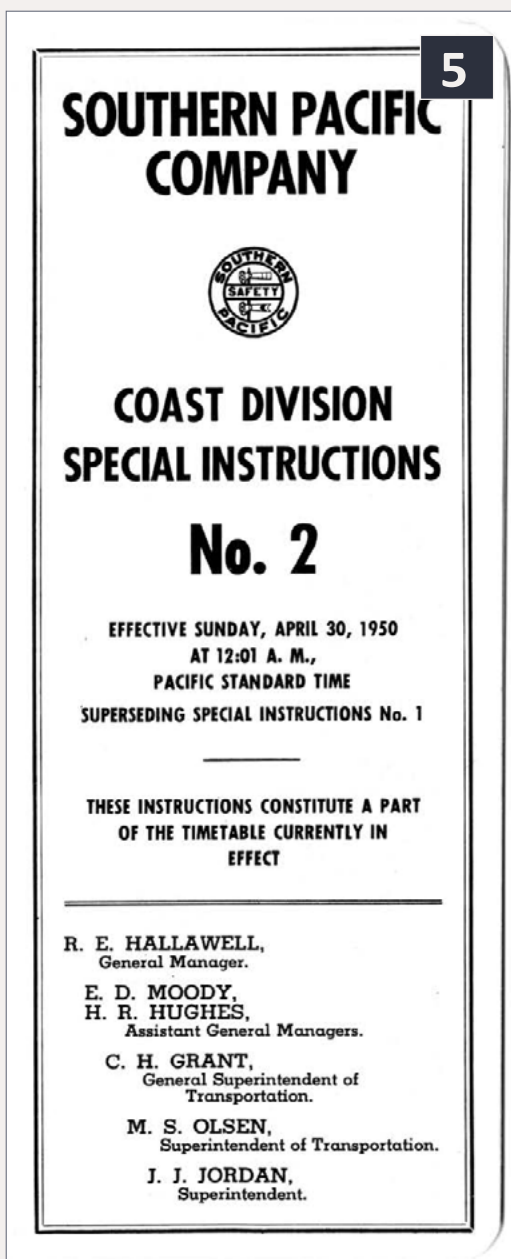
ADDITIONAL STATIONS table with columns for Name, Mile Post, Capacity.

4. This is the double-page spread of train schedules for just the Guadalupe Subdivision of the Coast Division, Timetable 158 of 1950. It contains 33 station names vertically, along with nine columns for trains eastward, and westward (westward freights after 1953 were dispatched as extra trains). This is considerably more information than I needed for my layout.

railroad in the region you model. Since I model Southern Pacific's Coast Division in 1953, I have mostly used that division's timetable No. 164, effective September 27, 1953 (the date in that year upon which Daylight Saving time ended). [2] shows its outside front cover, a lightweight manila stock.

This is a document with 8 1/2"x11" pages (though corners are rounded), and is normally folded in half the long way, so it will fit in a pants or overalls pocket. It's stapled on the left edge as you see it here, and in fact the staples are just visible in this image.

Already you can see that starting from a cover appearance like this will help set out your timetable as realistic. In fact, I have used this



5. Coast Division Special Instructions, Issue No. 2, effective April 30, 1950. The resemblance to the front cover of [1] is obvious, though it is on white stock; note the cover below states that these instructions constitute a part of the timetable.

front cover (the right-hand part) almost verbatim, except for calling mine a “Supplement,” so no one expects it to contain the entire Coast Division material. One can then print it on manila stock to get the same appearance.

But before getting to my version, let’s look at more of the SP version. The back cover of most SP employee timetables of this era displayed a division map, as does this one, shown in [3].

The map is interesting, but contains far more detail than needed for my layout, so I simplified it to show just the subdivision I model, the Guadalupe Subdivision, the southernmost part of the Coast Division, from San Luis Obispo to Santa Barbara. (I will show it later.) In other circumstances, one might wish to show the entire map.

So that’s the exterior. What about interior pages? The core pages of these timetables, as you would expect, are the pages of train schedules. They are really complex and busy, as the 1950 example in [4] shows, and certainly contain far more information than can be applied on my layout.

And this is not the entire subdivision; the schedule of the Lompoc Branch of

RULE 535. SPRING SWITCHES
Spring switches equipped with facing point locks are located as follows:
Location Normal Position
Hedley End double track Westward track
Concepcion East end siding Main track
Lento West end siding Main track
West Santa Barbara End double track Eastward track

PASSENGER TRAINS
RULE 38. Will apply at San Luis Obispo and Santa Barbara when carmen not on duty. At Santa Barbara engineers will use hand, instead of steam whistle signals. Trainmen will place themselves in position to relay signals to the best advantage.
No car inspectors on duty at San Luis Obispo 4:30 PM to 8:00 AM daily. During this period trainmen and yardmen will couple and uncouple air hose and make necessary tests.

RULE 705. LETTER TYPE INDICATORS
Indicators located as follows:
Illum. On Letter Signal Approaching Authorizes and requires movement as follows
M.....3010. Surf..... Proceed on main track to east end of siding.
S.....3010. Surf..... Enter siding.
M.....3041. Surf..... Proceed on main track to west end of siding.
S.....3041. Surf..... Enter siding.

MISCELLANEOUS
1. Water supply at Gavista and Lompoc for emergency use only. Engines take only sufficient water at Guadalupe to make San Luis Obispo or Surf.
10. Engines listed must not operate on tracks shown below:
Class of Engine Restricted Tracks
DEP, DEP, Mk, F, AC, MM, Mt, GS, SF, T-40, P, A, San Luis
Surf Vegetable spur.
Surf Short leg of wye.
Goleta Walnut spur.
All engs. and cars. Tangair On Government tracks at Camp Cooke, except wye tracks may be used to a point 300 feet west of west switch of interchange tracks.

GENERAL REGULATIONS
RULE 825. When freight trains are tied up in San Luis Obispo yard trainmen will set sufficient hand brakes on the rear of westward trains.

LOAD LIMIT (car and contents):
San Luis Obispo-Santa Barbara 251,000 pounds
Surf-White Hills 210,000 pounds
Unless authorized by Superintendent, heavier loads must not be handled.

AIR BRAKE RULES
RULE 17. All retainers must be turned up White Hills to White Hills set.
Eastward freight trains with steam engine and over 60 cars, turn up ten retainers, (more if requested by engineer) on head-end from end double track West Santa Barbara until train stops on yard track Santa Barbara.

LOCATION OF OVERHEAD AND SIDE STRUCTURES NOT STANDARD CLEARANCE ON MAIN TRACK AND SIDINGS
MP Location Description
261.37 Tiber Villa Creek bridge Side
262.68 Pismo Villa Creek bridge Side
266.37 Oceano Arroyo Grande River bridge Side
265.85 Oceano West water tank, main track Side
318.32 Sudden Tunnel 12 Overhead and side

FREIGHT TRAINS
RULE 22. Trainmen must not couple air hose on outgoing freight trains at Santa Barbara or San Luis Obispo until train is made up and caboose on the train. Coupling the caboose to the rear of the train will be considered as an indication that the train is made up and yardmen have completed their work. Yardmen must not perform switching on, or couple other cars to a train on which the caboose has been attached, without instructions from the yardmaster, who will see to it that members of the crew are notified in advance.

LOCATION OF OVERHEAD AND SIDE STRUCTURES NOT STANDARD CLEARANCE ON MAIN TRACK AND SIDINGS
MP Location Description
261.37 Tiber Villa Creek bridge Side
262.68 Pismo Villa Creek bridge Side
266.37 Oceano Arroyo Grande River bridge Side
265.85 Oceano West water tank, main track Side
318.32 Sudden Tunnel 12 Overhead and side

RULE 24. Road test must be made before leaving White Hills as prescribed by this rule.
No car inspectors on duty at San Luis Obispo 4:30 PM to 8:00 AM daily. During this period trainmen and yardmen will couple and uncouple air hose and make necessary tests.

RATING OF ENGINES—In Units of 1000 Lbs. (Ms)

Table with columns: NOMINAL CLASS, ENGINE NUMBERS, and engine ratings for various classes (DEP, F, P, M, T, C, A, M, S, SP) and locations (San Luis Obispo, Lompoc, White Hills).

In figuring tonnage of train, add 6 Ms for each empty or underloaded car of less than 45 Ms, and 3 Ms for each such car of 45 to 55 Ms, except from Lompoc to White Hills add 3 Ms for each such car of 55 Ms or less.

UNLESS AUTHORIZED BY SUPERINTENDENT, ENGINES WILL NOT BE PERMITTED TO OPERATE IN THOSE TERRITORIES WHERE NO RATING IS SHOWN IN ENGINE RATING TABLE.

6. Two pages of the Coast Division Special Instructions No. 2, for April 1950, showing the kind of information included. These pages are for the Guadalupe Subdivision; there were three more pages just for this subdivision. Altogether, there were 30 pages of instructions in this document, much more than is in the corresponding timetables.

the Subdivision was too large to fit here, and had to be printed on an adjoining page.

But as with the cover, the appearance here is so characteristic of the railroad that I wanted to use as much of it as I could, for my own timetable interior pages.

Some added features

And in addition to the cover and the train schedule pages, there is still more that can usefully be included. One addition can be some of the special instructions for the division, or just for that subdivision, which may be relevant to model operation. In SP's Timetable



contents

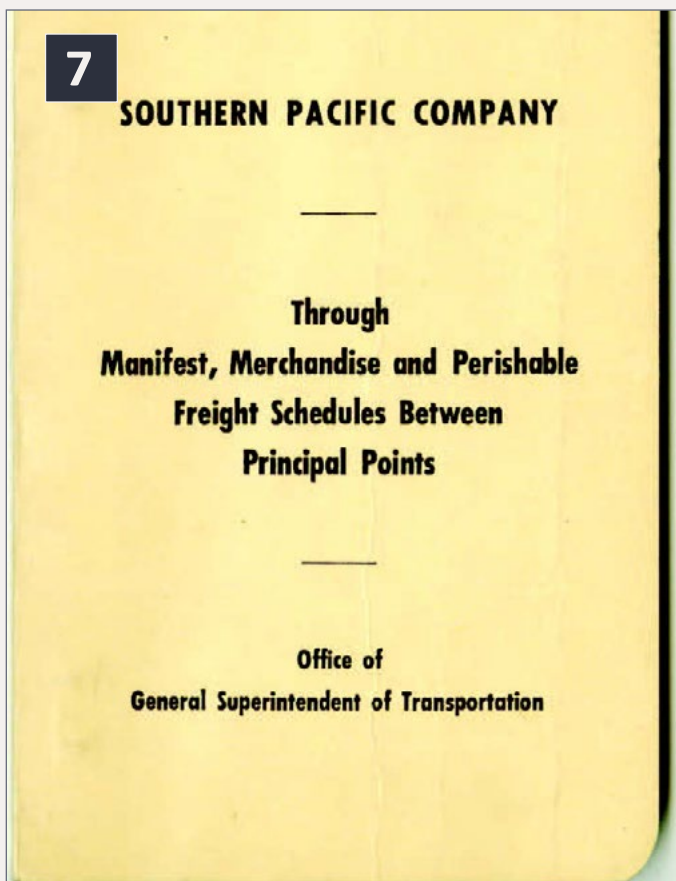


index

164, these instructions are brief, less than a third of a page. But they are far more extensive in the separate Special Instructions document. [5] shows what one looks like; this particular edition is for April 1950 and is the companion to [4].

To give some idea of the extent and complexity of the material in this Special Instructions document, I show in [6] a pair of pages for the Guadalupe Sub. Note on the right-hand page that tonnage ratings for both steam and diesel locomotives are shown. There is also a table (not shown) of speed restrictions for the subdivision, as there was for each subdivision. At the front of the document

were also five pages of instructions for all subdivisions. This material, of course, is much more extensive and detailed than what is included in the employee timetable.



7. The cover of the Southern Pacific manifest freight schedule book, 4¼" x 6½". This same cover was used from the 1950s at least until the late 1960s.

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An advertisement for HO scale GP60 locomotives. It features four models: a red and white GP60M ATSF (Santa Fe), a white and red GP60B ATSF (Santa Fe), a black Norfolk Southern (NS) 7127, and a black Norfolk Southern (NS) 7140 (Operation Lifesaver). The ad includes the Fox Valley Models logo, the text 'NEW TOOLING SOUND AVAILABLE', and 'RESERVE TODAY!'. The website www.foxvalleymodels.com is listed at the bottom.

I browsed through the Special Instructions and chose some selected rules I thought were relevant. On the prototype, these would be included in the separate Special Instructions document, not the timetable, but I wanted to compact everything into one document, and these rules add flavor. They also provide information permitting operators to reference any specific rule which may affect operation. I decided to place these at the back of my timetable, as the prototype did.

The third element I wanted to add to my timetable is, again, a separate document on the prototype, namely freight train procedures. The SP did have a document describing manifest train schedules [7] but I wanted to get everything into a single document for operators.

These procedures identify the purpose and schedule of specific trains. [8] and [9] show

8 Coast Route

Train - GGM (Golden Gate Manifest)
Los Angeles to San Jose
(Daily)

<u>Station</u>		<u>Time</u>	<u>Day</u>
Los Angeles	Lv	845PM	1
San Luis Obispo	Ar	700AM	2
San Luis Obispo	Lv	800AM	2
San Jose	Ar	400PM	2

GGM (Golden Gate Manifest) will handle traffic for points King City and beyond to and including Mulford via Newark Line to and including Estudillo via Hayward Line, including perishable which requires re-icing at Watsonville Jct.

Will pick up available traffic Santa Barbara, Surf, Guadalupe, San Luis Obispo and Watsonville Jct.

Connects with SJR at San Jose. (See Overland Route.)

May 1, 1965
GST No. 23

- 69 -

8. A page from the 1965 freight schedule book, showing the Golden Gate Manifest train.

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contents



index

example pages for the Coast Route; one is a manifest train, the Golden Gate Manifest, symbol GGM, the other a perishable block from Watsonville, symbol WPB. Note for the WPB that schedules eastward over connecting railroads are also shown (T&L = Texas & Louisiana Lines, or T&NO; SSW = Cotton Belt; CRIP = Rock Island).

My plan was to abstract all of the Coast Route train schedules and information, and place these on the inside front cover and first

9

Coast Route

Train - WPB (Watsonville Perishable Block)
Watsonville Jct. to Los Angeles
(Seasonal)

<u>Station</u>	<u>Time</u>	<u>Day</u>
Watsonville Jct. Lv	330AM PT	1
San Luis Obispo Ar	1045AM PT	1
San Luis Obispo Lv	1115AM PT	1
Santa Barbara Ar	330PM PT	1
Santa Barbara Lv	345PM PT	1
Los Angeles Ar	745PM PT	1
Colton Lv	1000PM PT	2
El Paso Ar	845PM MT	3
New Orleans Ar (T&L)	100PM CT	5
St. Louis Ar (SSW)	800PM CT	5
Memphis Ar (SSW)	530PM CT	5
Chicago Ar (CRIP)	1230AM CT	6

WPB (Watsonville Perishable Block) operates through to Los Angeles for connection with Colton Perishable Block traffic from Los Angeles following day.

May be consolidated with LA from Watsonville Jct. to Los Angeles.

For further detail of perishable schedule beyond Colton, see Colton Perishable Block schedule - Golden State-Sunset Routes.

May 1, 1965
GST No. 23

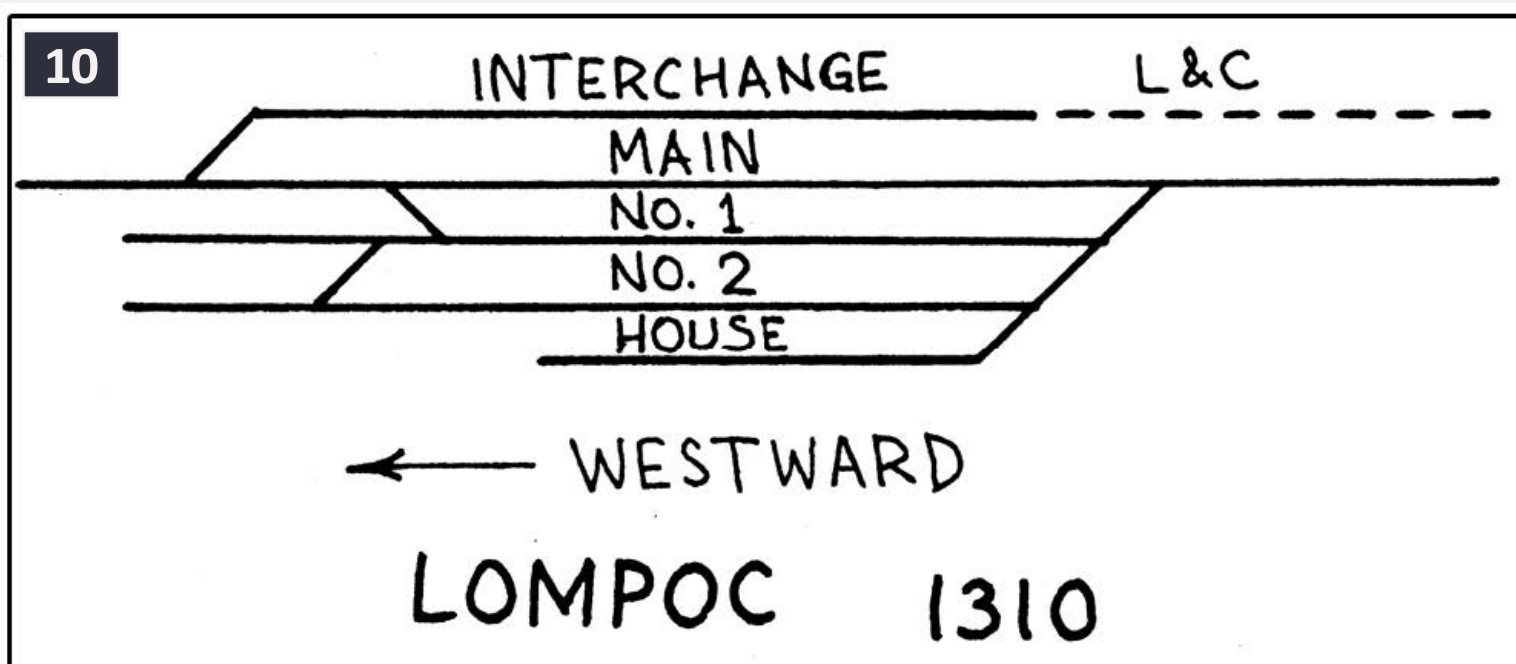
- 65 -

9. A page from the 1965 freight schedule book, showing the Watsonville Perishable Block schedule.

right-hand page of my timetable (the former being on the manila stock, and the latter on white paper). Although not prototypical, this location would be convenient for operators to consult.

Finally, one more item that can be useful is a schematic diagram (not a map) of any towns or other complex trackage, complete with track names. Railroaders give names to every feature which might be of importance, and certainly to every track they might need to use (or direct someone else to use). Many might be obvious (team track, warehouse spur), but others may be more obscure. Richard Hendrickson tells the story of visiting Jerry Stewart when he was a tower operator in the Chicago area, and overhearing Jerry tell an approaching train crew to hold short of "the oil spur." Looking down the line from the tower, he could see no





10. A hand-drawn schematic map showing track identifications in a town. The L&C refers to a former layout which had a freelanced Lompoc & Cuyama short line.

oil facilities. So he asked Jerry about this, who replied (railroaders can see this coming), “Oh, the oil stuff has been gone for years, but that’s the name of the track.” Your operators need to know all these names.

[10] is an example of a simple, hand-drawn schematic, from the time when I planned to include Lompoc on my layout. The interchange was with the freelance short line, Lompoc & Cuyama. This kind of schematic is quick to make and fully informative, though maybe not as elegant as the rest of the timetable. I wanted to find a better approach.

Constructing a timetable

My first issue was how much of a schedule to show. On my layout, the junction of the main line and the branch, called Shumala, is only a few miles south of Oceano, and accordingly is not a train-order station. The depot therefore houses an agent but not an



contents



index

11 GUADALUPE SUBDIVISION			
Capacity of sidings in car lengths	EAST- WARD	Timetable No. 158 September 24, 1950 Lompoc and White Hills Branches	WEST- WARD
	Mile Post Location		Distance from White Hills
Yard Limits		STATIONS	
113 WOYP	302.7	TO SURF 1.1	14.0
26	303.8	BARODA 3.8	12.9
17	307.6	POST 2.2	9.1
5	309.8	ACORN 2.6	6.9
Yd. Lmts. { BKWTP	312.4	TO-R LOMPOC 0.5	4.3
	312.9	WHITE HILLS JCT. 3.8	3.8
	316.7	WHITE HILLS (14.0)	0.0

11. The prototype timetable for the Lompoc and White Hills Branches, from Timetable No. 158 of 1950.

operator. For that reason, there is of course no train-order signal at the depot.

Moreover, passenger trains, even the mail train, would not ordinarily stop there (I might consider occasional flag stops). In daylight hours, there were just two passenger trains: the Daylight in both directions, and the mail train, nos. 71 and 72, in both directions.

For freight operations, SP practice on most divisions was to operate through freights, that is, freights which ran from division point to division point, without any intermediate switching. These were usually scheduled trains (these are the trains you see in [4]), with additional sections, and sometimes

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extra trains, as needed. I duplicate this on my main line by operating freights which simply pass by Shumala in both directions.

The mainline schedule therefore shows, in effect, the freight and passenger trains which pass Shumala without interacting. This makes the schedule in my timetable really only a guideline to a lineup of the trains that will appear on the main line.

Let me digress to explain that a lineup or sequence of events is a simple way to conduct operations. You would simply write a list of the trains that will run, in time order. Maybe it would say something like, "run the hotshot freight westward; run the mail train eastward; switch local industries in Epsilon and then run the local freight as far as Delta, do needed switching en route, return." This avoids time pressure, because each train movement only takes place once the previous one has been completed. In my case, as described above, the layout arrangement is such that a timetable really provides only a sequence of trains.

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Of course, if there are a lot of trains, or multiple routes, junctions, etc., where closer coordination becomes important, the obvious solution is the prototype one: a timetable with working parts. I just happen not to need that.

So all I really need in my timetable is a few adjoining station names for stage-setting, and of course a set of times at Shumala. I started with a scan of the prototype pages, like [4], and then modified the digital image by multiple steps of cutting and pasting in Adobe Photoshop, mostly removing unneeded lines for the many stations which were not near Shumala.

I also needed to add a timetable element for the branch line. Note in [4] that the Lompoc Branch is not shown, because it did not fit on that page; the SP printed it in the lower corner of the previous page. Here is what it looked like [11]. There was no scheduled train, but station names and mileages are shown.

How did I create the entries for Shumala? This word was made by choosing the individual characters from elsewhere in the timetable scan, copying them one by one, and lining them up into the needed word. The miles and train times were likewise created by copying times or digits from other parts of the scan. Yes, it's a little tedious, but you only have to do it once.

But despite the fictional Shumala entries, the remainder of each schedule is entirely accurate SP history, with all train times and identities completely copied from the prototype version.

I used the same technique as with the main timetable, to create a timetable for my mythical branch to Santa Rosalia. Because I had removed a lot of mainline station entries from the subdivision timetable, I had room on a single page to collect both eastward and westward timetables, with the branch at the bottom, as you see in my completed schedule page, [12].

GUADALUPE SUBDIVISION

EASTWARD

Capacity of sidings in car lengths	SECOND CLASS								FIRST CLASS				Mile Post Location	Timetable No. 164 September 27, 1953	Distance from San Luis Obispo
	918	916	914	912	98	72	76	374	98	72	76	374			
	Freight	Freight	Freight	Freight	Morning Daylight	Passenger (c)	Lark	C. M. E.	AM	PM	AM	PM			
	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Leave Daily	Lv. Daily Ex. Sat. Sun. Mon.		
S. L. Obispo yard BKWOTYP	PM 9.00	PM 3.30	AM 10.15	AM 4.00	PM 1.20	AM 8.45	AM 3.20	AM 2.50	252.1	TO-R SAN LUIS OBISPO } D.T.					0.0
P	9.15	3.45	10.30	4.15	1.32	8.57	3.31	3.05	259.1	HADLEY } D.T.					7.0
32	P					s 9.12	3.42	3.15	265.9	TO OCEANO } D.T.					13.8
Yard Limits WOTP	9.35	4.03	10.48	4.35	1.46	9.17	3.47	3.19	270.1	SHUMALA } D.T.					17.8
Yard Limits BKWP	10.00	4.11	10.57	4.45	1.52	s 9.40	c 3.55	3.27	276.5	TO GUADALUPE } D.T.					24.4
Yard Limits WOYP	11.00	4.48	AM 11.49	5.34	2.23	s 10.27	4.30	3.59	302.7	TO SURF } D.T.					50.6
81	P	AM 12.01	5.20	12.23	6.07	2.41	10.54	4.50	320.8	TO JALAMA } D.T.					68.7
74	WP	12.35	5.49	12.49	6.49	3.01	s 11.27	5.13	339.4	TO GAVIOTA } D.T.					87.3
115	P	1.10	6.26	1.28	7.23	3.25	f 12.05	5.40	362.8	TO GOLETA } D.T.					110.7
P	1.18	6.34	1.36	7.31			12.13	5.50	368.5	WEST SANTA BARBARA } D.T.					116.4
Santa Barbara yard BKWOTYP	AM 1.30	PM 6.45	PM 1.50	AM 7.45	s 3.37	PM 3.37	s 12.25	s 5.58	370.7	TO-R SANTA BARBARA } D.T.					118.6
	AM	PM	PM	AM	s	PM	s	AM							
	Arrive Daily	Arrive Daily	Arrive Daily	Arrive Daily	Arrive Daily	Arrive Daily	Arrive Daily	Arrive Daily							
	(4.30)	(3.45)	(3.35)	(3.45)	(2.17)	(3.40)	(2.38)	(2.45)							
	26.36	31.60	33.09	31.60	51.94	32.25	45.04	43.13							
	.....Time over District.....														
	.....Average Speed per Hour.....														

GUADALUPE SUBDIVISION

WESTWARD

Mile Post Location	Timetable No. 164 September 27, 1953	Santa Barbara Distance from	FIRST CLASS								THIRD CLASS			
			71	99	373	75	911	913	915	919				
			Passenger (c)	Morning Daylight	C. M. W.	Lark	Freight	Freight	Freight	Freight				
			Arrive Daily	Arrive Daily	Ar. Daily Ex. Sat. Sun. Mon.	Arrive Daily		Arrive Daily	Arrive Daily	Arrive Daily	Arrive Daily			
252.1	TO-R SAN LUIS OBISPO } D.T.	118.6	AM 9.02	PM 12.50	AM 12.10	AM 2.20		AM 9.10	PM 2.40	PM 9.00	AM 3.19			
259.1	HADLEY } D.T.	111.6	s 8.49	12.38	11.57	2.05		8.52	2.25	8.43	3.04			
265.9	TO OCEANO } D.T.	104.8	s 8.35		11.47	1.51								
270.1	SHUMALA } D.T.	100.8	8.27		11.43									
276.5	TO GUADALUPE } D.T.	94.0	s 8.19	12.19	11.36	s 1.38		8.32	2.05	8.24	2.45			
302.7	TO SURF } D.T.	68.0	s 7.26	11.49	11.00	s 1.03		8.23	1.52	8.15	2.36			
320.8	JALAMA } D.T.	49.9	6.56	11.30	10.38	12.42		7.35	12.58	7.36	1.40			
339.4	TO GAVIOTA } D.T.	31.3	s 6.30	11.10	10.16	12.21		7.12	12.35	7.13	1.16			
362.8	TO GOLETA } D.T.	7.9	f 6.00	10.48	9.53	11.57		6.49	12.05	6.49	12.50			
368.5	WEST SANTA BARBARA } D.T.	2.2	5.50	10.42	9.47	11.51		6.18	11.28	6.18	12.18			
370.7	TO-R SANTA BARBARA } D.T.	0.0	AM 5.40	AM 10.35	PM 9.40	PM 11.44		6.10	11.20	6.10	12.10			
	(118.6)		Leave Daily	Leave Daily	Lv. Daily Ex. Fri. Sat. Sun.	Leave Daily		6.00	11.10	6.00	11.59			
								AM	AM	PM	PM			
	.....Time over District.....		(3.22)	(2.15)	(2.30)	(2.36)		(3.10)	(3.30)	(3.00)	(3.20)		
	.....Average Speed per Hour.....		35.23	52.71	47.44	45.62		37.45	33.89	39.50	35.58		

RULE 86. Second- and third-class trains, extra trains and engines must be clear of main track and insulated joints for Nos. 94, 95, 98 and 99 not less than ten minutes before the arriving, or leaving, or train-order time at that station.

Capacity of sidings in car lengths	Mile Post Location	Timetable No. 164 September 27, 1953 Santa Rosalia Branch				Distance from Santa Rosalia
		STATIONS				
		TO	STATIONS	TO	Distance from Santa Rosalia	
16	WOTP	269.9	SHUMALA 9.7	14.0		
	P	279.6	BALLARD 0.5	4.3		
	P	280.1	AJAX JCT. 3.8	3.8		
	WOP	283.9	SANTA ROSALIA (14.0)	0.0		

12. The timetable I constructed to show my layout town of Shumala, with adjoining stations and both ends of the subdivision, San Luis Obispo and Santa Barbara. My mythical branch is also shown.



13 SPECIAL INSTRUCTIONS GUADALUPE SUBDIVISION

RULE 10(J). Oval white slow boards indicate the maximum speed of trains, the larger number indicating the maximum for trains consisting entirely of passenger equipment, the lower number the maximum for all other trains. Where one number is shown, it is the maximum for all trains. If present on the same post, round yellow slow boards indicate the maximum speed for trains consisting of streamlined passenger cars with engines counterbalanced for speeds of 75 MPH.

RULES 17 and S-17. Headlight will be displayed by day by all passenger and freight trains as an aid to motorists.

RULE S-72. Westward trains are superior to trains of the same class in the opposite direction.

RULES 86 and 93. Second class and inferior class trains, except passenger trains, must clear the time of Nos. 98 and 99 not less than ten minutes.

RULE 93. Yard limits in which the provisions of Rule 93 will apply are established at the following stations:

West MP		East MP
249.56	San Luis Obispo	254.00
269.13	Shumala	271.16
275.20	Guadalupe	277.32
301.85	Surf	303.49
369.16	Surf (Lompoc Branch)	303.84
	Santa Barbara	373.71
310.61	Lompoc	316.93

RULE 104. Trainmen are responsible for the position of switches and derails used by them and members of their crew. Switches and derails must be properly lined after being used.

RULE 221. Trains must obtain clearance before leaving Lompoc or Santa Rosalia only when operator is on duty. Train-order office Santa Barbara is located at freight station.

GENERAL REGULATIONS

RULE 801. Indifference in the performance of duties will not be condoned. Employees who are careless of the safety of themselves or others, insubordinate, dishonest, immoral, quarrelsome, or otherwise vicious will not be retained in the service.

RULE 834. Open top cars loaded with rail, pipe, lumber, structural steel, poles, or mounted wheels, when such lading projects above side and end walls of the car, must not be placed in trains next to caboose, occupied outfit cars, cars loaded with inflammables, nor cabs or tenders of oil-burning engines.

RULE 1213. Train crews must notify yardmaster of defective cars being brought into terminals and notify train dispatcher of defective cars set out of train during the run.

FREIGHT TRAINS

RULE 22. Trainmen must not couple air hose on outgoing freight trains at Santa Barbara or San Luis Obispo until train is made up and caboose on the train. Coupling caboose to the rear of

SPECIAL INSTRUCTIONS GUADALUPE SUBDIVISION

train will be considered an indication that the train is made up and yardmen have completed their work. Yardmen must not perform switching on, or couple other cars to a train on which the caboose has been attached, without instructions from the yardmaster, who will see to it that members of the crew are notified in advance.

MISCELLANEOUS

1. Water supply at Gaviota and Lompoc for emergency use only. Engines at Guadalupe take only sufficient water to make San Luis Obispo or Surf.

7. Capacity of sidings between clearance points based on an average car length of 49 feet, in addition to steam engine and caboose.

10. Engines listed must not operate on tracks shown below:

Class of Engine	Restricted Tracks
DEP, DEF, Mk, F, AC, MM, Mt, GS, SP, T-40, P, A	San Luis Obispo Vegetable spur. Surf Short leg of wye. Goleta Walnut spur.
All engs. and cars	Tangair On Government tracks at Camp Cooke, except wye tracks may be used to a point 300 feet west of west switch of interchange tracks.

20. All cars moved in passenger trains must be equipped with steel-tired or all-steel wheels. Cars not so equipped must be moved in freight trains. Cabs used on first class or manifest freight trains must have steel wheels (cars numbered 1000 and above). Cabs with cast iron wheels must not be used. When necessary, passenger equipment may be used instead.

27. Empty flat and gondola cars, especially cars longer than 55 feet, should be coupled toward rear of train.

SPEED RESTRICTIONS

All freight trains limited to 40 MPH east of San Luis Obispo except 35 MPH between MP 309-312 (Arlight-Arguello).

Maximum speed of passenger trains not to exceed 50 MPH except as otherwise prescribed by slow boards. For engines of classes Mk-T-M-C-AC-6, 45 MPH; for engines of classes M-21-TW-F-SP classes, 40 MPH.

All trains must not exceed speed of 15 MPH, San Luis Obispo yard. Trains and engines must not exceed 10 MPH through cross-overs and on sidings, except within CTC limits.

Freight trains handling restricted cars further limited within districts specified in timetable. Restricted cars include twin or multiple loads; cars of excess height or width; loads of excess height, width or weight; scale test cars; cars with arch bar trucks; and any equipment listed under "Maximum Speed Permitted with Certain Equipment" in timetable. Trains handling such equipment must not exceed maximum speed of 35 MPH.

13. The selected Special Instructions that I included at the back of my model timetable; compare [6].



TRAINMASTERS

T. McDANIEL.....San Francisco
 W. MACE.....San Jose
 R. D. SPENCE.....Watsonville Jet.
 C. H. NEILL.....San Luis Obispo

ASSISTANT TRAINMASTER

W. R. CORBETT.....Salinas

ROAD FOREMEN OF ENGINES

L. E. PROUDFIT.....San Francisco
 C. G. HOLMBERG.....San Luis Obispo

ASSISTANT ROAD FOREMEN OF ENGINES

E. F. BACHER.....Watsonville Jet.
 W. E. SANFORD.....San Luis Obispo

CHIEF TRAIN DISPATCHERS

E. D. SPENCE.....San Francisco
 O. D. GOODWILL.....San Luis Obispo



MAP
 OF THE
COAST DIVISION
 SOUTHERN PACIFIC CO.

SCALE OF MILES
 0 10 20 30 40

SOUTHERN PACIFIC COMPANY



COAST DIVISION

TIMETABLE

164

SUPPLEMENT

EFFECTIVE SUNDAY, SEPTEMBER 27, 1953

AT 12:01 A. M.

PACIFIC STANDARD TIME

FOR THE GOVERNMENT AND INFORMATION
 OF EMPLOYEES ONLY, WHO MUST ALSO
 CARRY COPY OF CURRENT ISSUE
 OF SPECIAL INSTRUCTIONS

R. E. HALLAWELL,
General Manager.

E. D. MOODY,
 W. D. LAMPRECHT,
Assistant General Managers.

C. H. GRANT,
General Superintendent of Transportation.

V. E. ANDERSON,
Superintendent of Transportation.

J. J. JORDAN,
Superintendent.

14. My timetable cover, incorporating elements of the prototype employee timetables of the era, but indicated as a Supplement.



contents



index

TIMETABLE SUPPLEMENT

COAST DIVISION

Guadalupe Subdivision

Employees must also carry copy of current Coast Division timetable and special instructions. Contents of this supplement are intended only to highlight Guadalupe Subdivision practice and do not substitute for current book of rules, time table, special instructions, bulletins, or procedures.

GENERAL RULES

- A. Employees whose duties are prescribed by these rules will be provided with a copy.
- B. Employees must be conversant with and obey the rules and special instructions. If in doubt as to their meaning, they must apply to the proper authority for an explanation.

FREIGHT TRAIN PROCEDURES

Freight trains may be of first, second or third class. Named merchandise trains such as the *Coast Merchandise*, known as the "Overnight," are of first class. Symbol freight trains are of second or third class. Coast Line through freight traffic normally moves as scheduled trains, but seasonal extras are operated as needed.

The *Coast Merchandise* (Eastward, CME; Westward, CMW), or "Overnight," provides overnight LCL and carload service between Los Angeles and San Francisco. Specially equipped and painted box cars are operated on a limited-stop schedule, with pickup and set out of cars only at San Jose, Watsonville Junction, San Luis Obispo and Santa Barbara.

Daily symbol trains include the "Coast Line Manifest" (CLM) and "Los Angeles Manifest" (LAM), Oakland-San Francisco to Los Angeles; the "Golden Gate Manifest" (GGM) and "San Francisco Manifest" (SFM), Los Angeles to Oakland-San Francisco. CLM schedule reflects connection at Colton with Sunset Route manifest trains, including "Blue Streak Manifest" (BSM), destined St. Louis, and "Southeaster" (SE prefix) for traffic destined beyond New Orleans.

Traffic permitting, CLM operates as Train 926 from SLO; LAM as Train 914; GGM operates to San Luis Obispo as Train 911; SFM as Train 915.

The "Los Angeles Auto Parts" (LAAP), Oakland to Los Angeles, and "Empty Auto Parts" (XAP), Los Angeles to Oakland, operate as needed and may be consolidated with LAM and SFM, respectively. Bay Area auto parts cars arriving via Sunset Route normally connect with SFM.

Seasonal trains include "Watsonville Perishable Block" (WPB), originating Watsonville Junction and destined Colton

SAFETY IS EVERYBODY'S BUSINESS

GUADALUPE SUBDIVISION

EAST-WARD		Timetable No. 164	WEST-WARD
Capacity of sidings in car lengths		September 27, 1953	Distance from White Hills
Yard Limits		Lompoc and White Hills Branches	
113 WOYP		STATIONS	
	302.7	TO SURF 9.7	14.0
	312.4	TO-R LOMPOC 0.5	4.3
	312.9	WHITE HILLS JCT. 3.8	3.8
	316.7	WHITE HILLS (14.0)	0.0

for consolidation with Los Angeles perishables as Colton Perishable Block (CPB) trains, Sunset Route. WPB is consolidated with CL or LA as needed. The "Salinas Vegetable Block" (SVB) operates Watsonville Jct. to Roseville daily, for consolidation with "Roseville Perishable Block" (RPE), Overland Route, or "North Coast Perishable" (NCP), Shasta Route.

The "Santa Maria Vegetable" (SMV) originates at San Luis Obispo or Guadalupe, as needed, destined Los Angeles. Santa Maria perishable cars destined Oakland are consolidated with GG as needed.

Empty refrigerator cars returning to Watsonville Junction or Coast points are blocked as "Empty Watsonville Refrigerators" (XWR) or "Empty Salinas Refrigerators" (XSR); "Empty Santa Maria Refrigerators" (XSMR) are destined San Luis Obispo. These blocks may be consolidated with manifest trains.

Cars are not set out or picked up by symbol freight trains except at San Jose, Watsonville Junction, San Luis Obispo and Santa Barbara. All other local traffic is handled by local trains and haulers as needed, King City turns from Watsonville Junction and San Luis Obispo, and Surf turns from San Luis Obispo and Santa Barbara.

CONDENSED SCHEDULES

Train	Schedule
CL	Dep San Francisco 7:05 AM, Oakland 4:00 AM Dep San Luis Obispo 9:00 PM, Arr LA 5:20 AM
LA	Dep. San Francisco 9:30 PM, Oakland 9:00 PM Dep San Luis Obispo 9:00 AM, Arr LA 5:45 PM
GG	Dep Los Angeles 11:40 PM, Arr SLO 9:10 AM Arr San Francisco 10:40 PM, Oakland 11:40 PM
SF	Dep Los Angeles 5:00 AM, Arr SLO 2:40 PM Arr San Francisco 11:50 PM, Oakland 11:55 PM
WPB	Dep Wats. Jct. 3:30 AM, dep San Luis Obispo 10:30 AM Arr Los Angeles 6:45 PM, Dep Colton 10:00 PM Arr New Orleans 1:00 PM, St. Louis 8:00 PM (both day 5) Arr Memphis 7:00 PM (day 5), Chicago 12:30 AM (day 6)

WATCH INSPECTORS

San Francisco, C. D. Fabrin, Manager of Time Service, 65 Market St.
San Francisco..... E. J. Land, 745 Third St.
San Francisco..... M. Grandstaff, 2839 16th St
San Francisco..... I. S. Preston, 357 Phelan Bldg.
Bayshore..... L. E. Brown, 30 Leland Ave.
San Bruno..... A. E. Brown, 458 1/2 San Mateo Ave.
San Mateo..... A. E. Benoit
Redwood City..... Kessingurs Jewelers, 2316 Broadway
San Jose..... Kochers, 749 So. 1st St.
Gilroy..... Geo. M. Lawton
Santa Cruz..... C. M. Pennell
Monterey..... Samuel Kushel, 243 Alvarado St.
Salinas..... Goodfriend
King City..... W. V. Bolton
San Luis Obispo..... R. E. Gragg, 1023 Osos St.
Santa Barbara..... Howard V. Weirum
Lompoc..... Walter Ziesche
Los Gatos..... Harold W. Peters

15. The opening pages of my model timetable, mostly giving freight train procedures and schedules.



You will notice that to obtain my final result, I cut and pasted from a couple of SP prototype employee timetables to achieve the content I want. My timetable deviates from the prototype in 1953, in that I have shown the westward scheduled freight trains from a year or so earlier. (By late 1953 westward freights on this subdivision were all extra trains, although still operating at about the same times; in other words, my schedule does reproduce a correct number of trains and their times.)

Likewise, of course, the time and mileage entries for the mythical Santa Rosalia Branch (bottom of schedule, [12]) are non-prototypical, and of course for Shumala on the main line. The number of stations on the subdivision has been seriously compressed; the stations omitted are not on the layout anyway. This is intended to be printed full-size as an 8½"x11" page, and in use will be folded down the middle the long way. Since it is the centerfold of the document, opening to this page shows the full spread of these timetable schedules.

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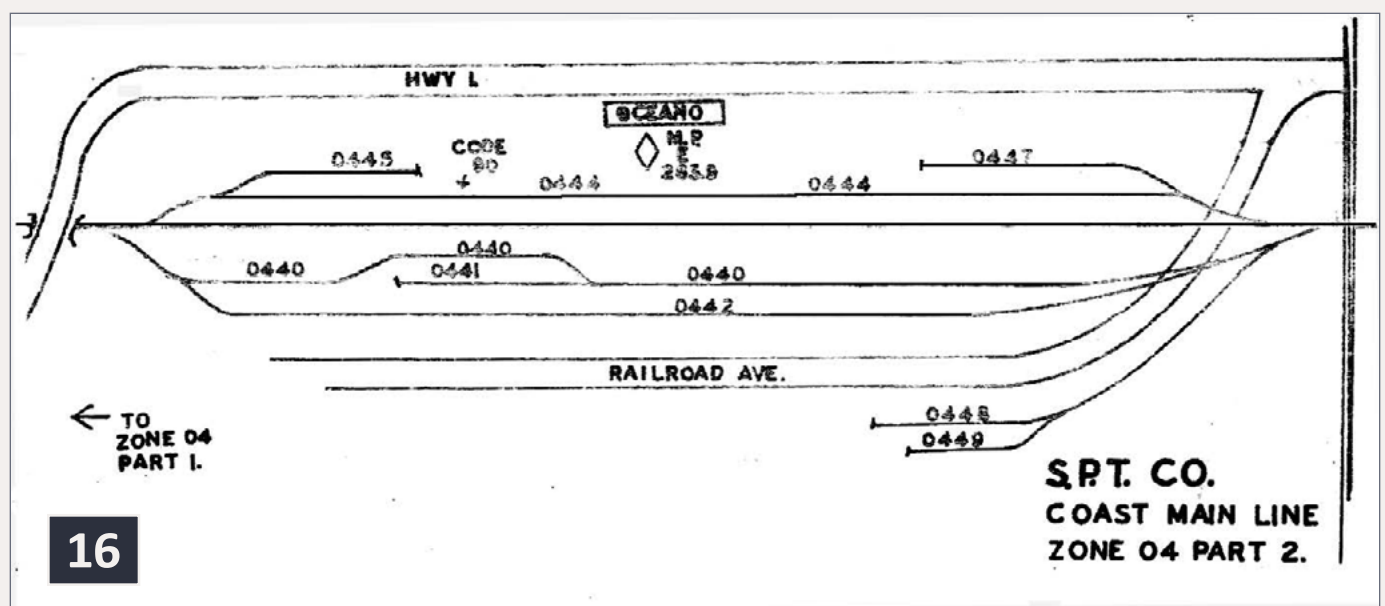
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I should mention that although there are four first-class and four second-class trains shown in this timetable, these operate around the clock. For daylight hours of operation, which is my practice on the layout, those scheduled freights that operated in late night or very early morning hours would not be seen, leaving me with at most two scheduled freights and two scheduled passenger trains during daytime.

The timetable for freight trains only shows the scheduled ones, which as I mentioned were through trains. All other freight operations, such as locals, turns, or haulers, were operated as extras and thus do not appear in the timetable. Any lineup would have to include those too.

Why did I recommend a timetable even if you want to operate informally, with a lineup, or without clock pressure, or, as in my case, without adjoining mainline stations? The prototype employee timetable usually contained a lot of additional information, and this can be helpful to your operators, as I mentioned above. Now I will show some examples of that information.



16. SP SPINS map for Oceano, California in 1972, Zone 04, Part 2. It looks hand-drawn.

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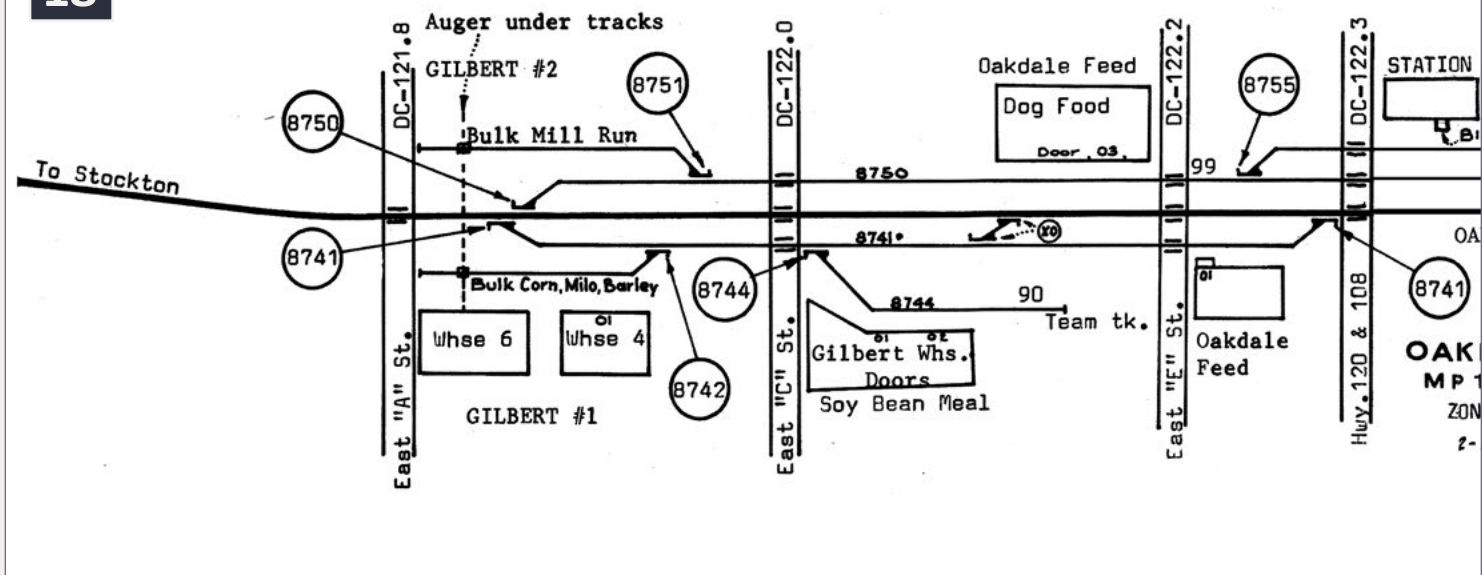
index

ZONE 04

TRACK INDUSTRY SERVED	CAP
0440 Oceano Passing Track Code 91	
0441 Pismo-Oceano Veg. Exchange Spots 12-13-14-15-16 (Outside Track)	5RS 3RM
0442 Pismo-Oceano Veg. Exchange Spots 11-12-13-14-15-16-17- 18-19 (Inside Track)	9RS 6RM
0444 Phelan & Taylor Produce Co. Inc. Spots 01-02-03-04-05-06 (Outside Track)	6RS 4EM
0444 Oceano House Track Code 95	1
0444 Oceano Team Track Code 90	3
0445 Vacant Spots 01-02-03	3
0447 Phelan & Taylor Produce Co. Inc. Spots 01-02-03-04 (Inside Track)	4RS 3RM
0448 American Forrest Products Code 99	2
0448 Oceano Packing Co. spots 01-02-03-04-05 (Inside Track)	5RS 3RM
0449 Oceano Packing Co. Spots 01-02-03-04-05 (Outside Track)	5RS 3RM

17

17. The Oceano SPINS map in [16] was accompanied by these descriptions of the industries on each track, and the spots at each, or the "Code" for a location without an exact spot, such as a team track.

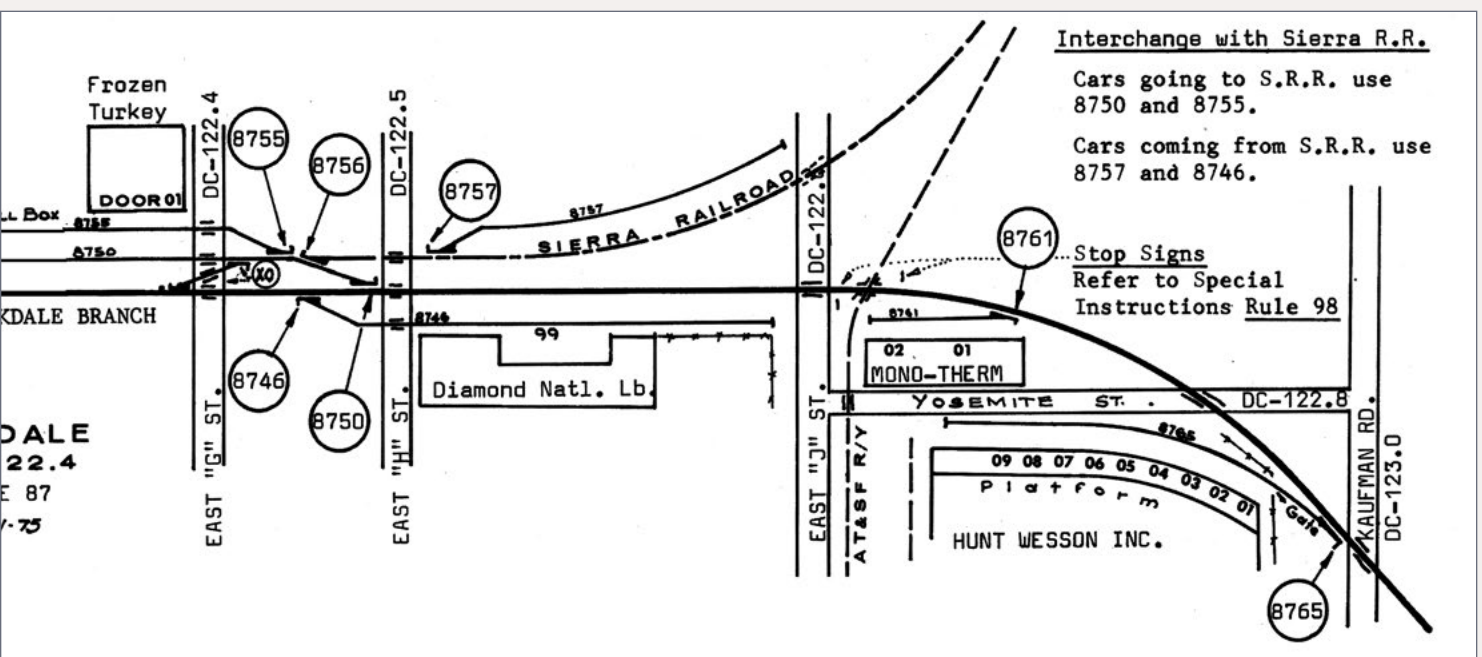


18. A 1975 SPINS map for Oakdale, California, Zone 87, with considerable detail for streets, other railroads (the Sierra Railroad and ATSF), industry names and spots, numbers of all switches (which match track numbers), and even the bill box location on the depot. Note the team track here is Code 90, as in [17]. – John R. Signor collection.

Adding selected rules

SP employee timetables had only brief instructions in the back, since a separate Special Instructions document was always in force, formally considered part of the timetable. My choice was to select rules which were either relevant to operation or interesting in themselves, and filled two timetable pages (a single 8½" x 11" sheet). I show that selection in the form of a double-page spread of those dimensions, in [13]. In the same way as I created the timetable lines for Shumala, I created a Shumala or other relevant entry in some of these rules, such as Rule 93 (yard limits) and Rule 221.

A few entries were simply pasted in, taken as parts of the scan of prototype pages, but most entries were created in what seemed



to me a very similar typeface to the prototype timetable, which was Adobe Caslon Semibold, 10/11, that is, in 10-point size and 11-point leading.

I must concede that much of this really does qualify as what Al Kalmbach called “typographic scenery,” but all the rules are real ones, and it certainly conveys the spirit of the prototype timetable. This can be seen by comparing [13] to parts of [6].

The outside cover

I especially wanted the outside of my model timetable to look like an SP employee timetable. I decided to use the front cover, when the timetable is folded, almost exactly like the prototype, adding only the word “Supplement” under the “164,” so the entire Coast Division need not be included. The basis, in other words, is the right half of [2].

For the back cover of the folded document, I wanted to use some of the division map shown in [3], but only to show the Guadalupe Subdivision and neighboring trackage, and also some of the officials listed on the prototype document (the left half of [2]). Putting all this together yielded a cover which, when printed on manila stock, does indeed have the look, the flavor, and many of the specifics of the prototype timetable. It is shown in [14].



contents

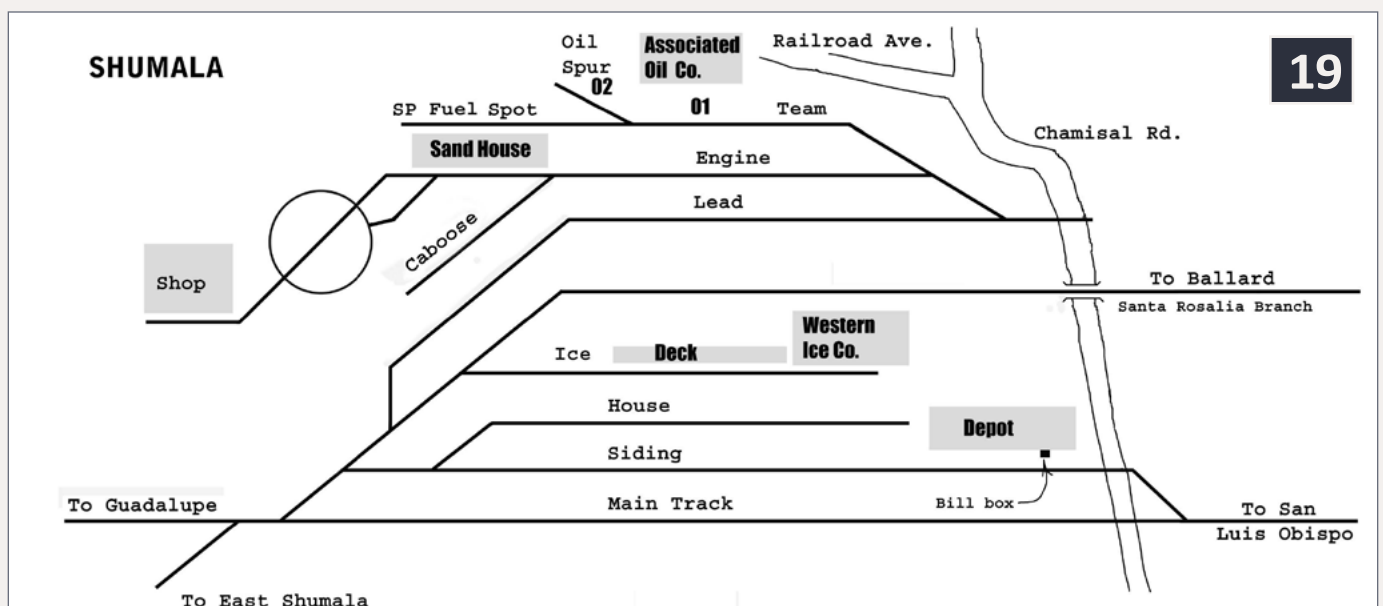


index

Freight train procedures

Here I used the information from the prototype documents on this subject [8-9], but collected and summarized the information, rather than scanning the typewritten pages of the prototype document. I then made a small table to encompass the schedules of the various trains, to accompany their definitions from the prototype Schedule. Again, this material was set in Adobe Caslon Semibold, 10/11.

I included on these pages some items which did not fit elsewhere, much as the prototype document did, such as a safety slogan, a Lompoc Branch timetable [11] and a list of watch inspectors. Again, this is typographic scenery but is taken directly from the



19. My interim map for the layout town of Shumala. Not all the graphic features of this way of representing the town are entirely satisfactory, so this may change – an easy process with a digital map. The intent here was to combine and extend the styles of [16] and [18] to create this graphic, but of course without SPINS numbers for track and switches. Only a couple of roads are shown in this version. The depot's bill box location is identified, as in [18].

real thing. My front pages, again intended for the lengthwise fold, are shown as [15].

Track identification maps

I mentioned that these are essential for those doing switching, and although previous versions of my model timetable included hand-drawn examples similar to [10], I wanted to go in a little different direction for this new timetable. My first idea was to follow what Southern Pacific did in later years, an arrangement they called SPINS, which stood for Southern Pacific Industrial Numbering System. Unfortunately, the earliest one I have found for my area of the SP Coast Line is dated 1972, just about 20 years after my modeling date, so only of limited factual use, but suggestive of method.

Briefly, the SPINS concept was to define zones all over the railroad, identified by two-digit numbers; identify all tracks in that zone by a second two-digit number; and then call out individual spots on that

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contents

index

track by a final two-digit number. So a SPINS location like 512204 would mean Zone 51, Track 22, Spot 04. You would of course need a SPINS map to tell you where and what that was.

Shown as [16] is the SPINS map for Oceano, California, zone 04 on the Coast. Each track is numbered, and spots along the track, if relevant, are also numbered. The accompanying list of SPINS numbers and locations is shown as [17], including car capacities of tracks and car types, such as RS. Such a diagram style could certainly be implemented in my layout timetable.

Another example of a SPINS map, this one for Oakdale, California on the Oakdale branch, dates from 1975 and is from the John Signor collection. It was reproduced in an article entitled “The Montpelier Branch,” by Gary B. Jones, in the SP Historical & Technical Society magazine *Trainline*, Issue 104, Summer 2010. As [18] shows, it is packed with information and very neatly drawn.

My goal was to land somewhere between the rather simplified map in [16], and the highly detailed map of [18]. I have used two Adobe applications, Photoshop and Illustrator, to create my maps. The Illustrator application in particular has a considerable learning curve, which I ascended by taking an Adult Education course in my city, an approach I highly recommend if you are not instinctive in computer matters.

However, many paint and drawing programs can do this job too, so if you don't want to deal with Illustrator, other methods can work. My original versions of some of these maps were done in Photoshop, actually a very versatile art program which goes far beyond just the photo processing its name might suggest.

The advantage, worth mentioning, to creating a digital version of your maps is that they are readily modified if something about your layout changes (trackage, industries, industry names), perhaps more easily than if you had drawn it “old school” on paper with



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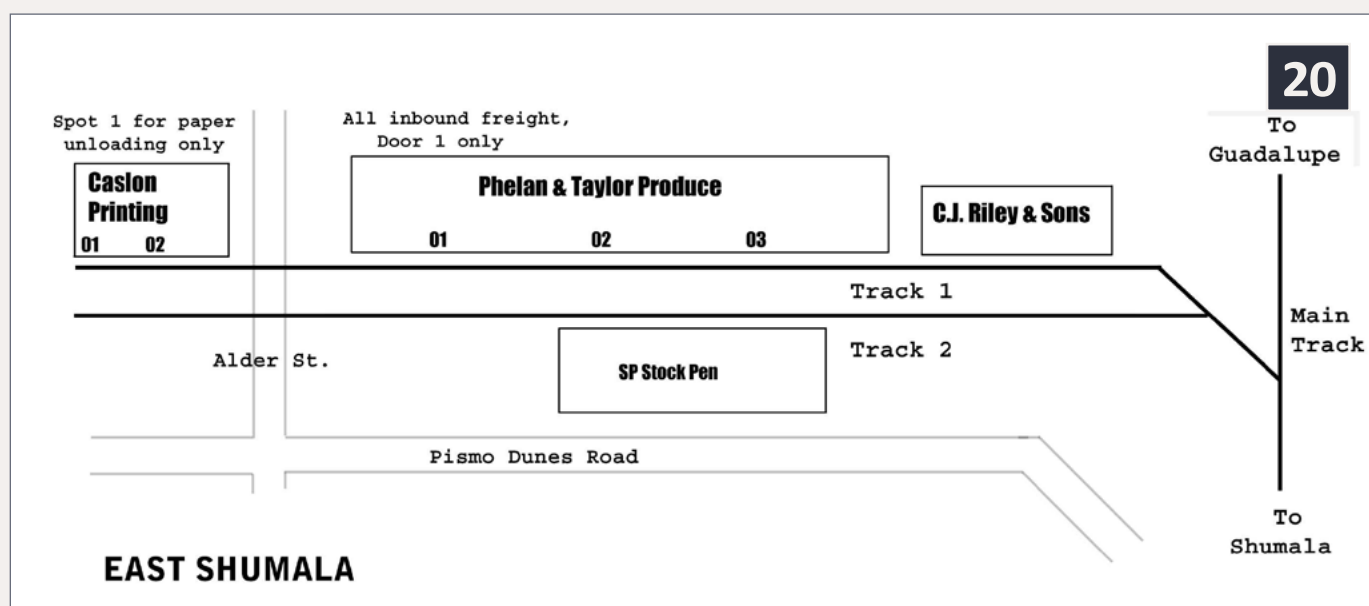


ink, similar to [10.] Almost as soon as the [10] map was completed (some years ago), there were needs for changes, not readily done on this inked drawing version.

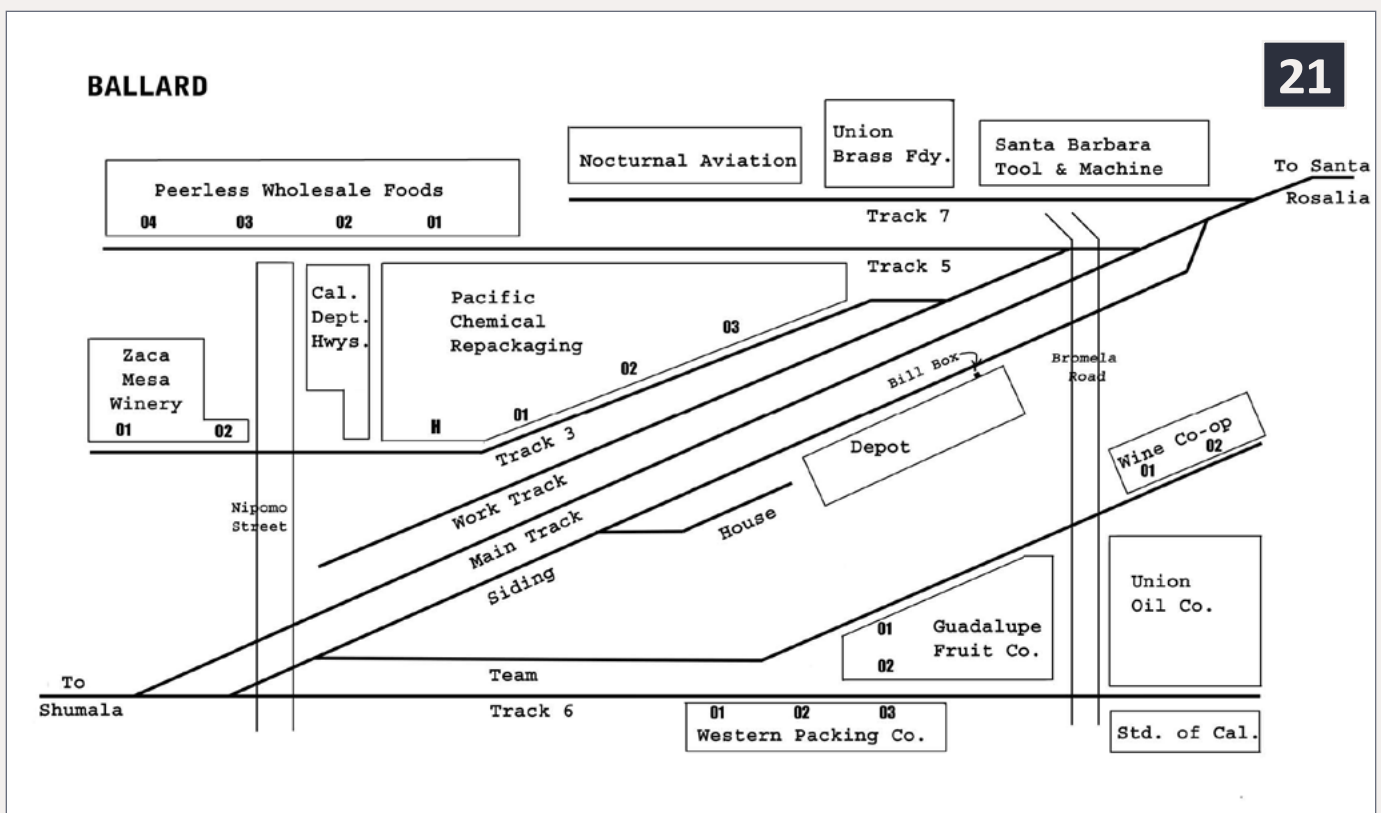
One of my new maps is shown in [19], for my town of Shumala. (This is an actual Chumash Indian place name from the area.) Note the stylistic similarities to both of the SP maps shown in [16] and [18], though of course I do not show any numbers for tracks or switches, since those were assigned years after my 1953 modeling era. This is a Photoshop map; a test to see if I liked this map style.

The map does not show railroad structures such as the roundhouse (to the left of the turntable [19]), because in and of itself, that's not a switching destination. But the machine shop at the left rear of the roundhouse, as the map shows, *is* a switching location. Likewise, the sand house and the "SP Fuel Spot" are where sand and locomotive fuel are unloaded for use at this engine terminal.

This particular map only has one instance where specific spots are identified, at the Associated Oil Company bulk dealer. But other



20. Map for the layout timetable of the location called East Shumala. Here there are specific spots at two of the industries. Surface roads are also shown, as this helps operators locate specific points.



21. My current map of Ballard, which is still undergoing occasional revision. Not only are there a number of industries here, but many have multiple spots. These are called out on most waybills. If the specific spot is not designated on the waybill, crews would receive direction from the local agent or from a plant foreman.

towns are different; I will show examples in a moment. Note that in [19] there is a track at lower left, labeled "To East Shumala." The map is done this way partly to suggest that East Shumala is some ways away from the town depicted in [19], but partly also because it physically lies about perpendicular to Shumala on the layout, thus not being geometrically convenient to be represented in a map like [14].

That in turn means that a separate map in the timetable was prepared for East Shumala. That area is itself simple to represent, but as stated, the separate map helps convey some conceptual distance. This strategy could be used on many layouts. My map for East Shumala is shown in [20], and here open boxes instead of gray rectangles are used for structures (partly as an experiment relative



contents



index

to [19]). The length of the track at the stock pen permits surplus empty stock cars to be stored here, as was common on the SP in the 1950s. Note that there are specific spots for the industries on this map, particularly at the Phelan & Taylor Produce packing house. For Caslon Printing, the inbound waybill would have to be consulted to know which cars go to which spot.

My other two maps are for the towns of Ballard and Santa Rosalia. Neither one on the layout is complete at this point, so it is especially important to have the flexibility of digital maps for future revisions of all kinds, especially industry names and locations. But I should mention that even maps of towns (on the physical layout) which are actually incomplete can still convey locations of industries in those towns, though they are not yet built.

Such switching destinations may show up in waybills used in operating the layout, and then the timetable map shows where these are (or will be) located, even if both the town and the industry are

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only represented (temporarily) by a storage track or tracks extending into the future town location.

My current Ballard map is shown in [21], and again, it is a slightly different style than [19] and [20]. It is more complex in that a number of industries have multiple spots, but simpler in terms of track arrangement and switching complexity. The local agent would indicate which spot to use if one is not designated on the waybill, or that information could come from the plant foreman.

Incidentally, the design of this trackage used a town from Terry Walsh's well-known layout, the West Agony & Inchoate, as a starting point. A track plan for his town of West Agony was included in an article in *Model Railroader* for July 1960, which was about a switching puzzle set in this town.

As mentioned, the town maps I've shown are not regarded as finished, but remain works in progress. I am still not sure whether I want to go more in the direction of [16] or [18] as SP prototypes for the final versions. But as components of a digital timetable, these can be gradually modified and improved as needed.

The same is true of the rest of the timetable material, though most of it appears satisfactory to me at this point.

Putting it all together

With these sample track maps, along with the previously described components, my layout timetable can now be assembled. To sum up, the outside cover was shown as [13]; the first two pages inside, pages 1 and 2, are [15]; the center-spread pages, pages 5 and 6, are the schedule shown as [12]; and the back two pages, 9 and 10, are the pages shown in [13]. The town maps are then included as pages 3 and 4, for Shumala and East Shumala [22], and pages 7 and 8, for Ballard and Santa Rosalia. [22] contains the same maps as



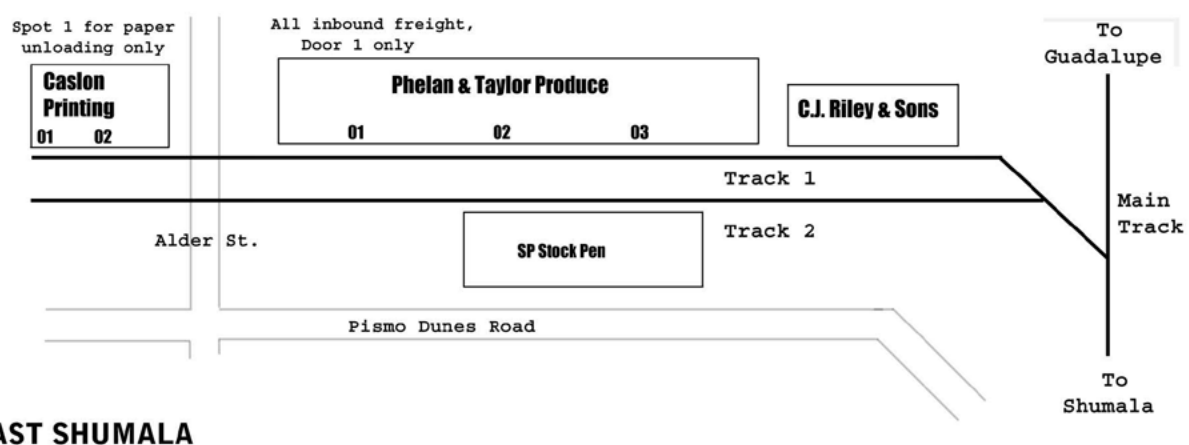
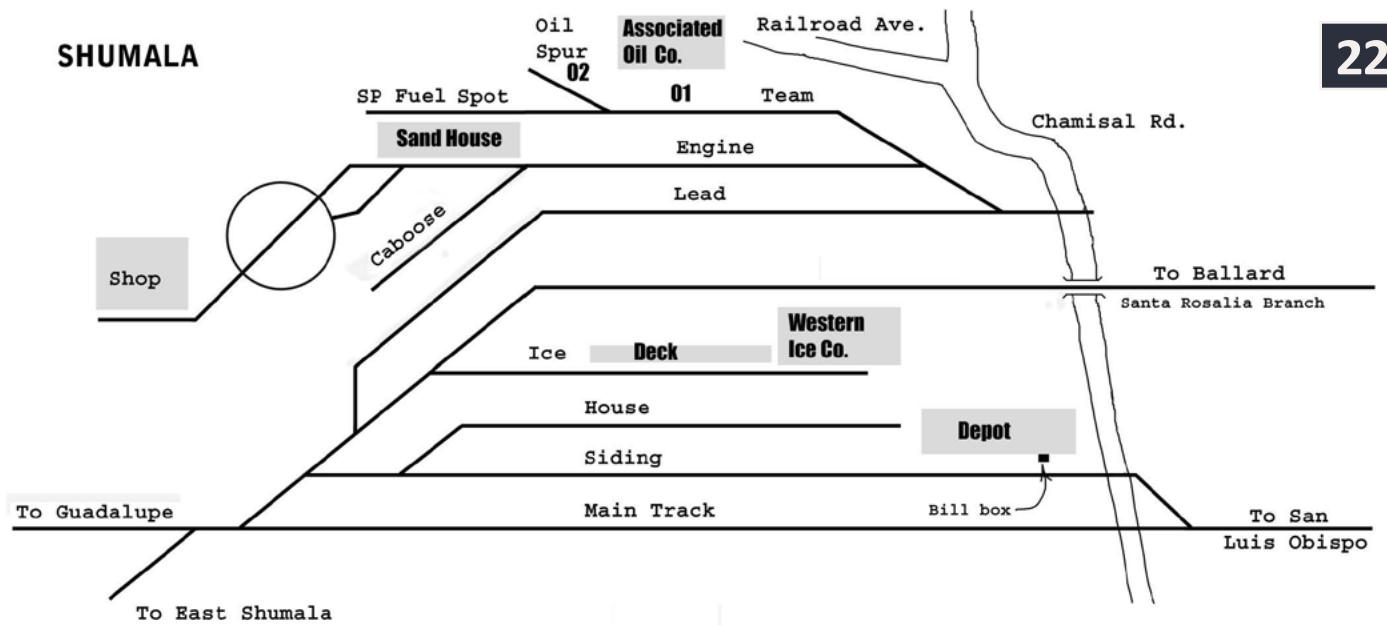
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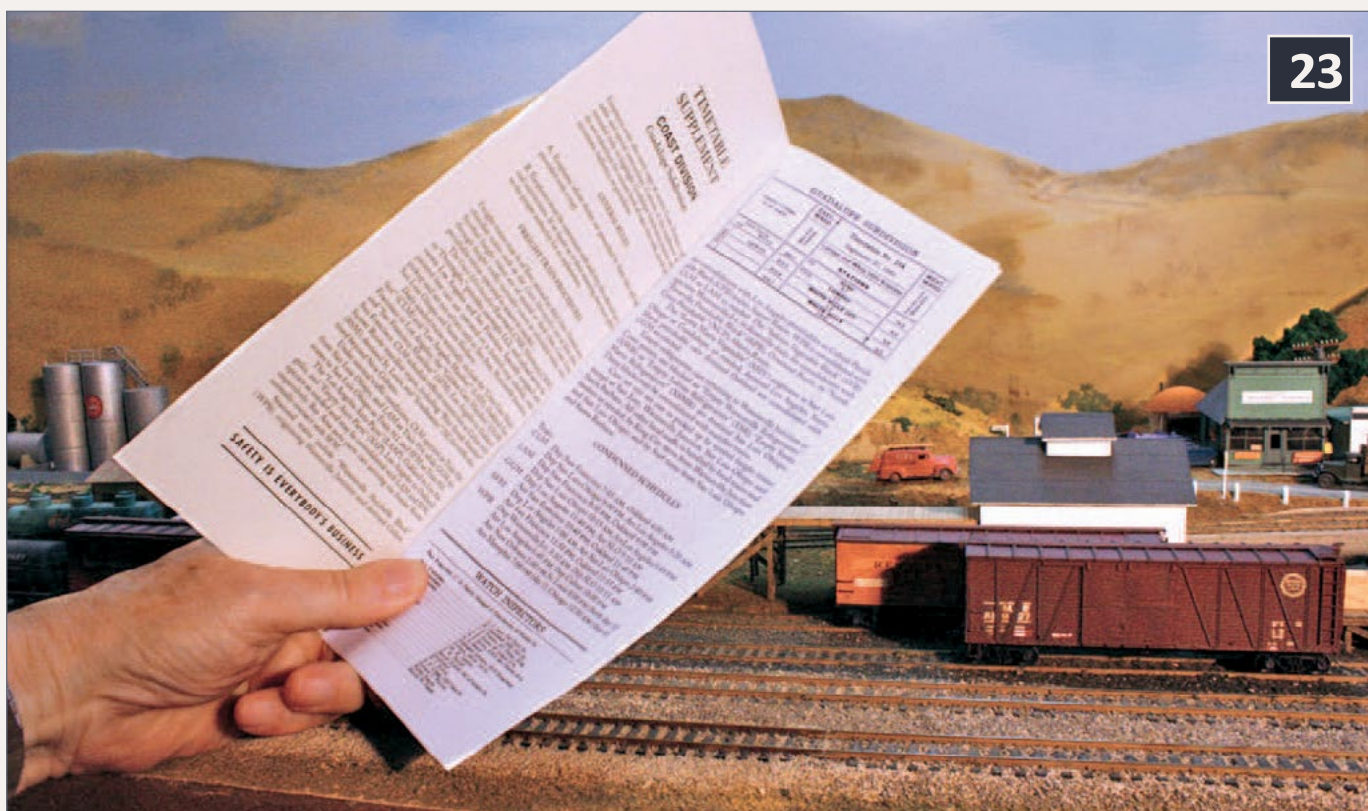
index

already shown, but is presented to show how the timetable pages are arranged in the final version.

Here is a view of a completed version of my timetable, [23] to give an idea of how it looks in use. Overall, I am pleased to have incorporated into this document the aspects of my layout that I wanted to include, along with as much SP-style information and graphics as I could use.



22. Combining the Shumala and East Shumala maps to make timetable pages 3 and 4.



23. A view of my completed timetable (the current version, that is), open to the first two pages (see [15]), illustrating the document in use on the layout at Shumala. The left page is printed on manila cover stock.

Concluding remarks

Obviously the exercise of timetable construction I have described is for a very specific railroad, place, and era. But the methods of construction could be used for a wide variety of other places and times. The components I chose from the prototype timetable, and the method I used to assemble them, to make up a layout schedule, along with the selection of Special Instructions, train procedures, and town maps, are all options to be chosen by the modeler, and can be varied quite considerably according to needs and wants. I hope the ideas of how to identify, extract and use the various elements which can go into a model timetable might be useful to others desiring to do something along the same lines.



contents



index

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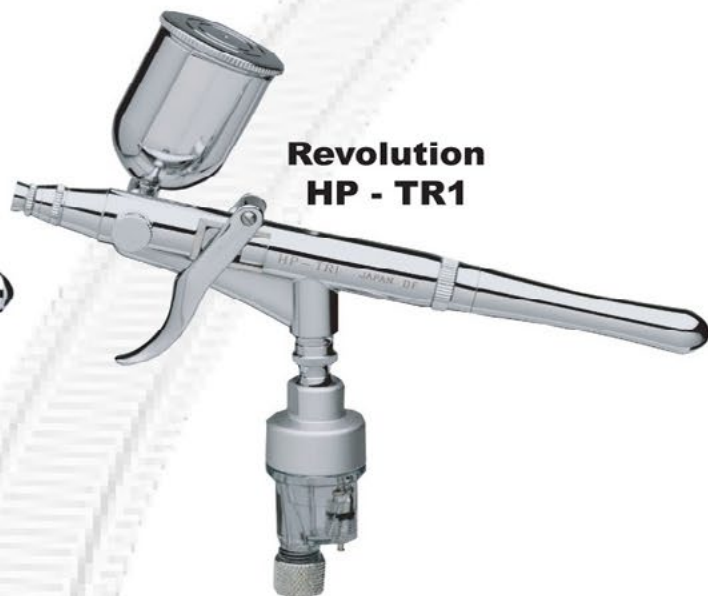
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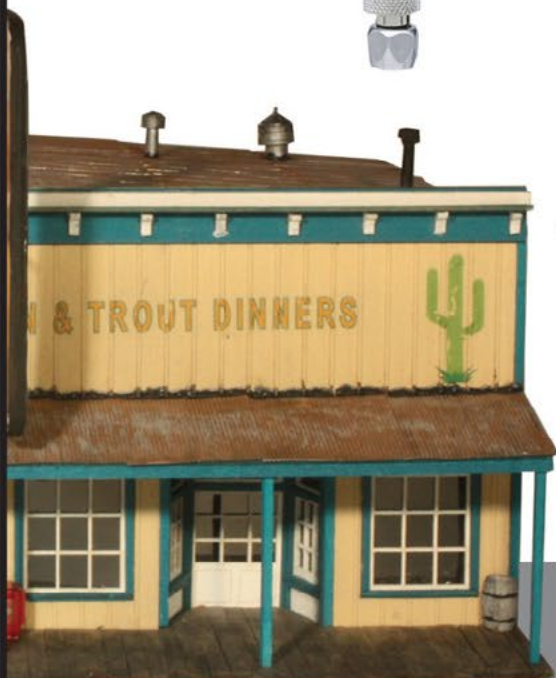
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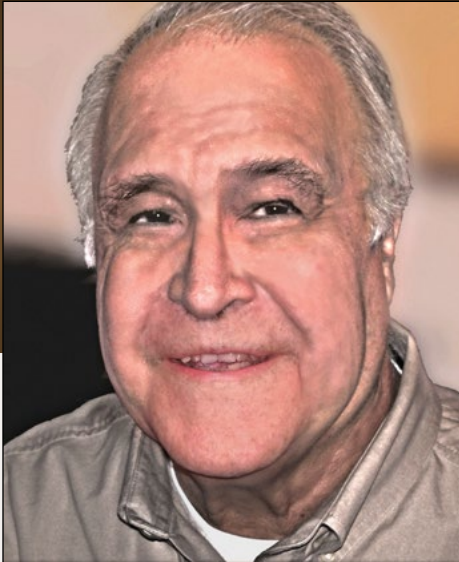
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A narrow gauge coal tippie Part 3

Ramblings on Narrow Gauge
and Branchline Modeling



The Lite and Narrow column by Larry Smith

Modeling the support structures ...

Completing the tippie scene

There have been very few really complete articles on modeling coal tipples. Most articles concentrate only on the tippie, and not the entire scene. The only article that I can remember in the general modeling press is the Jack Work tippie in *Model Railroader*, October, November, and December 1959. Because the mine in the article was a slope mine, he built the hoist house and several support structures, compressor building, office building and a garage as part of the entire scene. These three support structures greatly enhanced the overall model scene although there is no indication of a power source for the tippie. When the tippie was produced for AHM the support structures were not included and the tippie was made to look abandoned. It may be still available and might be a start for a kitbash to bring it back to a working tippie.



Ron Pearson has drawn two tipples in the Friends of East Broad Top's *Timber Transfer* that include the support buildings, the Robertsdale Number 5 and the Jollar tipple, the one featured in this series of articles. He included all of the support buildings in the articles and showed how to construct them. You saw the first of these with the scale house in the last article.

The types of support structures depend on the type of mine that is being modeled. Shaft mines, easily identified by the tall tower, must have a hoist house as part of the scene at a minimum. A power house should also be present. A drift mine, one that goes straight into the hillside, should have some indication of how the coal is moved from the mine to the tipple, and the power used to move it. In most cases this is indicated by overhead wires, and a transformer bank or a powerhouse is needed. But if animal power was used, then, a stable would be present instead. A slope mine, one similar to the Jack Work tipple, needs a hoist house and a power house at a minimum to represent the support structures.

Jollar tipple support structures

For this article, the only support items to be installed on the tipple diorama will be the mine cars and the blacksmith/car shop. The other structures will be mounted on ¼" foam board for inclusion in the final scene when installed on the layout. A map of Jollar from 1938 was used to determine their location relative to the tipple, and I include that information here. For example, the tracks are located on the south side of the tipple, and the mine car scale house is located on the north side.

Mine cars

While technically not a support structure, no coal tipple scene is complete without mine cars. I have several packages of the



1. Two BTS mine cars that have been modified to represent the smaller 2½ ton cars used at mines on the East Broad Top next to an unmodified car for size comparison.

BTS mine car on hand, and thought these would be adequate for the Miller tippie. However after construction of the mine car scale house, I discovered they are too large. In my questions with Steven Runkle, a relative of the Miller family, I was told the mine cars were 2½ ton cars about 4' 6" wide and 8' long – about the same size as mine cars used in other Broad Top mines. Models of the mine cars based on one that is on display at Robertsdale, PA were produced in brass, but that was in 1996, and they were expensive at the time. The old Alexander Kanawha mine cars are now available from Tomar, but, as with the BTS cars, they are also too large.

Using drawings from Don Heimburger's book, "Along the East Broad Top," I modified the BTS cars to get the smaller mine cars, reducing them by at least 30% and shortening the wheelbase as with the Broad Top cars.

Begin construction of the cars by gluing the center sills into the slots for the floor. Measure the distance between the axle slots, and remove a scale 1' between them, then glue them back together. Narrow the frame of the car by measuring 6" on each side of the slot for the ends. The line should be along the



contents



index

outside edge of the wheel well holes. Remove the wood. Trim the floor piece to length and glue it to the narrowed frame, trimming off the excess flooring.

The ends of the car are a little tricky. Find the center of the end and measure 2'3" from the center line on each side at the top of the piece. Mark these points, as this will be the new width of the car, 4'6". At the bottom of the end, measure 6" on each side of the slot and mark it. Draw a line from the top marks and cut the excess from the end. Where the cut intercepts the lower board, make an angle cut to the 6" mark and glue the ends into place. Measure the distance between them and cut the side boards to fit between them. To complete the cars, follow the kit instructions.

Truck scale house

The truck scale house is located on the east side of the tippie on the road that runs along the base of the hill with the mine



2. Typical operation of the mine cars at the Jollar tippie with the mule in position to pull them back to the mine. The harness has yet to be attached and the cars are still to be coupled using link-and-pin couplers.



3. Truck scale house with roof removed, showing the scale and interior.

trackage. Just beyond the truck scale house the road begins a steep climb up the hill and over the ridge to connect with a state highway.

I used a combination of the Builders in Scale kit 610 scale house and scratchbuilding to model the Jollar truck scale. This kit is designed for either a truck scale or a railroad scale, making the components easy to use for any situation. For all intents and purposes, this is really three structures – the truck scale, the shelter, and the weigh shed. All are very simple structures.

You can construct this building on your workbench or in place on your diorama or layout. I chose choice to build it on a 5" x 4" piece of basswood painted with my earth-colored latex paint. The first structure I built was the truck scale. I cut a piece of .060" styrene 10' x 16'. Scale 2" x 8" styrene was glued to the edges. The entire assembly was then painted concrete



contents



index

color and set aside to dry. Scale 2" x 8" lumber was stained using Builders in Scale Silverwood and put aside to dry. The shelter over the scale was constructed using 1/8" dowels for the posts. This type of construction was called telephone-pole construction, for the heavy round timbers used to support the roof. They were also strong enough to resist any wayward trucks hitting them. The shelter is 16' x 26' with the posts located at the corners, plus two in the middle at 13'. Before gluing into place, rough them up with a razor saw and then stain them. I used Hunterline Boxcar Brown stain for the stain on this structure, as it gives a nice weathered reddish color. I glued an 8"x 10" x 26' timber to the tops of the poles for the rafters to rest on. The rafters are 2"x 8" glued to a 2"x 8" center beam on 24" centers. Both ends of the rafters have 2"x 6" boards added to the inside of the rafters. Roofing boards consist of 2" x 12" with American Model Builders peel-and-stick asphalt shingles. The shingles are painted olive drab as were the prototype's.

The scale house is small, only 6' x 10' and is constructed of 5" tongue-and-groove siding. There is a door in one end and a large window on the scale side. The only tricky part is getting the roof angle the same as the scale shed. The door is a Grandt Line 5131, and the window is from a Builders in Scale scale house. I also placed the scale casting inside the building. A potbelly stove is also in the small space, and has an 8" stove pipe through the roof. The Builders in Scale smoke stack is on the roof. The roof has asphalt shingles from American Model Builders and like the scale shed painted olive drab.

Blacksmith/mine car shop

The blacksmith/mine car shop is located northwest of the triple and mine car scale house, on the same level as the mine.

Mine cars are moved into the building for repair through a switchback. It is a simple box-like structure measuring 18' x 25'.

As we have seen throughout this series, photographs have a tendency to show up after the initial project is done, and this structure is the same. When Ron built his version of the building, he had photos of the tipple side and the wall on the same side of the scale house. A photo emerged that shows the third wall of the structure and showing it resting on a cut-stone foundation. Using this new information, I added the new wall and windows, along with a Monster Model Works stone foundation. I have learned that most if not all of the buildings in Jollar rested on cut-stone foundations.

The upper walls are cut from Northeastern scribed siding that closely represents the 9" tongue and groove siding used on the prototype structure. I used 6" x 6" for the corner



4. The blacksmith/car shop with a mine car ready to enter the shop. It has yet to be placed on the tipple diorama and the track glued in place.



contents



index

pieces. Grandt Line 5239 windows were used for the building. Campbell Scale Models attic vents were used in the ends of the building. The sliding doors were made from scribed siding, and .080" Evergreen angle for the roller mechanism at the top. The roof was made from 1/32" basswood and covered with Northeastern paper corrugated metal. The entire building was stained using PollyScale boxcar red.

Mule barn and corn crib

The Miller mine stabled 25 mules at the Jollar tipple for use above ground and in the mine itself. Horses were also stabled at the tipple. Both the horses and mules were used to haul lumber out of the woods whenever the mine was shut down and the timber on the property was being harvested. The company owned 25,000 acres. To house these work animals, the



5. The rear of the blacksmith/car shop showing the rear wall and window arrangement from a late-appearing photograph.



6. Mule and horse stable.

company had a barn to the west of the tipple. It was 75' x 40' without any windows, and only one large door, at the east end of the building. The building rested on a stone foundation for the south and west walls and a concrete wall for the north wall. Because of the sheer size of the structure, I reduced it by 20%, making the building 60' x 32'. The structure was constructed using Monster Model Works S scale scribed siding. The concrete foundation wall was constructed from 1/16" basswood, with Monster Model Works distressed concrete sheets laminated onto it. The walls were attached to the concrete foundation and a stone foundation from Monster Model Works. The roof was built using 1/32" basswood with BTS French shingles. The real eye-catcher for this structure is the large corn crib attached to the east end of the building. Using plans downloaded from Midwest Plan Service (www-wps.sws.iastate.edu) for a single frame corn crib, I began construction by making a cut stone foundation 16' x 8' from Monster Model



Works cut stone strips. A floor of 1/32" basswood was glued to the foundation. The four walls were constructed using 6" x 6" corner posts and 2" x 6" studs spaced on 2' centers. The front wall is 11' x 16' and the rear wall is 8'6" x 16' to the corner posts and studs. 1" x 6" x 16' boards were attached spaced 2" apart to the front and rear walls. The end walls are 8' wide and the studs spaced on 2' centers. 1" x 6" x 8' boards were attached leaving 2" spaces between them. A Grandt Line 5131 door was used and was framed with 4" x 4" lumber. The loading doors, which should have been on the roof, were made from scribed siding, as were the feed doors. The entire structure was washed with PollyScale boxcar red. A roof of 1/32" basswood was constructed and Northeastern paper corrugated metal was applied. It was weathered using chalks.



7. Corn crib showing construction and a stone foundation. The corn crib was built board-by-board.



8. The corn crib in position adjacent to the mule barn, as it will be installed on the layout.

Powder house

Every mine needs a place to store explosives. There was only one shift at the mine, and explosives were used only after the shift ended or during the lunch break. This was so every man and mule could be accounted for.

The powder house was located east of the tipple and north of the company store. It was enclosed by three earthen bunkers to direct a blast away from the houses that were located farther up the hill. There are no known photos of the structure, but the prototype is known to be of concrete construction with a roof that would easily give way during an explosion. This type of roof isn't known.

Information about the type of construction became available after I had purchased a kit as a stand-in for the structure.



I knew the shape of the building, searched online for one of similar shape, and found Buck's Dynamite Building by BTS, kit #27455. The building is 28' x 16' and is the shape of the real building. The kit is cast metal with a laser-cut paper roof. It assembles quickly with most of the time needed for painting in the details. I used Floquil Rust and Aged Concrete on the structure. The roof was painted aged silver and then rusted with Bragdon powders. The earthen bunkers were cut from Styrofoam and covered with plaster cloth.

Fan house

Not included in the *Timber Transfer* article on the support structures at the Jollar tipple was the fan house. The primary reason for that was a lack of space on the diorama. Another reason may have been the lack of photos of the building.



9. The powder house from a BTS kit. The roof has been modified to represent a corrugated roof rather than the rib-seam roof supplied with the kit. This building is very heavy, as it is cast metal.



10. The ruins of the fan house showing the interior detail and fan as they existed in 1991. Vagel Keller photograph used with permission.

A fan house is an essential building at any tipple scene. Most of them are located close to the tipple, as their purpose is to get fresh air down into the mine. This is to clear methane gas that accumulates in some mines, sometimes with deadly consequences. The fan was mounted to draw air through the open mine entrance and then up a shaft and out of the mine. Inside the mine were doors that were opened and closed to regulate the air flow. This particular fan was 5' in diameter, and was operated by a gas engine that was started every morning by the carpenter who walked from the shop to the fan house before the shift began. There was only one shift at the Jollar mine, and it varied in length, from eight to 12 hours, depending



on the demand for coal. The fan wasn't converted to electric power until after WWII when electricity reached the area.

The model is based on the fan house at the Number 5 tipple at Robertsdale on the EBT, and was a typical design that was used at the mines of the Broad Top field. It was of concrete block construction, and had two large screened openings for the air to enter and exit. Photographs show this fan house was located up against an opening in the hill similar to a mine entrance, and drew the air in through one opening and exhausted it out the other.

The fan house was located northwest of the tipple, higher up the slope. A substation was placed nearby after the fan house was converted to electricity.



11. Fan house constructed using Monster Model Works concrete block laser-cut basswood and Ron Pearson's plans from Robertsdale No. 5 tipple.



12. Monster Model Works new kit developed from Ron Pearson's plans. Note the differences in the foundation and the screened opening, as the kit is designed for universal usage.

The model was constructed using Monster Model Works concrete block sheets. This material is easy to work with, as it is laser-etched basswood. The concrete block pattern is taken from a photograph and cut into the 1/8" basswood; it is very realistic.

I drew the walls on the plain side of the material. I then cut the pieces out with a saw. There are only three openings in the building, and they were removed as well. The corner pieces were measured against the peaked walls and cut to match the angle of the roof. The same was done for the bump out on the front of the building. You may have to sand the two pieces to get a good tight fit. I used the corner pieces to line the door openings and then used Scale Scenics brass mesh for the screened openings. The man door is a Grandt Line 5131 casting. The floor is Monster Model Works cracked concrete that was pre-painted with Floquil Aged Concrete before gluing in place. The entire building was painted with Floquil Aged Concrete before the roof was added.

The roof is 1/32" basswood with BTS French Shingles applied. The roof was painted weathered black.




contents



index

The second fan house that you see is Monster Model Works version of the same structure and is available as a kit. Some changes were made to make the building more adaptable for other tipples and ore mines. So if you don't want to scratch-build one, there is a kit available.

There are many more structures to be added to the diorama, some large, and many small. Still left to build are a company store with an interesting story about pigs, a carpenter's shop converted from the first school, and the school itself. There were nine houses, single and duplex in the town and a multitude of frame garages and out houses scattered over the property. There was a saddlery near the mule barn that can be added. Over time, we will revisit this diorama and show how these were constructed. 



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Building a movie set, take 2

Larry Smith shared how he built a model diorama for a TV commercial in his last column – now, he gets to do it again! ...

A good couple years after doing the first diorama set for the Subway commercial, a call came from the movie company again. They had another commercial to shoot and wanted another diorama to use as a set!

This set was to be larger, both in size and scale, with the same western theme. Instead of an open spaces type of set, they wanted a western town in a larger scale than HO: we settled on S scale.

There had to be two key structures on the set: a church and a saloon. Everything else was left to my discretion.

In the two years since I constructed the previous set, more material had become available to allow easier base construction of the diorama. This time, I used rolls of large vinyl mats from Woodland Scenics® in desert sand. These large mats made the project less expensive as well.

I constructed a framework of 1" x 2" lumber and covered it with ¾" foam board glued into place using foam board construction glue applied with a caulking gun. I attached the vinyl mat using the same glue. I did leave a three inch loose edge of material on the front of the diorama to avoid an abrupt edge on the front.

I found the structures to be the most time-consuming part of the project, with me building a total of seven buildings from craftsman kits. I purchased four structures from Wild West Models and three from BTS.

From Wild West Models: Miners Supply, Assay Office, Don's Dry Goods, and Harvey's Hardware. From BTS: Kee's Laundry, Red Eye Saloon, and Country Church. The building ranged from easy to difficult in complexity of construction. In addition we cut wide board sidewalks to use to connect the buildings.

Here's the final commercial: the cowboy pulling the horse with the rope is me reduced to S scale! ■



Subway commercial using an S-scale set made by our Lite & Narrow columnist, Larry Smith ...



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contents



index



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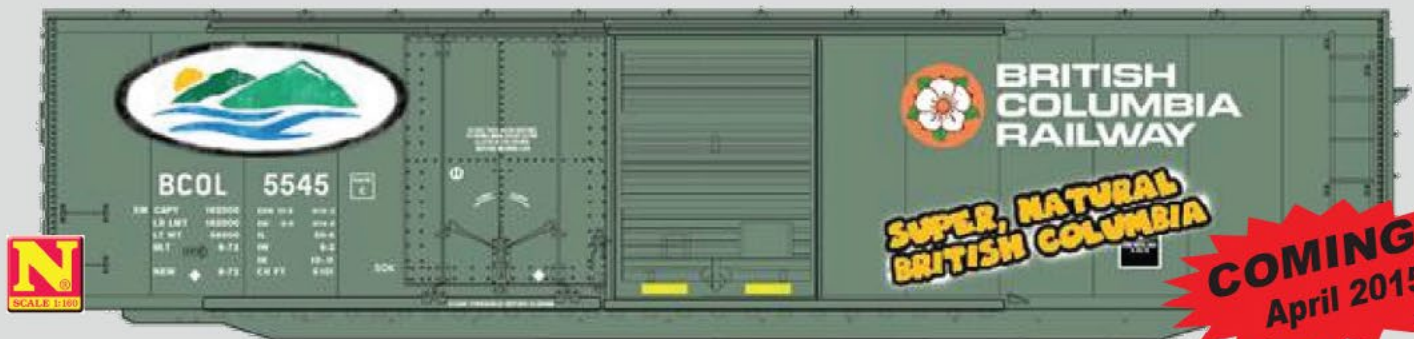
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contents

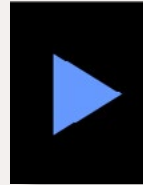


index



Words and music

Photos and video of superb models



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What's neat this week column

by *Ken Patterson*

Cleaning up the garden railroad, and engineering a lift-out section ...

1



1. A little music with the work.



This month's video was fun to put together. Glen Andrews came by during train night on Saturday and played some guitar tunes on the cliff deck while the summer moon gave an epic background. I had to share some of that while I enjoyed a few summer train runbys on the garden railroad.

C-19s and three-truck Shays with all their working mechanics, along with a 4-4-0 pulling coaches made for some good railfanning that day. I have been working hard to keep up with the upkeep of the outdoor large scale layout during the growing season. It's no simple task with 400 foot of main line. I painted the roadbed with a few cans of brown camouflage paint from Rustoleum. This tones down and darkens the roadbed for good photos and video in the summer sun. The next series of still photos are cut out of the video to illustrate to you here in the still text how I designed a lift-out section on my home layout to gain access to a door.



Playback problems? [Click to try a different version.](#)

The river section shown this month is made up of foam sheets cut to the contour of the main line curve, with six inches of scenery on each side of the track. Quarter-inch oak plywood is wrapped around the foam and glued in place to form the curved sides and flat bottom. Everything is stained, and finished with polyurethane.

The removed sections has a safe place under the layout for storage and can be dropped into place at a moment's notice. Replacing the pins and the rail joiners allows trains to be running in minutes.

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2



2. The Bachmann C-19 in bumblebee colors runs past freshly trimmed dwarf pine trees. For this shot in the video, the camera sits on a flat car and runs alongside the train for a realistic shot.

3



3. Rio Grande Southern C-19 40 pulls into a curve where you as a passenger can see the side rods working to pull you along, just like the prototype. It's an even more impressive a sight on video.



contents



index



4. The 16-foot long river scene on my HO scale home layout scale is made up of two sections, each eight feet long. I set it up outdoors to photograph BLMA's bridge for an ad in the model press. I plan to paint the bridge silver and reshoot the scene for a different series of photos in the coming days. The next series of still photos are captured from the video to illustrate to you, here in the still text, how I designed a lift-out section to gain access to a door on my home layout.

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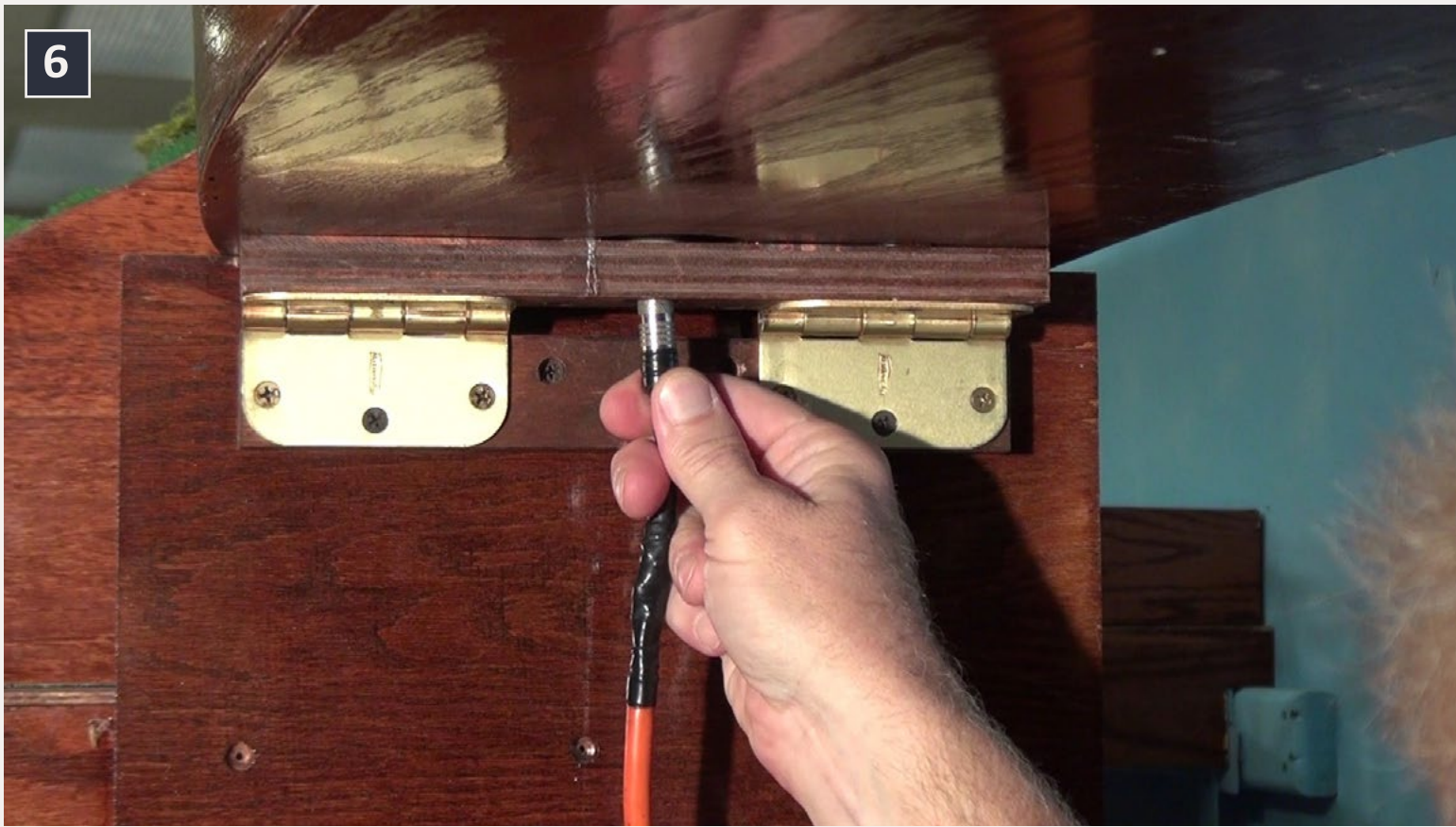
index

5



5. The liftout sits on top of mounted door hinges. This maintains the same alignment every time you install it, so the rail will match to the other segments. The door hinge pins hold everything tight when installed. To remove the section, pull the pins.

6



6. Pull out the power plug that supplies power to the track in the lift-out section. This is simply a guitar jack from Radio Shack.

25,000 have read this MRH forum thread - *have you?*

Share your weathered rolling stock, Please!

Sat, 2012-03-24 12:34 — Bluesman Locos and rolling stock Locos - Rolling stock (general)
ShareThis

I am hoping some of you will share some pictures of your weathered rolling stock. I always love to see other peoples work and of course learn something new!


Gary

25632 reads not spam (1) mark as spam

Athearn Blue Box

Thu, 2012-03-29 04:56 — Tom Patterson

Here's a boxcar that I built in 1985 based upon a small photo in MR.



The image shows a weathered brown boxcar on a track. The boxcar has "G.N.E. & O." and "37302" written on its side. It is surrounded by green trees and foliage.

Read
now



contents



index

7



7. Remove the hinge pins and lift the section to separate the hinge parts. See how the hinge mounts fit together.

8



8. Lift the section from the layout to allow access to a walk-out door. The opening is four feet wide.

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contents



index

9



9. The section is made up of foam sheets cut to the contour of the main line curve, with six inches of scenery on each side of the track. The ¼-inch plywood is oak. It's wrapped around the foam and glued in place to form the curved sides and flat bottom. Everything is stained, and finished with polyurethane.

10



10. The removed sections has a safe place under the layout for storage and can be dropped into place at a moment's notice. Replace the pins and the rail joiners to have trains running in minutes.

 **Reader Feedback** 
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contents



index

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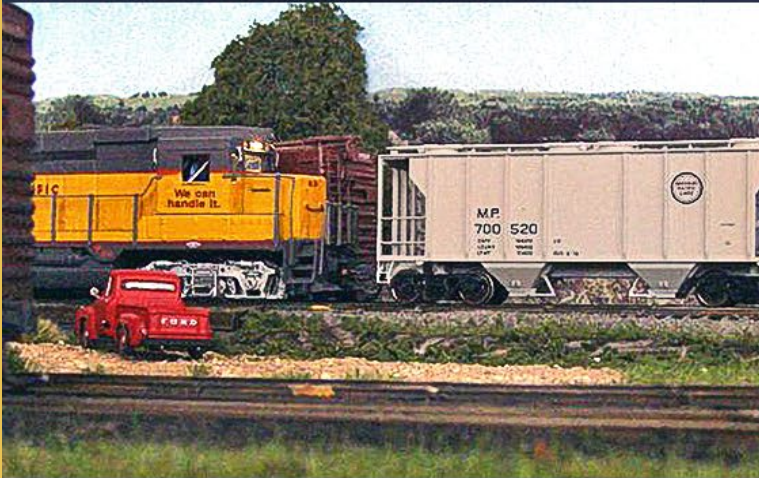
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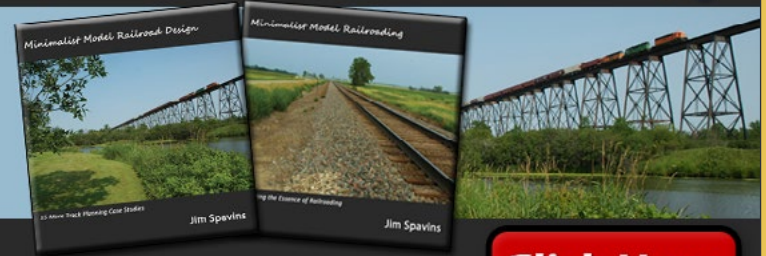
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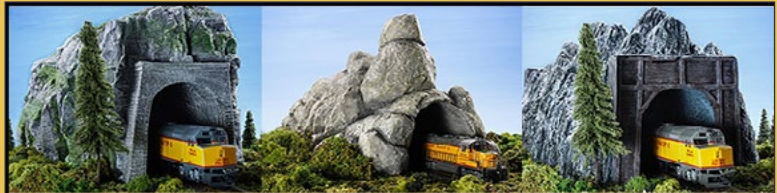
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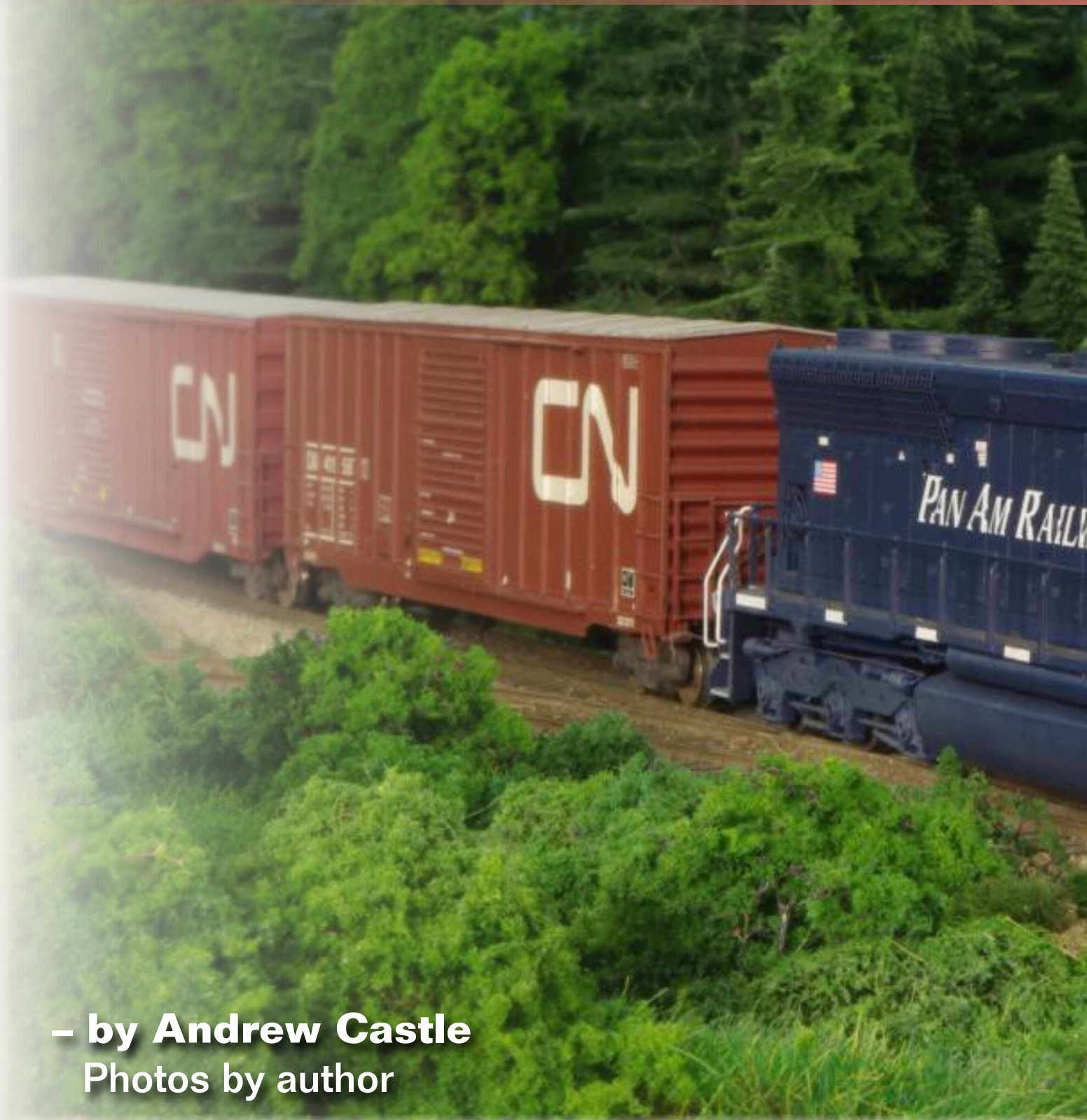


contents



index

Build a **Pan Am Railways SD45R**



– by Andrew Castle
Photos by author





contents



index

Building a contest quality model ...



Reader Feedback
(click here)



Today's Pan Am Railways is a different company than the Guilford Rail System of just a few years ago. The 1980s and 1990s saw Guilford facing declining traffic, labor disputes, and line abandonments; changing the railroad's name to Pan Am Railways in 2006 brought little change. It was a 2009 agreement with Norfolk Southern that turned things around; today Pan Am Railways is seeing increased traffic levels, unit oil and

2



2. MEC 610 leads a southbound freight preparing to depart Waterville ME in October 2011.



grain trains, and is slowly repainting its locomotives into a new all-blue paint scheme.

I saw my first blue-painted Pam Am Railways locomotives on a 2011 trip to New England. During a stop in Waterville ME I saw MEC 610 waiting to depart with a southbound road freight, I only had time for a quick snapshot of the train, but further rail-fanning trips to New England convinced me I needed to model one of these units.

Pan Am gets six-axle power

During 2010 Pan Am acquired 20 six-axle locomotives from Kansas City Southern Railway and Helm Leasing. These were the first six-axle units to join the Pan Am/Guilford roster in many years. All units were rebuilt to SD40-2 standards with 16-cylinder EMD 645 engines, but they retain the looks of the SD40, SD45, SD40-2, or SD45-2 models they were originally built as. All 20 have MEC reporting marks, and are numbered 600 to 619.

When choosing a locomotive to model I decided I would build MEC 610, the unit I saw in Waterville. Research showed this unit was originally a Southern Pacific SD45 and had been rebuilt at least once under the SP's GRIP rebuilding program. The unit retained several SP features such as split doors on the cab sub-base, and the front windshield had been converted from its as-delivered L-shape to a more common multi-panel window. The steps I used to build this model can also be used to build a Southern Pacific SD45R; some of my techniques can be used on other diesel projects. All of Pan Am's six-axle units have detail differences, so be sure to consult photos of the exact unit you are modeling.

While building my model I constantly referred to photos I found online. Some of the best websites for this are



contents



index

rrpicturearchives.net, railpictures.net, locophotos.com, photos.greatrails.net, and rr-fallenflags.org.

Choosing a model to start

Modelers have a choice of SD45 models to start with. Recently they have been produced in HO scale by Athearn, Bachmann, Kato, LifeLike Proto 2000, and Walthers Proto. In my opinion the LifeLike Proto 2000 model has the best shell detail; while out of production they are frequently available at train shows or on eBay. The Proto 2000 model does have an oddball gear ratio which makes it run faster than other models, but this is



3. Comparison of the blower duct lengths on Proto 2000 SD45s.



4. Proto 2000 SD45 before disassembly.

easily fixed if you are running DCC. The same model is currently available from Walthers Proto with a more standard gear ratio and optional DCC sound.

An undecorated model is the best starting point, but unfortunately they are hard to find. An advantage to starting with a Proto 2000 model is the paint can be removed without any harsh chemicals or hard work. The Proto 2000 model was made with two different-length blower ducts on the conductor's side as seen in [3]. While I started with a model having a long blower duct, I highly recommend finding a model with the shorter version as seen on the Santa Fe unit.

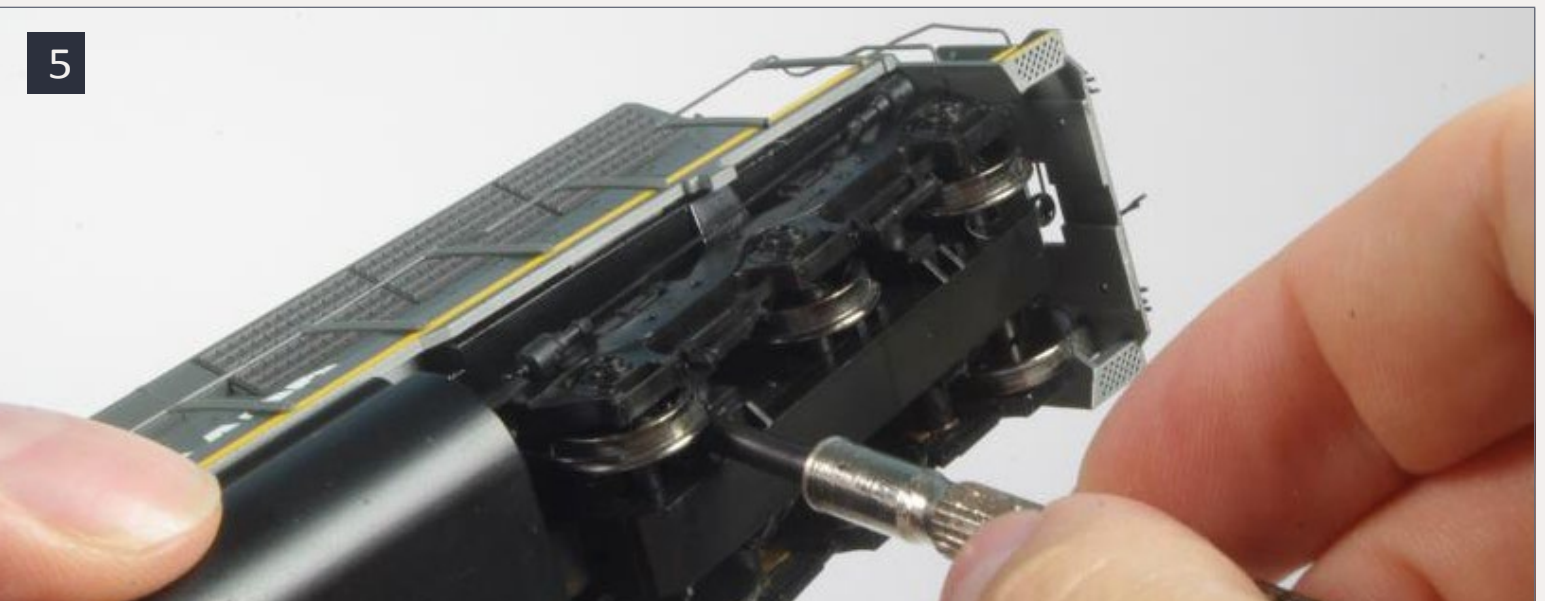
Getting started

I built MEC 610 as a contest-quality model; it is up to you how much modification and detailing you want to do on your model. My starting point was the Seaboard System unit shown in [4].

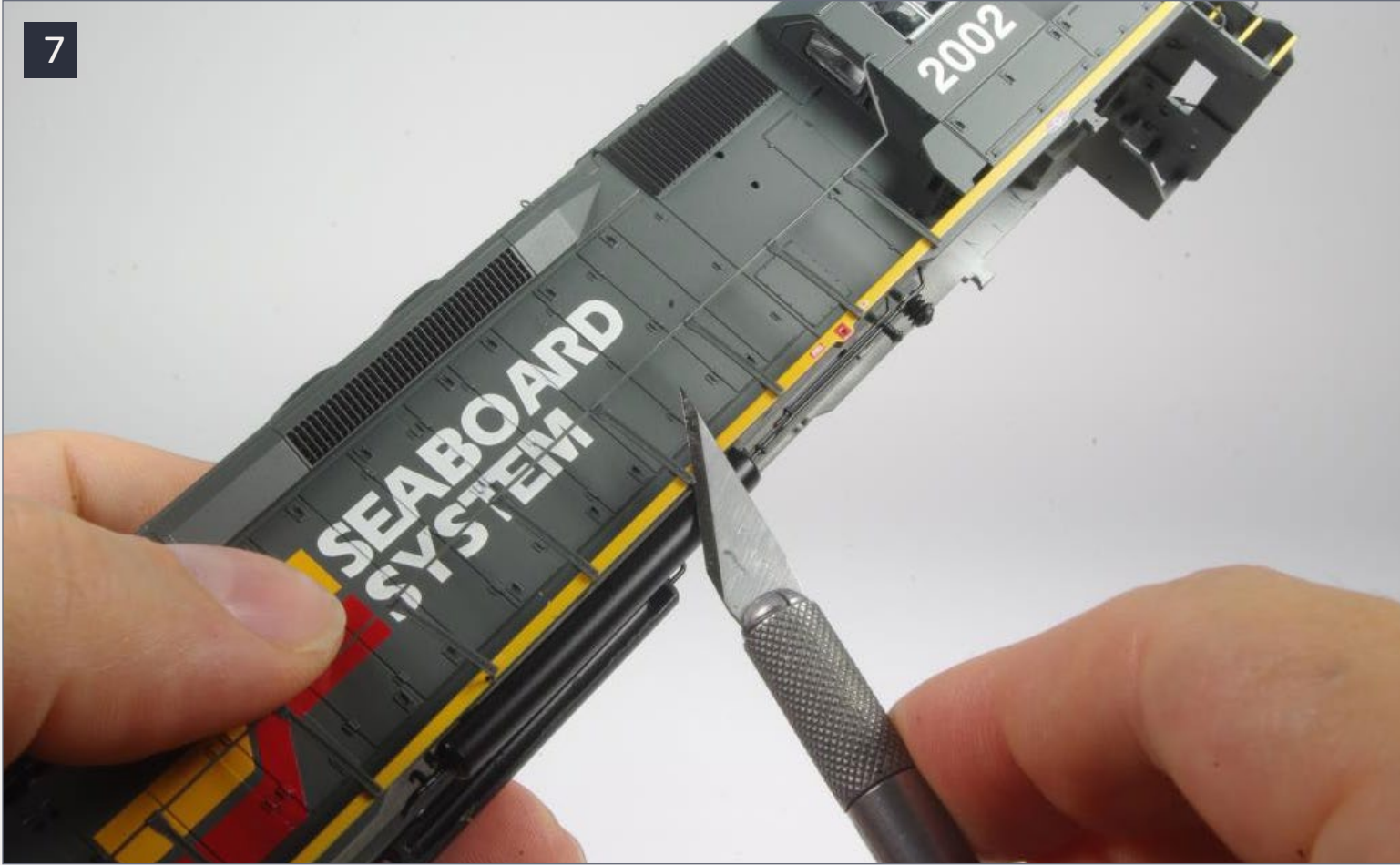


Once you have gathered all your tools and materials, the first step is to disassemble the model. There are two small Phillips screws which hold the shell to the frame, they are a bit hidden, so follow [5-6] to locate them and remove them. At this point I will concentrate on the shell; I will come back to the chassis later.

Next remove the handrails. I found the easiest way to do this was to slide a #11 blade under the edge of each handrail



5-6. Removing the rear and front screws which secure the shell to the frame.



7. Removing the Proto 2000 handrails using a #11 blade.

stanchion [7] and twist it to loosen the stanchion. I disassembled the shell into its major components [8].

Continue to remove all of the added-on details. I discovered that many of the plastic parts are inserted in their mounting holes, then the mounting pins are melted on the inside of the shell. Quite often you can shave off the melted part with a hobby knife and then pop the part right off. To remove the side radiator grilles, use a dental pick or small screwdriver to push out the mounting pins from inside the shell.

Once the shell has been disassembled and the details removed, it is time to strip the paint. The best thing for stripping Proto 2000 paint is 99% isopropyl alcohol or isopropanol. I put the parts of the shell in an airtight container, pour in enough isopropyl alcohol to cover everything, then let everything sit for a couple of hours. I scrub the parts with a





8. The disassembled Proto 2000 SD45 shell.

toothbrush. If the paint is still sticking to the model I let it sit a bit longer. Once the paint is removed, the model is washed in warm soapy water, rinsed, and set aside to dry. Notice in the pictures I also stripped the paint from the cab and short hood. I used Cannon parts on this model, as I planned to use the Proto 2000 parts on another model.

The long hood

With any kitbashing project it is a good idea to work in sub-assemblies; a good starting point for this project is the long hood. First I cut apart the rear headlight and number board casting by making a horizontal cut just below the headlight [10]. I set the headlight aside and made two more cuts to separate the number boards [11]. Since MEC 610 does not have rear number boards, I glued the clear number board castings into their holes. I filled all the grab iron holes with .020"

9



9. Preparing to strip the paint from the shell.

10



10. Cutting the rear headlight and number board casting.



contents

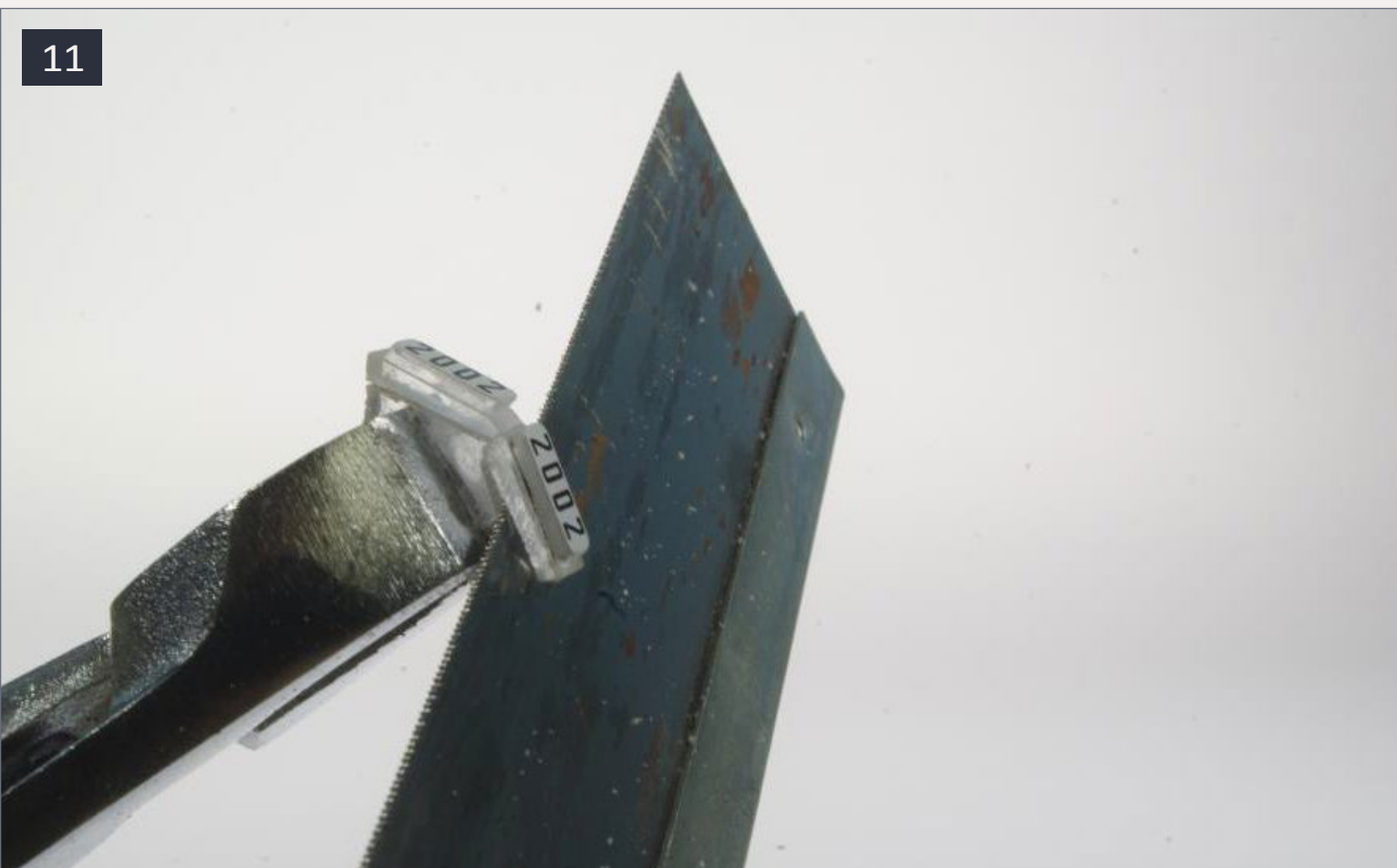


index

styrene rod and the class light holes with pieces of 1/16" rod. Putty and sand to remove all traces of the number boards, class lights, and grab iron holes. Use either a razor saw or file to remove the slot on the front of the hood casting where the Proto 2000 cab mounts onto the hood.

Fill the hole for the hand brake wheel with a piece of .040" styrene rod. Plug the small drain holes near the front of the hood on both sides using .030" styrene rod. Putty and sand the areas smooth. I removed the right side generator compartment door using an X-Acto #17 blade. I made several gouges in the shell while doing this so, if you make any marks in the shell fill them with putty and sand smooth. Next I enlarged the hole where the exhaust stack will go using the open part of the Cannon

11



11. The second cut on the rear number board casting.

12



12. Long hood under construction on the fireman's side.

13



13. Long hood under construction the engineer's side.



contents



index

turbo hatch as a reference. Sand off any mold parting lines on the shell.

Moving to the radiator area of the model, I glued on the Hi Tech radiator shrouds, puttied any gaps and sanded the joints smooth. Fill all of the mounting holes from the Proto 2000 side radiator grilles with pieces of .030" styrene rod. I cut rectangular pieces of .030" sheet styrene to fill the holes in the front section of the radiator grilles, file the bottom to match the profile of the other two grille sections. At this point your shell should be looking like [12-13].

Next install the Plano radiator grilles following the included instructions. This is shown in [14-17]. The only change I made to the instructions was to brush paint the area behind the grilles flat black.

14



14. Plano radiator grilles step 1.

15



15. Plano radiator grilles step 2.

16



16. Plano radiator grilles step 3.



contents



index



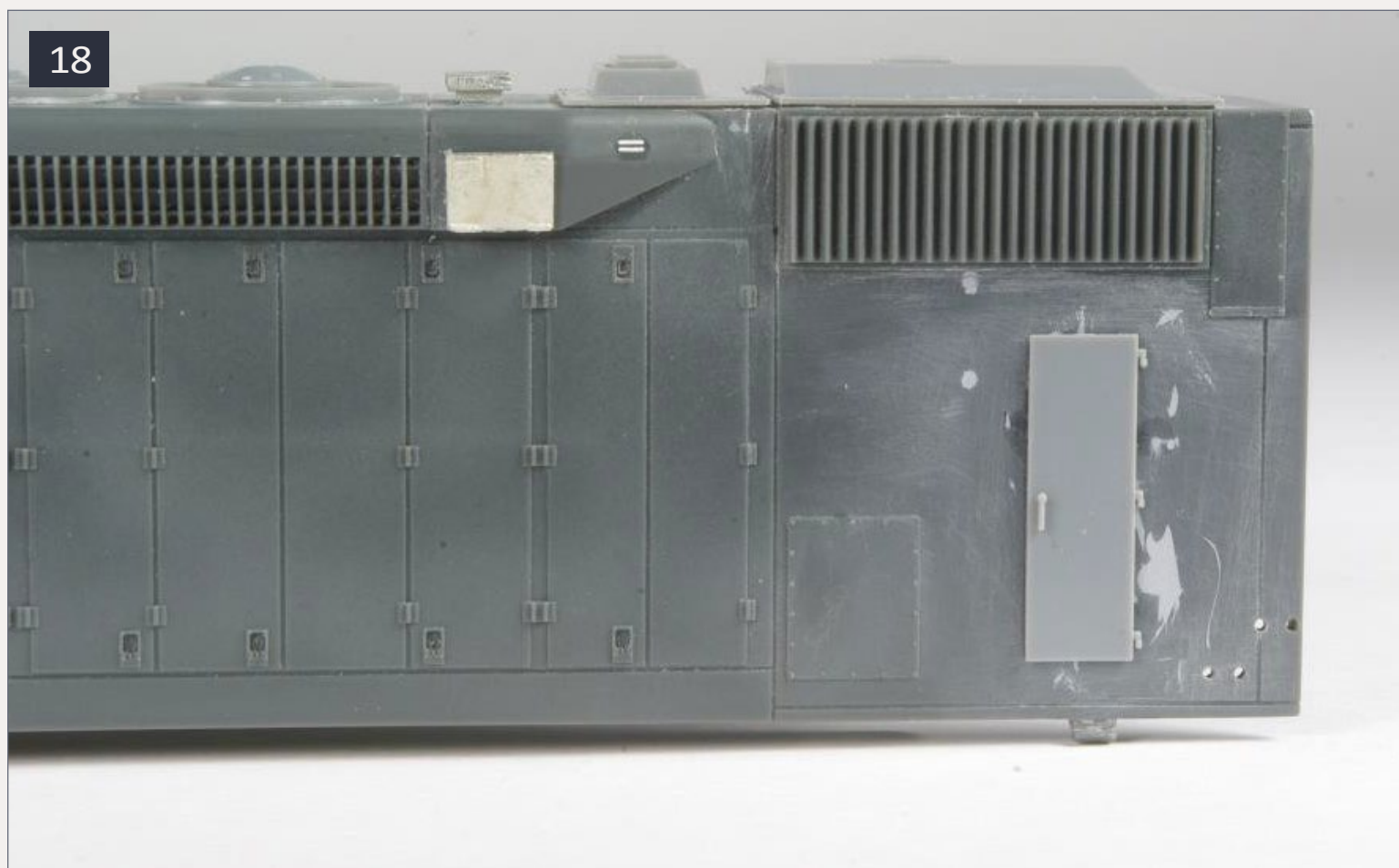
17. Plano radiator grilles step 4.

I drilled #79 holes in all the spots where I previously filled the grab iron holes. A Detail Associates nut-bolt-washer casting was glued into each hole, then I drilled a second hole just above each NBW casting for the actual grab irons. BLMA grab irons are installed using a piece of .030" styrene strip as a spacer to keep all of the grab irons an equal distance from the hood.

Next I installed the Cannon inertial filter hatch, turbo hatch, dynamic brake fans, and radiator fans. Install the two dynamic brake vents, the one from the Details West detail kit in front of the dynamic brake fans and the Detail Associates vent behind. The dynamic brake access doors are glued on, as are small louvers from the Details West SD45 detail kit. The very small louvers are located on the front of the dynamic brake blister, and cut from small pieces cut from .005" styrene sheet. I glued the

Cannon generator compartment door on the right side of the hood .120" from the bottom of the hood and .360" from the front [18].

Plano 14651 lift rings are installed on the dynamic hatch and Plano 14652 lift rings on the radiator compartment, turbo hatch, and inertial filter hatch. Bend the curved grab iron behind the rear radiator fan using .008" brass wire. I added the sand filler hatch and lift tabs on the rear of the hood from the Plano 14771 winterization hatch screen. I used lift tabs from Sunrise Models, but these parts are no longer available. A #76 hole was drilled where I previously plugged the hole for the handbrake wheel. Glue a short piece of .015" wire in the hole; use this as a mounting pin to attach the hand brake wheel from the Cannon short hood kit.



18. Electrical cabinet/clean air room door.



contents



index

One thing I did not notice until I was ready to paint my model is the seventh hood door from the rear on the right side has a water sight glass, the same as EMD Dash 2 locomotives. Make this sight glass by drilling two holes then connecting them with a knife or file. Continue filing with a small round file until the hole matches the size of the sight glass in a Cannon hood door or shell from an Atlas or Athearn EMD Dash 2 model.

The finished long hood is shown in [19-22].

The cab and short hood

I built the Cannon cab following the instructions included with the kit, except I substituted the Hi Tech Details cab front for the Cannon part. The Hi Tech package includes two different cab fronts and no instructions, so make sure you choose the right

19



19. Completed long hood left front view.

part. I used the one where the tops of all the windows line up, not the one where the engineer's front window is taller.

The real MEC 610 has insulated cab doors. To model this shave off the inside handle on the Cannon cab doors and glue a layer of .020" styrene to the back. Use pieces of .020"x.020" strip to build out the door hinges, these can be seen in [23]. The door opening on the High Tech cab front needs to be filed a bit so the Cannon cab door will fit.

Since I did not plan to light the number boards, I cut pieces of .010" styrene to replace the clear plastic included in the Cannon kit and glued them in place. This is a good time to drill the holes in the bottom of the number board assembly for a grab iron. Once the holes are drilled, glue the number board assembly to the cab. Sand off the molded plate between the

20



20. Completed long hood left rear view.



contents



index



21. Completed long hood right rear view.

number boards. Cut a piece of .05" styrene to .140"x.250", round the corners with a file or sandpaper, and glue it in place between the number boards. Glue a Detail Associates 1003 headlight on top of that. Once the glue is dry, drill out the headlights with a 1/16" bit. Glue on the sunshade tracks from the Cannon cab kit and drill #76 holes for the windshield wipers.

The cab sub-base has several doors that were unique to the Southern Pacific. When you are assembling the Cannon cab sub-base kit, substitute doors 1 and 6 from Cannon 1203 and the other doors from Hi Tech Details. Once again the Hi Tech Details package has several different parts and no instructions; select the longer doors and test fit the parts before gluing them. When you are assembling the doors note the tops

should line up but the bottoms do not. Drill #80 holes for grab iron on the front of the right sub base.

Moving on to assembly of the short hood, select the left side with no brake wheel or hand brake. Build up the inside of the front of the nose with .020"x.080" styrene strip as seen in [24]. Once the glue dries, file a notch in the top front of the short hood that is .250" high and .200" wide. The bottom of the notch should be tapered, and the top curved as seen in [23 and 25]. At this point I also removed the classification lights by applying putty and sanding until the area was smooth.

Drill a #64 hole in the top of the short hood that is .300" from the rear and .170" from the left side, install vent #13 from the Cannon short hood kit. Drill all the grab iron holes with a #80 bit.

22



22. Completed long hood right front view.



contents



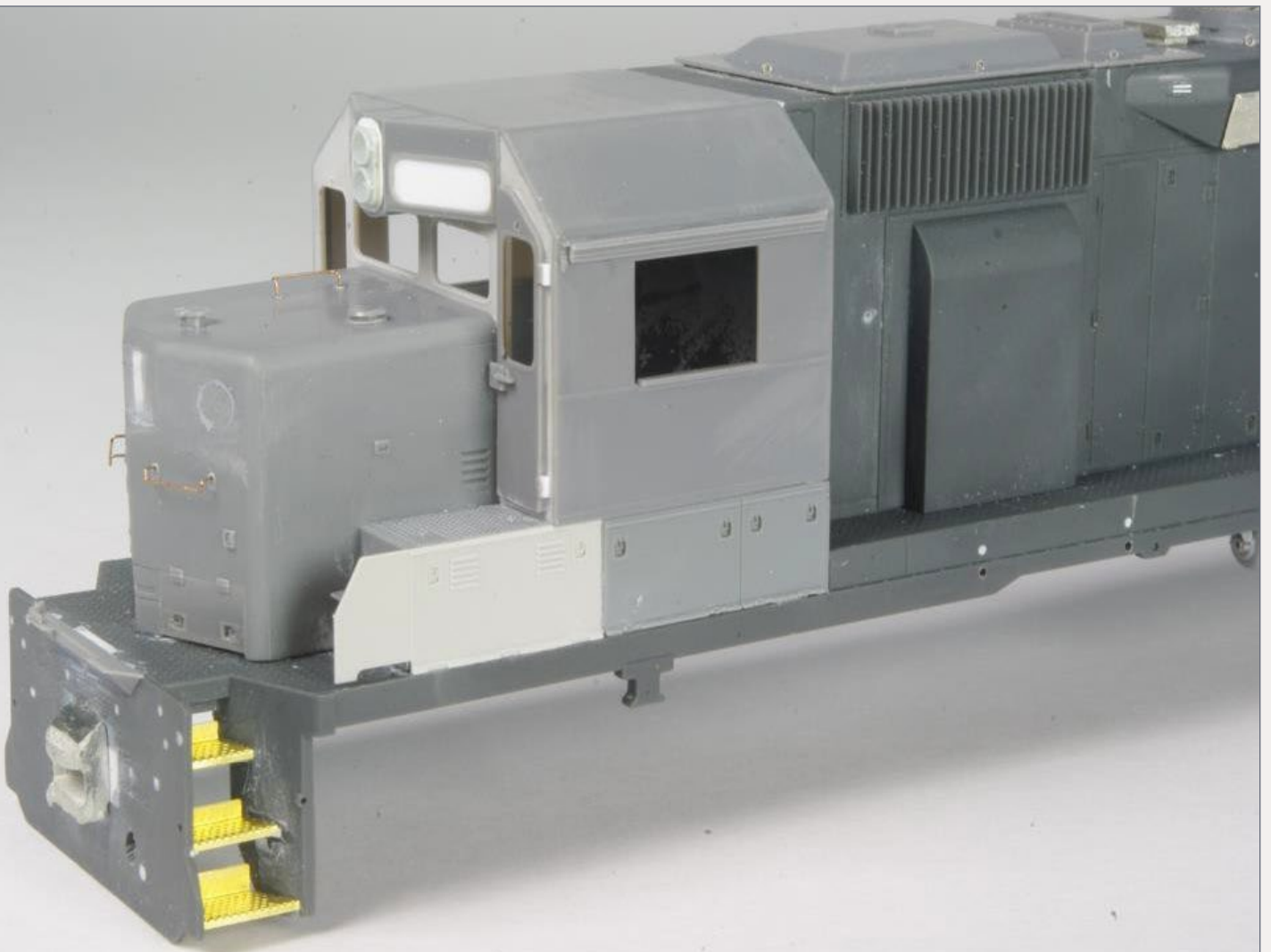
index

Next assemble the cab, sub-base, and short hood all into a single unit. Install BLMA grab irons into the previously drilled holes and glue from the inside. Once again use a piece of .030" thick styrene as a spacer to ensure all the grab irons are the same distance from the hood. Glue the step on the left front of the sub-base. Do not install the rear right cab steps yet.

The pilots, sills, and walkways

The first step with the sill is to file off the anticlimbers and fill the holes in the pilots with various sizes of styrene rod and strip. Fill the handrail stanchion holes on the left side with .020" styrene rod. Mark new stanchion holes directly below the old holes. The rear three holes should be .050" from the

23



23. Cab and short hood left side view.



24. Inside of short hood built up with styrene.

ing on it.

It will regain its strength once the new sub-base and cab are attached. If your model has the long blower duct on the left like mine, this is a good time to shorten it. Once you shorten the blower duct, there will be a gap in the walkway; fill this with a piece of styrene. When filling the gap on my model, I also glued on a piece of Cannon etched brass walkway material from my scrap box.

Cut off the corner steps, leaving a bit behind to attach the Cannon etched steps. Glue short lengths of .020x.030" styrene strip in the holes where the middle steps were, as shown in [26]. Bend the Cannon steps following the included directions and attach them as shown in [27].

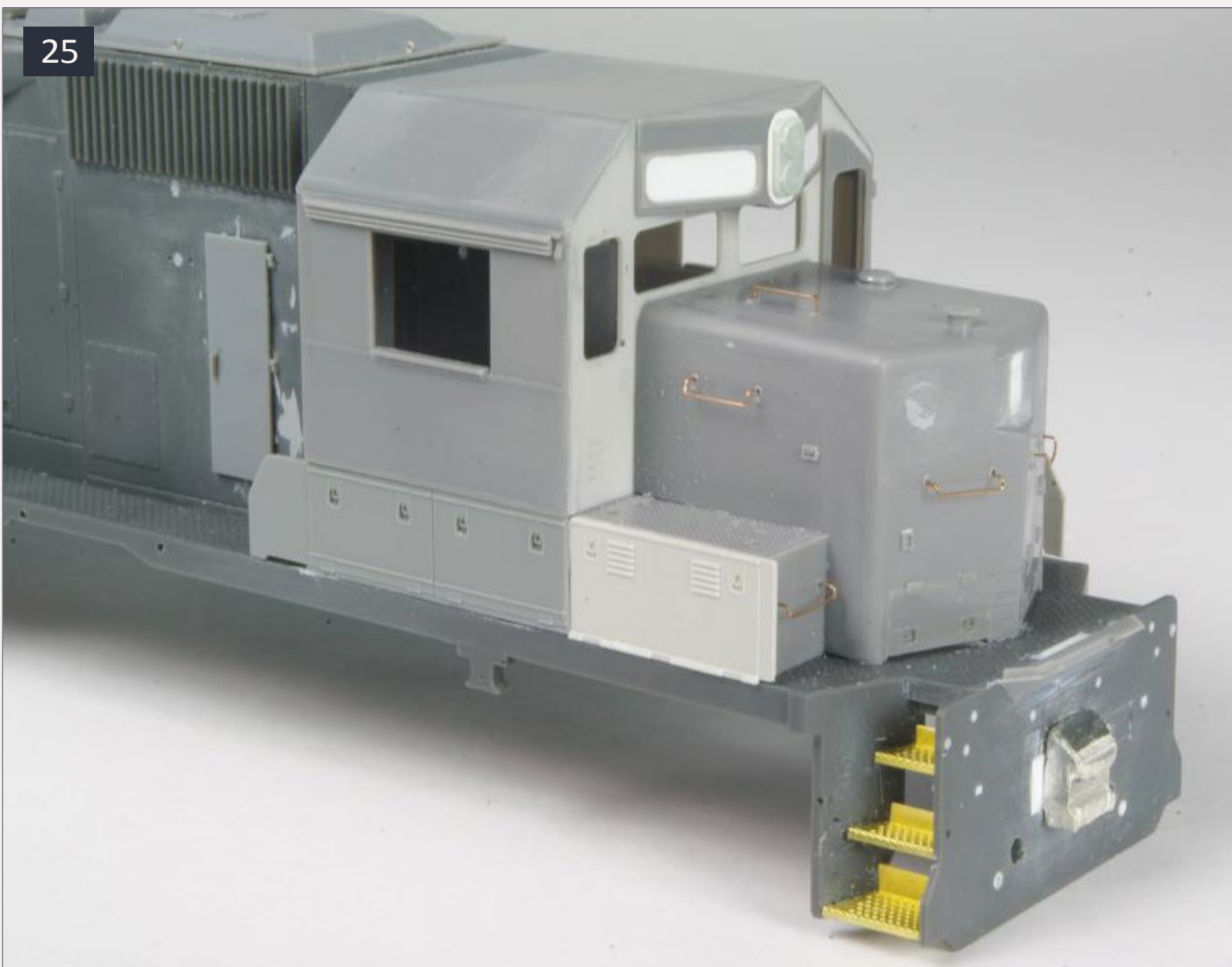
top of the walkway and the remainder .140" from the top of the blower duct. Drill all the holes with a #70 bit. Remove the cab sub-base using either a razor saw or nippers, and file the area to match the rest of the side sills. The sill unit is quite fragile once the sub base is removed, so be careful when work-



If you choose to use the Details West scale coupler buffer plates. you will have to fill part of the hole for the coupler box. If you decide to stay with the Proto 2000 coupler boxes, you will not need to make these modifications. Cut four pieces of .030x.060" styrene strip .140" long and glue to the sides of the coupler box holes. Remove .025" from the top of the coupler box opening. Install the Details West coupler buffer plates. Install the Cannon anticlimbers.

Assembling the shell

25



25. Cab and short hood right side view.



26. Sill unit with steps removed and Cannon anticlimber installed.

Now it is time to start joining the sub-assemblies to complete the shell. First attach the long hood to the sill unit. The small tabs will hold the two parts together, but I suggest you also glue them. Next I attached the cab and short hood assembly to the long hood and sill unit. Glue pieces of .020" styrene rod in the joint between the cab sub-base and sill unit to strengthen the joint as shown in [28].

Assemble the Cannon air tanks and drill the ends with a #73 drill bit. The Cannon instructions specify the side sill should be .055" thick, so build up the area where the air tanks will mount using a strip of

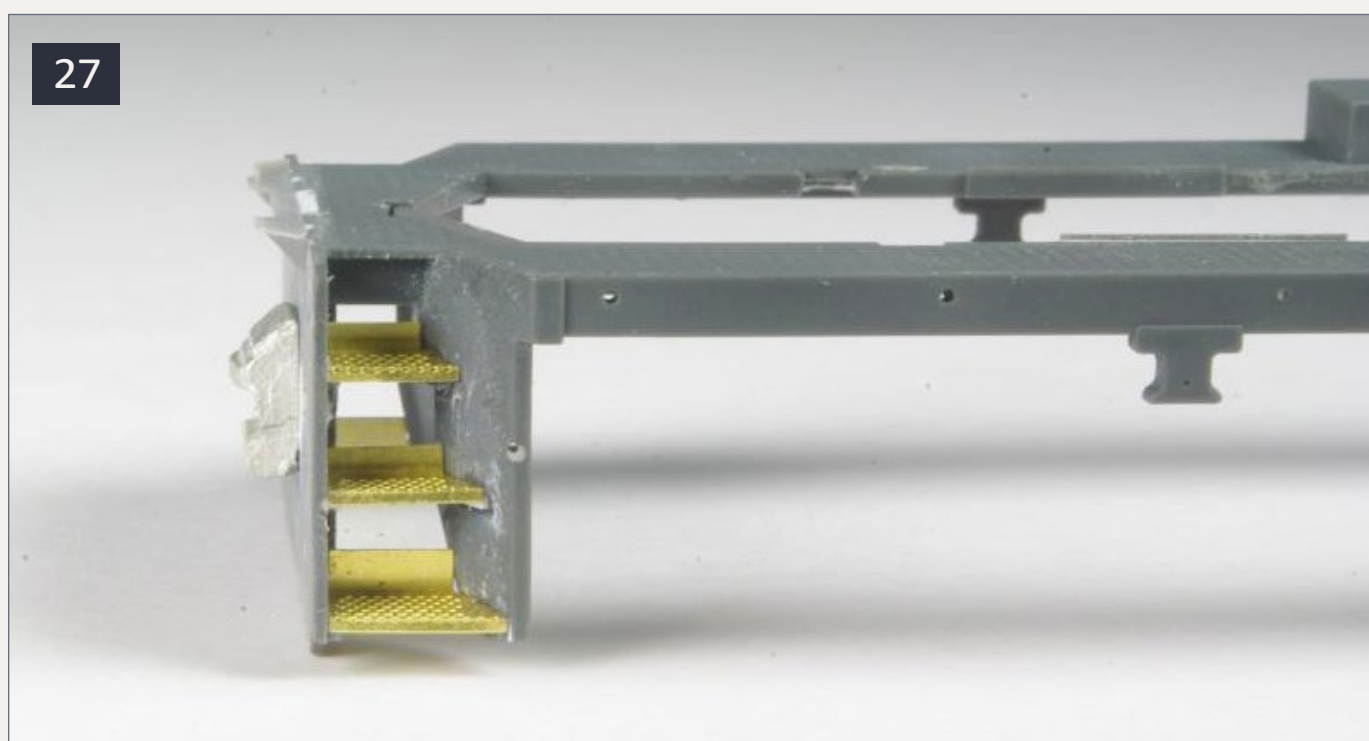
.010"x.010" styrene on the right side and .010"x.040" on the left. Also, you will have to file the top of the right-hand air tank a bit so it will fit in place properly. This is due to the Proto 2000 walkways being thicker than what the air tanks were designed for. Note the air tanks on this model are



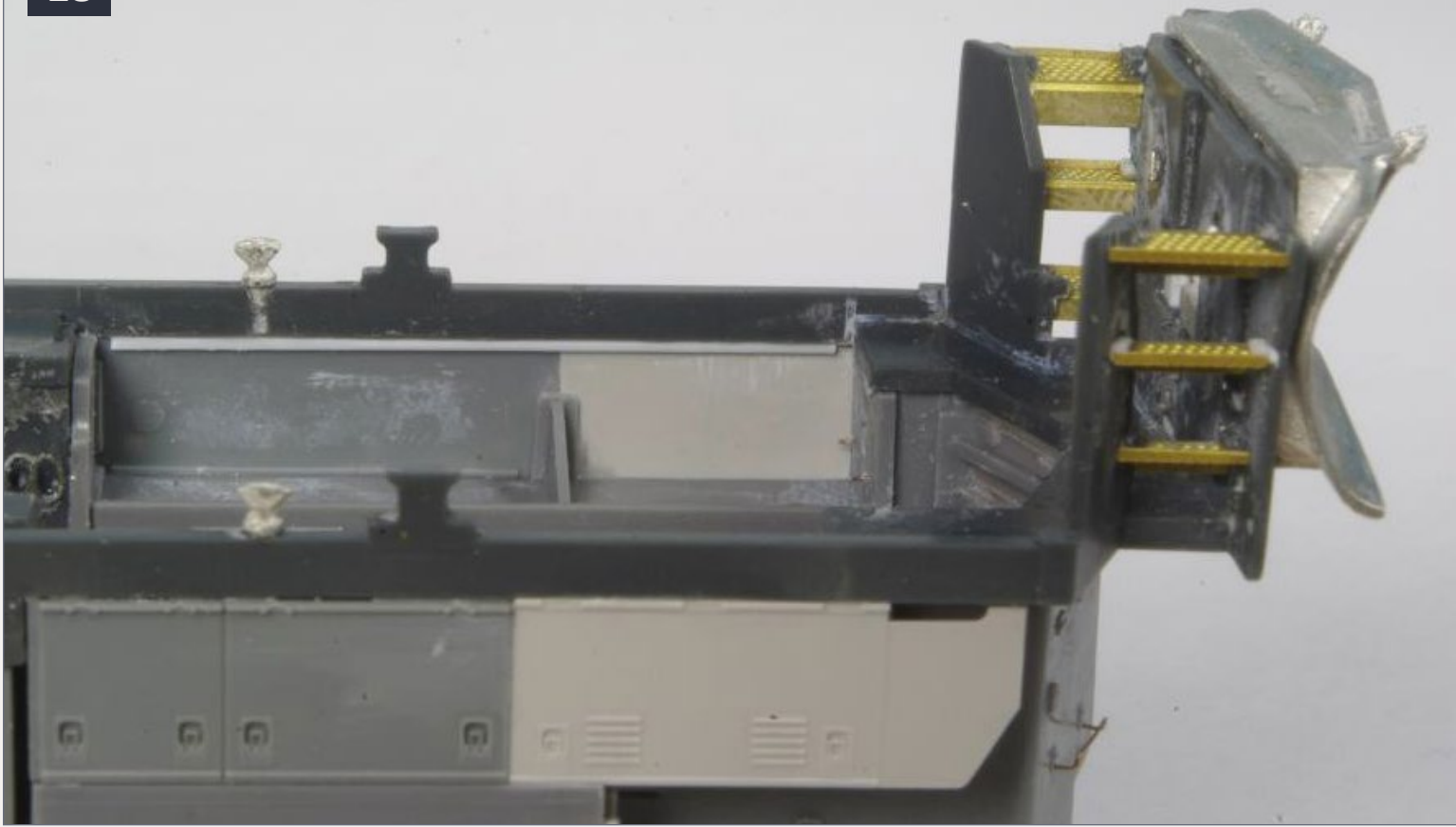
farther forward than a standard SD45. Follow photos to glue the air tanks in the right position.

The moisture ejectors on the rear of the air tanks are fragile and can be easily broken off. To make them stronger, drill #80 holes and insert pieces of .010" wire as shown in [29]. Next trim off the pieces of wire so they are flush. In this photo you will also see the truck air cutoffs from the Details West detail kit. One of these is glued above each truck with the front one under the right side sill and the rear under the left. I found these parts to be quite fragile and accidentally broke them off several times. Eventually I decided to leave them off so you will not see them in later photos.

Add the air filters from the Details West detail kit. Shorten the smaller filter as shown in [30], drill a #79 hole in the top, and make a new mounting pin from a short length of .012" brass wire. I tried using the air piping from the detail kit as well but, did not have much luck with it. I decided to bend the air piping



27. Cannon steps and Details West buffer plate installed.



28. Underside view showing reinforcing strip between cab sub-base and sill unit.

from .015" brass wire instead. Use either method to install the air piping on your model.

Figure [31] shows the pilot details. Drill two #52 holes in the front pilot .175" from the bottom and .460" apart for mounting the plow. Take one plow from the Details West SD45 detail kit and file off the MU hose doors. Drill four #80 holes in the top of the plow, bend two grab irons using .008" brass wire, and glue them in place. Drill a hole in the plow for the Details West 267 brake hose and glue it in place.

I used Details West 295 for the front MU hoses. These are four-hose clusters; if you remove the largest hose, it gives you a three-cluster set of long MU hoses. This is perfect when you are modeling MU hoses which feed through a plow as on this model. Glue the MU hoses in place, bend them so they stick





29. Reinforcing air tank drains with brass wire.

almost straight out, then feed them through the doors on the plow. Slide the plow into place, then glue the mounting pins from behind. Once the glue is dry, trim the plow mounting pins flush with the back side of the pilot and bend the MU hoses down into place so they have a natural drape to them. Glue Details West 266 MU hoses on the rear pilot. Also on the rear, glue on one of the brake hoses from the Details West SD45 detail kit.

You will notice the rear pilot has angled slots near the top corners. I made these by drilling #73 holes where I figured the ends of the slots should be, then I used a fresh #11 blade to cut out the area between each pair of holes.

Next drill holes in both pilots for the coupler lift bar brackets. I made each coupler lift bar or pin lifter from three pieces of



30. Details West air filter modified and mounting pin made from brass wire.

.010" brass wire. The rear bar is mainly horizontal while the outer two pieces of the front bar angle upward from the center. First bend the outer pieces for the front and rear using photos as a guide. Note the inner end has a bend that curves 180° back toward the outer edge of the pilot. Slide the Detail Associates brackets onto the bars and glue them in place on the pilots.

On a real EMD locomotive the middle piece of the coupler lift bar attaches to the two outer pieces but not the pilot. To give the middle piece strength on my models, I attach it to the pilot; to do this, first drill a #80 hole in the pilot just above the curved inner end of each coupler lift bar piece you previously glued on. Following photos, bend the inner part from



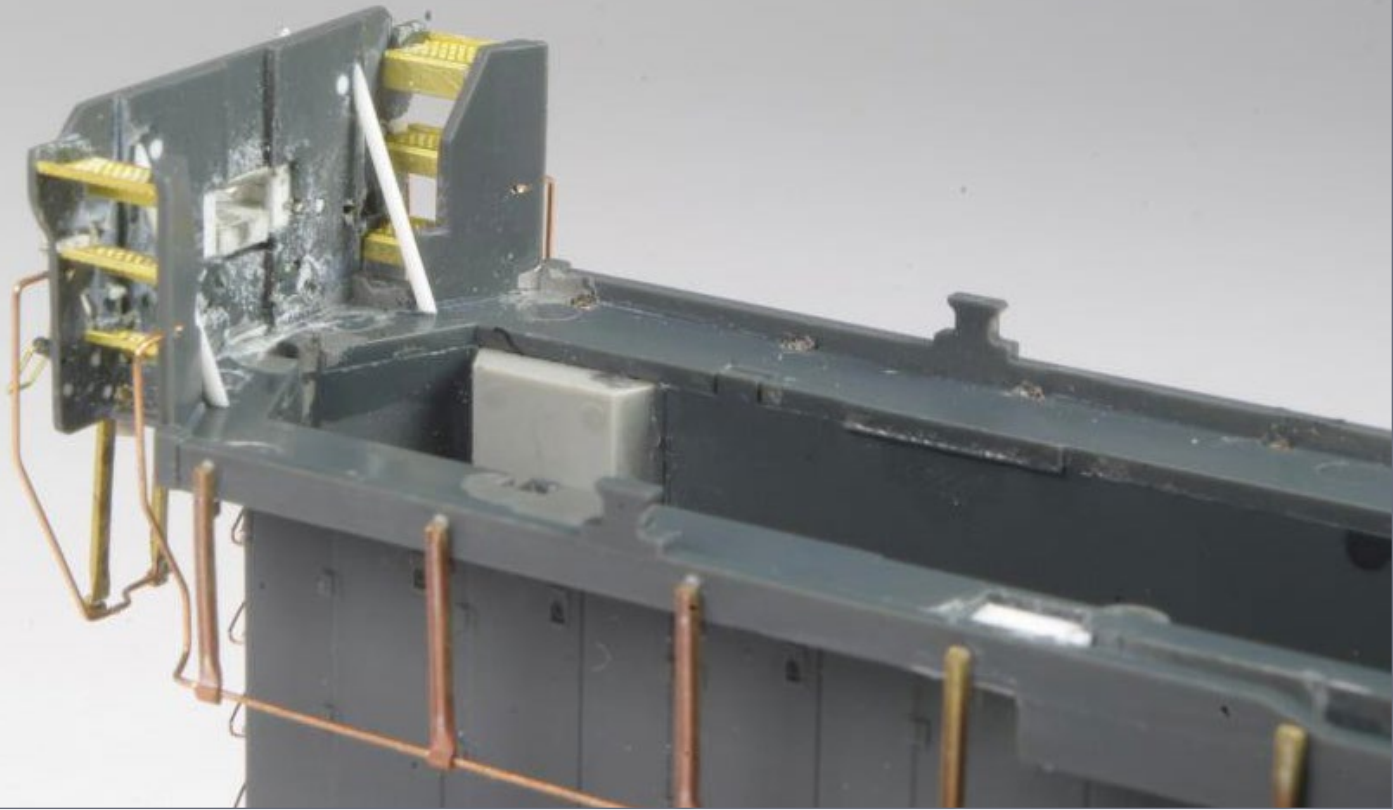
.010" brass wire and glue it into the holes in the pilot. Unless you look really closely, the middle part now appears to be attached to the two outer parts. If all this bending sounds like too much work, I suggest using Detail Associates 2211 or Cal Scale 522 instead.

Continuing with the front pilot, you can next build the ditch lights. Cut two squares of .010" styrene that measure .140"x.140". Cut four strips of .030"x.060" styrene strip to a length of .140". Glue two of these pieces on edge to the back of each of the .010" thick squares you just cut. Again following pictures, glue these two assemblies to the front pilot so they go over the coupler lift bars. Take the Detail Associates 1013 ditch lights and drill them out with a 1/16" drill bit. Glue the

31



31. View of finished rear and front pilots.



32. Styrene rod used to represent pilot braces.

drilled-out ditch light castings to the mount you just glued on the front pilot.

Drill two holes in the rear pilot for mounting the Details West 196 spare knuckles and glue them in place. Add one Detail Associates 1505 MU stand and one Detail Associates 1509 MU receptacle on top of each anticlimber. Glue the Detail Associates drop steps in place, I had to add a strip of .010" styrene to both sides of each drop step to get them to fit and look right.

Cut four pieces of .030" styrene rod to a length of $9/32$ ". Angle the ends and glue them in place behind the pilots as seen in [32]. Make sure these pieces are as far apart as possible so they do not interfere with the frame, test fit the frame to make sure everything still goes together as intended.

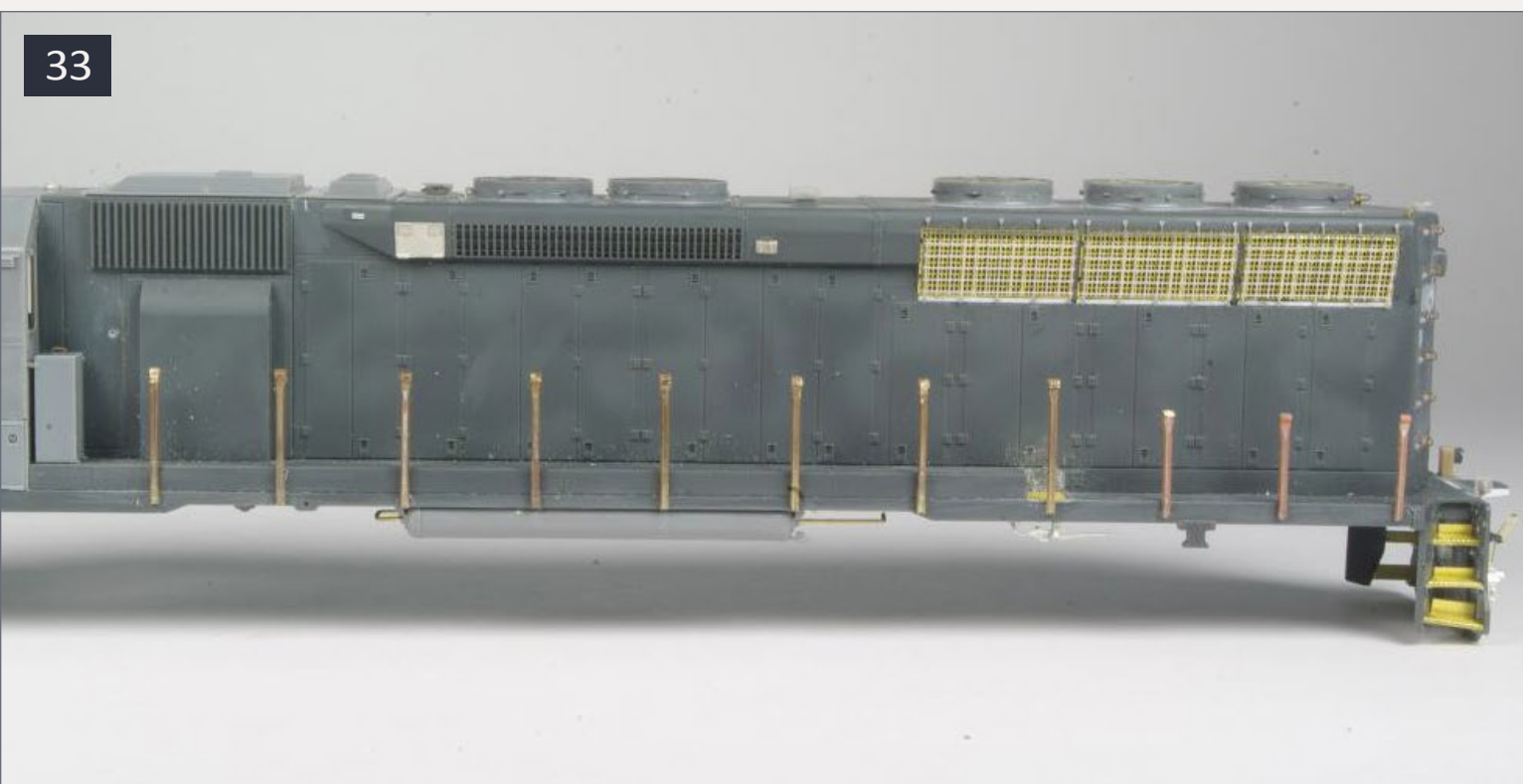


At this point you can also install the truck lights from the Details West SD45 detail kit. One goes under each side of the side sills just behind the front jack pad. You can install the Cannon 1903 electrical cabinet air filter box behind the cab on the left side. Make the handle on the top from a piece of .008" brass wire. Install the original Proto 2000 steps behind the cab on the right side.

I am a huge fan of brass handrails on my models; usually I add Smokey Valley stanchions and bend my handrails from .015" brass wire after I paint and decal a model. On this model the handrails are mostly the same blue as the rest of the locomotive and they do not interfere with decal placement, so I decided to install the handrails before painting.

I like to complete one handrail section before moving on to the next. I started with the left side handrail behind the cab,

33



33. Handrail stanchions installed.



34. Using pieces of styrene to hold the horn in place while the glue dries.

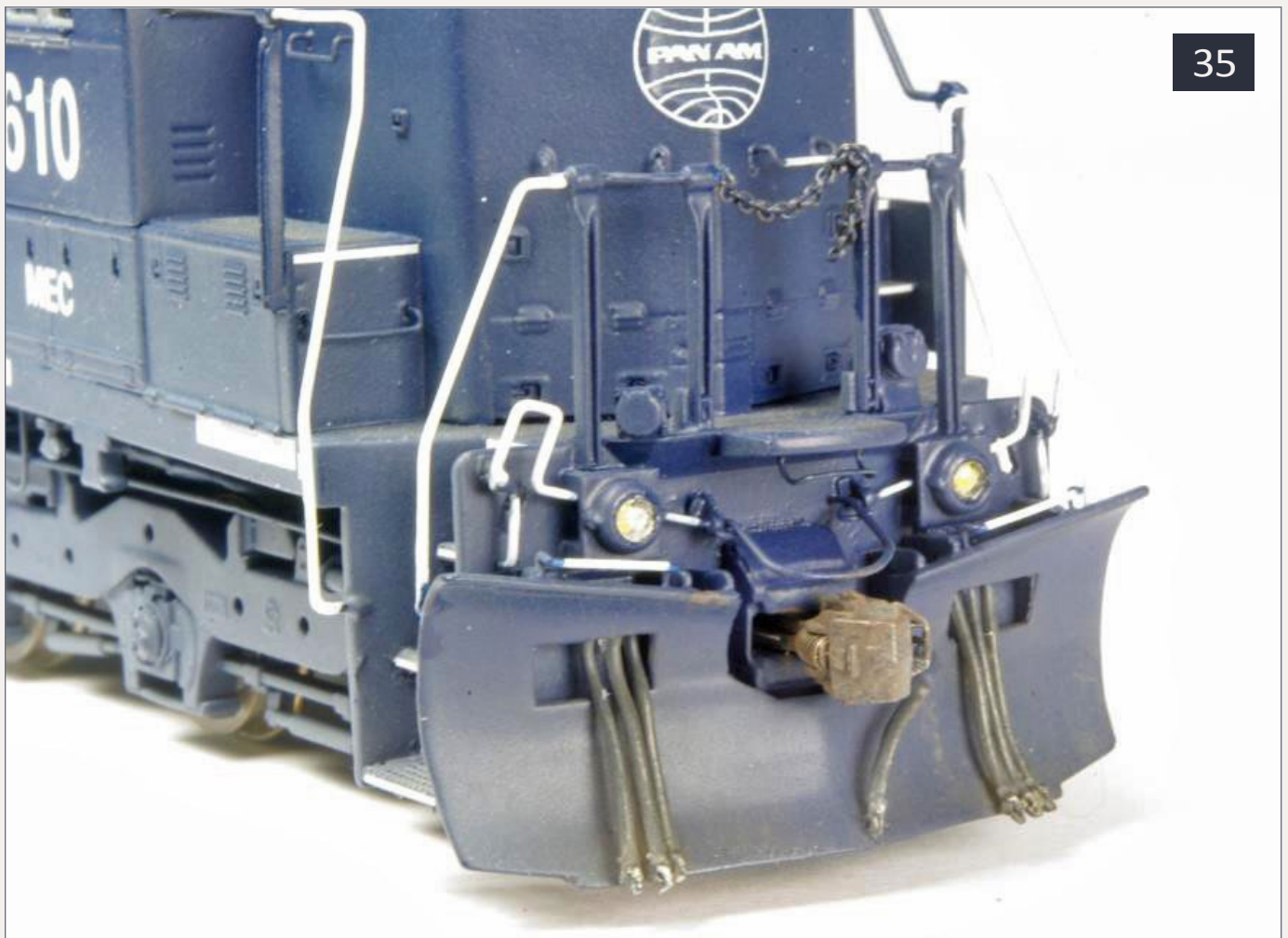
then the right side, then the handrails in front of the cab, then finally the end handrails. First I gave the Smokey Valley stanchions a scrub with a toothbrush to removed the white powder that is on them, then I used a small file to clean any mold flash from the sides and top. Starting on the first hand-rail section, you can glue all the stanchions in place as shown in [33]. Notice on this model on the fireman's side, the fourth stanchion from the rear is a tall stanchion where there would normally be a short one to match the step-down in the walk-way where the blower duct ends.

Once you have the stanchions installed, you can install the wire handrails. Your two options are to use the pre-bent .015"



brass wire pieces in the handrail kit or bend your own from one long piece of wire. I use the second option for my models but this does take some practice. You also have to decide if you want to solder the handrails to the stanchions or glue them. Soldering definitely makes the strongest handrail, but you have to be careful not to melt any parts on the plastic shell. I suggest the use of flux, heatsinks, and perhaps a low-temperature solder. On my recent models I have used Microscale MicroBond to glue the handrails to the stanchions, in fact I now use MicroBond in all situations where I used to use regular CA adhesive.

Continue with all the other handrails, following the Smokey Valley instructions and photos. When drilling the vertical



35. View of finished front pilot.

holes for the end stanchions, be careful not to drill all the way through the anticlimber.

Once most of the work is done to the shell, you can add the fragile parts which could be easily damaged or broken off. On this model that includes the details on the cab roof, the sunshades above the cab windows, and the underframe bell.

Install a Details West 373 horn rather than the horn included in the Details West SD45 detail kit. Drill a hole in the top of the number board assembly for mounting the horn. Trim the mounting pin on the horn so it is long enough to provide a strong mount but short enough so it will not interfere later when you are installing headlights. I used two spacers made from styrene strip while gluing the horn so it would be at the correct height. The front spacer is a piece of .030"x.060" strip and the rear is a piece of .030"x.080" strip. These can be seen in [34].

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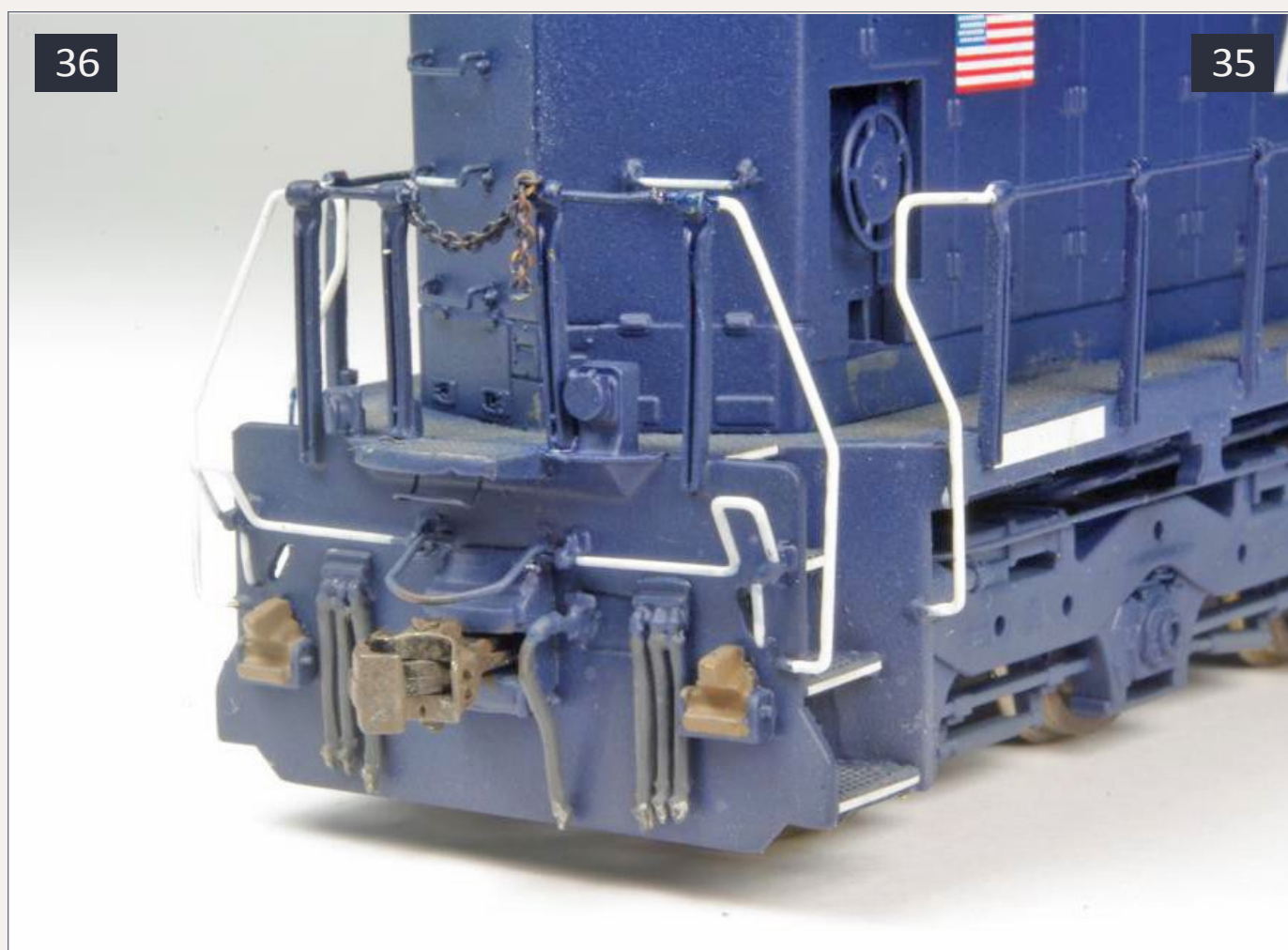


index

While working on the cab roof, you can also install the whip antenna base from the SD45 detail kit and the Details West 157 firecracker antenna just to the right of the horn. Bend two grab irons from .008" brass wire, one for above the right number board and one for below the number board. This one goes in the holes you drilled in the bottom of the number board casting earlier.

I chose to replace the original Proto 2000 underframe bell with a Detail Associates 1202 bell. If you also want to do this, drill the mounting hole with a #55 drill and glue the new bell in place.

The final step on the shell is to glue the cab sunshade in place. Looking at pictures online, it seems MEC 610 had two cab sunshades in 2010 but by 2011 the right side sunshade had been



36. View of finished rear pilot.



37. Finished model

removed. I used one brass sunshade from the Details West SD45 detail set. The set also comes with mounting tracks, but these are already on the Cannon cab. You can, however, use the Details West tracks as a reference for where to drill the holes to mount the sunshades. Drill two #78 holes and glue the sunshade in place.

Next month I will modify the frame and finish the loco.



contents



index

Parts list

A-Line 29219 Black chain

Badger Modelflex paint

1601	engine black
1603	grimy black
1629	Conrail blue
1632	Santa Fe silver
1671	Wisconsin Central maroon
16162	CP gray
16172	Rust
16175	Roof brown

Cannon

1019	Dash 2 alternator compartment doors
1103	81" short hood 1201 cab sub base
1203	optional sub base doors – SP split
1353	inertial filter hatch
1502	cab kit – “35” line
1705	radiator fans
1853	dynamic brake fans
1903	electrical cabinet filter box
1952	turbo hatch
2012	step set for P2K SD45
2101	anticlimber – EMD small
2155	air reservoirs
2156	fuel tank details

Detail Associates

1003	headlight
1013	ditch lights
1202	bell
1402	drop step
1505	MU stand
1509	MU receptacles
1904	dynamic brake vent
2203	Nut Bolt Washer castings
2213	coupler lift bar brackets
2314	windshield wipers
1216	windshield wipers
2502	.008" brass wire
2503	.010" brass wire
2505	.015" brass wire
2506	.019" brass wire
2507	.022" brass wire
2808	speed recorder
3001	sand filler hatch

Details West

157	firecracker antenna
196	spare knuckles
244	axle bearings
266	MU hoses
267	brake hoses
295	MU hoses



Parts list *continued ...*

338	detail kit for SP SD45
341	lenses
357	rear view mirror/deflector
363	scale coupler buffer plate
373	horn

Evergreen Styrene

9009	.005" sheet
9010	.010" sheet
9020	.020" sheet
9030	.030" sheet
218	.020" rod
210	.030" rod
211	.040" rod
222	1/16" rod
103	.010x.060" strip
120	.020x.020" strip
121	.020x.030" strip
122	.020x.040" strip
124	.020x.080" strip
126	.020x.125" strip
133	.030x.060" strip
153	.060x.060" strip
154	.060x.080" strip

Hi-Tech Details

5014	SP EMD Cab front
6009	waste fluid recovery tank



- 6030 SP GRIP Battery box door set
- 6031 SD45 radiator fan shroud inserts

Kadee

- 153 scale whisker couplers, short centerset LaBelle
- 102 oil
- 106 grease

Life Like Proto 2000 or Walthers

HO scale SD45

Ngineering

- N1038 Nano super incandescent LEDs
- N5038 #38 magnet wire

Microscale

- 87-527 diesel data decals
- 87-904 number board decals
- 87-1415 Pan Am loco decals

Miscellaneous

- 1K ohm $\frac{1}{4}$ watt resistors
- 5.1K ohm $\frac{1}{4}$ watt resistors
- 1/16" and 3/32" Heat shrink tubing

Plano

- 14651 lift rings
- 14652 lift rings
- 14771 SD45 winterization hatch screen (for lift tabs)

Plastruct

- 90850 .010" round styrene rod



contents



index

Parts list *continued ...*

Smokey Valley

42 SD45 handrail kit

Richmond Controls

SW33mm sunny white LEDs

TCS (Train Control Systems)

1078 black hook up wire

Testors Model Master paint

1706 Sand

1723 Gunship gray

1749 Flat black

2002 Skin tone tint base - dark ■





Andrew bought his first model train at age 13 and has been hooked ever since. One of his favorite parts of the hobby is kitbashing locomotives and freight cars, and he can often be found at his workbench.

Andrew is currently building a HO scale layout based on Canadian National around Truro NS, Canada in the mid-1990s.

Andrew is a commercial pilot, and lives in Enfield NS Canada with his wife and son.

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Yes, it's a model

Model Railroad Hobbyist's monthly photo album



1. A salesman pulls up to the pump in his new pink Cadillac, ready to fill it up for the first time.

Jure Sporn took the photo on his freelance layout Wausau & Western - MILW subsidiary, 1950-1959. Jure took time to add the little details, such as a trailer and logos on the gas pumps that bring the scene to life.



**Reader
Feedback**
(click here)





2. Good things come in small packages. Craig Kempf shared some of his work in Weekly Photo Fun in the MRH forums. The cars are N-scale. that's right, N. We think this is some pretty amazing work.

3. Sunset over Puget Sound. The sun has set, but another train shows up, passing by a signal. With digital cameras, running out of film is no longer a problem. Shoot on! You may get lucky!

The locomotives are from Kato and Atherarn and the cars are from Walthers. The sunset was provided by God himself. Paul Mack took the photo, posting it to Weekly Photo Fun. Thanks for sharing, Paul.



contents



index





contents



index



4. Pacific Rust Express! Certainly is safe for hauling tetanus shots and not much else. Around the late 1980s and into the 1990s, this was a reality for the once-great PFE fleet. A former Penn Central boxcar, Conrail X-72 269369, shows off its many miles of grime from the long trip out west.

The PFE is an Athearn blue box 57' mechanical reefer and the CR boxcar is a Life-Like trainset car. Chris Palomarez modified and weathered the cars. On the CR box he experimented using a darker brown to force shadows and give the appearance of undulating sides.



5. Bringing up the rear, BNSF 5753 is the DPU on a loaded grain train as it glides by, heading west to Seattle and the ports. Below, BNSF 5753 takes the lead on an eastbound empty coal as it passes a small yard.

BNSF 5753 is an Athearn Genesis ES44AC with a few upgrades. Weathering consists of a very light fade first, followed by heavier fading and grime on the roof. The fuel tank, including the fuel spills, was done with acrylics and sealed with Dullcote. Kevin Packard detailed and photographed the model.



contents



index



6. Stock car! Need we say more? George Booth posted this tongue in cheek photo in Weekly Photos Fun earlier this year. Clearly he is following our motto, "Having Fun With Trains."

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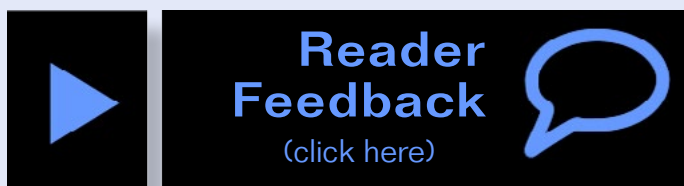


See your photo here!

Our *Yes, it's a model* monthly photo feature presents some of the most inspiring modeling and photos from the MRH website and other locations. If you'd like to get *your modeling* in our photo feature, just start posting your photos on the MRH website, especially in the Weekly Photo Fun thread created each weekend.

Many of the photos posted show HO modeling, but we encourage modelers in other scales to post on the MRH website as well. We don't want this to just be an HO photo feature!

For info on how to post photos to our website, [see this help how-to](#). You need to be an MRH subscriber to post photos to our website, and becoming a subscriber is free, [just fill out this form here](#).



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Modelers guide to boxcar ends of the 20th Century

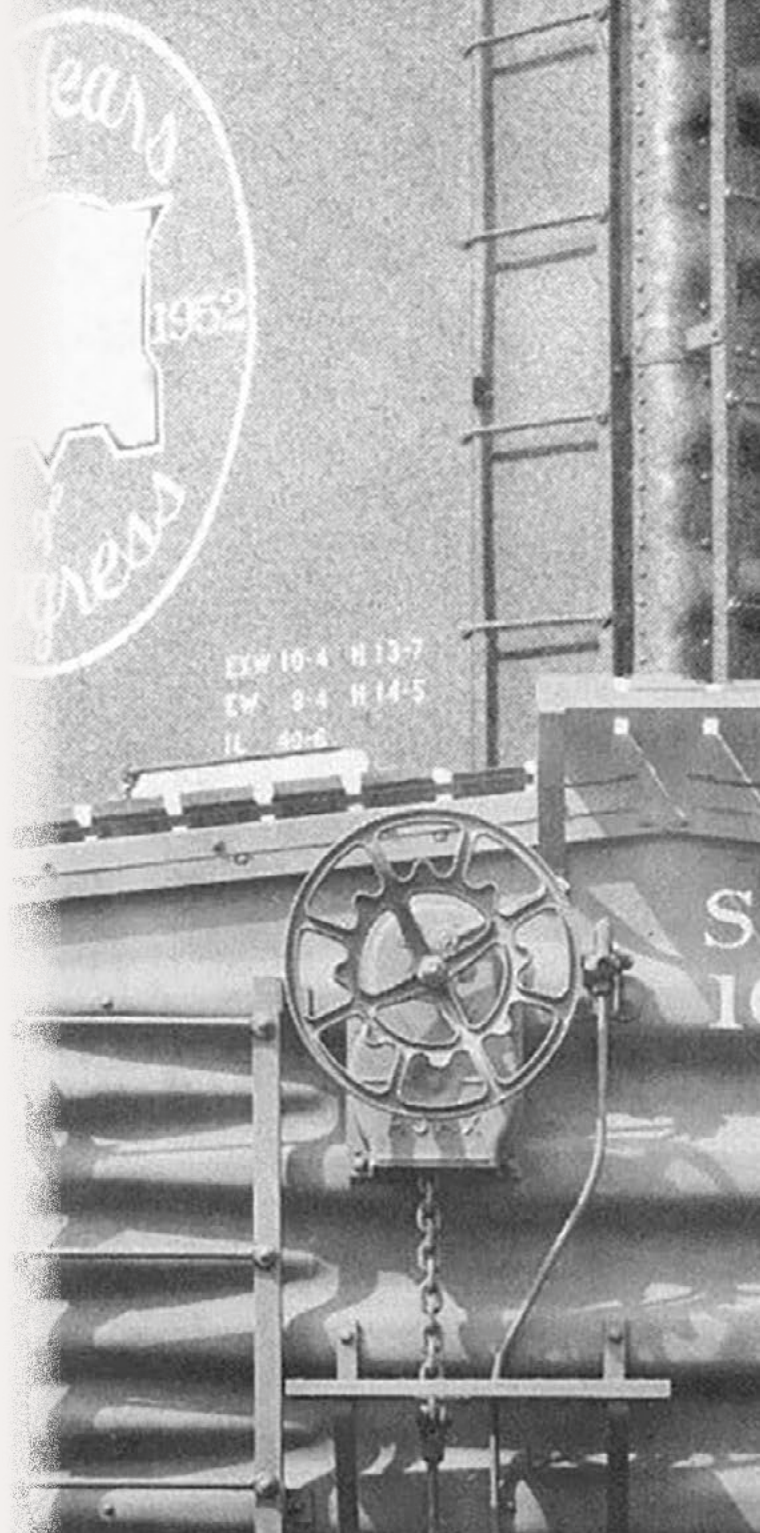
A brief history of boxcar ends ...

One of the principal spotting features of boxcars are the ends. During the 20th century, the material used in fabricating car ends evolved from wood to steel, with a myriad of design ideas tried along the way. Although the evolution of car ends was mostly logical, there were some unusual designs that were short-lived, but no less interesting.

Wood ends

By the late 1890s, the wood ends of most boxcars were

– by **Richard H. Bale**
Photos as noted



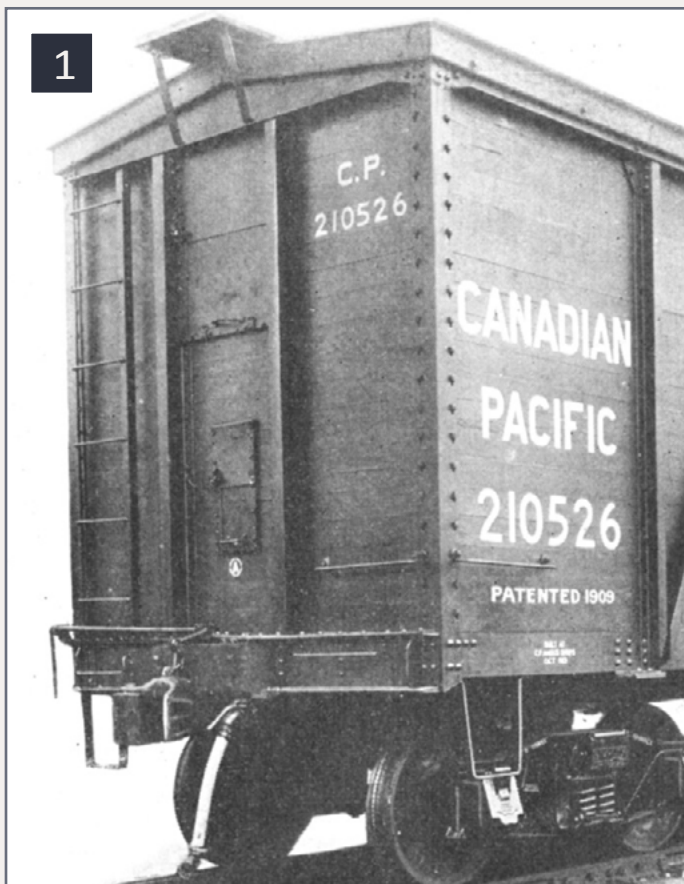


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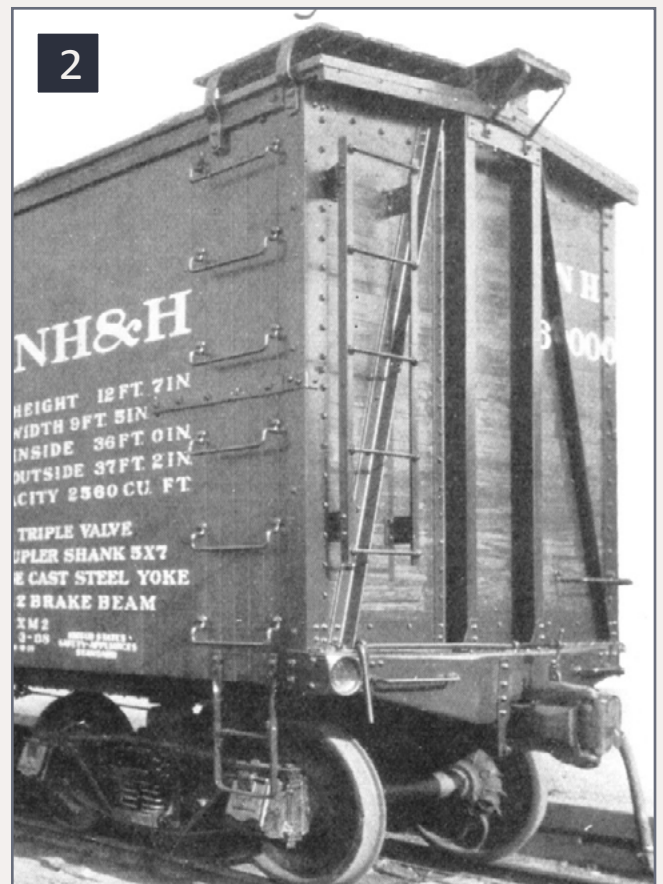


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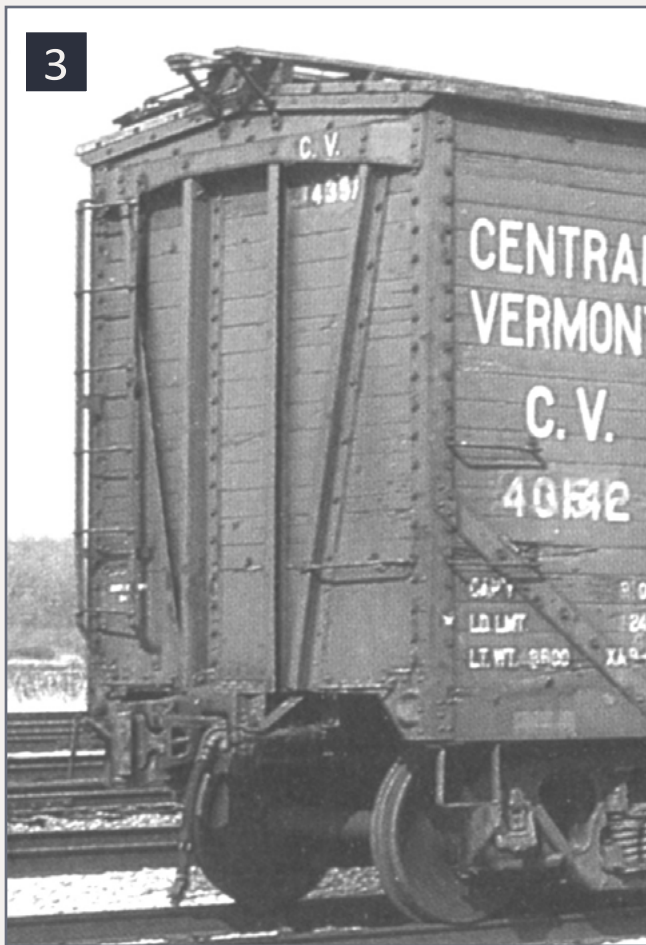
constructed with steel bracing using standard and Z-section steel. End bracing was intended to keep car bodies square and to help minimize collision damage to the car and its lading. The steel bracing was arranged in several patterns including vertically [1]. The vertical bracing was frequently augmented with additional steel in either an 'A' [2] or an 'V' [3 and 4]



1. 36' Single-sheathed wood car with vertical steel bracing manufactured by Fowler Car Co. circa 1909.



2. 1908 car rebuilt in late 1920s with heavy vertical steel bracing augmented with lighter L-sections angled inward from the lower corners. Note overhanging roof.



3. Single-sheathed wood car built in 1925 with steel end bracing in a 'V' pattern. Note the protective shield over top of steel bracing.



4. Distinctive 'V' braces with a single vertical brace in the center of the end.



contents



index



5. Double-sheathed car with vents installed between the vertical steel end braces.

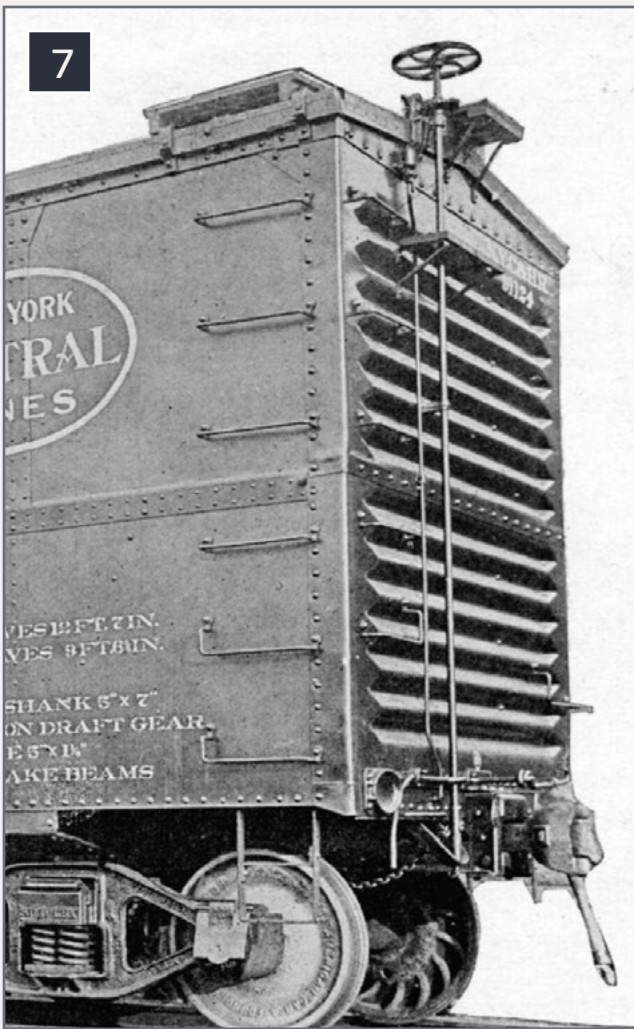


6. Double-sheathed wood car with unique vertical braces.

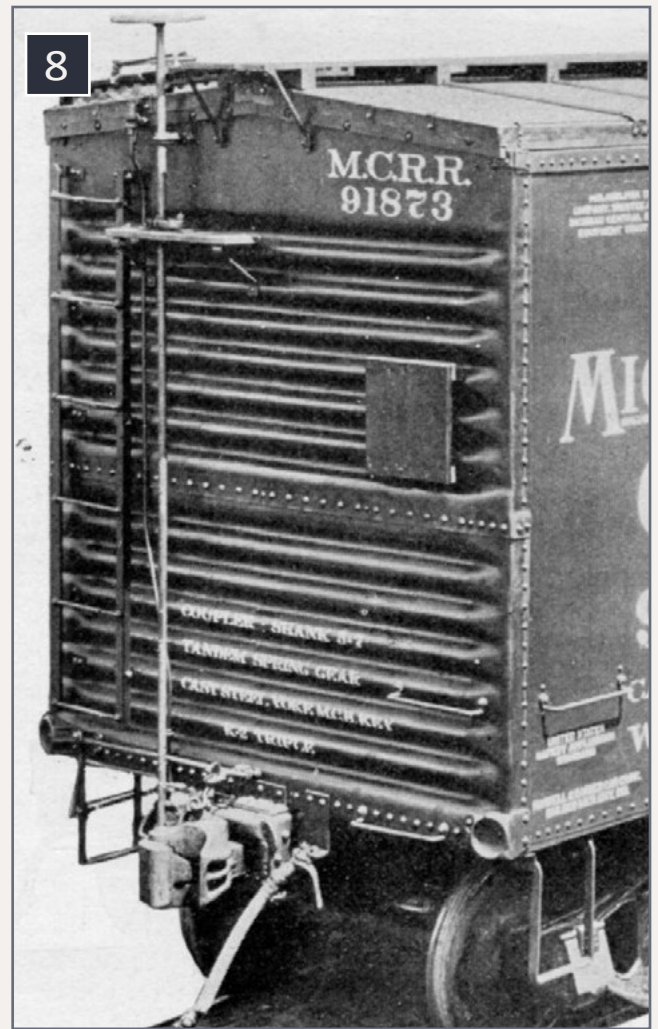
configuration. Internal steel bracing was hidden from view on cars with double-sheathed wood ends [5]. As the load capacity of boxcars increased there was a greater need for stronger ends to minimize damage from shifting loads and to protect the car itself.

Corrugated metal ends

The first widely-accepted stamped steel corrugated car ends were introduced in 1912 by the Pressed Steel Mfg. Co. [7]. The company marketed them under the trade name Murphy, and



7. ACF builder's photo of 36' steel car built in 1912 with 7-7 Murphy end. Note lack of end ladder.



8. Car built in 1918 by Pressed Steel Mfg. Co. with 6/6 Murphy steel end.

licensed the design to other manufacturers. Corrugated steel ends were made in two [8], three [9] or more [13] sections that were riveted together. Heavier steel was favored for the bottom section where the impact from shifting loads would be greater.

In 1914 the A.R.A. recommended that one-piece corrugated steel ends must be not less than $\frac{1}{4}$ " in thickness, and when constructed of more than one piece, the lower third of the end should be $\frac{1}{4}$ " thick, and the remainder should be not less than $\frac{3}{16}$ " thick. About 1916 the Master Car Builders recommended that all new boxcars have steel ends.

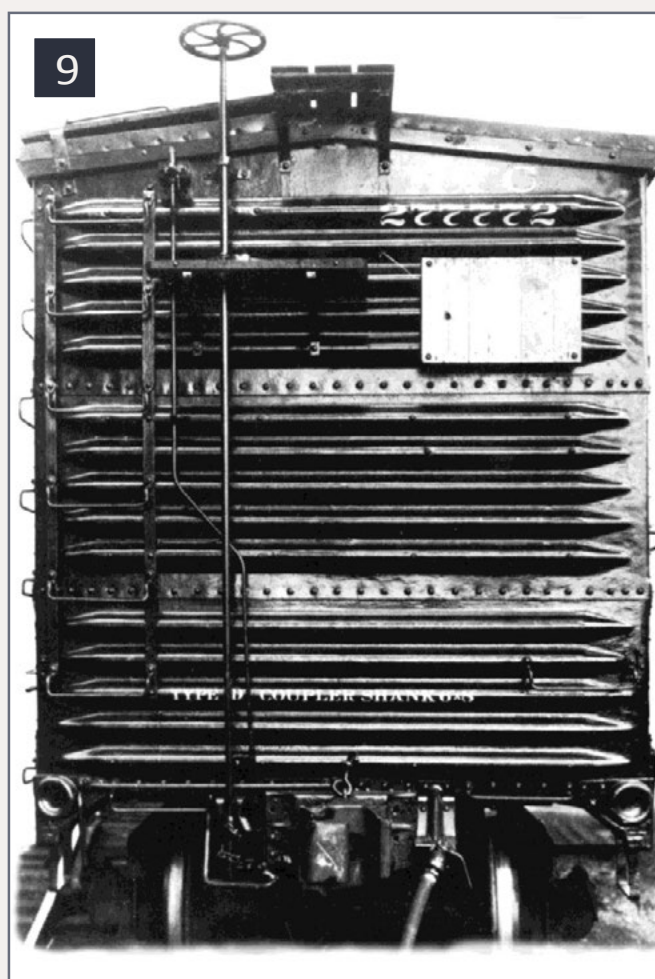


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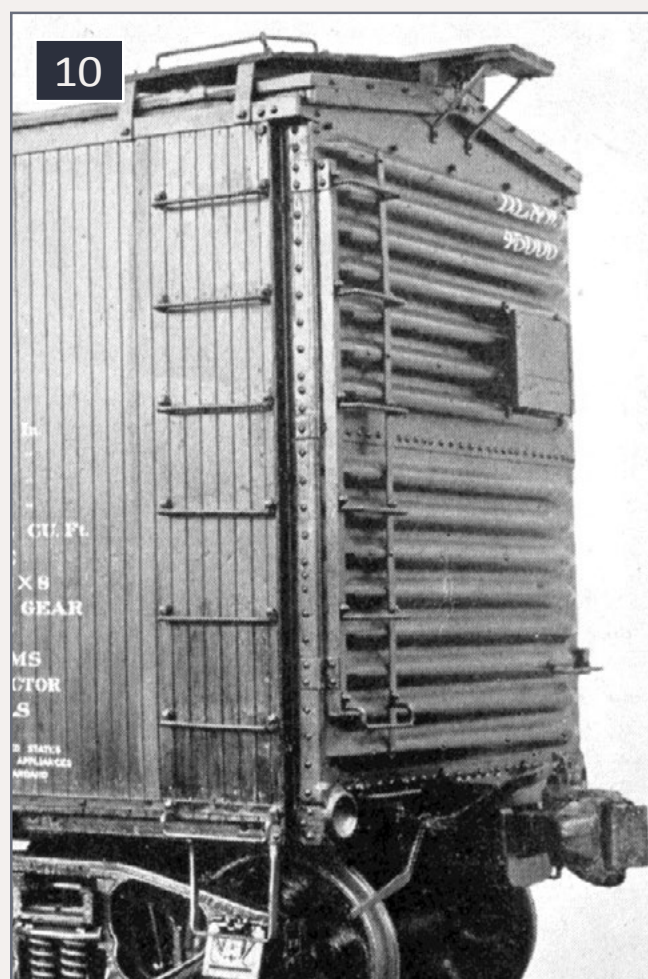


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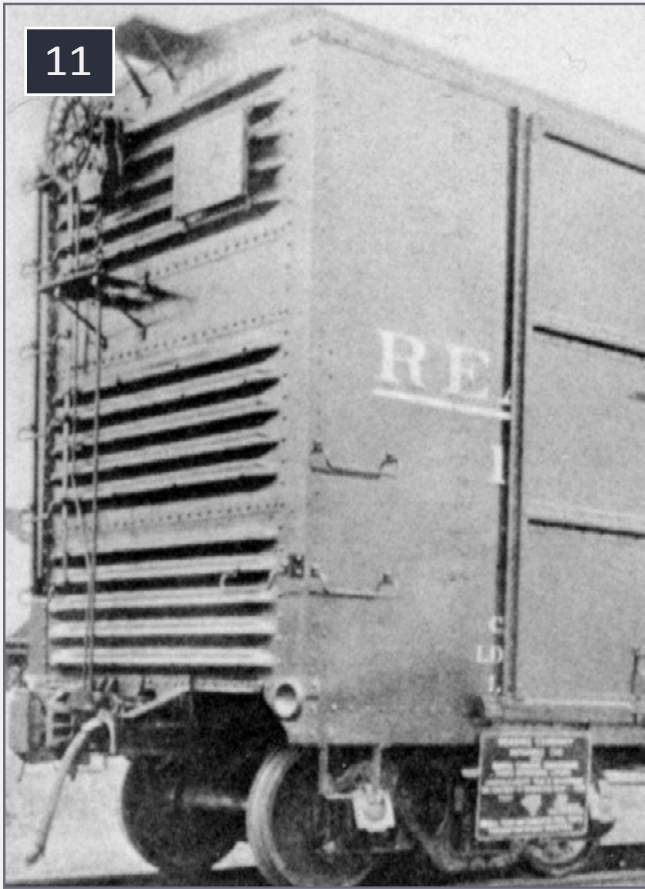
The nomenclature of steel corrugated ends is readily understood. For example, a 6/6 end [8] indicates that the end is composed of two sections with six corrugations in each section. Damaged cars were sometimes repaired with unusual combinations of end sections [11]. The majority of ends had the corrugations pressed outward, but a few inward corrugations were also made [12].



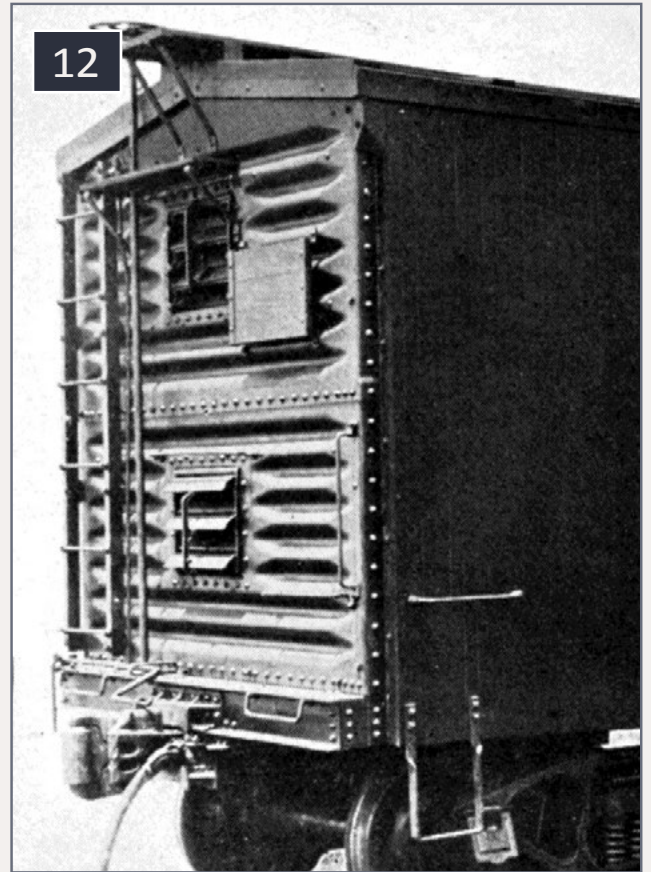
9. 50-ton USRA box car built in 1919 with 5/5/5 Murphy end.



10. Double-sheathed car built by ACF in 1925 with 7/8 Murphy corrugated steel end.



11. Murphy 5/0/5/5 corrugated steel end on a Reading auto car.



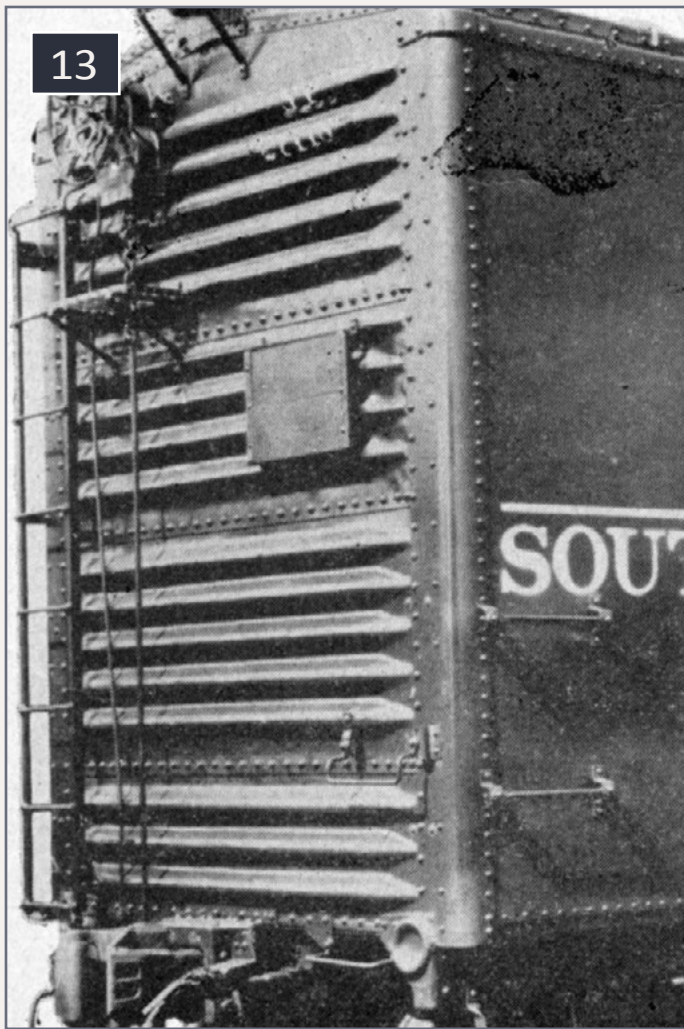
12. A pair of Wine ventilators installed in 7/7 Murphy end with inward corrugations. Circa late 1920s.



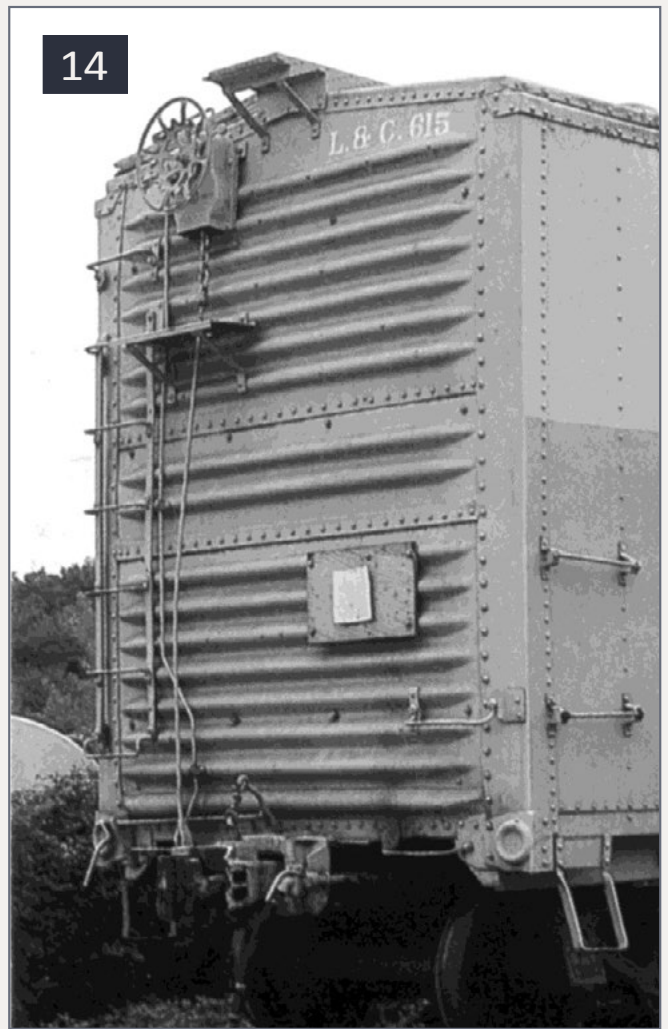
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index



13. Murphy 5/4/5/3
corrugated steel end.



14. Rebuilt car with
Murphy 7/2/8 corrugated
end.

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What DCC system do you use - and why?

Mon, 2010-08-02 11:03 — [joef](#) [Track and electrical/DCC](#) [DCC - Electrical](#)

I'm curious what DCC system various modelers on here are using, and why? I think the discussion could be useful - so post a bit about the system you use and how you came to choose it. Also if you have any interesting learnings, that's always helpful!

[Wire gauge](#)

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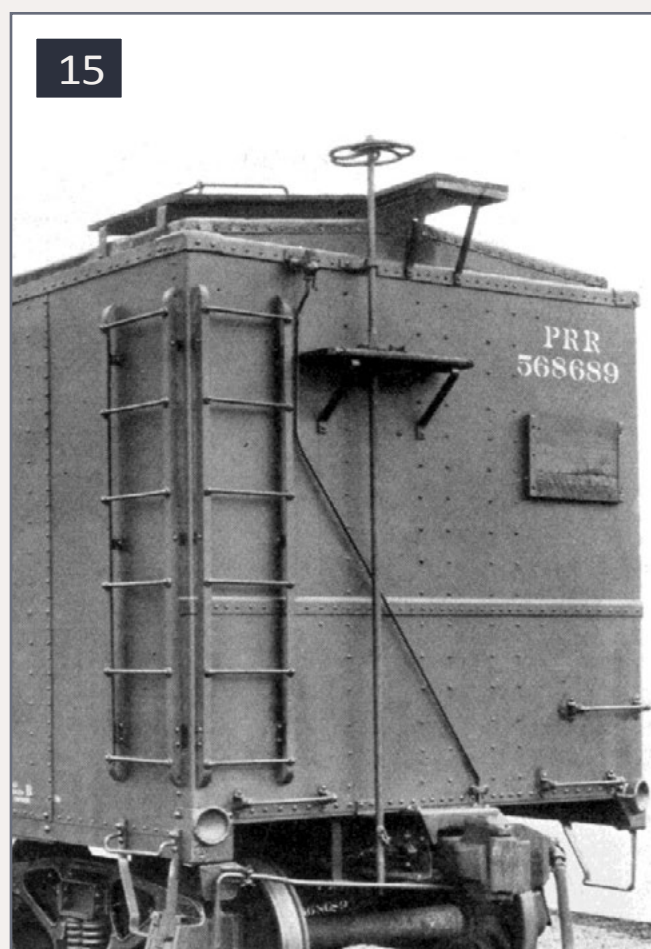
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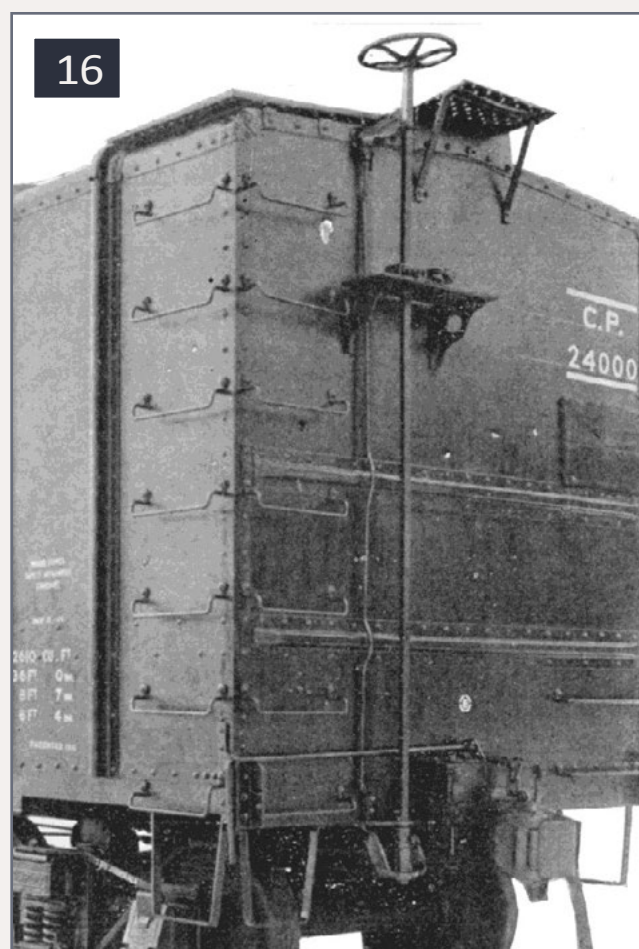
Hobbyists sometimes label Murphy corrugated ends as Youngstown ends. This is erroneous since the Youngstown Steel Door Company did not manufacture any car ends.

Flat ends

The Pennsylvania Railroad pioneered the flat steel plate ends with the introduction of the class X-29 boxcar in 1914 [15]. The A.R.A. recommended that flat steel ends be reinforced with at least three internal vertical braces. Note the rivet pattern visible on the end in [15].



15. Pennsylvania Railroad X-29 car built with flat steel end. Note rivet pattern for internal braces and separate hat section.



16. 36' boxcar with three-panel flat steel end built by Canadian Car Mfg during the teens.



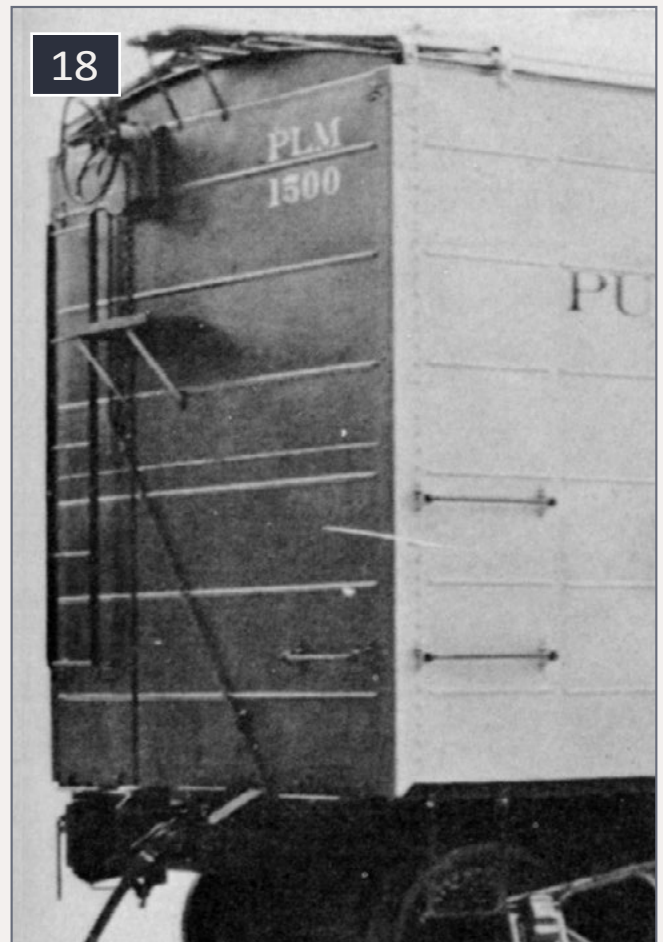
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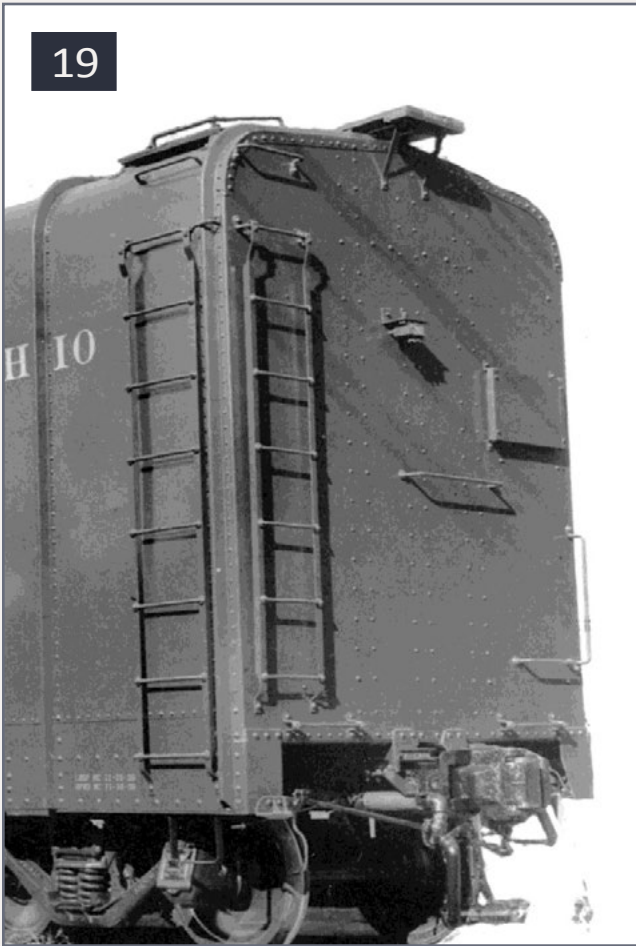
index



17. Flat steel end fabricated with three vertical panels on express car built by Pullman-Standard in 1937.



18. Flat steel end with minor indentations to match sides. Car built in the late 1930s by Pullman-Standard.



19. B&O C-16 wagon-top express boxcar with flat steel end.

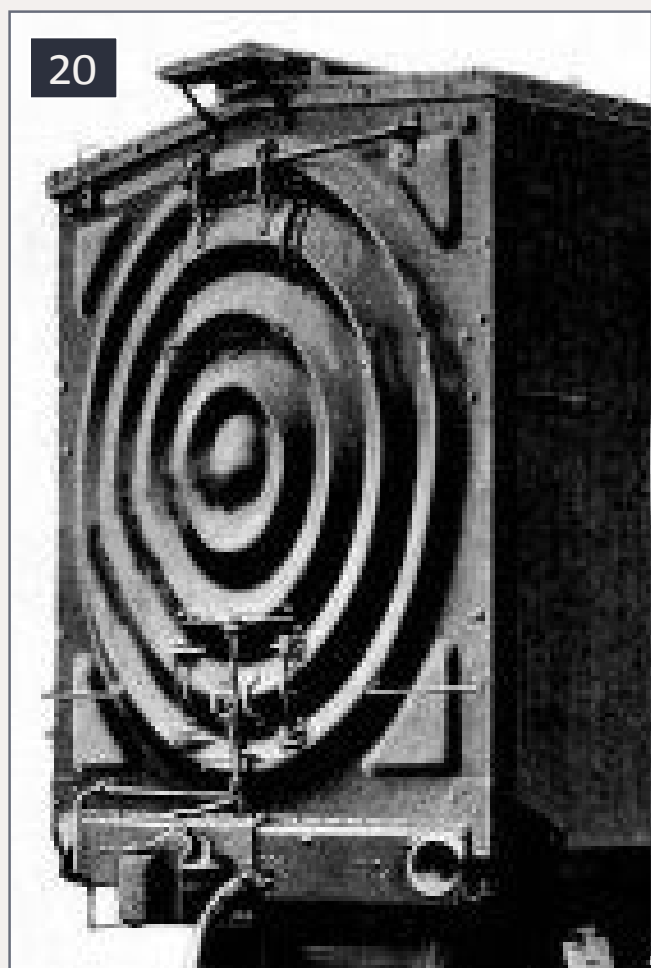
Poling Pockets

To move cars on an adjacent track, switch crews used a hardwood pole about 8' long pressed into round poling pockets located at the bottom corners of the freight car [13, 14, and 15]. The pilots and tenders of switch engines had similar pockets. The poles were typically about 6" in diameter tapering down to 3" or 4" at the ends, with a metal band to prevent splitting. Trainmen held the pole in position while the engine nudged the car on an adjacent track to the desired location. When not in use, the poles were stored under the tender's side sill. Poling was dangerous, and many railroads banned the practice. Poling pockets began to disappear as tow ropes and reinforced slings came into use. Poling was eventually banned on all American railroads.

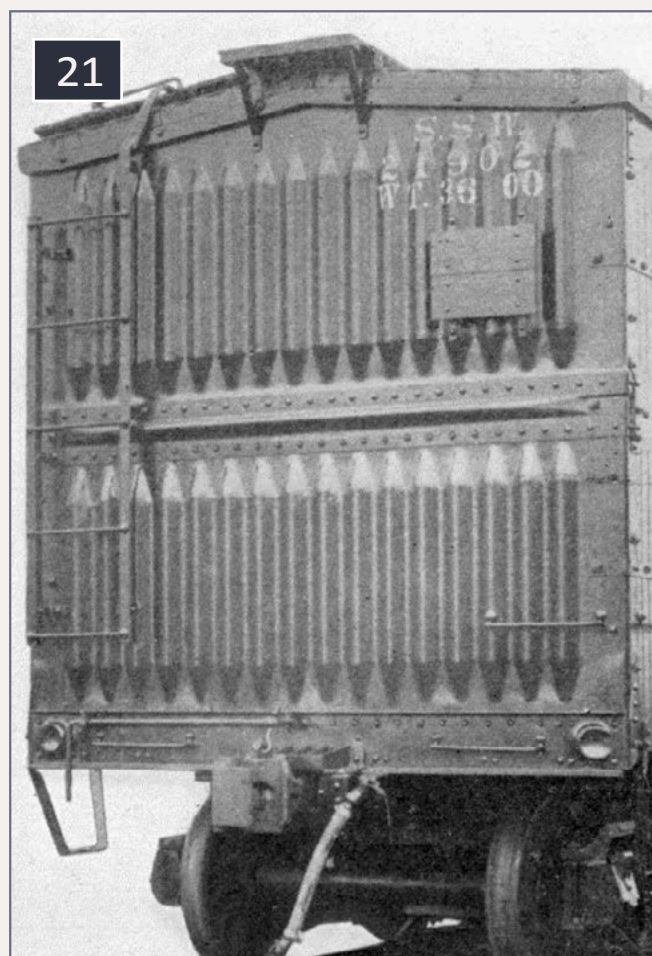


Miscellaneous stamped metal ends

Although Murphy ends and variations on the Dreadnaught theme dominated the field, several additional stamped steel freight car ends made brief appearances. Prior to World War I, Vulcan advertised steel ends with vertical corrugations [21 and 22]. AC&F briefly produced a one-piece steel end with a circular pattern that was quickly nicknamed the Bullseye end [20]. Another unconventional end was a waffle pattern that appeared just prior to World War II [26].

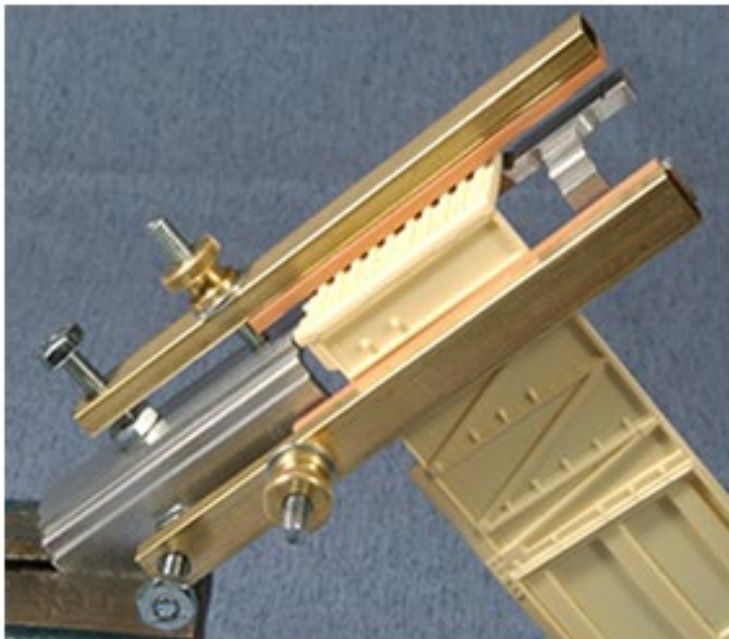


20. Van Dorn “bulls-eye” end manufactured briefly by AC&F.

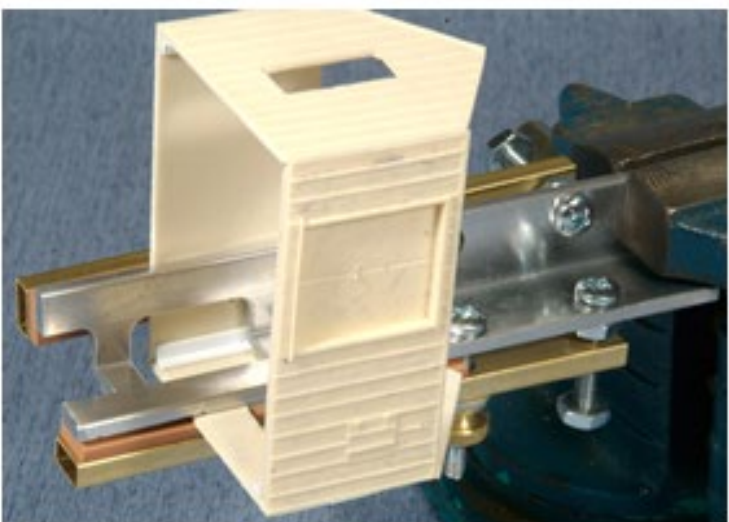


21. Two panels of vertical corrugations and a center panel with a single horizontal rib on circa WWI car. Railroad modeler/historian John Nehrich dubbed this a ‘jail-house’ end.

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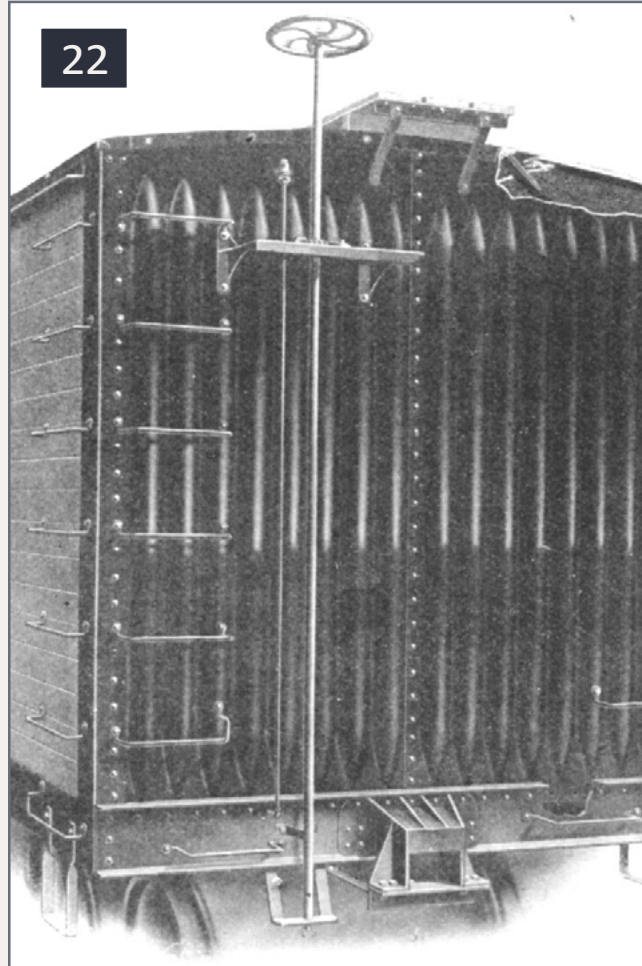
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Tools for Modelers

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22



22. Vulcan all-steel end
composed of two vertical
panels each with eight
corrugations fabricated
circa 1912 by Chicago-
Cleveland Car Roofing Co.



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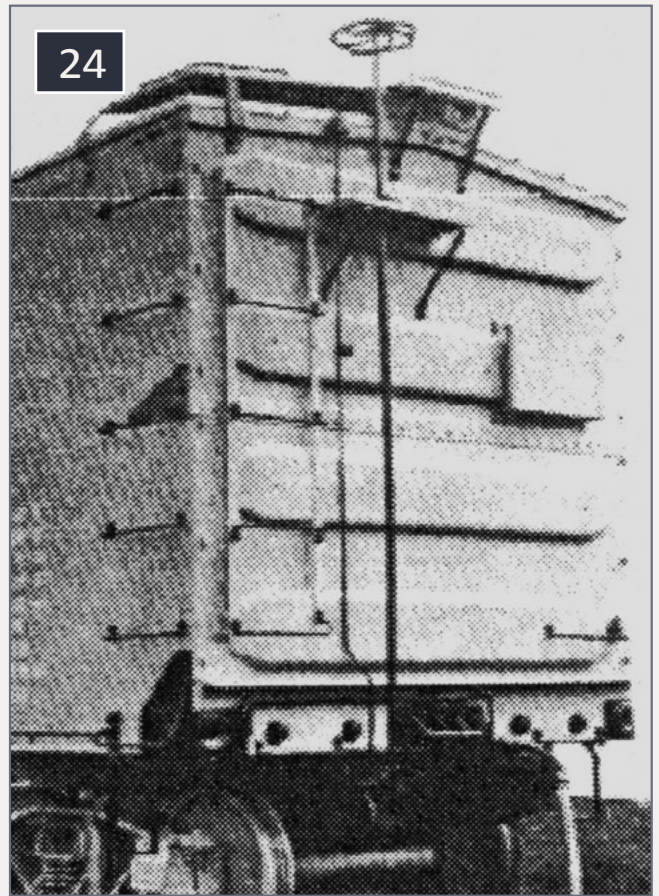
contents



index



23. Buckeye two-panel end with straight corrugations that flatten at sides. Built in late 1920s by Chicago-Cleveland Car Roofing Co.



24. Hutchins Car Roofing Co. introduced this end with four broad ribs in the early 1920s.

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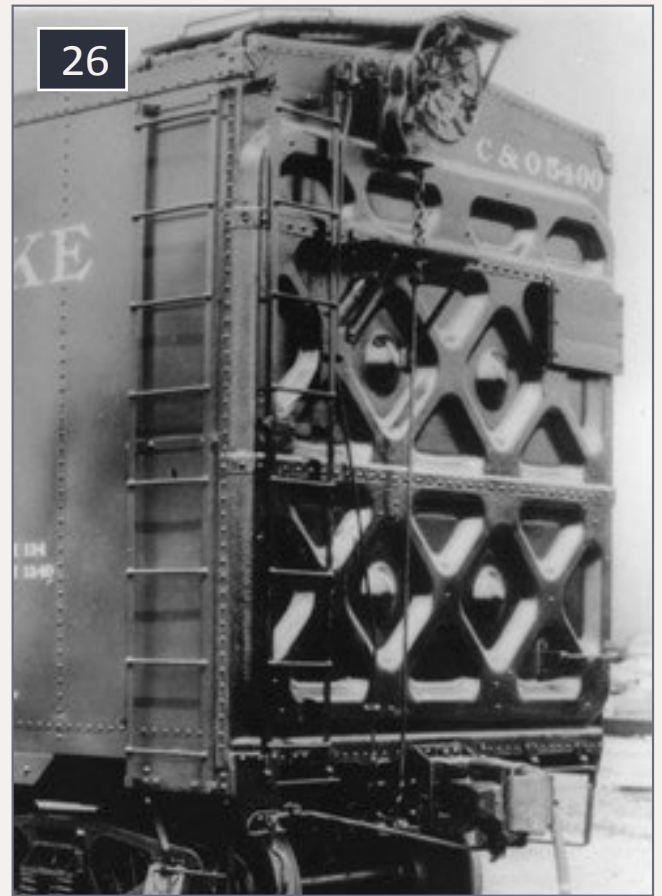


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25. Unidentified variation on a Hutchins end. Neither this or the original Hutchins gained a following.



26. Boxcar built for C&O in 1937 had interesting art deco waffle end.



contents

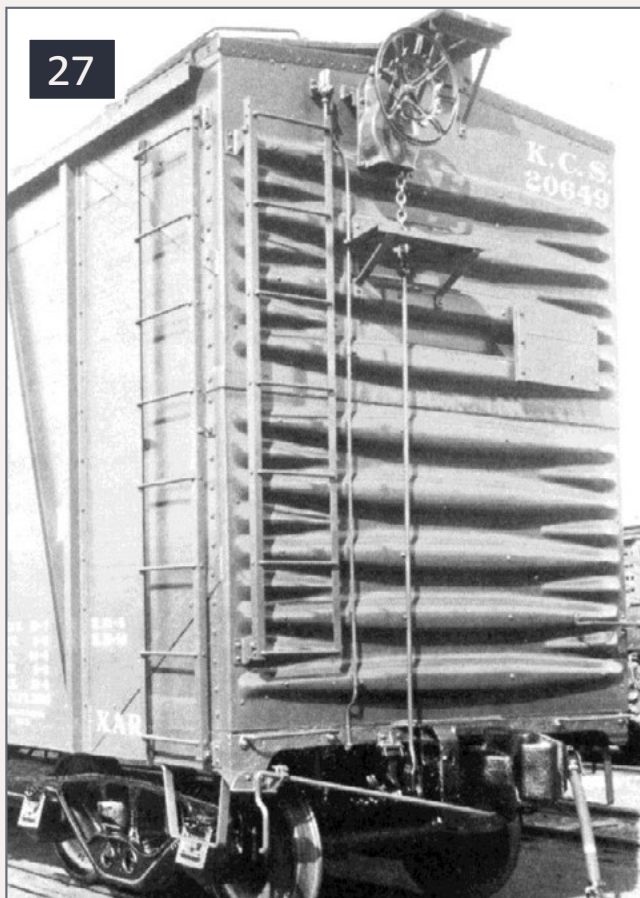


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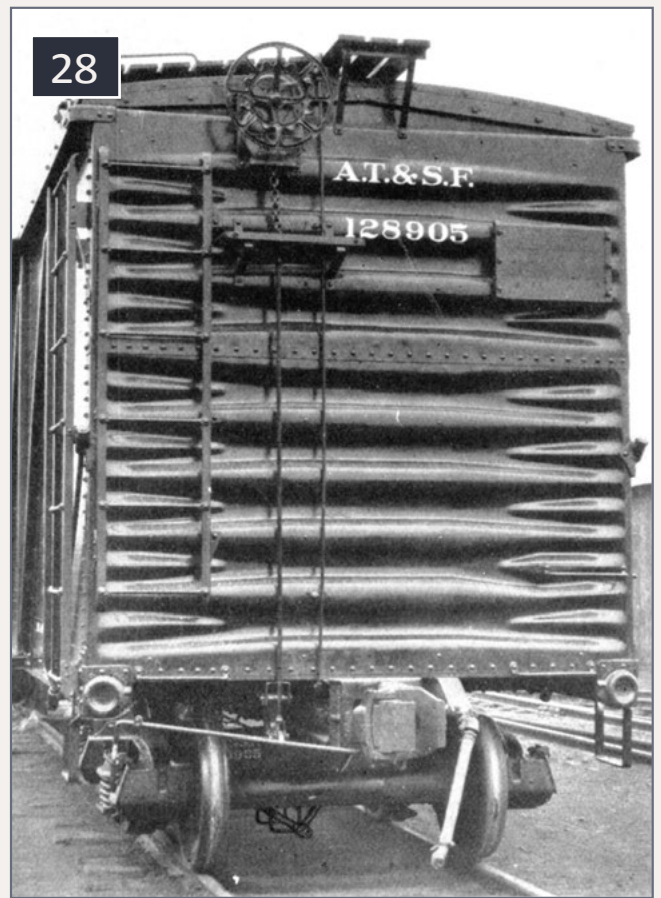
End doors, automobile and lumber doors

Lumber doors in the end of boxcars were not used for inserting or withdrawing lumber [30]. Long pieces of lumber were loaded through the regular side door, and poked out the lumber door as far as needed for the opposite end to clear the jamb of the side door. Once inside the car, the lumber was stacked in a conventional manner. Unloading was accomplished in the same way.

Lumber that was too large to be jockeyed through the lumber door was not usually loaded into box cars. Tamper-proof vents



27. Dreadnaught 4/5 ends cost \$117 pair on this 1936 rebuilt single-sheathed boxcar.

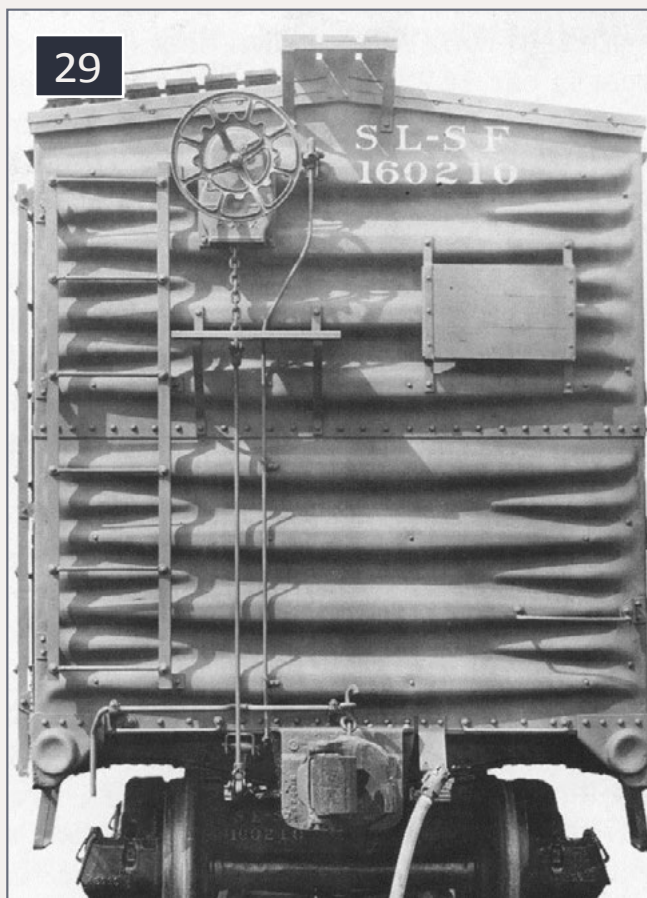


28. Dreadnaught 3/4 end on car built by ACF in 1930. End panels are joined at the peak of corrugations rather than between the ribs.

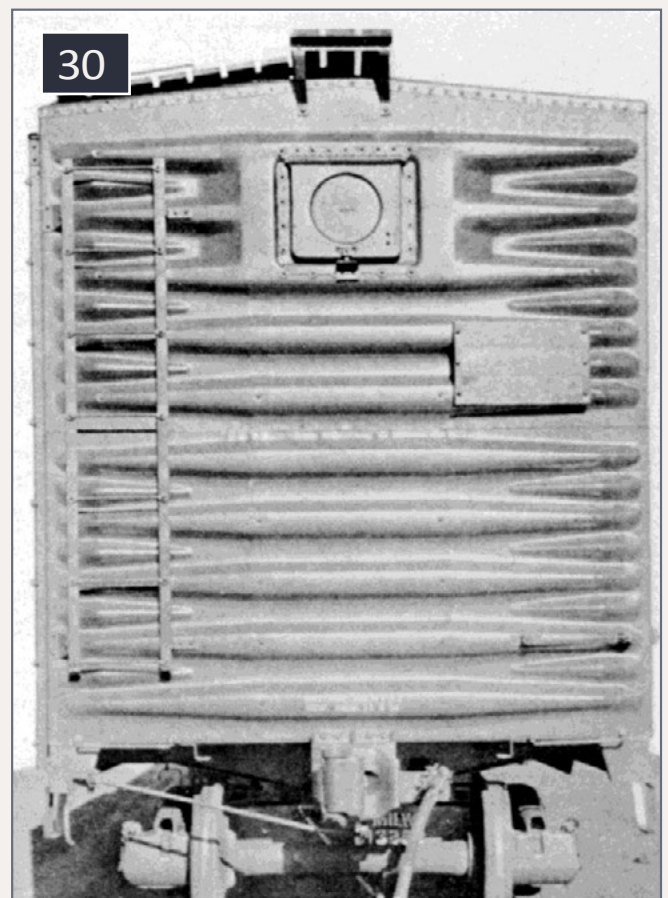
were also installed in car ends [5 and 12]. Boxcars designed to transport automobiles frequently had full-width end doors to ease handling their intended lading [32].

Dreadnaught ends

The Dreadnaught stamped steel car end was introduced in 1925 by Union Metal Products, a company under the control of Standard Railway Equipment Company since the early 1920s. The distinctive new end featured large horizontal ribs that tapered toward the sides. For added rigidity, short darts from



29. Basic 4/4 Dreadnaught steel end with small side darts between large corrugations applied to Frisco boxcar in late 1920s.



30. Two-panel 5/5 Dreadnaught end with lumber door in upper panel.



contents



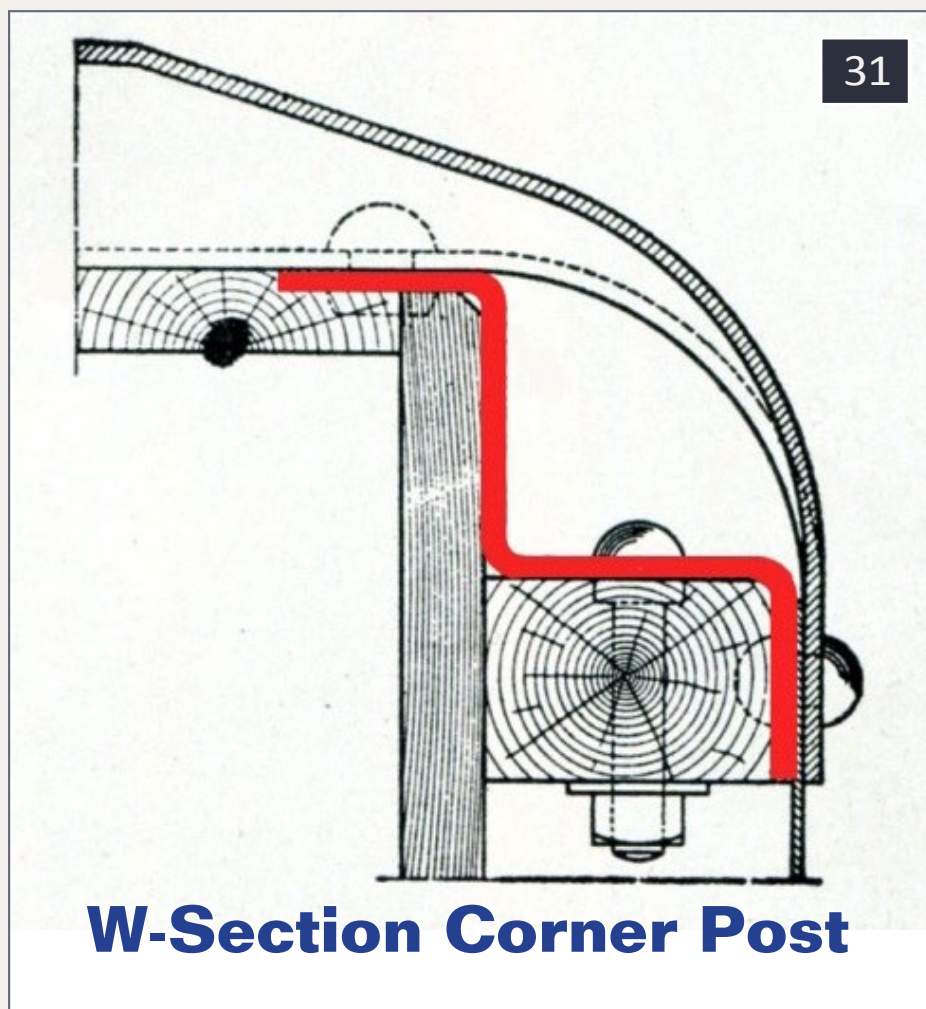
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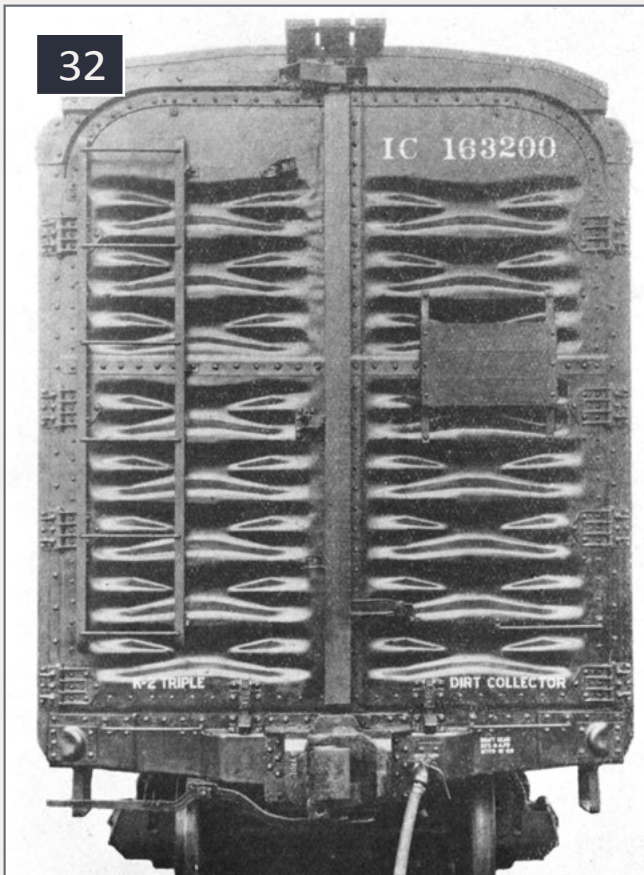
the sides filled the area between the ends of the main ribs [27, 28, and 29]. The ribs on the introductory design were formed inward; however subsequent Dreadnaught ends were stamped with the ribs formed outward. The upper panels of some Dreadnaught ends were formed with shallower ribs than in the lower, thicker sections [27]. The seam where the panels were joined together with rivets was usually in the valley between two main ribs [29], however, in some cases the riveted seam was along the center of the outward corrugation [28].

The brand name, Dreadnaught, was an Americanization of the British battleship HMS Dreadnought that was very much in the

31. The W-corner post was introduced in 1939 by the Standard Railway Manufacturing Co. The intent was to develop a stronger connection between

the ends and sides. The name is somewhat misleading since the 'W' shaped steel post is internal. The spotting feature is the round end that wrapped around the corner and attached to the side of the car [33 and 34].





32. Dreadnaught 3/5 swing end door for automobile car built in 1929 by Mt Vernon Car Co.



33. Dreadnaught 5/5 end with rounded corner for W-section corner post. Note truncated top rib. Car built in 1941 by Pressed Steel Corp.

news at the time the ends were introduced. In both cases, the name was meant to imply indestructibility.

Improved Dreadnaught ends

Following the expiration of the Dreadnaught patent in 1942, new and improved designs began to appear. The most widely accepted was a simple modification of the original Dreadnaught pattern with the small side indentations, or darts, being extended the full width of the end [35]. The design was marketed as the Improved Dreadnaught end. Although



contents

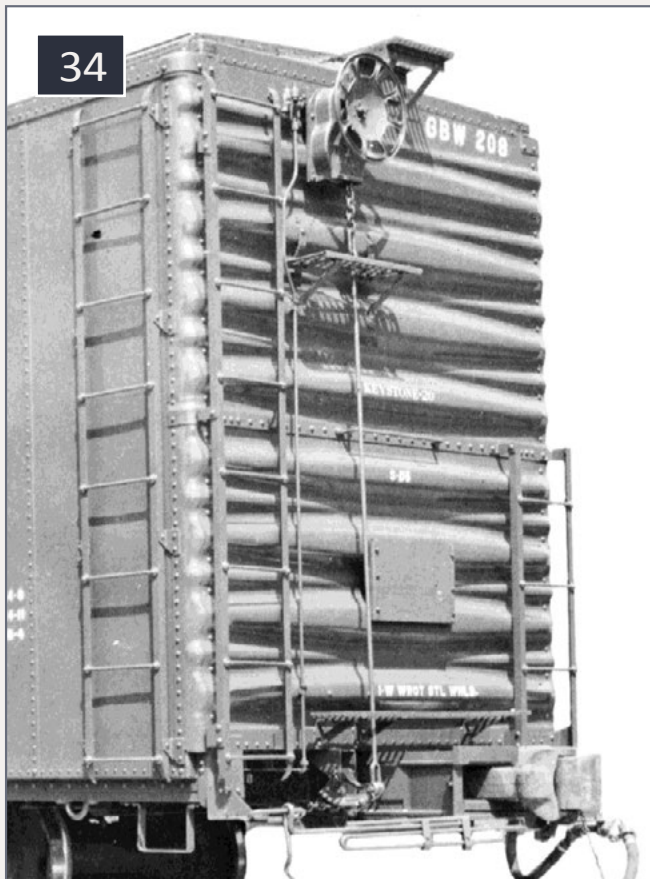


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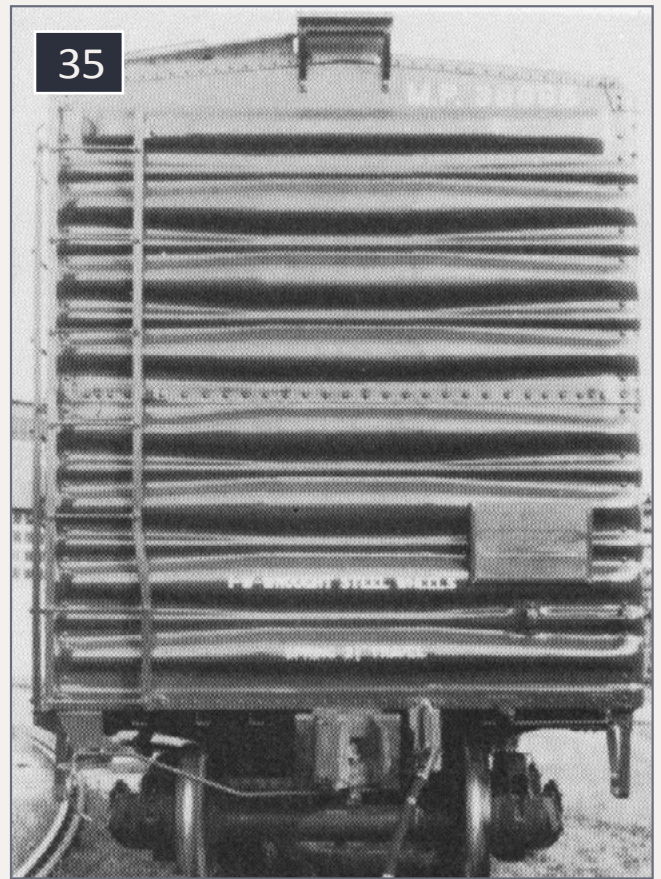
the larger rib was usually smoothly tapered [35], on some Improved Dreadnaught ends the main ribs took on the appearance of a rolling pin [36]. Improved Dreadnaught ends were made with both truncated [35] and full width top ribs [37].

Dartnaught or dart-less ends

Stamped steel car ends with large ribs, but without the secondary ribs or darts, were introduced in the late 1930s [39], however, they did not come into common usage until after WWII. Although the railroad industry had no generic name for the design, John Nehrich coined the name dartnot, or dartnaught,



34. Dreadnaught 4/4 end with round corners for W-section corner post. Car built by Greenville in 1963.



35. Improved Dreadnaught 4/4 end with smooth tapered corrugations. Note truncated rectangular top rib.



36. Improved Dreadnaught 4/4 end with main ribs shaped like rolling-pins. Note truncated top rib on this car built in 1953.



37. Improved Dreadnaught end on car built by Pacific Car & Foundry. Note non-tapered top rib and six small vertical indentations in the hat section.

because they looked like a standard Dreadnaught end without the usual small side darts. American Car & Foundry increased the rigidity of the dart-less end by adding dimples at the corners between each large rib [42]. Note that the four ribs in the lower panel are larger than those in the upper panel and, in accordance with A.R.A. recommended practice, are stamped from heavier-gauge steel.

The original Dreadnaught concept of a series of large tapered ribs continued to evolve as car builders developed their own



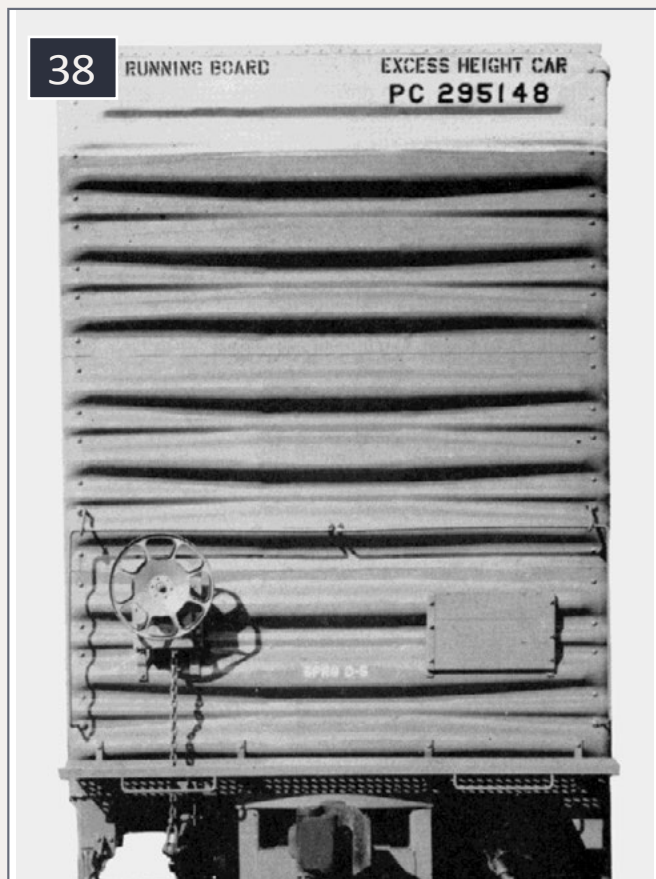
contents



index

proprietary designs. In the 1950s Pullman-Standard developed a new end for its PS-1 boxcars. It had a series of distinctive non-tapering ribs across the face of the end [44]. Also distinctive during this period was the stamped signature of six small rectangles in the hat section of P-S ends.

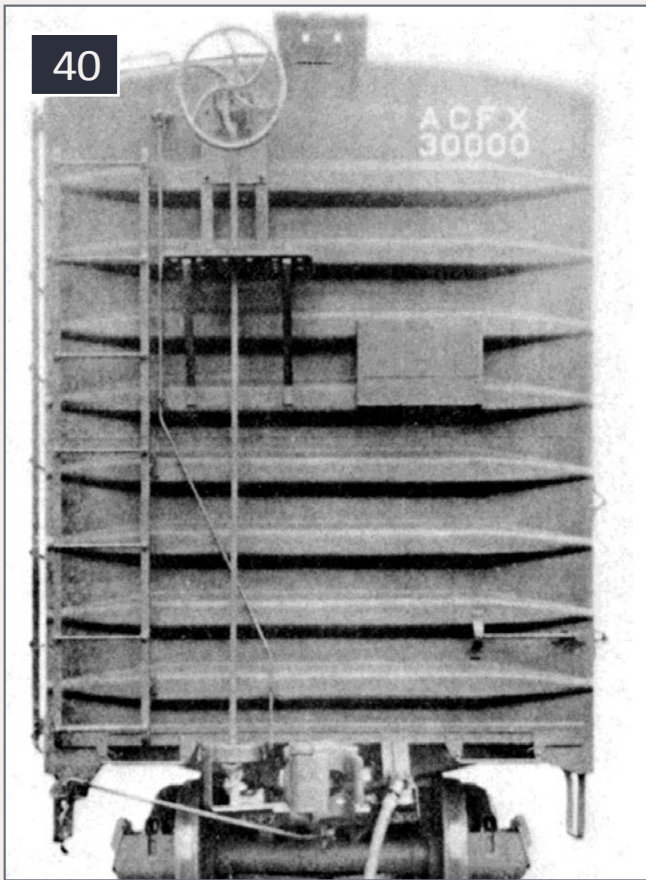
New York Central's Despatch Yard created a new look with non-tapered ribs that flared slightly as the ribs rounded the W-section corner post [45]. Used initially on NYC equipment, Despatch later applied the end to cars it built for other railroads. Despatch ends were used on all post 1956 NYC built boxcars and MDT reefers.



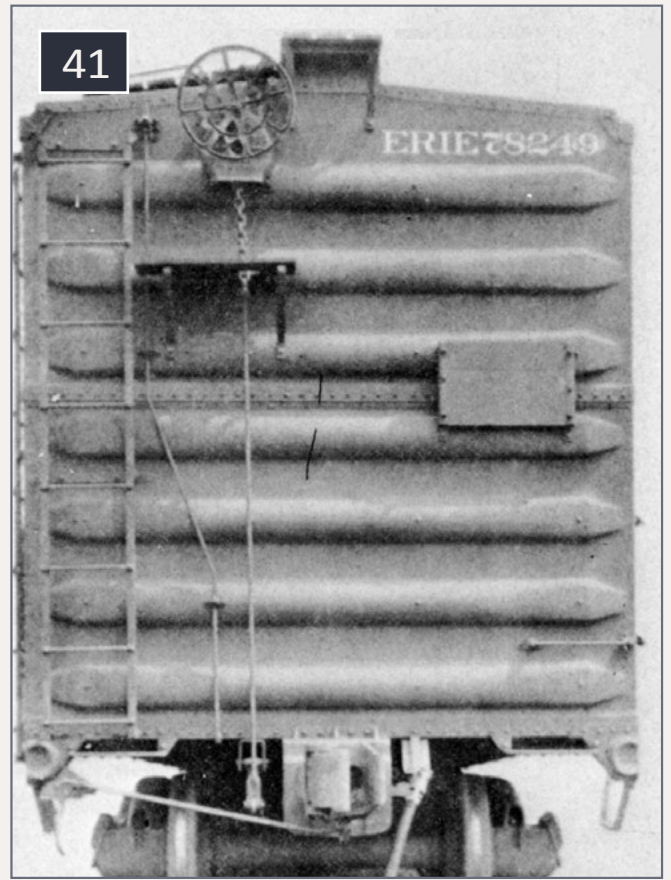
38. Improved Dreadnaught 3/3/3 end on excess height car built in the late 1960s. Note short thin rib in top panel.



39. Introduced in the late 1930s, the dart-less end didn't gain significant favor until the late 1940s.



40. The 4/4 end of this car, built in 1939 by AC&F, has sharply pointed ribs and no secondary ribs or darts.



41. This dart-less 3/4 Buckeye end produced by Chicago-Cleveland Car Roof Co. in the late 1930s featured straight, non-tapered ribs that come to an abrupt dull point. Compare this design with earlier Buckeye end in [23].



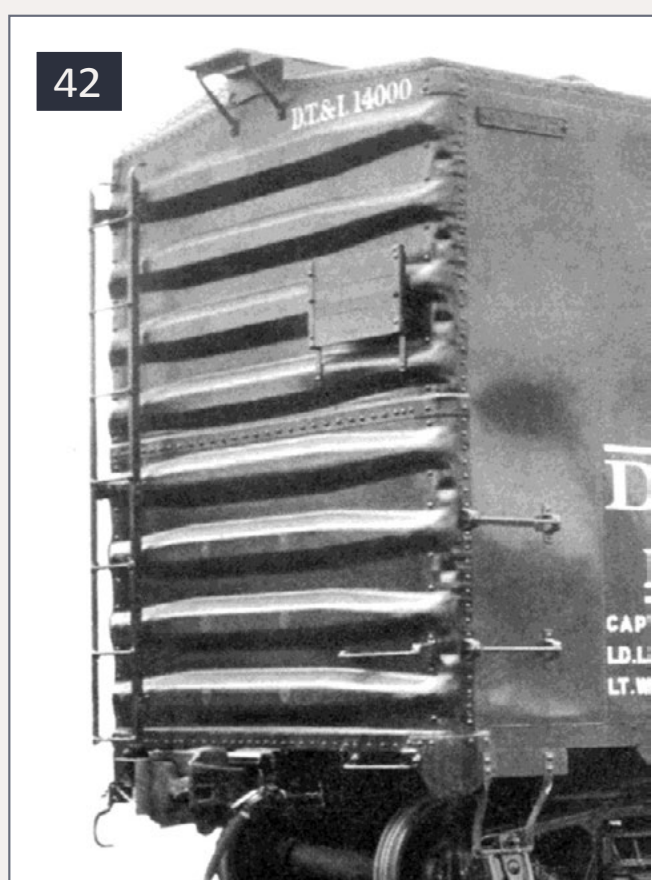
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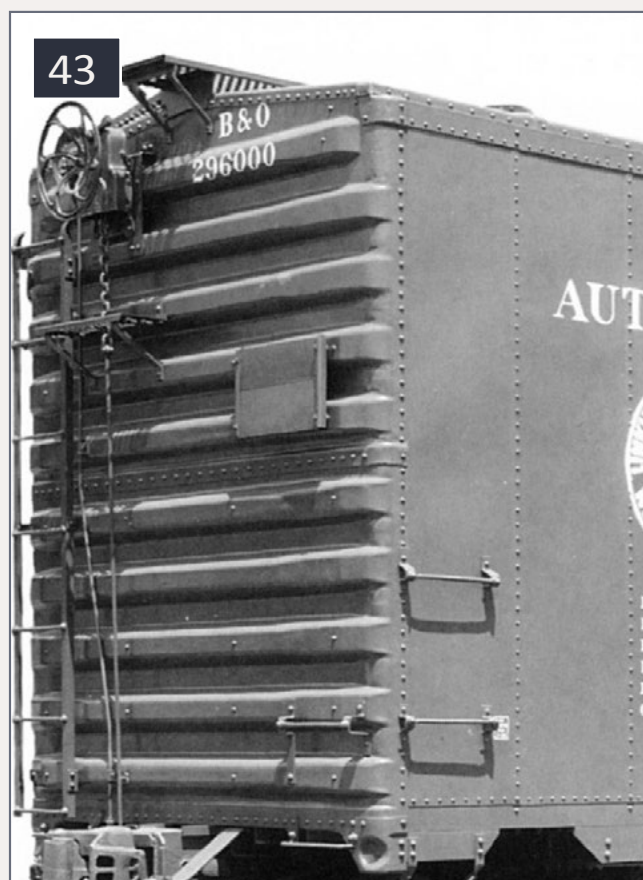
index

At about the same time, Greenville Steel Car Company developed a proprietary end that was similar to the Despatch end. The design was used exclusively on cars built by Greenville. Railroad historian, Richard Hendrickson, cites the ends on the B&O M55c class boxcars Greenville built in 1945 as an example of this practice [43].

In the 1970s, Stanray introduced heavy non-terminating box ribs that were welded directly to the corner posts [48]. The non-tapered design provided some flexibility in the

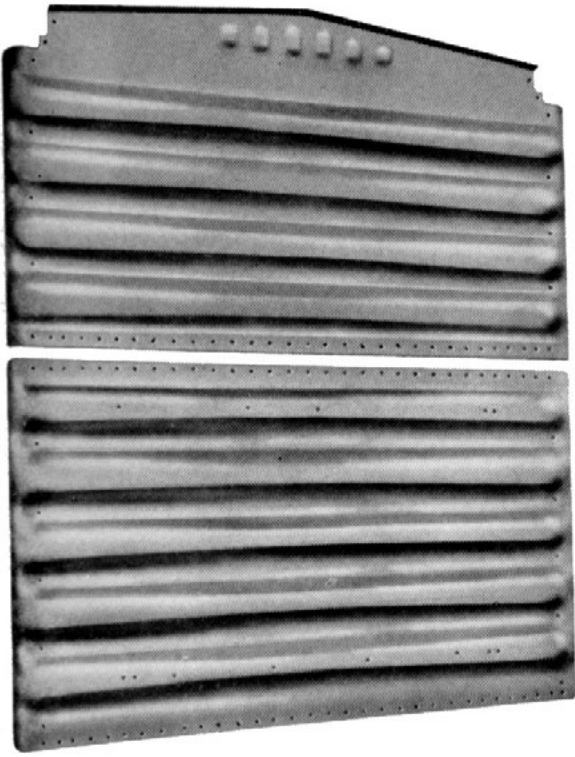


42. Corner dimples between the dart-free ribs identify this as an ACF proprietary end introduced in 1948.



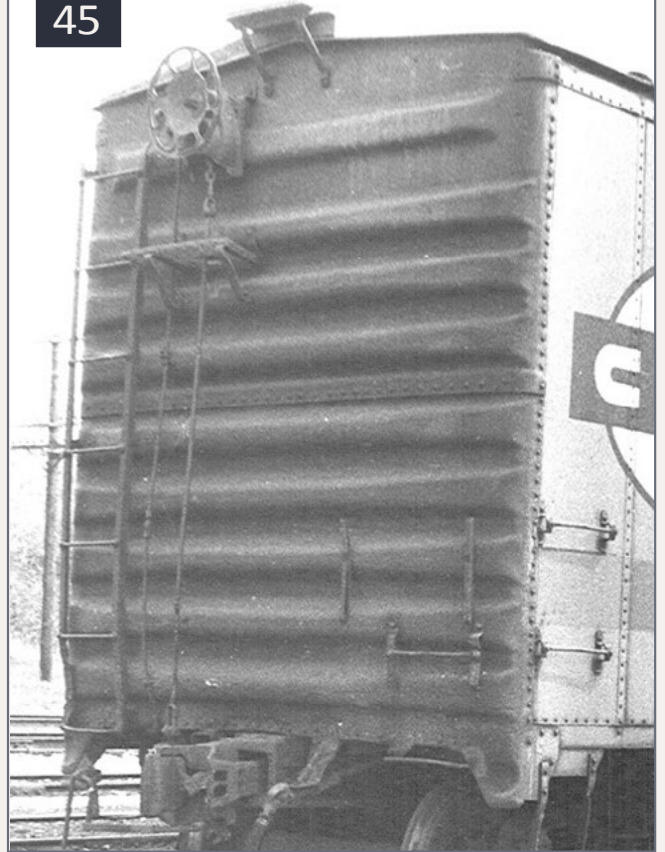
43 Greenville Steel Car Co. built this car in 1945 with a 5/5 end with non-tapered ribs that wrap around the W-section corner post. Note the shortened top rib.

44



44. Pullman-Standard promoted this 4/5 steel end in 1953. P-S frequently identified their ends with six indentations in the hat section.

45



45. Proprietary 4/5 end designed by Despatch Shops in East Rochester, NY. Note the truncated top rib.

manufacturing process without the need for specialized tooling for various car sizes.

Terminating and non-terminating end ribs defined

A terminating end wraps around the side of the car and is bolted or welded to the sides [45, 46]. Non-terminating ends are recessed flush with the corner of the car and are either bolted or welded to the corner post [48].



contents



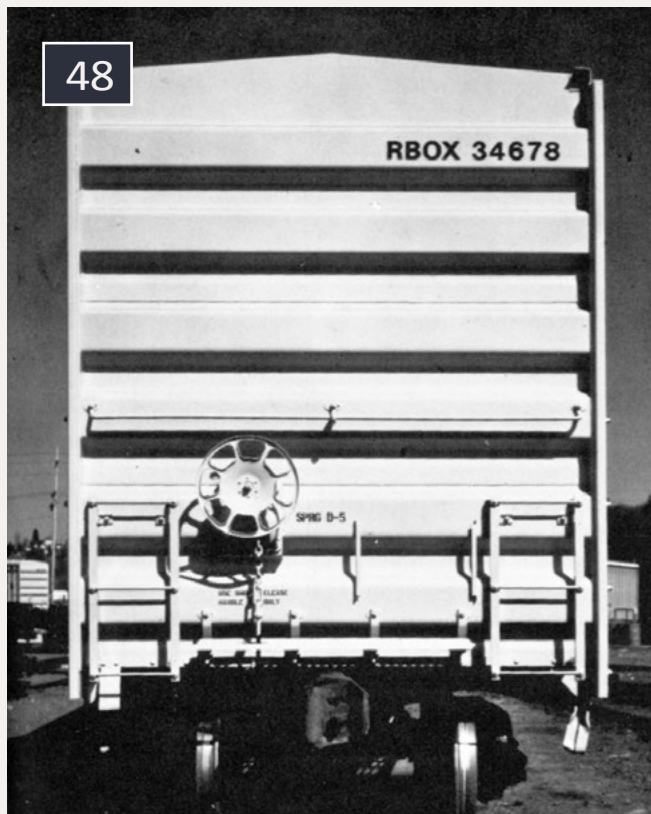
index



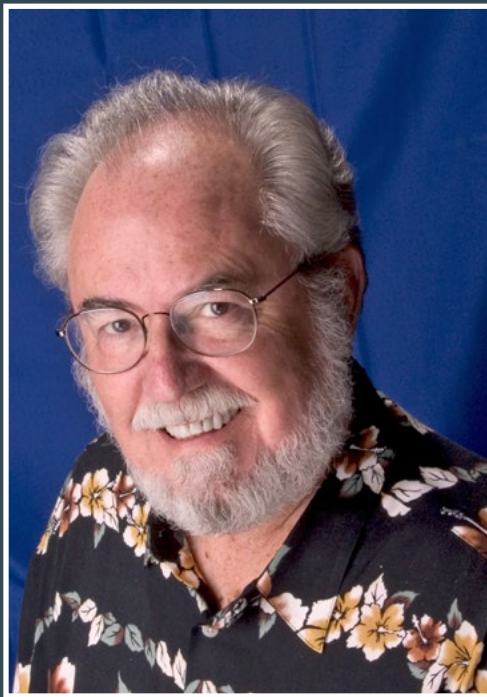
46. P-S-built this car in the late 1960s using 4/5 ends with bold nontapering ribs. Note the small short rib at the top.



47. The 2/2/3 ends on this Cotton Belt car built in 1979 feature split or bifurcated ribs.



48. Pacific Car & Foundry built this RailBox car in 1979 using Stanray steel ends welded to the corner posts. The six non-terminating box corrugations are on 20" centers.



Author 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 1960’s.

He enjoys building models, particularly structures, some of which appeared in the June 2006 issue of *Model Railroader* magazine.



Photo credits courtesy of private collections: Richard Burg (figure) 45; Bob Charles 4, 6, 25; Haskel & Barker 17; Richard Hendrickson 39, 40, 41; David Hussey 47; Museum of Transportation 2; Todd Novak 14; Al Westerfield 24; and Rich Yoder 29. Others are from author’s collection of advertising material, application literature, and builder’s photos including American Car & Foundry 7, 10, 14; Canadian Car Mfg. 16; Fowler Car Co. 1; Greenville Steel Car Co. 34, 43; Mt. Vernon Car Mfg 32; Pacific Car & Foundry 37, 48; Pressed Steel Corp., 8, 33; Pullman-Standard 18, 44, 46; and Wine Car Appliance Co. 5, 12.



contents



index

Logging Caboosees

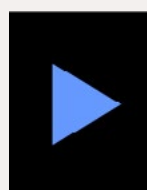
KITBASH

– by Jeff Johnston

Photos by the author



Kitbashing a pair of unique cabooses ...



Reader Feedback
(click here)



Loggers from the steam-vintage era were a creative and energetic bunch. They could cobble up some incredible and functional equipment while working with limited resources and near-nonexistent budgets.





Using what they had on hand or could beg or borrow, they'd build the hardware they needed to get the logs from stump to mill. Rolling stock, such as the pair of customized cabooses in this story, was often the subject of such modification.

Not all log trains used a caboose. In fact, a caboose was probably the exception rather than a rule for many early logging operations, but enough of them used one, especially in later years, that it's perfectly OK to hang one on the back of your log train. A train of any type just looks better with a caboose, right? Logging companies that operated their trains over common-carrier rails for part of the trip from woods to mill were required to use a caboose per the common carrier's operating rules.

Some logging companies used second- or third-hand rolling stock from mainline carriers. Others would build a caboose from the ground up in the company shops. In some cases, they used whatever they could get and repurposed it to suit their needs. Such is the case with the models shown here.

Both of these models are strictly freelanced although they're based on prototype inspiration. They're far afield from the usual prototype-based modeling I do for our Sugar Pine



contents



index

Lumber Company/Minarets & Western Railroad layout, but I wanted to try something just for fun, and to see if I could come up with something plausible. These will be used with log trains on the freelanced component of our layout, the Tillamook Bay & Beaverton, so our non-SPLCo trains hauled by articulated tank engines or assorted geared locos can be appropriately capped with caboose.

In brief, TB&B #2, [1], started as an MDC “Shorty” Overland combine to which I added a cupola, some extra windows and finishing details. This model was inspired by Simpson’s caboose as shown in [3] in a photo from the Martin Hansen collection.

Number 3, [2], also started as a Roundhouse/MDC kit, this one a double-sheathed smooth-sided wood caboose. I removed its



2. Caboose #3 has had its cupola removed and a side-access cargo door added to make it more functional as a piece of logging rolling stock.



3. It's clear to see how this image of a Simpson timber caboose was the inspiration for my #2. Photo courtesy of the Martin E. Hansen collection.

cupola (guess where it went) and added a few extra windows and a cargo door in the end once topped by the cupola. A few extra details rounded out this project. This model is somewhat along the lines of Hammond Lumber #1 from the Glen Comstock collection, [4], minus the cupola.

Caboose #2, get started

The Overland combine body, shown in more-or-less stock trim [5], was already equipped with a cargo door, so I didn't need to add that part. Loggers also used a caboose as a crew transport vehicle for moving the workers to and from the woods, so seating was important. To suggest the extra passenger volume I added three more windows to the car with two on the left and one on the right. "Right" and "Left" refer to looking along the



roof with the cupola and baggage end closest to the viewer, and the same convention applies later to the work on #3.

I had already started hogging out one of the window openings when I photographed [4]. These cuts were started by measuring the rough opening on the Tichy Part No. 8068, 18" x 28" Work Car windows, and scribing the siding. A small drill, about 1/16", made the first holes in the car body, then a sharp X-Acto #11 blade cut the balance of the plastic from the opening, followed by some needle file action for the final trim. I repeatedly test-fitted the window moldings and used a flat needle file to clean up the openings and bring them to their final required dimensions.

Although I removed the vertical mullions to better reflect the car's existing windows, it's obvious the new windows don't



4. The stock MDC Overton combine that was the start of TB&T #2 rattled around my roster for decades before being put to a better use. I had already started cutting an extra window opening when this photo was shot.

match the old. This is right in line with logging railroad practice – they'd use whatever they had on hand to do the job. In my opinion, it adds some interest to a semi-oddball piece of rolling stock.

After the windows were in place I added hand grabs made from .015" brass wire next to the baggage compartment doors. This wire was just a handy piece I had in my scrap box rather than being selected for a specific reason. Likewise, some flat brass stock was used to add the step supports shown with the hand grabs in [5]. Medium-viscosity CA secured the parts in place.

From this point on in the project, I supported the car body with wood scraps to avoid damaging the fairly delicate step hangers. I sized the hangers to accommodate steps and kickplate backers made from 2x10 scale lumber that was colored with an



5. Two additional windows, brass wire hand grabs and brass strip step supports had been added by this point.



contents

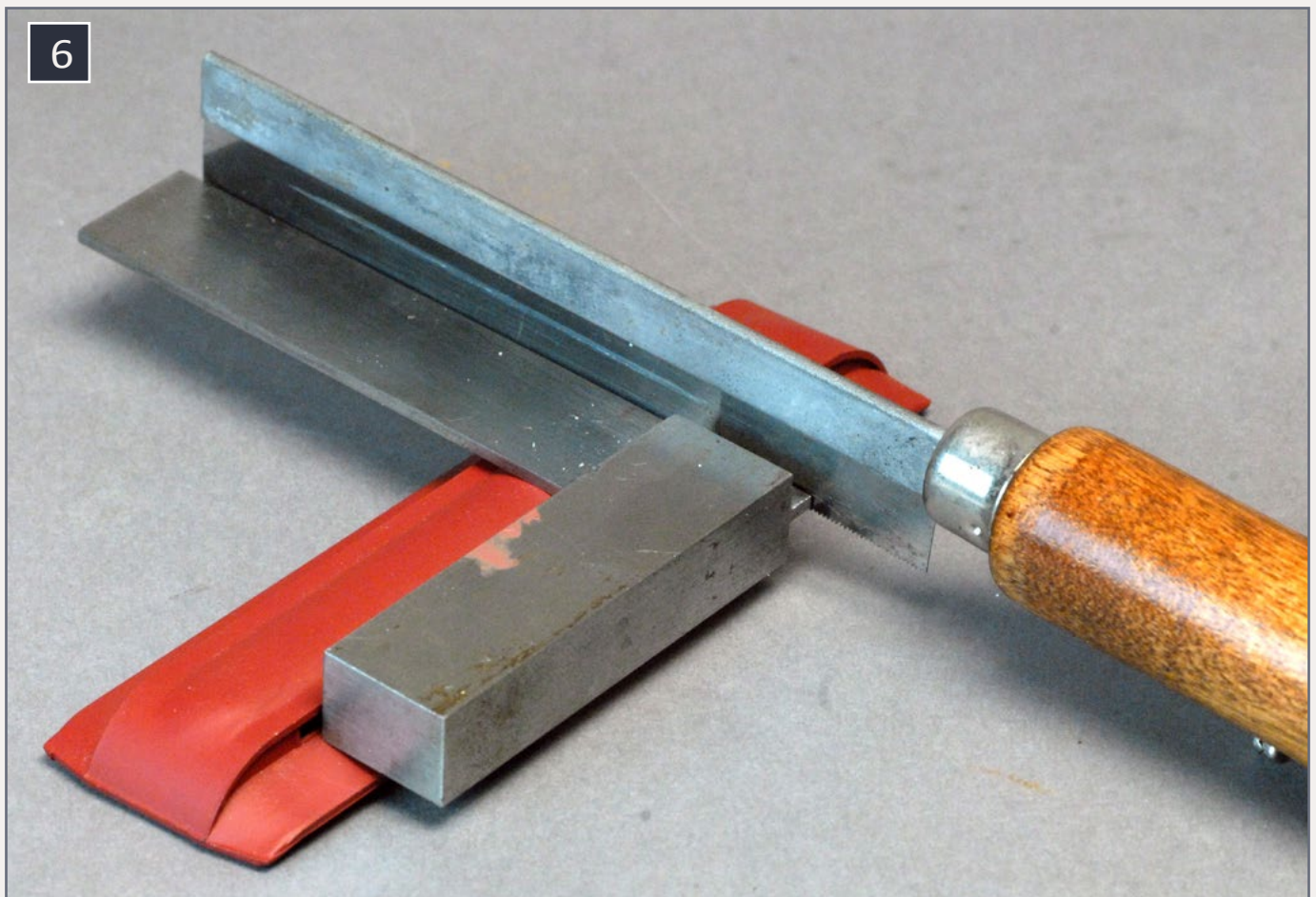


index

India ink/alcohol blend. The mix is about 1-teaspoon of ink in a pint of rubbing alcohol.

Rather than stripping the existing paint, I left it in place because the planned Boxcar Red is a dense color that covers everything well. If there remained a bit of bleed-through, well, loggers could occasionally be somewhat slipshod when it came to cosmetics.

Next came the roof modification, starting with cuts to accommodate the cupola. This is the only critical part of the process because it needs to be as square and even as possible. In [7] you can see the setup I used for this cut. A metal machinists' square – very handy for many modeling projects and not



6. A machinists' square is invaluable for achieving a perfectly square roof cut for the cupola opening.

from the areas of the roof and cupola to which I wanted to glue something, so the solvent adhesive could have a good grip. The same scrap filled the first clerestory window near the cupola, and it would be acceptable logging practice to fill them all in on a conversion such as this one.

Next came painting the body, trucks, roof, and undercarriage. I used PollyScale Boxcar Red #414281 for the body, trucks and roof on both of these cabooses. The #2 underframe I did with PollyScale Grimy Black #414137. The paint was applied after the parts were cleaned with an old soft toothbrush and dish detergent, then rinsed in warm water and allowed to dry.

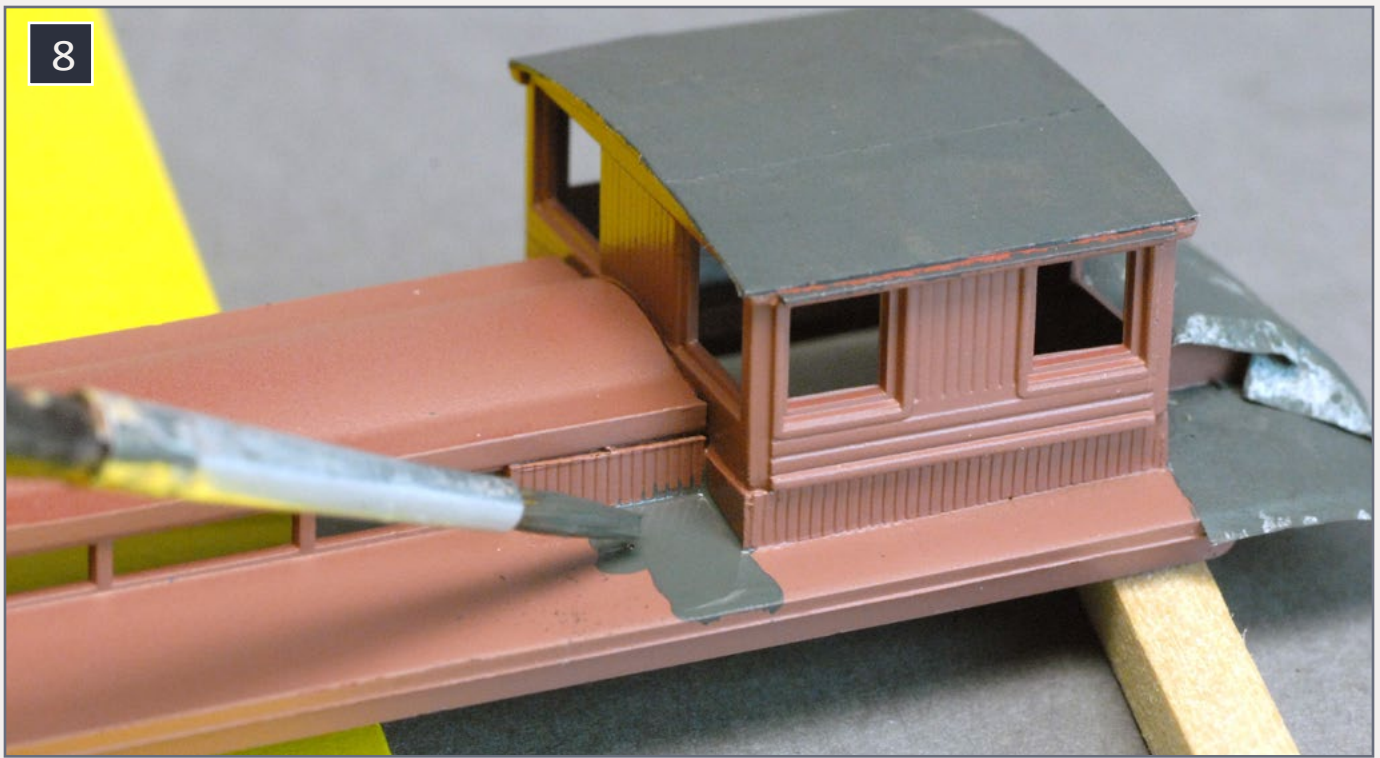
“...machinists’ square – very handy for many modeling projects...”

I’m giving the paint part of the story a once-over-lightly because painting has been covered in detail in many other how-to articles.

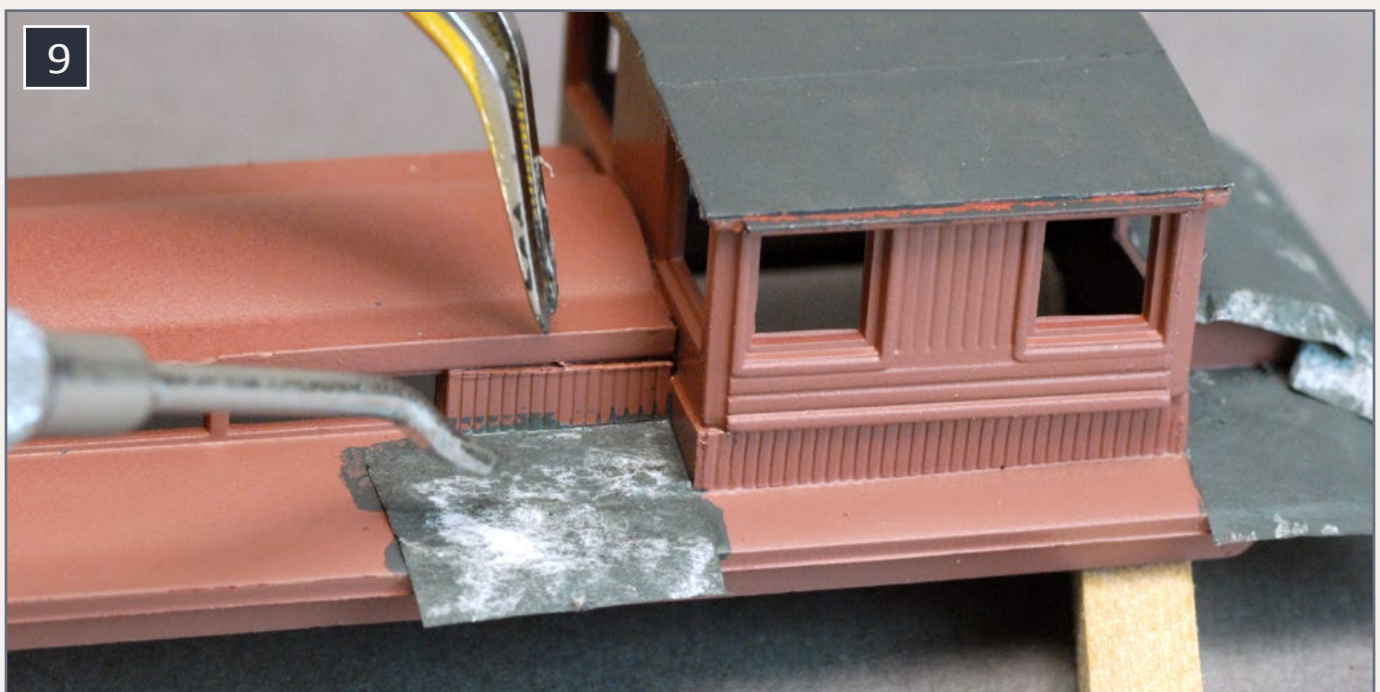
Tar paper roof

I wanted to add a tar paper roof to both models so the same general procedures were used both times. In essence, my procedure involves applying paint to the model as an adhesive for the tar paper, then the tissue/tar paper, followed by a top coat of paint. When dried, the edges were trimmed with a sharp knife and any paint errors were touched up. Here’s the step-by-step on how it’s done.

I start by cutting tissue paper into scale 3’ strips, then trim a piece from the strip to fit my next planned application spot. Next, I brush some paint, in this case PollyScale Grimy Black



8. Tar paper roof installation starts with a layer of Grimy Black paint that's used both for color and its adhesive qualities.



9. The tar paper piece is positioned on the previously applied section of black paint and carefully manipulated into place with tweezers and, in my case, a dental pick.



contents



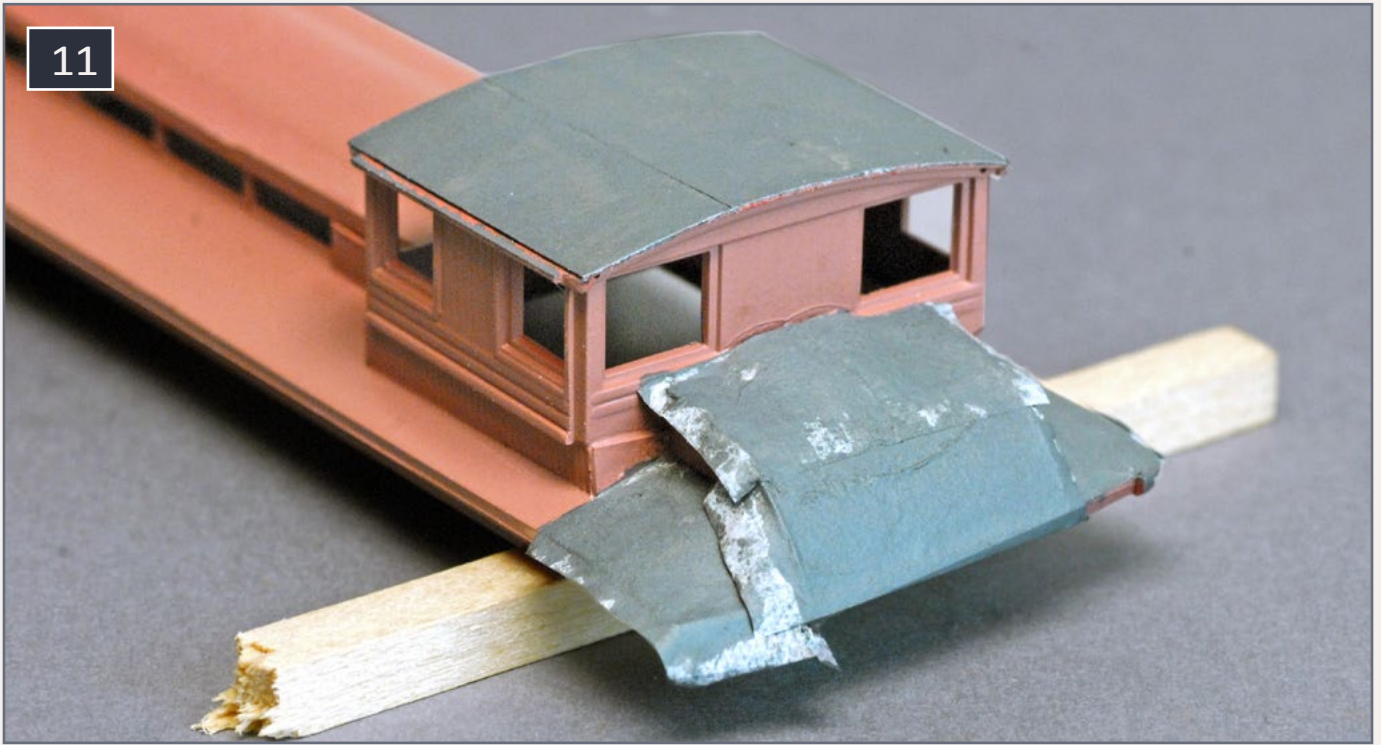
index

#414137, onto the roof where the tar paper will be applied [9]. The paint dries fairly quickly so I only work with a small area at a time.

With the tissue on a scrap work surface I brush a bit of paint into the edges that will become the underside of the tar paper on the roof [10]. This is to ensure I have good adhesion for the paper's edges. The yellow background is to make it easier to see the part being worked on in the photo. The prepped tissue is then inverted onto the pre-painted roof section, and I use a dental probe and tweezers to gently position it [9], taking care to avoid ripping the paper once it's saturated with paint. If the paper rips, add a patch on the spot. that's how loggers did it. After the tissue is positioned I apply another light coat of the black paint as a topcoat and sealer [10].



10. A final layer of the black paint is added to the top of the tar paper.



11. The tissue/tar paper is flexible enough that it easily conforms to many multiple-curve surfaces such as this roof end and corner. If it's wrinkled a bit, that's fine, the roof on a piece of logging equipment was seldom a cosmetic prizewinner.

There's enough flexibility in this system that even multiple curved surfaces, such as the ends of the passenger car roof, can have simulated tar paper applied successfully [11]. It doesn't matter if the tissue isn't completely smooth or the paint coat is likewise less than pristine because a tar paper roof on a piece of logging equipment was not necessarily a thing of beauty. They'd slap it down, add the tar coat and be done with it. After the final paint dried, I went back and trimmed the edges, but not too carefully, and did touch-up with a fine brush, using either the body or roof color as appropriate.

Cupola braces made from .015" brass wire were added to each top outside corner of the cupola end walls and installed in holes drilled in the roof to produce about a 45-degree slant in the wires. Close is good enough for this.



I added the scale 2x10 wood steps below the cargo door using medium-viscosity CA. Kadee #58 scale-size couplers make a big visual difference on a smaller piece of logging train equipment.

Because the final finish and weathering touches apply to both models, I'll leave that description until later.

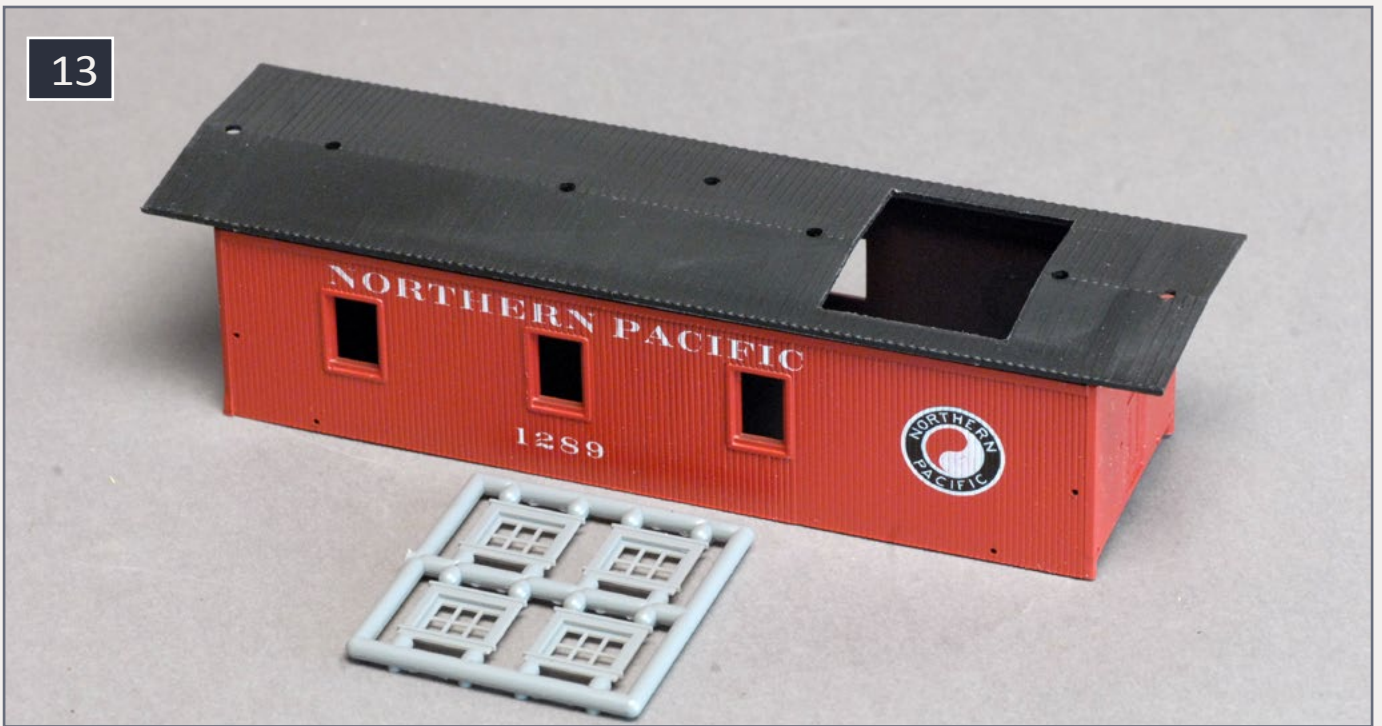
Caboose #3, get started

TB&B #3 looked like [13] at the start of the project. As with Caboose #2, I left the Northern Pacific lettering and paint on the body and used that finish as the base coat for my Boxcar Red later on. [14] shows the pair of new windows I added to the right side of the caboose, opposite the location of the new cargo door. The Tichy #8067 windows proved just the right size to somewhat match up with the existing windows in the caboose body.



12. Hammond Lumber #1 was a typical inspiration for TB&T #3. Photo courtesy of Glen Comstock collection.

13



13. TB&B #3 started as an MDC wood-sheathed caboose kit minus its cupola. A cargo door and Tichy windows were planned additions.

14



14. A pair of windows were added to the non-door side of the caboose.



contents



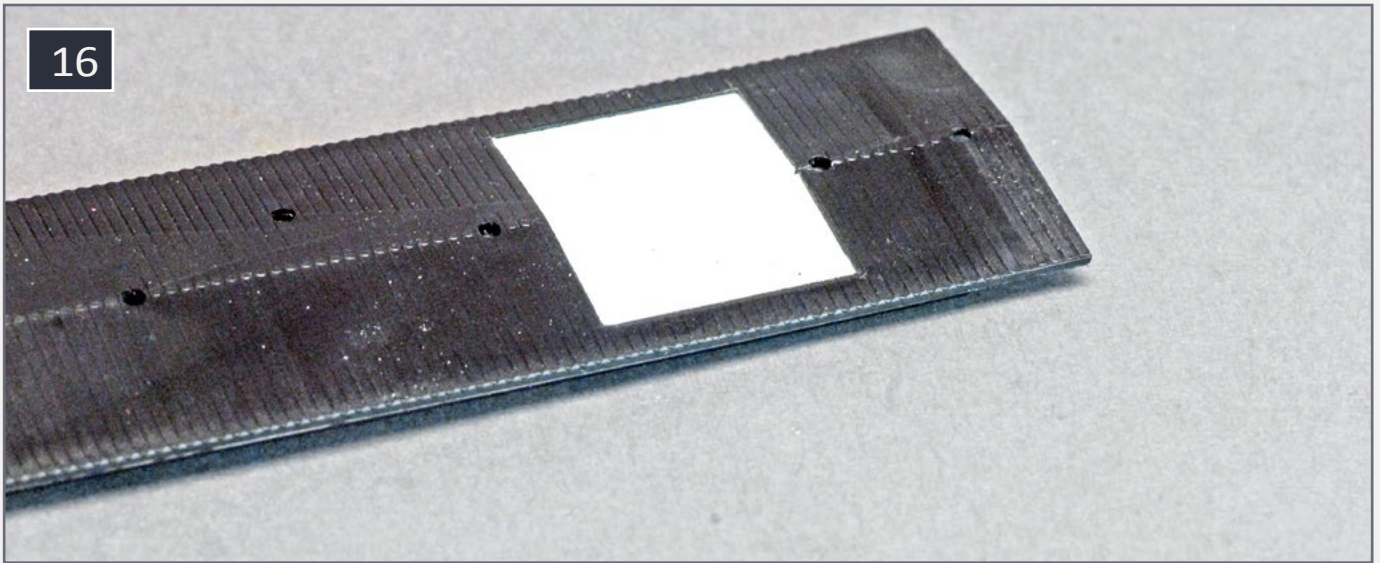
index

On the left side I cut out a cargo door opening about 6' wide and 5' tall as seen in [15]. That's a bit short, but it's based on the height of the model's floor, leaving a bit of wall space above the opening for strength. At first I added a partially opened door inside made from scrap scribed styrene, but researching a few photos showed it was also feasible to relocate the door to the exterior. A 12' piece of 3x3 Evergreen styrene just above the opening serves as the door slider hardware housing, and a strip of Evergreen styrene 1x3 stock trimmed the opening below the door.

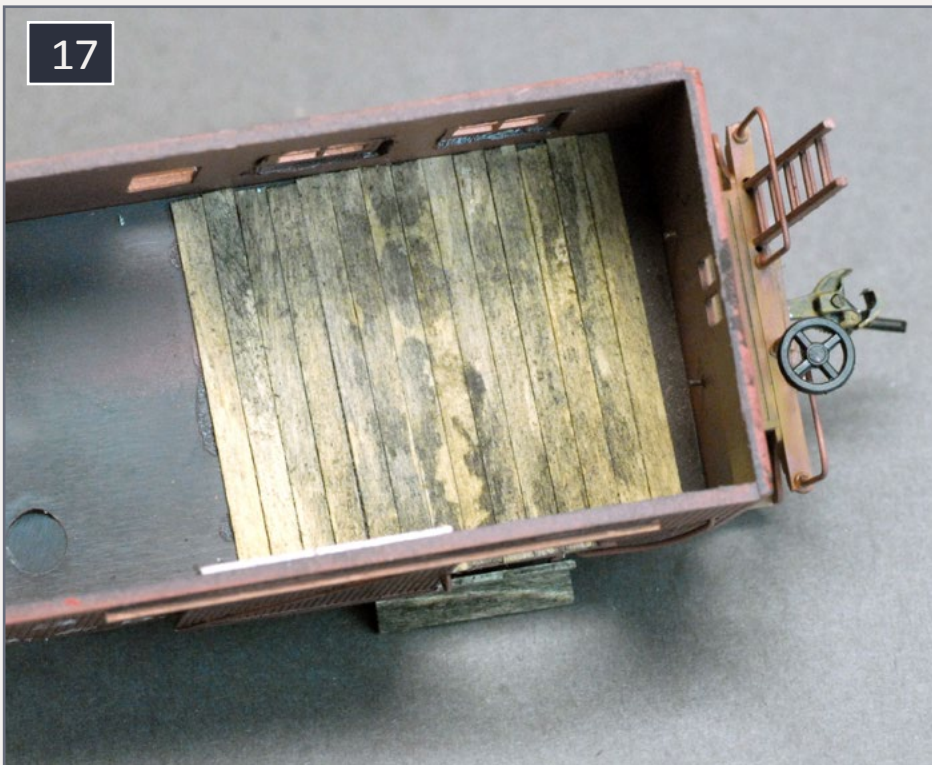
My scrap bin was the source of the 6'x6' scribed styrene door material to which I added a handle made from approximately .015" brass wire bent into a 6"-long U shape. More Evergreen 1x3 stock was added to the door as top and bottom edge trim



15. A cargo door was cut into the side of the caboose, and a pair of brass strip step supports were added just below the door, which later was swapped to an outside-hung version.



16. The cupola opening the roof was patched with a couple pieces of .020" styrene and tar paper was added just as with Caboose #2.



17. A floor made from stained 1x12 stripwood, secured with ACC, dressed up the visible part of the interior cargo area floor.

plus diagonal Z-bracing. After I cut and scraped away the adjacent window frame to allow a flush fit against the caboose side-wall, the door was simply glued in place with about a 3-1/2' opening present. This allowed enough space to somewhat view the interior while placing a seated figure in the doorway.



contents



index

Roof filler

Next I filled in the roof opening, once occupied with a cupola, using two chunks of .020" Evergreen styrene [17]. This could have been done with scribed styrene because the scribing may have come through the tar paper roof material and resembled the wood used by the shop crew to patch the hole, but I thought of that after the smooth material was in place.

It's easy to line up the patches with the roof surface by assembling the parts top-down on a work surface. At that point it's convenient to add the scrap styrene underside bracing to ensure the patches stay in place.



18. The original weathering wash for #2 was too heavy so it was covered with a wash of the Boxcar Red body paint to tone it down. The rest of the caboose is about ready for the flat finish.



19. The left side of #3 is ready for the flat finish. The window glazing was added after the Dullcote to avoid hazing the windows with the finish.

Paint and finish

As mentioned earlier I painted the caboose body, underframe and trucks with PollyScale Boxcar Red #414281. The roof needed only its underside at the end overhangs and outer edges done, as the top was covered with the tar paper. The roof was done using the same techniques described earlier for caboose #2. Also, the access step was built just like the similar piece on caboose #2, discussed earlier.

Because of the view through the side door, I added a wood floor to the cargo area [18]. It's made from 1x12 scale strip-wood stained with the mix of India ink and alcohol and secured with medium-viscosity ACC. I didn't mess with decorating the walls, but added a few small detail items [19] inside to provide a more interesting view when looking in past the seated figure in the doorway. The metal plate at left in the photo is a piece



of lead sheet added for weight, and a similar piece was also installed in caboose #2.

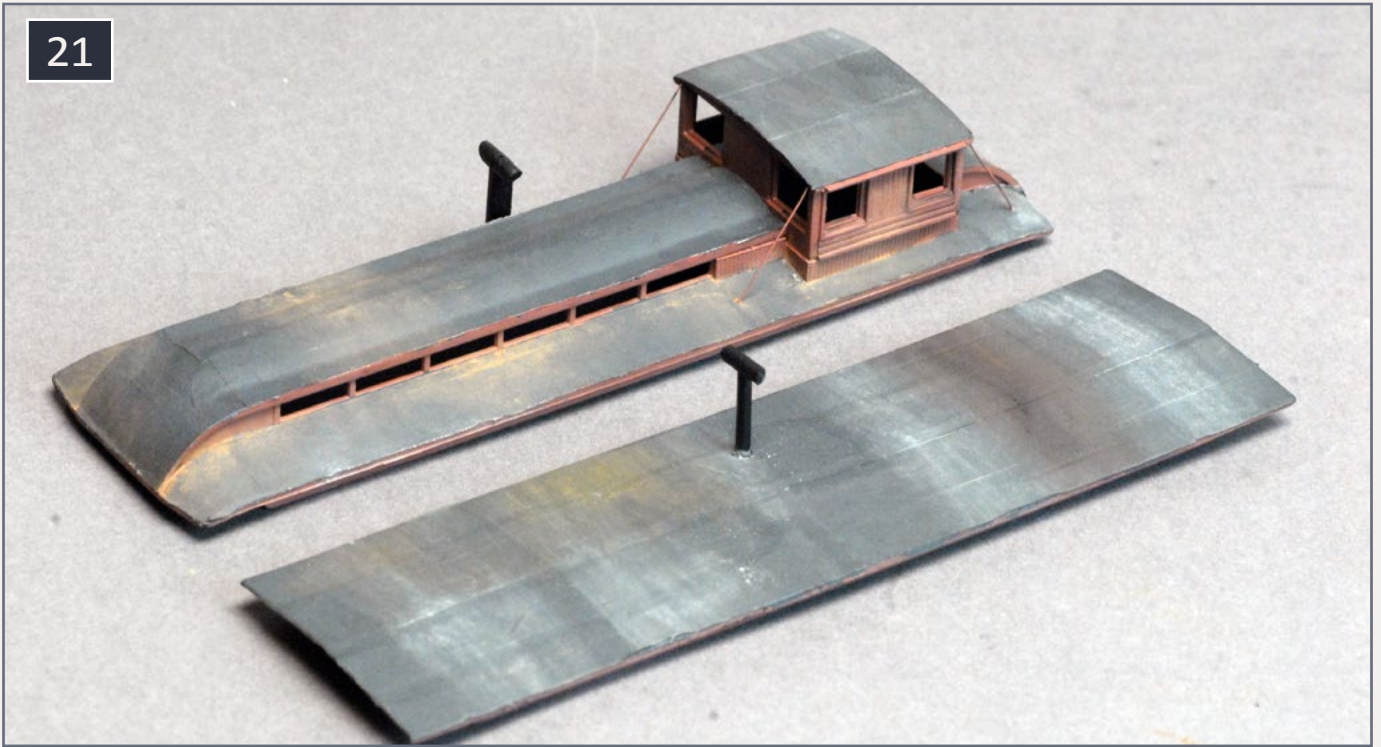
Final finishing, weathering, and details

The T.B. & B. decals came from a sheet of assorted custom decals I had made, and the number is from a Roman Numeral decal sheet.

For weathering I used washes of PollyScale Earth #414311 and Railroad Tie Brown #414329, liberally applied, with touches of Grimy Black and PollyScale D&H Grey #414197 here and there for variety. The brown was left somewhat heavier on the end platforms and steps where loggers would walk with muddy boots. To make the washes I thinned the paints with “wet” water and a few drops of denatured alcohol.



20. A Woodland Scenics figure set provided the guy sitting in the doorway. He also received some weathering washes, but his face and head clearly need work.



21. I had applied weathering chalk to the roofs of both models but most of it disappeared under the Dullcote spray. More dust will be carefully added on top of the Dullcote for the final effect.

Photo [20] shows the body of caboose #2 with its first weathering job. The brown was too intense, so I went back over it with a wash of the Boxcar Red body color to tone it down somewhat. This worked just fine and resulted in the subtle approach I prefer. Photo [21] is caboose #3 with its first weathering applied, but no details or final flat finish yet.

The guy sitting in the cargo door of caboose #3 [22], came from a Woodland Scenics figure set, but he was retrieved from a box of loose figures, so I can't say specifically which set. He also received some weathering washes, and by the looks of him, could use a bit of touch-up in the face and head areas. I normally work on and repaint a figure as needed, but this guy was used as-is.



The final clear coat of Testor's Dullcote, thinned 50/50 with lacquer thinner, was applied after the weathering had dried. As usually happens, most of the chalk dust I'd applied to the roofs [23], disappeared. If I get inspired, I may go back later and add more dust as appropriate.

Following the Dullcote, I added the .010" clear styrene window glazing. Adding it before the Dullcote would have either meant I'd have to mask all the windows or live with the frosting that occurs with Dullcote on clear windows. I did the caboose #2 clerestory windows using a scrap of blue-tinted clear styrene from my scrap pile. Now and then it pays to stash away some of those arcane but useful-looking pieces of hardware at the end of a project.

I have no plans for further interior detailing or lighting, so I glued the roofs in place. I applied small dabs of Walthers Goo to the roof lip that fits inside the body, positioned the roofs, and held them in place with weights, as shown in [24 and 25].



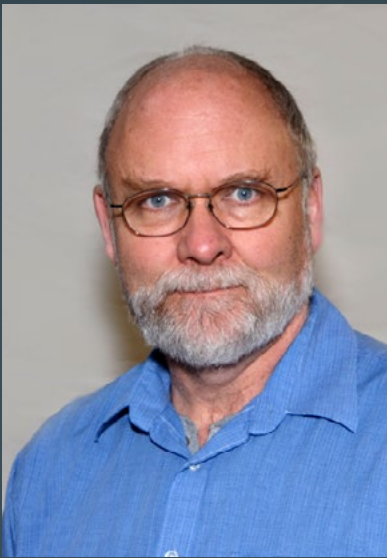


22-23. Metal model assembly weights with small foam pads were used to hold the roofs in place until the adhesive dried. The wood scraps under the steps help keep the bodies steady while the weights are in place.

The balsa scraps under the end steps help hold the body stable while the weights are in place.

The end result of this project is a pair of unique cabooses for our layout's logging trains. They're fun, they look plausible based on logger ingenuity and prototype photo inspirations, and they were inexpensive and easy to kitbash using readily-available materials. I highly recommend the effort if logging is part of your railroad plan. ✓





Jeff Johnston and his wife Pam, also an accomplished modeler, model the HO scale Sugar Pine Lumber Company/ Minarets & Western Railway circa September 1927.

Jeff is an automotive journalist by trade and host and associate producer of Rollin', a cable TV broadcast show about RVs. He has had dozens of model railroad how-to articles published, as well as producing Youtube how-to videos and

DVDs available from his website at trainvidesoandparts.com.

Parts and material:

Tichy parts:

Tichy #8067 24 x 24" Work Car Window

Tichy #8068, 18 x 28" Work Car Window

PollyScale paint:

414137 Grimy Black

414281 Boxcar Red

414311 Earth

414329 Railroad Tie Brown

414197 D&H Grey

Evergreen styrene:

8103 1x3 strip

8202 2x2 strip

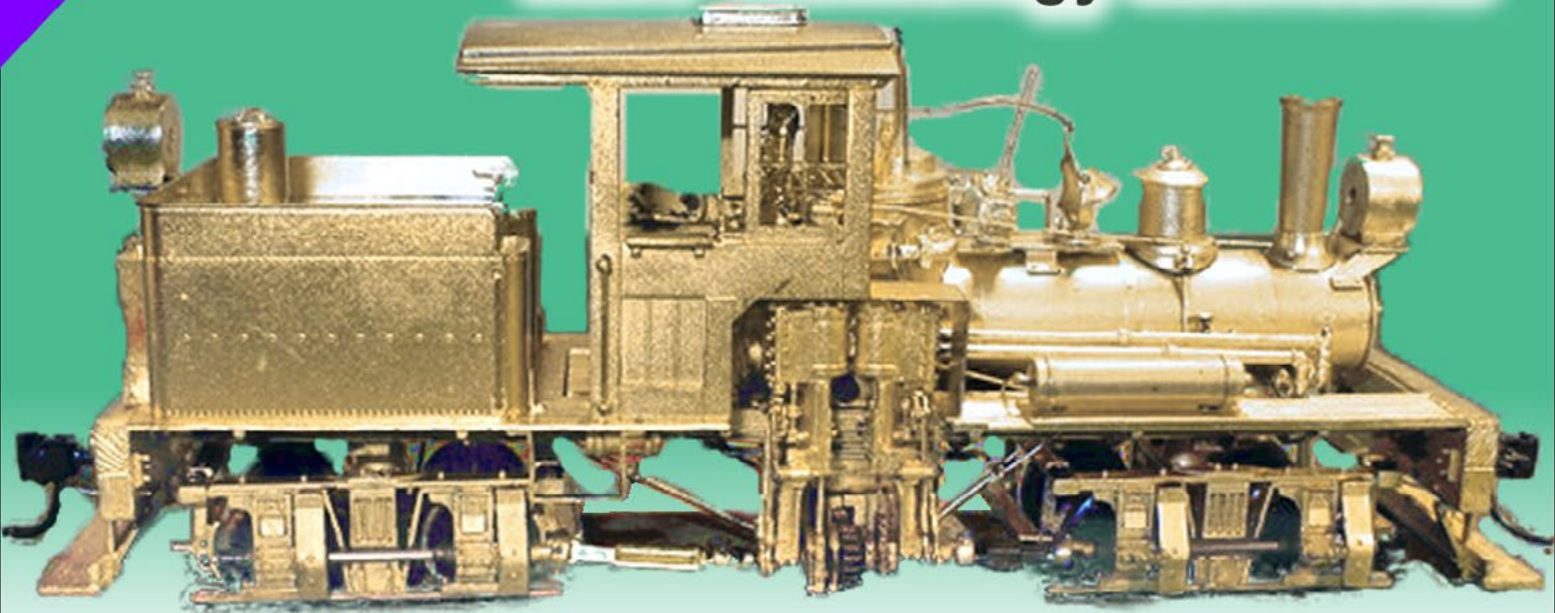
Scale stripwood:

1 x 12, 2 x 10 strips ■

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Build a simple portable workbench

– by **Kenneth Rickman**
Photos by the author



Build a portable workbench in a couple hours, using hand tools, screws, and whatever hardware you have on hand ...



Like many modelers, I have a space set aside for modeling, where I keep my workbench and where I can leave a project spread out while I'm working on it. Of course, my workbench is not in front of the TV, near a recliner, on the deck by the pool, or in my hotel room when I'm traveling, which means that I have to choose between working on a model and spending time in any of those other places. When my best friend mentioned sitting on the couch working on his portable workbench, I started thinking about what a handy thing that would be, and decided to build one for myself. This is what I came up with.

I designed and built my portable workbench in a couple hours, using hand tools, screws, and whatever hardware I had on hand salvaged from other projects. As it turns out, my friend's "portable workbench" was just a plastic lap board and a tackle box loaded with a few tools. After seeing mine, he wanted one like it, so I decided to build one for him as well, and to go all-out and see how fancy I could make it. Aside from the pleasure of making something nice for a friend, I used the opportunity

1. My portable workbench. The construction details are fairly obvious, as there are no hidden glue joints, etc. It's simply a collection of flat, straight boards screwed together. The hardware is screwed on the surfaces, and I varnished the whole piece afterward, hardware and all.

I chose to add a piece of sheet steel to the inside top surface of my workbench. This will allow me to use magnets to hold plans, photos, notes, or other bits of paper in place where I can see them, and hold them securely when the lid is closed.



contents



index

to practice some new skills and techniques in woodworking, as well as to use some of the nice tools I have. In the end, both workbenches are equally useful, the same size, and about the same cost. The difference is that mine is a little rougher around the edges and took a few hours, while his is as clean and as square as I could manage, and took several days to build.

The materials are simple and inexpensive. At my local home improvement store I found a laminated 16" x 36" x 3/4" panel for less than \$7.00. I also bought a 6' long 1" x 4" board, two



2. This is the workbench when closed. It's simply a box, 17½" deep, 19½" wide, and 3½" tall. The barrel bolts keep it closed, and also prevent the lid from closing too far and potentially crushing the contents. Attaching the box front to the lid leaves a convenient opening so you're not working down inside the box, while still having the other three sides to keep tools and parts from falling off.



3. These are the parts for my friend's workbench. The 36" long panel is cut almost perfectly in half, with the top being left about $\frac{1}{8}$ " shorter than the bottom. This will ensure there is a gap when the lid is closed, and prevent it from fitting too tightly between the sides. The 1" x 4" is cut into four pieces – the two sides are $17\frac{1}{2}$ " long, the front is $17\frac{7}{8}$ " long, and the back is 18" long. Make sure the front and back are the same lengths as the top and bottom panels, respectively.

Since I have the tools and wanted to practice the skills, this one was built with glued joints reinforced with splines. The grooves in the edges of the parts are to accept the splines. I also chose to cut a shallow groove along the front edge of the work surface, to catch any tools or parts which might be tempted to roll away. If you have the tools, the joints I'm making here result in an exceptionally strong and neat looking piece, but they're not really needed. The first version, held together with nothing but screws, works just as well.



contents



index

hinges, two barrel bolt latches, and one folding support. I already had plenty of drywall screws on hand, but if you're buying them, you'll need some at least 1½" long. I also chose to varnish both workbenches to protect the wood and make it a little prettier. Paint would also work well, though no finish is needed for the workbench to serve its purpose.



4. Here are both workbenches finished, side-by-side. I used different hardware on them, since I was using whatever I had on hand for the first one (left), and purchased everything new for the second.

When closed, there is 2" of vertical clearance between the top and bottom. That's enough for some HO rolling stock to sit upright, and pretty much anything to lie on its side. It's also enough room for most hobby paint bottles and most freight car boxes, which make great parts holders.



5. I chose not to add the sheet metal to the second workbench. For one thing, my friend has access to a better variety of sheet metal at much better prices, and with better tools for cutting it to size. Also, this way he can decide what he wants to put there. The options are nearly endless – a dry-erase board, cork, a variety of tool holders, a neatly painted railroad logo or a photograph, or anything else someone might find useful.

I am confident the one on the right (and maybe both of them) will hold water if needed. While that may seem pointless, I can see the potential for spilling paint, glue, water, or some other liquid, and knowing it will not leak out onto whatever the workbench is sitting on will be quite reassuring.



contents



index

Now I can work on my models while I'm watching TV with my family, or sitting in my recliner after work. It's a perfect size for working on a TV tray or on a lap, while still having enough room to work on a freight car kit, decal project, or even some



6. For the first workbench, I mounted the folding support bracket $5\frac{1}{2}$ " forward from the back edge of the top. Although it works, the top opens just far enough to make me worry the workbench could tip over backward. For the second one, I mounted the bracket $\frac{1}{4}$ " farther forward, and you can see the resulting change in the angle.


If you look closely at the workbench on the left, you can see where the hinge screws protrude through the inside surface of the top. The screws included with the hardware are a bit too long, so for the second one I ground the points off and took more care when drilling the mounting holes.



7. There are a few differences between the two workbenches. The second one (left) has a small lip to prevent anything from rolling out. Rather than cutting a groove in the bottom board, you could use edging veneer designed for hiding the edges of plywood, or even heavy cardstock. Once glued in place and varnished, it would be more than strong enough.

I had to modify the barrel bolt latches for the workbench on the right. They had a round tab on one side, so rather than cutting it off I bent it around the corner. A vise and a hammer made short work of that. Since the loops were separate from the base plates, I also soldered these pieces together. Sometimes cheap or salvaged hardware needs a little modification to work, but the price is right!



moderate scratchbuilding. Since the workbench is built of wood, it's sturdy enough to pack in the car under a pile of luggage, but still light enough to carry easily, making it perfect for taking a few modeling projects on vacation. When I'm done working, all I have to do is close the lid and set the workbench aside for later, rather than having to pick up all the pieces and clean up my mess. 



You can get Sketchup plans of Ken's workbench in this month's [subscriber bonus downloads](#) ...



Ken Rickman lives with his wife in Salisbury, NC. He has worked for Norfolk Southern for over 16 years, and is currently a locomotive engineer. Working for the railroad has given him a greater appreciation for fine modeling and for the finer points of operations. He models the Danville & Western Railway, a Virginia short line which is today one of the branch lines in his territory. He is also exploring ways to utilize 3D printing in model railroading.



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NYCSHS President Rich Stoving's Layout (Photo by NYCSHS member John Heitmann)

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contents



index

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– by **Thomas M. Tuerke**

Photos by the author

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Thinking above the box ...

So you've got the itch to build a layout, and more importantly, have been given clearance from your "accounting department" to spend up to \$500 in that pursuit. In doing so, you hope to experiment, learn, and answer some very important questions along the way.

What do I mean? Well, consider one very basic question: "Do I really like this train stuff, or would I rather race RC cars around



contents



index

an unused parking lot?” A \$500 spending limit – and only the most rudimentary set of tools – means you want an answer before sinking your nest egg into this hobby, not after.

But that’s not all. Another possible question might be, “OK, so I like railroading, but what do I want to model? A mountain shortline? An urban setting? A point-to-point or switching layout, or would I rather just watch trains go around and around a continuous loop? Do I like scenery? Track laying? Kit building? Operations? I thought I liked X before, but I’m wondering about Y now.” All these are things we hope to have answered before we even think about The Big One – the grand layout we always dream about building – and before we have that unpleasant conversation with the kids about having spent the inheritance.

Clearly, with a \$500 limit, we’re not planning to create that be-all and end-all layout (as if there ever was such a layout, except in our dreams!). Instead, we’re expecting to learn stuff, and quite likely, throw away chunks of what we’ve made. (Though if we have something worth keeping, so much the better.)

So, it’s settled: we can’t build that dream layout for \$500, and we won’t pretend to here.

Let’s add to our “reality” list a present-day fact: most of us are extremely busy with everything else happening in our lives. We’re pressed for time, and pressed for space, in addition to being pressed for money to spend on the hobby. We have to fit our creative activity into whatever slivers of time we can find during evenings or weekends. And when we can’t spend time on our hobby, we have to put it aside... sometimes literally. Apartment life may deny us a garage. City life may deny us a basement. Family life may deny us a spare bedroom. Military life may even deny us more than a bunk and cramped locker. But that shouldn’t deny us the opportunity to explore the hobby, and, well, experiment.



To answer these needs, we're looking for a project that...

- is inexpensive and simple to build, while still being something we can be proud of;
- allows us to try new things without getting too invested – emotionally or financially – in the outcome;
- allows us space-deprived and time-deprived folks the opportunity to focus our energies on small, manageable projects that can be put away during times when other things demand our attention;
- maybe even gives us something we can show off on the mantelpiece without demanding the rest of the room as well. Sure, like a diorama, but a usable one, as it were.

That's a pretty tall order. How?

With T-Trak modules, that's how.

If you're unfamiliar with T-Trak, it's a system of modules, each roughly the size of a sheet of paper, snapped together to allow you to form your own table-top or shelf-top layouts, or brought together to meet to form much larger layouts. While the latter social aspect of T-Trak is certainly great, I'm presenting T-Trak here for how it allows you to do the former.

What can you do with modules that small? Quite a lot, really. We Americans are fond of "bigger is better" but in terms of our goal here, smaller really has advantages. Let me strongly encourage you – at least to begin with – to embrace that petite aspect. You really can do quite a lot of modeling here, despite the size. And I cannot over-emphasize the importance (and pleasures) of resisting the urge to "go big"... at least right away.

Construction

There are many ways to build T-Trak modules. The traditional one is to use 1/4" plywood to build the basic module



contents



index

box. There's also the foam-on-a-slab-of-MDF approach. Both of these are perfectly valid ways to build modules, but living within the spirit of our \$500 budget – and the mindset that these are miniature platforms for experimentation that we might not want to get too attached to – I'm proposing an even simpler technique: foam-core. True, it's not as rigid as $\frac{3}{4}$ " furniture-grade plywood many use for room-filling layouts, but for the size of these modules, it's actually sturdy enough. And the assembly cost can't be beat: a dollar-store box-cutter and a two-dollar sheet of foam core can get you a basic module in about half an hour. (I don't, however, recommend dollar-store foam-board for construction, as that is too flimsy.)

That's a lot of experimentation potential, using only a small fraction of our \$500 budget. And truth be told, after you've built the first few modules using foam-core, there's still the option to try the other construction techniques. Later.

A single 16" x 20" sheet will yield a single standard-size module, with leftovers. I bought a name-brand three-sheet package

T-Trak

T-Trak has taken off over the years, but the one go-to place is still t-trak.org, run by Lee Monaco-FitzGerald, founder and staunch advocate of all things T-Trak. Paul E. Musselman also has a rather extensive "unofficial" T-Trak site, with many great ideas. And I've written a word or two on the subject as well. I recommend you visit each to get some ideas, and to more fully appreciate exactly what you can fit into such a small size.

The home of T-Trak: t-trak.org.

The "unofficial" T-Trak site: t-trakhandbook.com.

A word or two from yours truly: thomas.tuerke.net/ref/?t-trak. ■





1. Shown are the basic materials necessary: some foam board and glue. A pen helps you mark where you will cut, a simple retracting knife does the cutting, and a straight-edge keeps the cut nice and straight.

for just under \$6 from one of those big-box retailers, so counting the few drops of glue you'll use, figure a basic module will run you around \$2.00 [1].

To put one of these modules together, get out a single sheet of foam-core, and grab some Unitrack that is 310 mm long. (Unitrack track comes in multiples of 62 mm, so a single piece of 186mm track from Kato 20-000 and another 126mm piece from a 20-040 snapped together make the needed length.) This track becomes your gold standard measure, since you'll

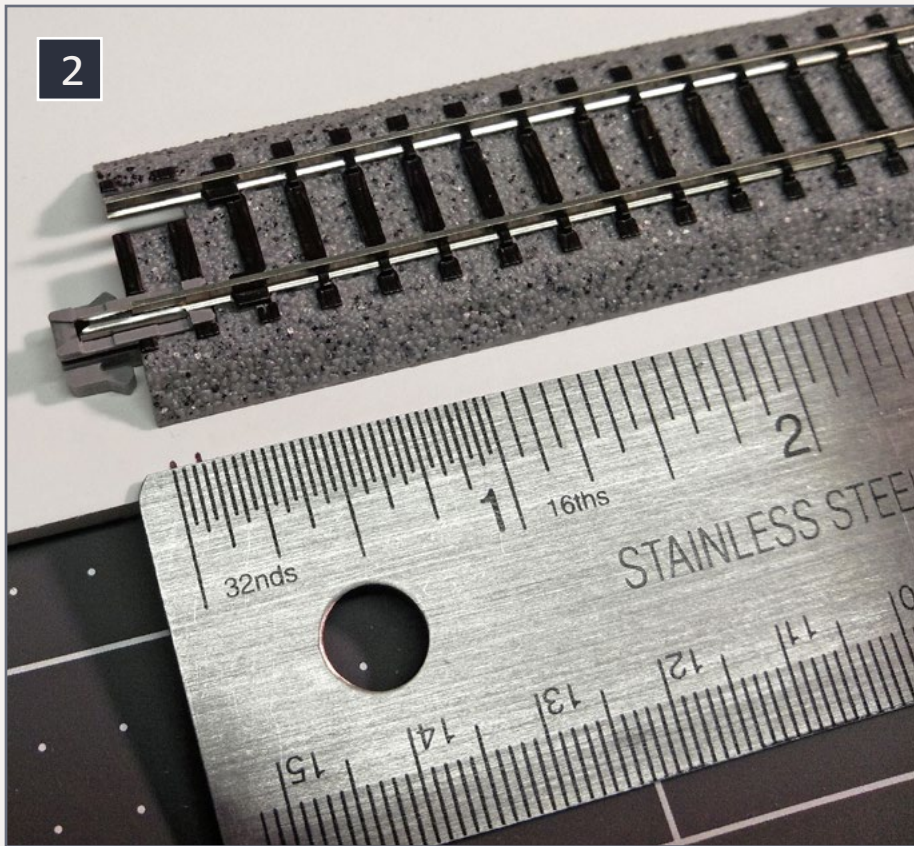


contents

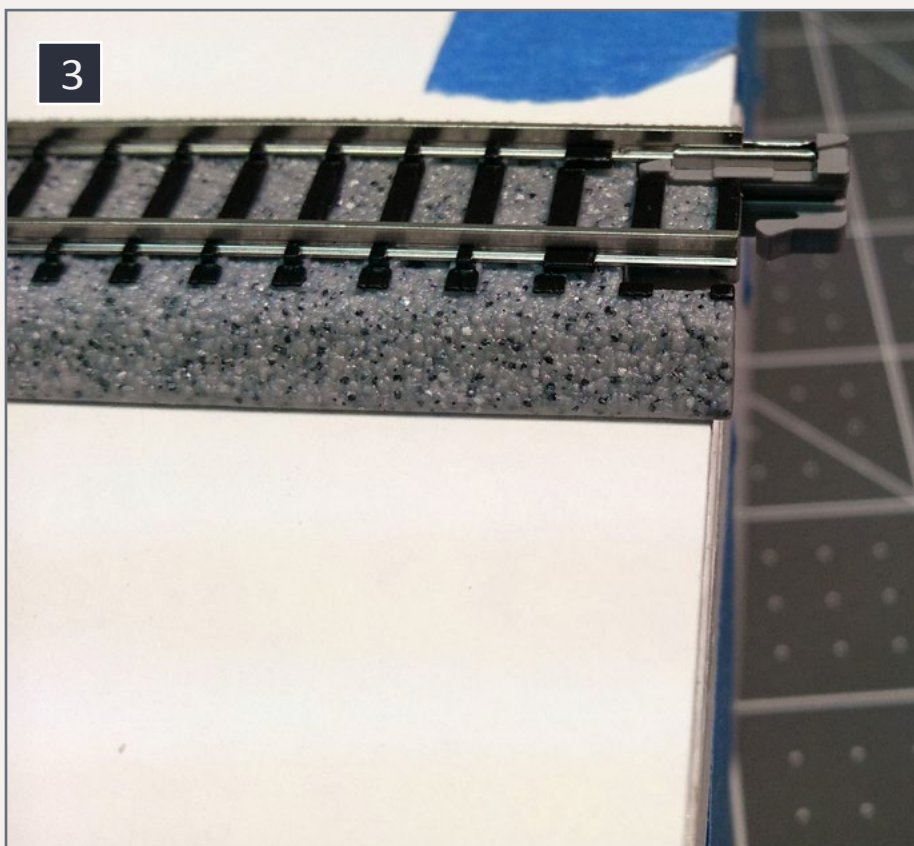


index

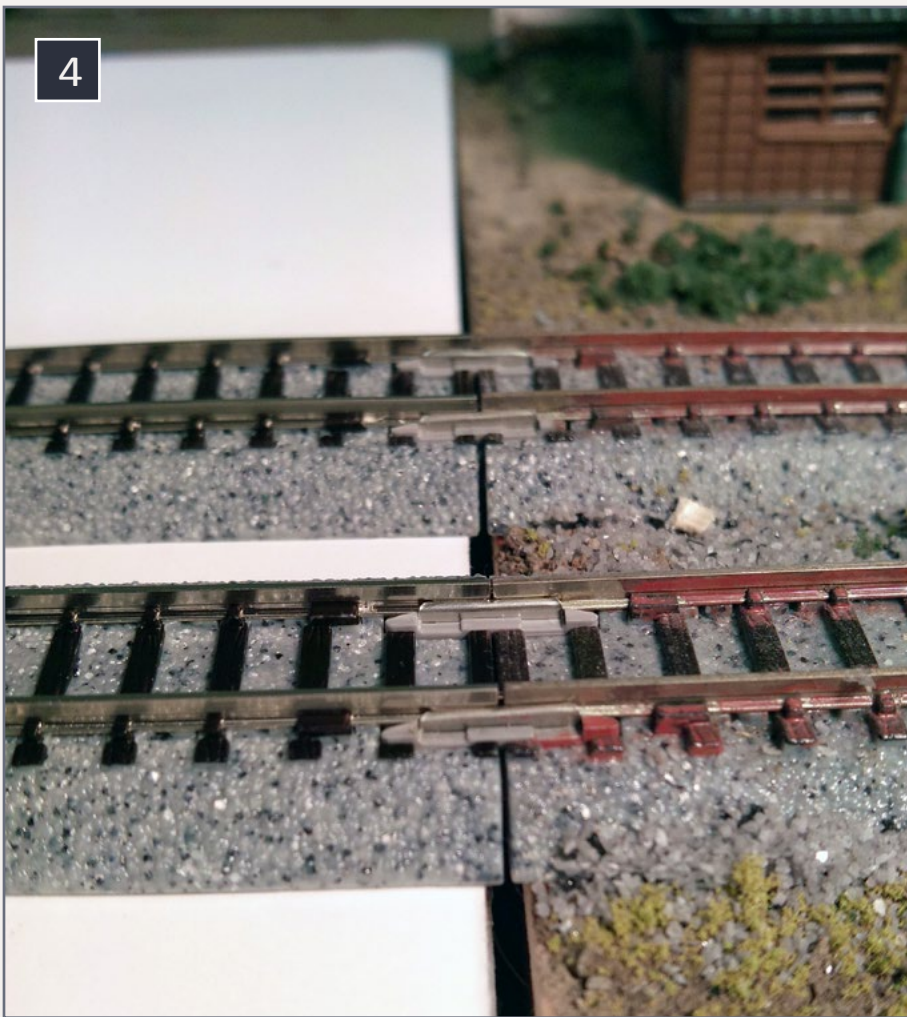
need to make the module to just shy of this length [2]. In fact, you want your module to be just a few millimeters (or 32nds of an inch, roughly the same) short to make sure that the tracks



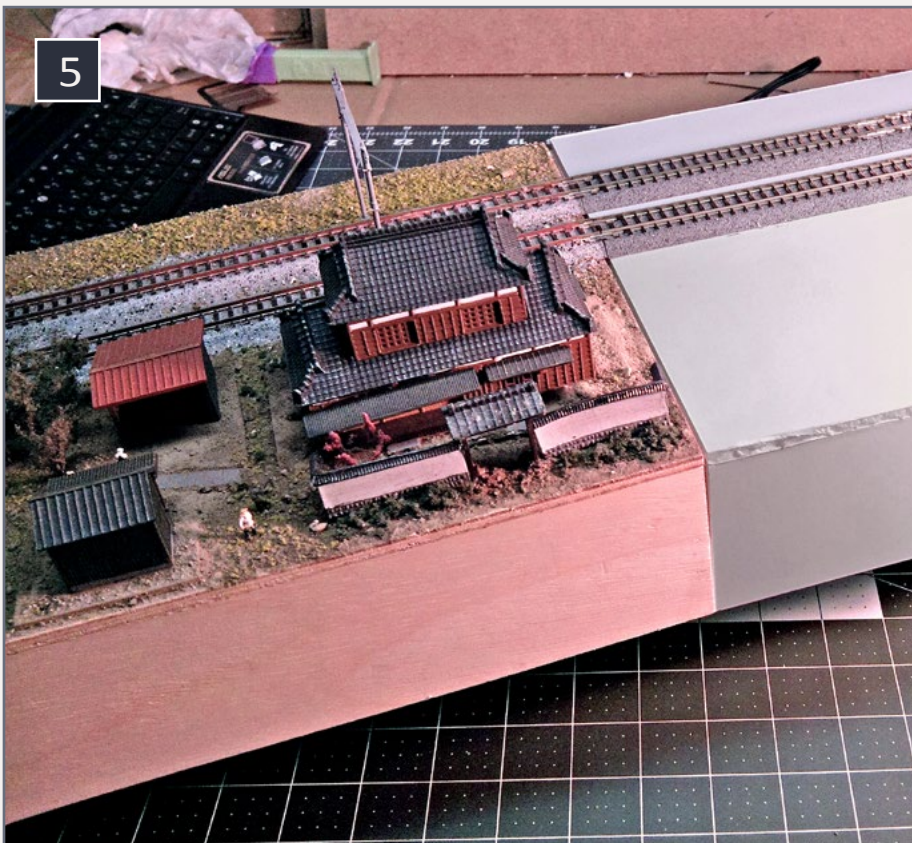
2. A module is 308 mm (12 1/8 inches) long. That's 2 millimeters (1/16th inch) short of the 310 mm (about 12 3/16 inches) you'll get from Kato track.



3. That 2 mm deficit is to make sure the track joins cleanly without the ends of the module interfering. For that reason, you want the ends of your track to stick out over each end of the module.



4. The result is a small gap between modules. This is what you want. Don't worry, you can disguise the gaps later, if the bother you.



5. Unijoiners are very strong, and are what hold adjacent modules together. No other connective mechanism (like clamps) is needed. Here we see a module being lifted into the air supported only by its joiners.



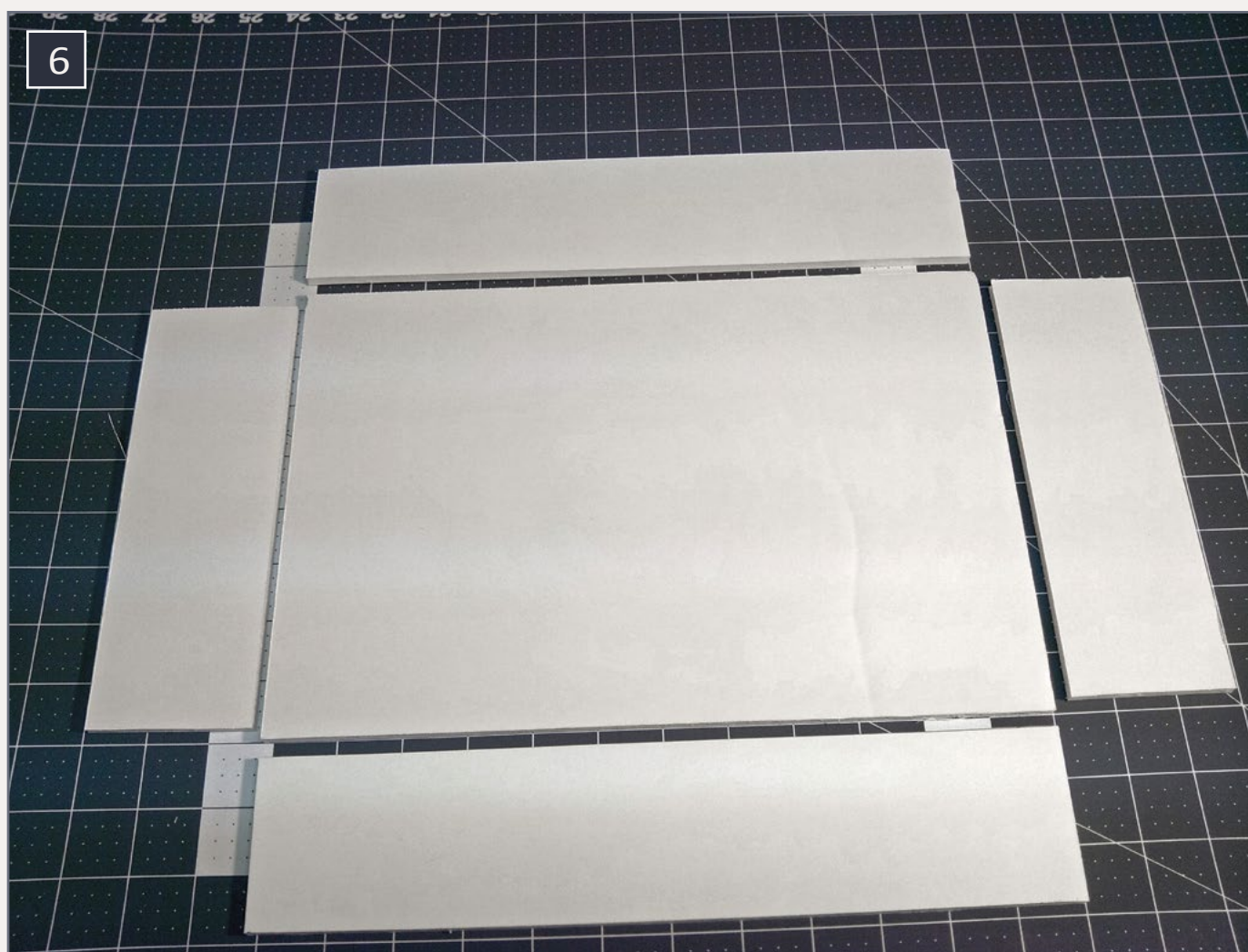
contents



index

themselves connect without the ends of the modules getting in the way [3-4]. The Kato Unijoiners will be doing all the work holding the track together. (In fact, they can hold the weight of an entire module; see picture [5].)

Draw a rectangle 2mm (or 1/16") shorter than your reference track length, and 8¼" wide. You will also want two more strips exactly the same length to be the front and back sides of the module. The goal is to have a module that is 70mm (2¾") tall, so the height of these side pieces will be that measurement minus the thickness of the board. In my case – where the foam-core measured 5mm – my pieces were 65mm, but you'll



6. When all the pieces are cut out, they should look like this. Note that the sides are as long as the top, but the ends are a bit narrower.

need to measure against your specific board thickness. It does vary. Once you determine what it is, remember that measurement as being the height of the side pieces.

For the ends, measure out two pieces that are side-piece height. again, one board-thickness short of 70mm, and two board-thicknesses short of the module width (8¼"). These will be the ends of your module [6].

By the way, take the time to make sure these pieces are measured precisely and are square. The extra time will make life better later in the form of nicely fitting modules. Also, when cutting, make sure the blade is sharp. A dull blade chews and tears the foam, and leaves ragged edges. A sharp blade makes clean, crisp, cuts. Take several passes, using a straightedge to protect the "good" side of the cut and make sure you stay on the marks. Again, don't hurry; you'll have a module soon.

Once cut, gluing-up is actually quite simple. Ordinary white glue, or something like Aileen's Tacky Glue, work just fine, and once set, typically makes the joint even stronger than the board. My experience – in the comparatively low humidity on the Pacific coast – is that the glue sets in under 10 minutes, giving you just enough time to work the pieces into exactly the right position. When in place, secure the edges with blue painter's tape. The paper facing and foam core wick up the glue, making a strong structural bond, and speeding drying.

As it happens, you're likely to have leftover scraps of foam-core. Here's one very important thing to make with some of those leftovers: a track-placement jig. T-Trak standard track placement puts the front track at 38mm (1½") back from the front edge of the track, and a little jig helps make this easy (not to mention helping keep the track straight.) Cut a bit of scrap



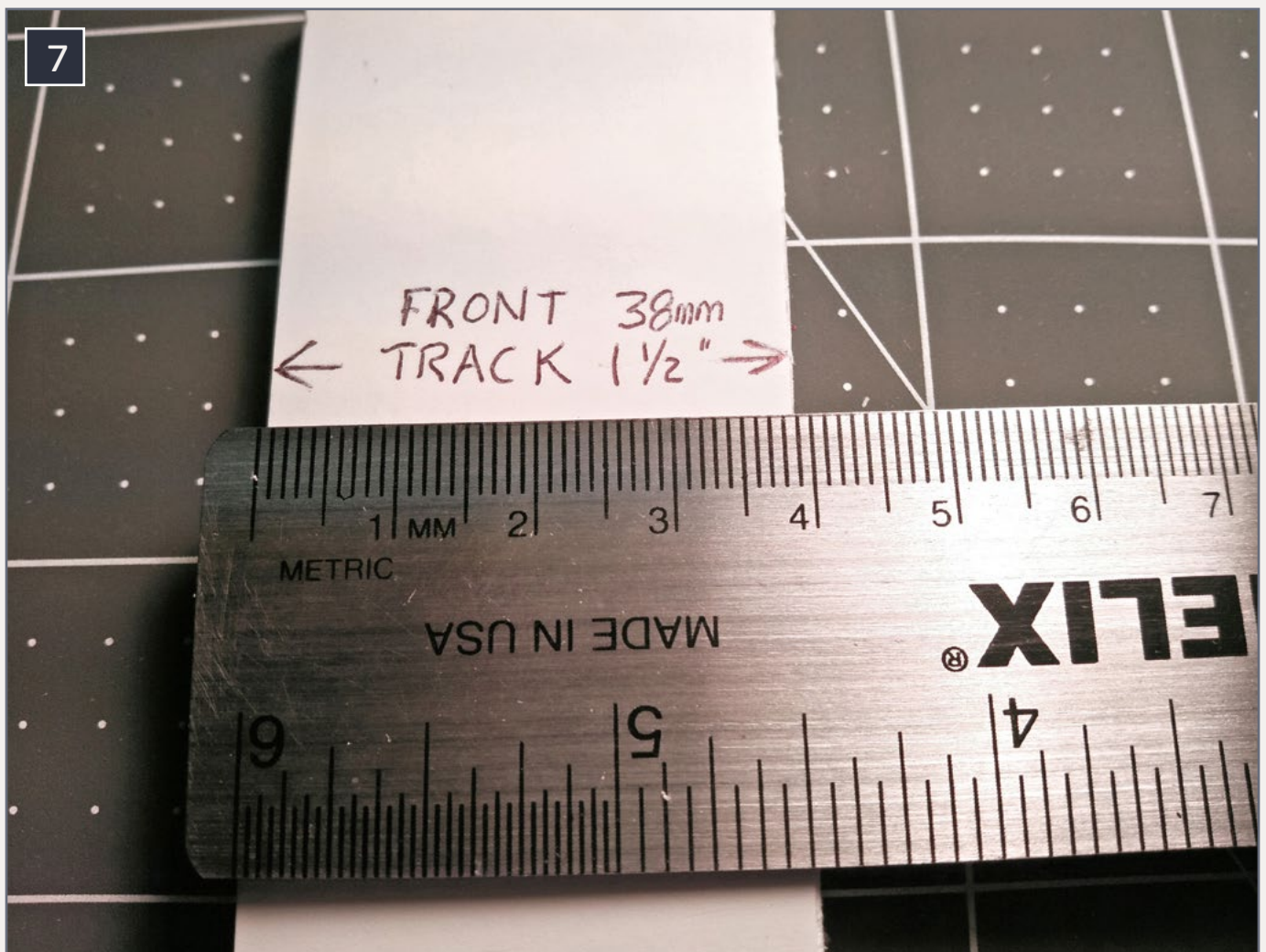
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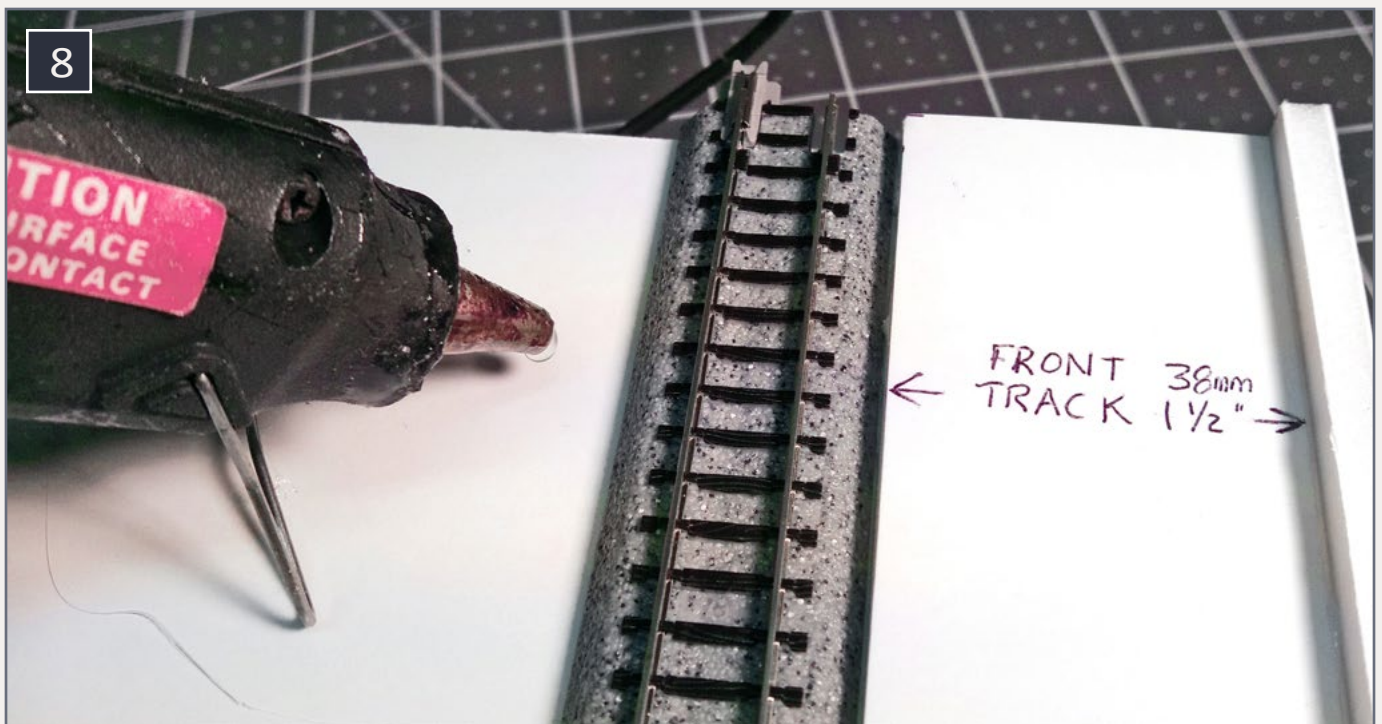
index

38mm wide and as long as your module, then glue another scrap along one edge, so you form a T shape [7].

Later, when it comes time to lay track, place the jig up against the edge you want to be up-front, and you'll be able to glue the track in place very precisely by placing it along the other edge of the jig [8]. Once the first track is in place, the second track can then be secured using the notches on the edge of the rerailer [9].



7. Form a jig out of a piece of scrap foam 38 mm (1 1/2 inches) wide and as long as the module. This will allow you to consistently place the front track on each module you make.



8. Using the jig you made, you can glue down the track at exactly 38 mm from the front of the module. To begin with, hot glue is more than satisfactory. This allows you to melt the glue to reposition the track if you want. Later, you can use more sturdy techniques.

Sticking with the Standard

This is necessary if you're thinking of going to meets and connecting with others' modules. But even if you're not, the opportunity for interchangeability – of being able to swap out one module for another – really allows you to experiment. Capitalize on this interchangeability in track planning, or other remove-and-replace efforts (goof-ups will happen... learn – and salvage – what you can, and move on.)

Later, you can start throwing standards to the wind (if you're not thinking of going to meets) but I strongly recommend not starting out there. ■



contents



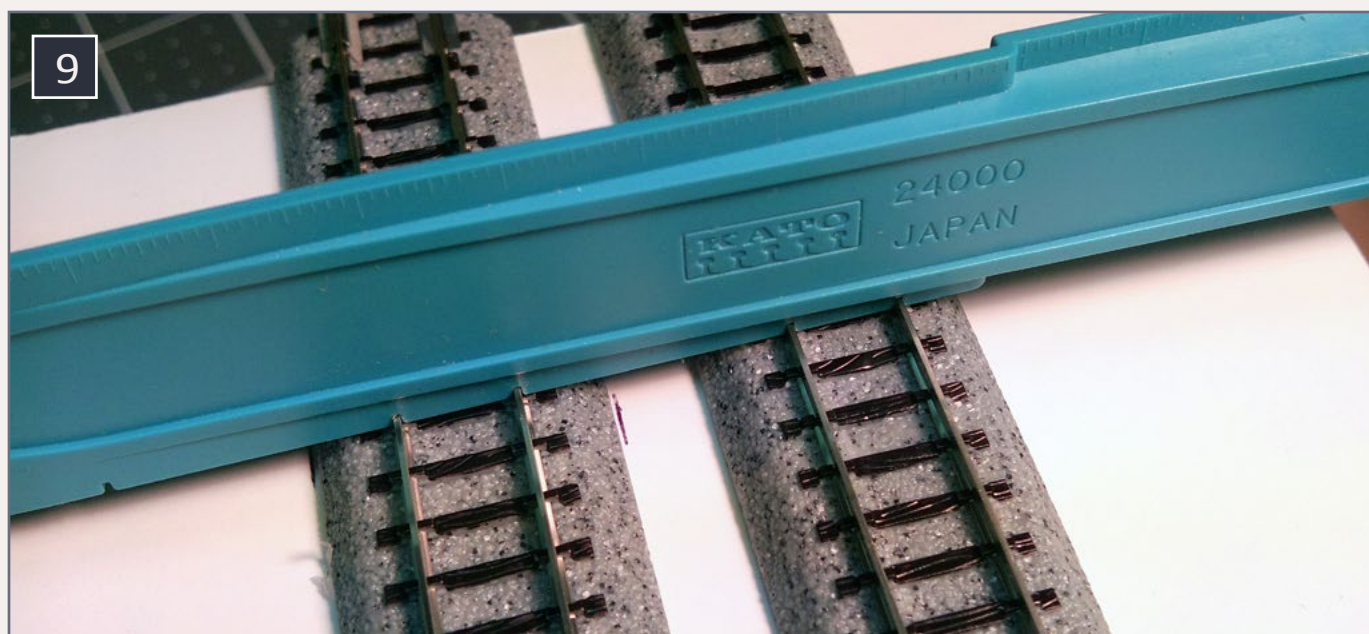
index

And, of course, nothing needs to go to waste. There are more things to do with the scraps:

- Bracing, if you're worried that foam-core is going to be too flimsy, you can glue strips underneath your module to keep it stiff and straight. That hasn't been necessary in my area, and I have no experience in moisture-laden east-coast environments, but I'm guessing that the foam material is structurally stable and won't warp due to humidity. Still, it won't hurt for larger (corner) modules to have some help, if you're concerned about sagging.
- Basic landscaping and scenery: Retaining walls, module edges, streets, etc.

Costing it out

Let's start to pencil-out a plan, and see how it fits into our budget. My crystal ball is in the shop for repairs, so I can't read your mind about what kind of trains you're thinking about. We'll set



9. With the first track in place, use the Kato rerailer to position a second track – if you're going to have any double track – at exact the right position.

aside \$170 for that, leaving a nice round \$330 for the rest of the project. (I'm also going to assume, for beginners – and this may seem heresy to some – we'll go with simple DC operation, on the assumption that this layout is for single-train operation. DCC is nice, but an added complexity, and added cost. I'd rather not discourage new modelers with the complexity and cost of DCC. Remember, we've sworn off be-all and end-all for this enterprise; it's all about experimentation on a budget!

The track plan, too, has a lot of flexibility. A simple roundy-roundy loop that fits on a tabletop (okay, maybe the dining room table, with the extensions put in) might consist of eight single modules and four corner modules at a cost of around \$28 for the modules, and another \$23 for the track. Of course, that's not very interesting for most, so tossing in four switches for some switching activity brings this price up by around \$100. (That's assuming the more-expensive #4 switches; #6 switches don't fit as neatly onto the standard module size.) If, point-to-point is where your curiosity lies, keep the eight regular modules, and trade two or three corner modules for three or four more simple straight modules. That's a not-too-shabby shelf-top situation, again for the same money. Let's put aside another \$173 for the track, regardless of what you pick, realizing that you can substitute standard modules, or even insert new ones later, as you get a better sense of what you want.

When it comes to laying track, you have choices, too. You can buy the electrical leads (KATO 24-828) and place them on several modules. If you have switches, you'll generally need power on all sides of the switch, but these quickly become pricey. If you're up on your soldering (really, a simple skill to learn if you follow a few basic tips), you can solder leads to the outside of the rails where you want to put power, and spare the expense of buying those rail leads. Another point: going with Kato parts



contents

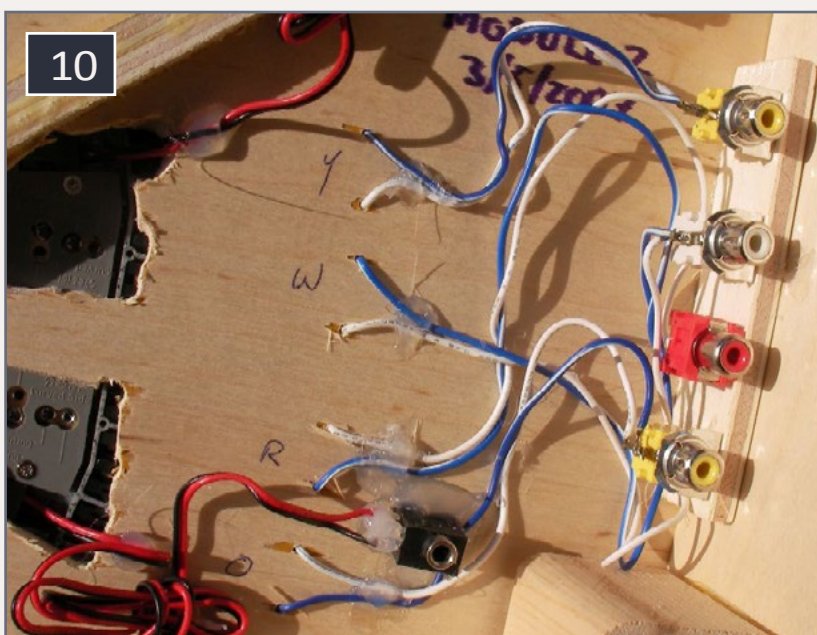


index

can also be expensive. I've found that old stereo cables work quite well; if you've just upgraded your TV to HDMI cables, those retired RCA connectors are perfect for distributing power over short distances [10].

I'll assume you don't have some lying around, and would have to order them. Here too, going name-brand jeopardizes the budget, but by trading sweat equity (some might call it "fun time with the hobby"), a much more cost-effective solution is possible. One vendor, monoprice.com, has excellent heavier-duty cables (RCA for your railroad, and HDMI for your home theater, in case you're thinking!) at really great prices, reasonable shipping, and they're warranted for life.

T-Trak calls for two parallel tracks. This is great if a dual-track railroad is what you're contemplating, but doubles the cost of the track, so we won't go there. Paul E. Musselman's site has some interesting design ideas in this area for you to consider; build to these unofficial standards, and you may not be isolating yourself very much.



10. Inexpensive stereo cables can be used for power distribution. Shown here is the underside of a module with RCA connectors feeding power to the various tracks.



**Many species of
Conifer trees available!**

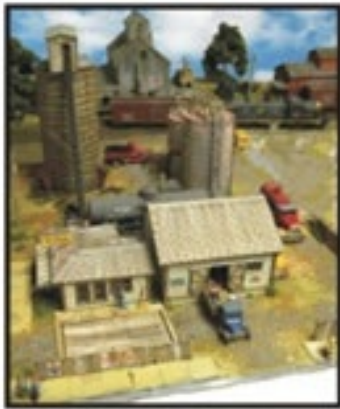


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more -
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**Also see our other
conifer offerings ...**



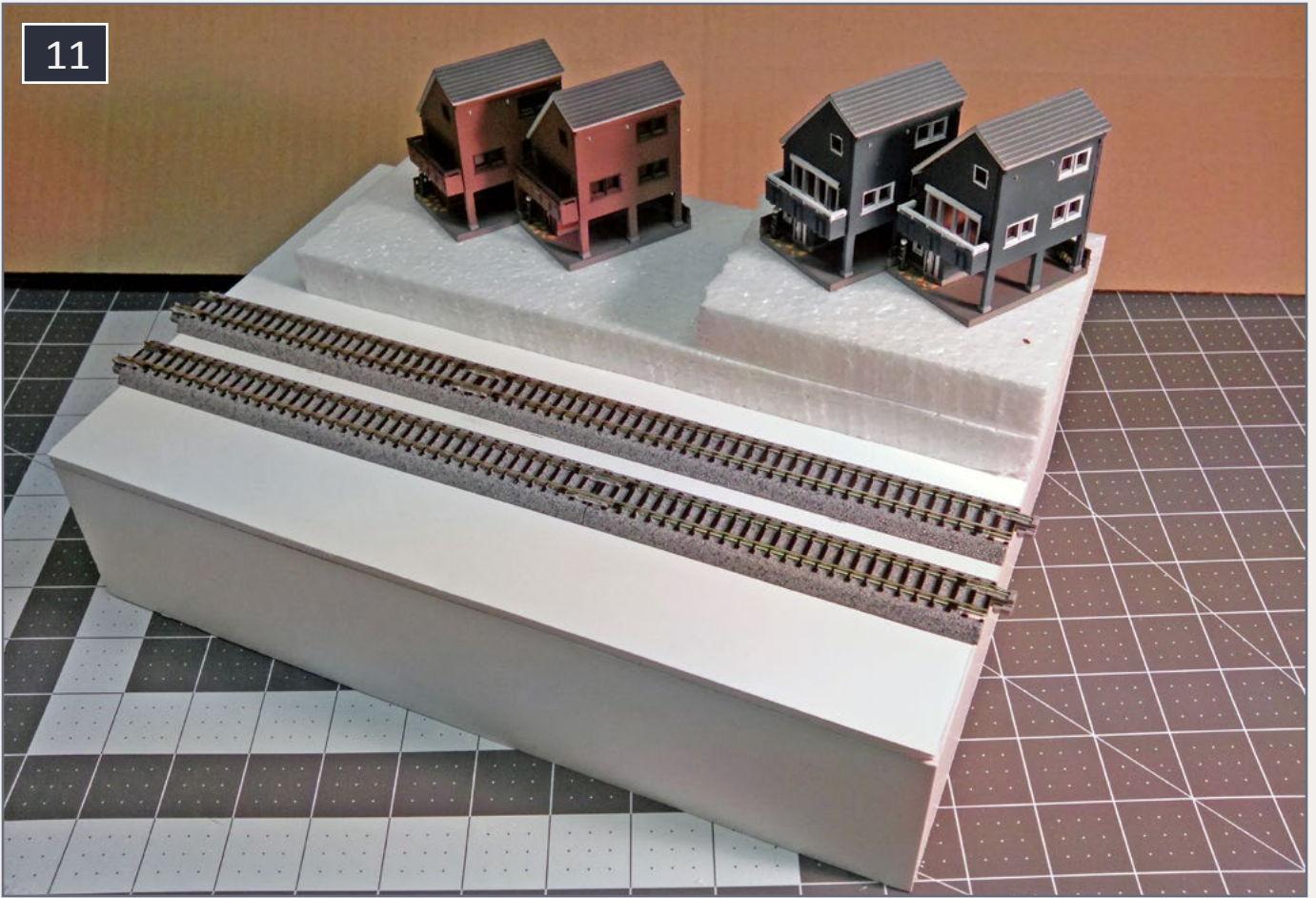
LASERMODELING **3** ELBA Coal and Heating Oil
 Newest Craftsman Structure Kit:
 HO/HOn3 12" X 12"



Scenery

Here's a place where you can be as basic or elaborate as you want. I will assume some frugality, and add scenery only at a rudimentary level. But if you're clever, do some planning ahead, and seize opportunities as they arise, you can do surprisingly much with surprisingly little outlay. A few economies that you might find useful:

- Packing foam, and in particular, flat sheets. Ikea's (and other manufacturers') assembly-required furniture frequently comes with sheets in ½" and 1" thickness. You'll likely get a small supply along with whatever furniture you buy. If buy-



11. Once the track is laid out, you're ready to play around with scenery. Here, I consider one possible layout of four townhouses using some scrap Styrofoam which I will carve to the shape I want. Or not. It's all about experimentation at this point.

ing furniture isn't on the horizon, you might ask if they have some that's bound for the dumpster. They're usually happy to be rid of it. The complex molded bits of Styrofoam are not as useful, however, so just stick with the sheets.

- Buckets of “Oops” paint – marked-down cans of almost-but-not-quite-the-right-shade paint – from the hardware store. Frequently these are “earth toned” and if you keep your eyes open, you can find a workable shade. Look for latex, and flat. Depending on the store, these can go for \$2 to \$10. It shouldn't take a whole lot; a quart should more than suffice.



- Dirt, of course, is dirt cheap. Use a dollar-store sieve (not the one in the kitchen!) to separate the “other stuff,” leaving you with the fines, which you can then sprinkle over wet earth-colored paint. Articles abound, so a bit of searching should give you more than you ever wanted to know about using the real thing for model dirt.
- What you put on top of that will depend on what you’re modeling, so I won’t go into much more detail. If you’re thinking about arid desert, you’re just about set – the odd tumbleweed and Joshua tree or saguaro cactus. Forests, on the other hand, mean trees, which are expensive when bought, so you will have to start out just “suggesting” the



12. Even though individual modules are small, when you snap them together, you can get quite interesting scenes.



13. Small modules can still make big scenes. No need to hide away your works in progress. Show them off to visitors, using as much or as little space as you have. Here, two modules abut to form a scene on a bookshelf, even while I decide how to finish them.

forests, using the many tricks of the hobby. We'll assume you'll deal with lush, dense woodlands later.

- Buildings, too, can vary depending on what you're modeling. You could easily blow the entire budget on a single craftsman kit. On the other end of the spectrum, there are cheap shake-the-box kits that come in at around \$10, and a small number of these will help fill things out initially. If scratch-building has ever held any appeal to you, you'll be surprised at how much you can accomplish with a sheet of balsa, an X-Acto knife, and some Duco cement can get you. These can



either be quick place-holder buildings that you'll replace with a craftsman kit or some kitbash, or if you take your time, can become the basis for the final building, which you continue to improve with additional details.

All told, we'll set aside \$74 for scenery basics.

Tools

The great thing about building these modules: the absence of any big-ticket tools. Let's assume you have a straightedge of some sort. Standard white glue is also likely to already be in one of your kitchen drawers. A box cutter from a dollar store (often two or three to a pack) is all you need to cut the foam-core. The one specialty tool, the KATO Rerailer (24-000) is handy to have just for rerailing trains, but the notches along one edge help you align your track to precise 33mm centers, if you have any parallel track (double mainline, or a yard) and will set you back just a few dollars.

Add all that up, and we've still got some cash left over – a slush fund of just under \$40 to put toward your area of interest. Operations? Maybe you want more track. Or maybe that double-track main, for going to T-Trak meets. Scenery? Trees, buildings, detail items. Given the flexibility, there's also the option of moving funds around. Maybe the goal is fewer modules, but more scenery. Or maybe you've gotten a good deal on some rolling stock, and want to build a more extensive layout.

The point is that you've got the freedom to experiment – to succeed, and maybe to fail – without reaching too deep into the purse.

Future directions

Where to go from here? Hopefully getting more and more involved in all aspects of the hobby. But with respect to these modules, there's a lot of room for experimentation:



- Building longer modules: either deeper, or double-length. (But stick with the simple single modules first.)
- Using the traditional plywood instead of foam board. That does require more tools, but also makes more durable modules. While plywood can – believe it or not – be cut with a utility knife and a supply of patience, a table saw makes construction a lot easier and more precise.
- Odd shapes. Larger curves. Once you have the basics down, you can tailor modules to your specific environment. Depending on what you make, these won't necessarily “play nice” at meets, but if they're just for your own fun, you can make your own rules.
- The “Big One.” Maybe, after experimenting, refining your skills, and deciding what, exactly, you want to model, circumstance will allow you to finally build that dream layout down in the basement, or out in the garage, or in a spare bedroom. Then these modules may be relegated to dioramas, display and test tracks, or something you haul out to put under the tree. Or even salvaged for scenic elements on the new layout. It is only foam board, after all. All you will need is another box-cutter.
- Or maybe this will become your dream layout... one that you know you'll be able to stow in the hallway closet, and easily take with you when you move. And it all started with one first, tiny, module.

You'll never know until you try it. Right?



contents



index

Track plans

So you want a track plan? There's no need, with modules, you can rearrange them however you like.

The T-Trak standard lays out basic forms, the most common are the corner (in this case, the "Alternate Track Spacing" corner) and a simple straight "Basic Module" depicted in the upper left of [14]. With this, you can create a basic loop layout (the darker colored modules). In fact, when you go to T-Trak meets, many layouts will simply be an extension of this, with everybody bringing their own modules to put together. If going to meets and hooking up with other modelers seems appealing, this may be a good starting point.

Paul E. Musselman's site introduces additional modules, allowing for more interesting trackage. A personal favorite allows modules to be "reversed" so track can go behind scenery instead of in front.

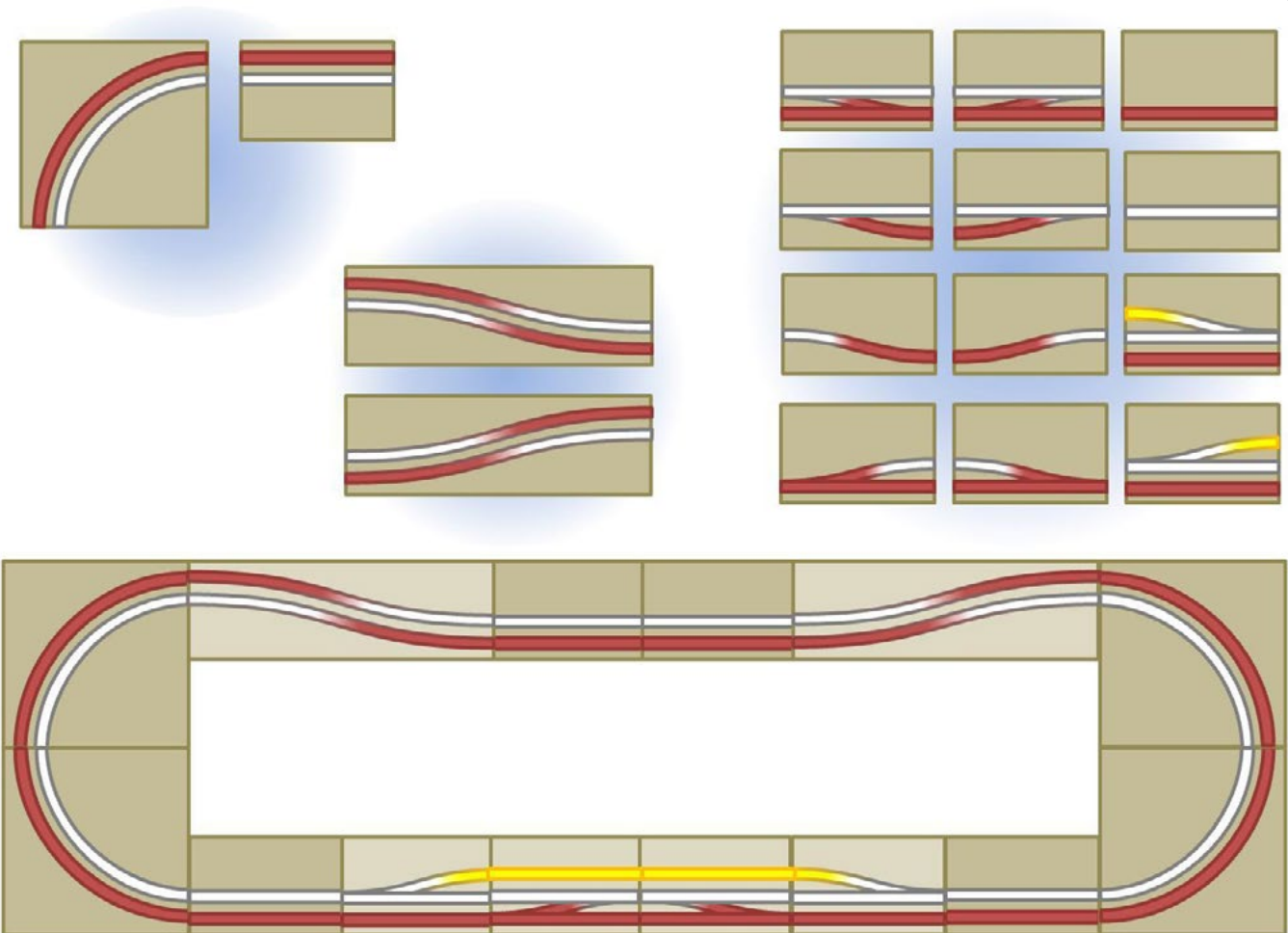
Notice, though, T-Trak is fundamentally double-track. For our purposes, we consider omitting one of the two tracks. This saves us money and we may prefer to model a single-track railroad. But which track do we keep? Well, either one: we can decide.

In the upper right corner we show some single, double, and triple track options. Using these may not make you welcome at meets, but for your own purposes, you should find them quite versatile. Expanding our basic loop with some additional modules (shown lighter-colored) can get more interesting operation.

But – I hear you say – it's still a basic caboose-chasing "roundy-roundy" layout.

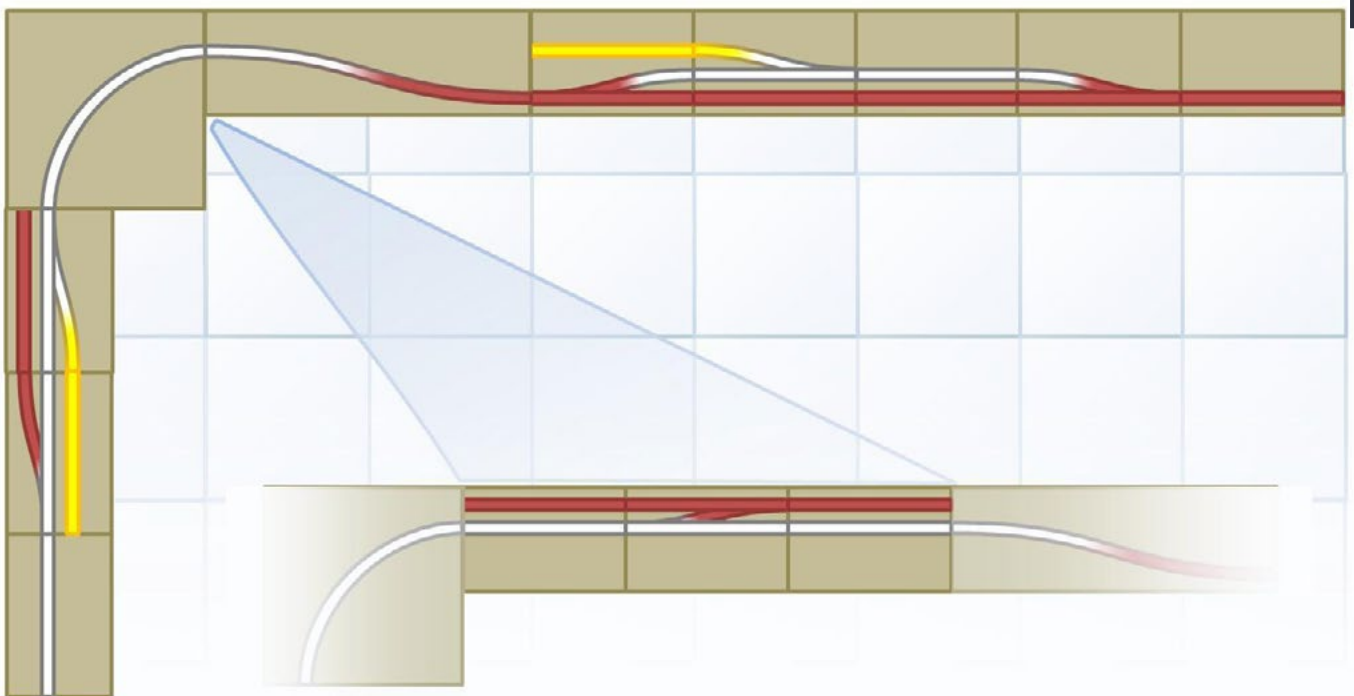
Fret not. There's no reason you can't do an against-the-wall switching layout. One possible variant is shown in [15]. You can build the modules you want, and assemble them how you want. Over time, you might add more modules to allow more operating options. You can put them either at the ends, or even (as illustrated) between existing modules. Your layout can grow and change, without so much as a tug on the chainsaw pull-cord. ■





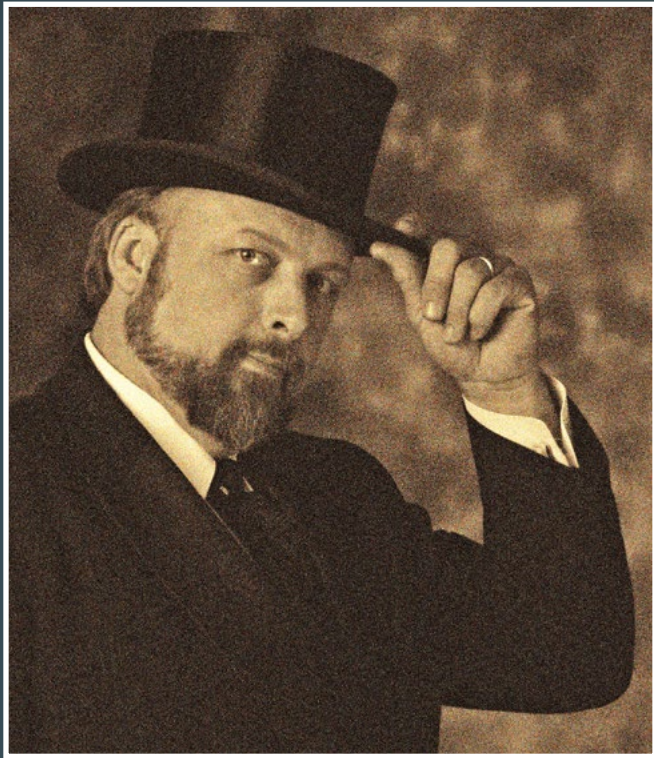
14. T-Trak modules and simple layout.

15. T-Trak modules for switching layout that grows.



Qty	Item	Unit Cost	Total	Budget
	Modules			\$ 28.00
8	Single	\$2.00	\$ 16.00	
4	Corner	\$3.00	\$ 12.00	
	Module Sub-total		\$ 28.00	
	Track			\$173.00
2	20-120: semicircle 315mm = 12-3/8" radius	\$ 8.00	\$ 16.00	
4	20-010: 4 pc 186mm = 7-5/16" straight	\$ 6.00	\$ 24.00	
4	20-020: 4 pc 124mm = 4-7/8" straight	\$ 7.00	\$ 28.00	
2	20-220: #4 switch Left	\$25.00	\$ 50.00	
2	20-221: #4 switch Right	\$25.00	\$ 50.00	
	20-202: #6 switch Left	\$19.00	\$ 00.00	
	20-203: #6 switch Right	\$19.00	\$ 00.00	
	20-150: 4 pc 718mm = 28-1/4" curve (for #6 switches)	\$ 6.00	\$ 00.00	
1	24-828: Unijoiner Terminal	\$ 5.00	\$ 5.00	
	Track Sub-total		\$173.00	
	Scenery			\$ 74.00
1	Ballast	\$ 7.00	\$ 7.00	
1	Ground Foam	\$12.00	\$ 12.00	
1	Paint	\$ 5.00	\$ 5.00	
	Buildings		\$ 50.00	
	Scenery Sub-total		\$ 74.00	
	Trains and Power			\$170.00
	Miscellaneous (PIDs for Monoprice.com)			\$ 15.00
4	PID 659: 6' RCA cables	\$ 1.00	\$ 4.00	
8	PID 6550 or 6554: RCA keystones	\$ 1.00	\$ 8.00	
1	PID 660: 6' Triple RCA composite cable	\$ 3.00	\$ 3.00	
	Miscellaneous Sub-total		\$ 15.00	
	Tools			\$ 3.00
1	24-000: Rerailer/gauge	\$ 2.00	\$ 2.00	
1	Knife	\$ 1.00	\$ 1.00	
	Miscellaneous Sub-total		\$ 3.00	
	Total		\$293.00	





Thomas M. Tuerke has been a model railroader since the age of 8, and has aspirations of someday being a rail tycoon (at the head of a turn-of-the-last-century HO layout set in and around San Francisco). Life, family, and building a new house have so far prevented full realization of that dream, but on trips across the Pacific he has gained an appreciation of

the wonderful Japanese rail system, as well as the Less is More sensibility, both of which are manifested in T-Trak modules in N scale.

When not modeling, Thomas manages a team of crack engineers at a San Francisco-based software firm, and along with his wife, is managing to raise two young daughters.

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thomas.tuerke.net/on/mrr



contents



index



Find out if your layout will work before you build it

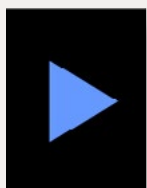
1. When Joe Fugate designed his HO Siskiyou Line, he used some track planning formulas adapted from a 1960's *Model Railroader* article by Dr. Roy F. Dohn. In this article, Joe presents the updated formulas he used, so you too can take these formulas and evaluate your track plans.

LAYOUT DESIGN

assessment formulas

by **Joe Fugate**

Photos by the author



**Reader
Feedback**
(click here)



You've just located two published track plans that both fit the space you have, and they're both for one of your favorite roads. But, you wonder,



contents



index

which plan will better meet your operating expectations? Even though you like the aesthetics of both designs, which will take less money and time to build?

Is there an easy way to find some quick, concrete answers to these questions before you cut the first stick of lumber? The answer is a resounding “Yes!” With a calculator, ruler, and a scale track plan, you can get solid answers to these questions with an hour or two of analysis.

LAYOUT DESCRIPTION STATS

Let’s look at these basic “layout description” statistics and how to compute them. We list each stat name (with its units), define it briefly, tell how it is calculated, and then discuss what that stat tells us about the design.

ROOM AREA (sq ft): Calculate the layout room’s square footage. If your room is much larger than the layout – such as a 4x8 layout in a large family room – then only include a reasonable amount of access space around the layout – don’t include all that extra room space. For instance, with a 4x8 layout in a large recreation room, you might add a 2 foot aisle all around the layout. This means the total “room area” for a 4 x 8 layout might be 8 x 12, or 96 square feet.

This stat tells us the approximate space requirement for a given layout, regardless of its shape. This is a clue that two differently shaped layouts could be altered to fit into each other’s space. This won’t always work, but at least it’s worth exploring.

LAYOUT AREA (sq ft): Calculate the total area taken up by just the layout “tabletop” itself. This does not include aisle space. For the 4x8 layout, this will be 32 square feet.

“By comparing the room area with the layout area, we can ascertain how well the layout design fills its space.”

This stat allows us to see just how much layout we really have, and is a valuable design statistic since it allows us to directly derive the amount of benchwork and scenery the layout needs.

By comparing the room area with the layout area, we can ascertain how well the layout design fills its space. For instance, the 4x8 layout's space usage is 32/96, or 33%. Most along-the-wall designs have a space usage of 50% or more, which shows us the 4x8 layout doesn't fill the space nearly as well as an along-the-wall design.

Filling the space isn't the only issue, since we could build a wall-to-wall table and fill the space 100%. Access, however, would be abysmal. As long as good access is maintained, this stat is useful – but it must be viewed in context with your other design needs and goals.

NUMBER OF TURNOUTS: To compute this stat, just count the number of turnouts on the track plan. Also count a crossing as a turnout, and count a single slip switch or three-way turnout or single slip switch as two turnouts. Count a double slip switch as three turnouts.

This stat is a good indicator of trackwork complexity, which tells us many useful insights. Given that the most costly trackwork is a turnout, the most maintenance intensive trackwork is



contents



index

a turnout, and the most interesting trackwork operationally is a turnout – depending on what trade-offs we’re after (less cost, less maintenance, more interesting operation), more or fewer turnouts may be preferable.

Combining this stat with the next one on total trackage gives us enough information to do a rough estimate of the trackwork and wiring costs for the layout.

Scale	Cars/ft
O	1
S	1.5
HO	2
N	4
Z	5

TOTAL TRACK (ft/cars): Determine how many feet of track are on the track plan by measuring it. Record the result as both total footage and as the equivalent number of 40 foot cars. Using 40-foot cars in the stats allows us to directly compare track plans across scales. To determine

the 40 foot cars equivalent for a track plan, use the appropriate factor from the table on the left.

For instance, if an S scale layout has a total track of 211 feet, then the cars equivalent will be 316 cars (211 x 1.5). Drop any fractions – don’t round. It’s best to deal only with whole car lengths and lean to the conservative side when computing car capacities.

This stat, in combination with the other track stats below, tells us much about the operational possibilities of the track plan.

MAINLINE TRACK (cars): Measure the length of the mainline in feet and convert it to the cars equivalent. The main route of a branchline is also considered mainline for the purposes of computing this statistic. Also, one track running through any visible yard and any staging yard needs to be designated as part of the “main” and included in this total.

As an exception, the offstage portion of a single track that runs into staging to be used as car storage/interchange is not “mainline” but instead is “staging” (see below).

From this stat, we get a sense of how much “mainline” running is available on the layout.

PASSING TRACK (cars): Measure the length of each passing siding in feet and add them together. Do not count track where the main would be fouled if cars were on the siding. That short chunk of track from the turnout points to the clearance point is connecting track (see below), not passing track. Convert this figure to the cars equivalent.

This stat helps us determine mainline traffic levels (more on this later).

“Using 40-foot cars in the stats allows us to directly compare track plans across scales.”

STORAGE TRACK (cars): Storage track is the amount of track in industrial spurs and yard storage (but don’t include staging, that’s a separate category below). Measure and total up the length of track in this category, and convert it to the cars equivalent. Like passing track, don’t count track in this total where the connecting track would be fouled. Remember one track running through any yard was counted in the mainline total and is not to be included in this total.

STAGING TRACK (cars): Measure the total amount of track used to stage trains and compute the cars equivalent. Again,



contents



index

don't count track where the connecting track would be fouled. Don't forget that one track running through any staging area was counted in the mainline total and is not to be included in this total.

Remember the one exception – the offstage portion of a single-track car storage/interchange track is “staging,” not “mainline.”

SERVICE TRACK (cars): Service track is loco storage, servicing, turntable, turntable leads, and so on. The rule of thumb is: if the track is used to store cars, then it is storage (or staging if it is “offstage”), if it is used to store locos and is traversed primarily by only locos, then it is loco service track. Measure the total amount of track used to service locos and compute the cars equivalent.

CONNECTING TRACK (cars): Connecting track is what's left. Compute it as:

Connecting track = total track - mainline - passing - storage - staging - service

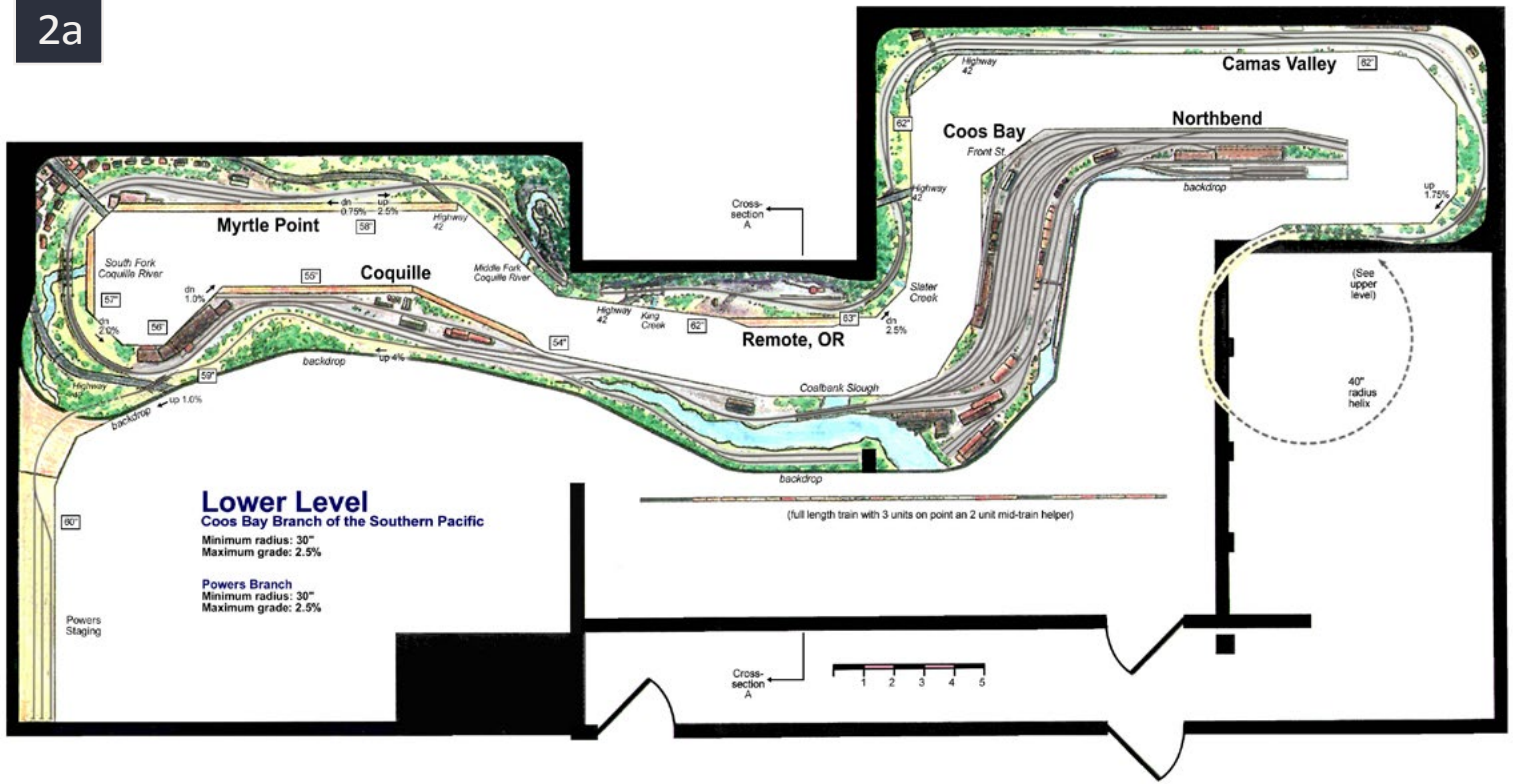
Connecting track is what allows us to make up and break down trains, and to maneuver cars from the main to industrial spurs and yard tracks. It turns out this track is essential to getting a layout that can move a lot of cars.

PASSING SIDINGS: Record the number of passing sidings.

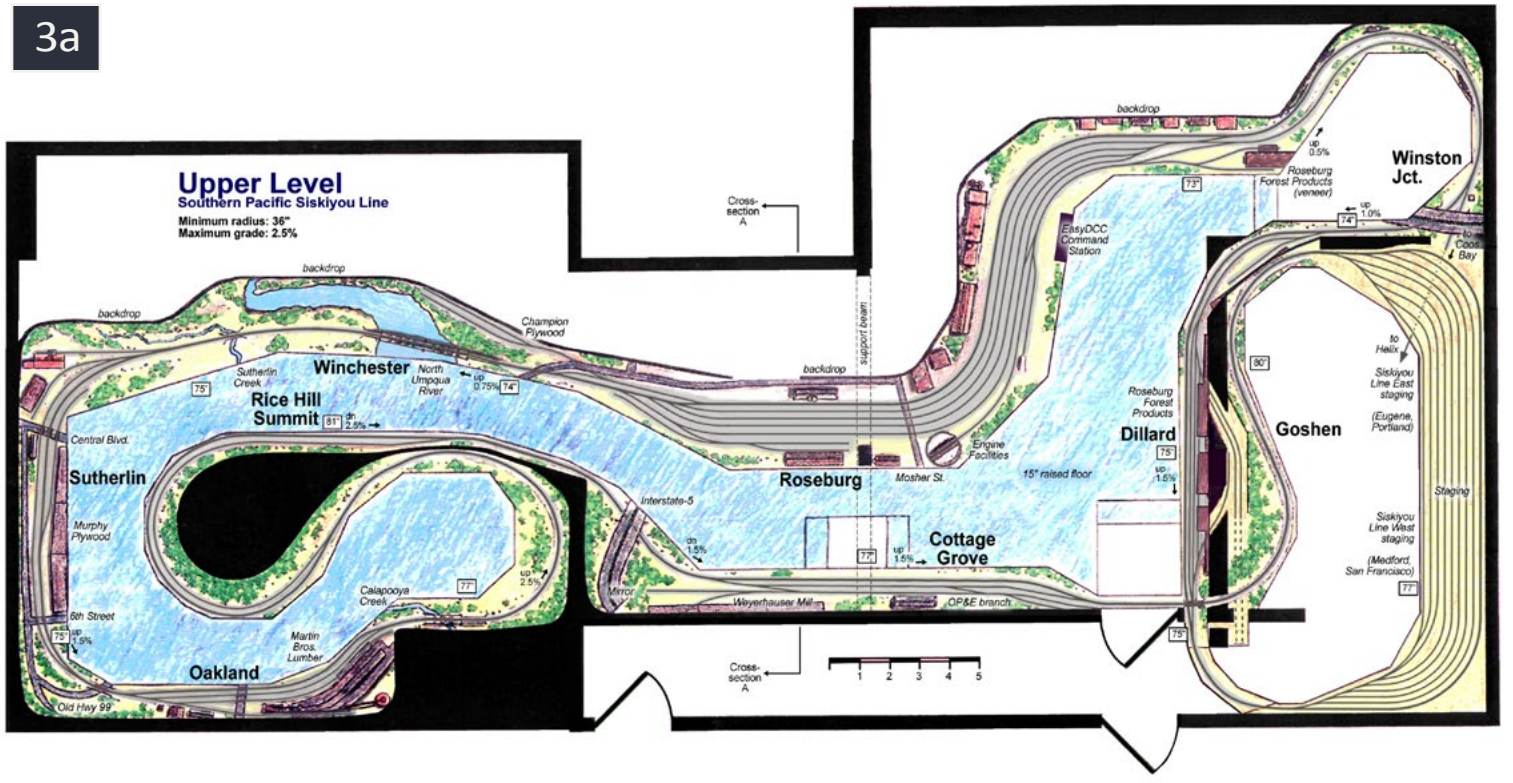
PASSING TRAIN LENGTH (Cars): Write this stat as three values separated by slashes – longest/average/shortest. Longest is the length of your longest passing siding in cars. Average is the length of an average passing siding in cars, computed as: passing track / number of passing sidings. Shortest is the length of your shortest passing siding in cars.

STAGING TRACKS: Record the number of staging tracks.

2a



3a



2a: Lower deck track plan for Joe Fugate's HO Siskiyou Line.

3a: Upper deck track plan for Joe Fugate's HO Siskiyou Line.

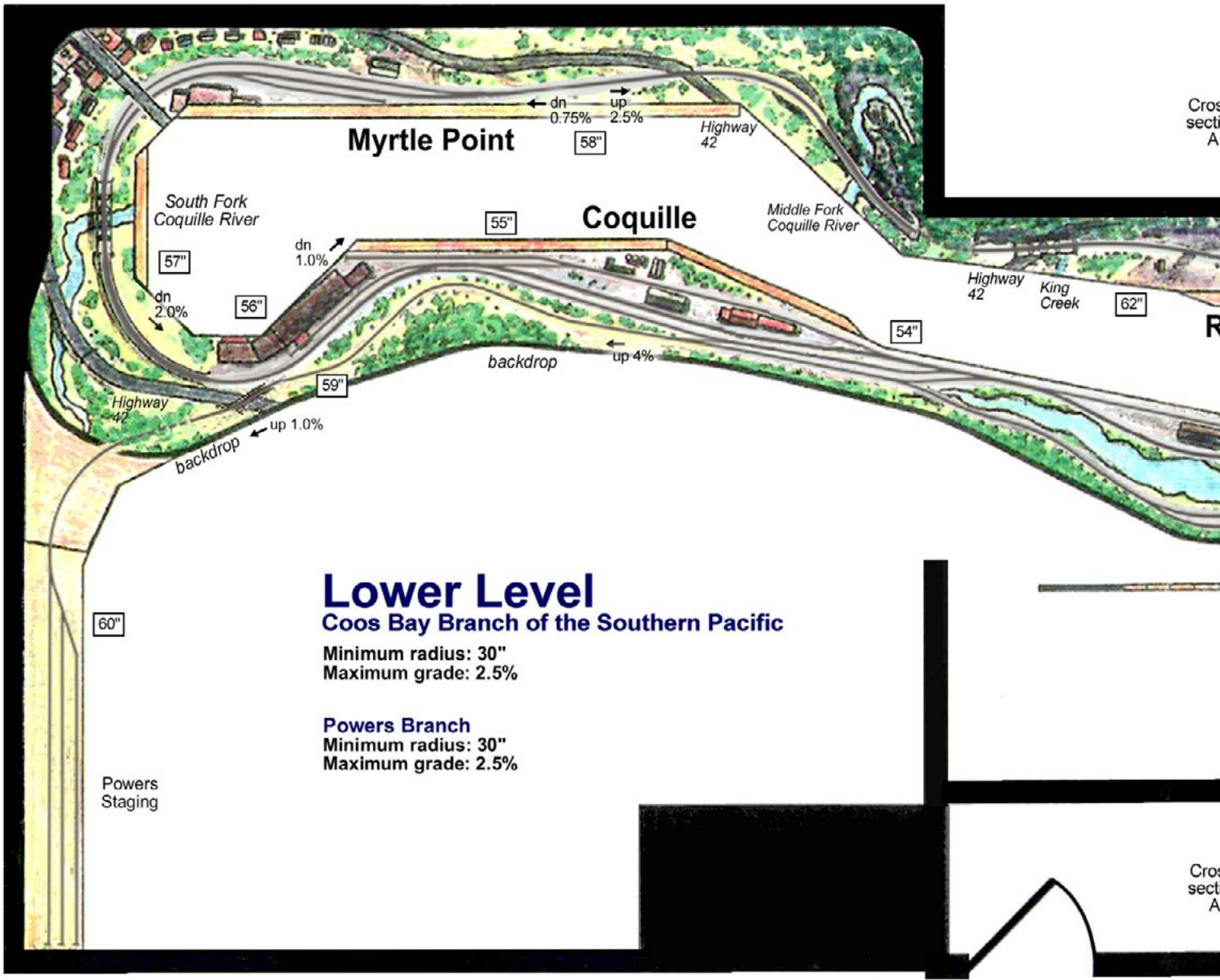
Captions continue on the following pages.



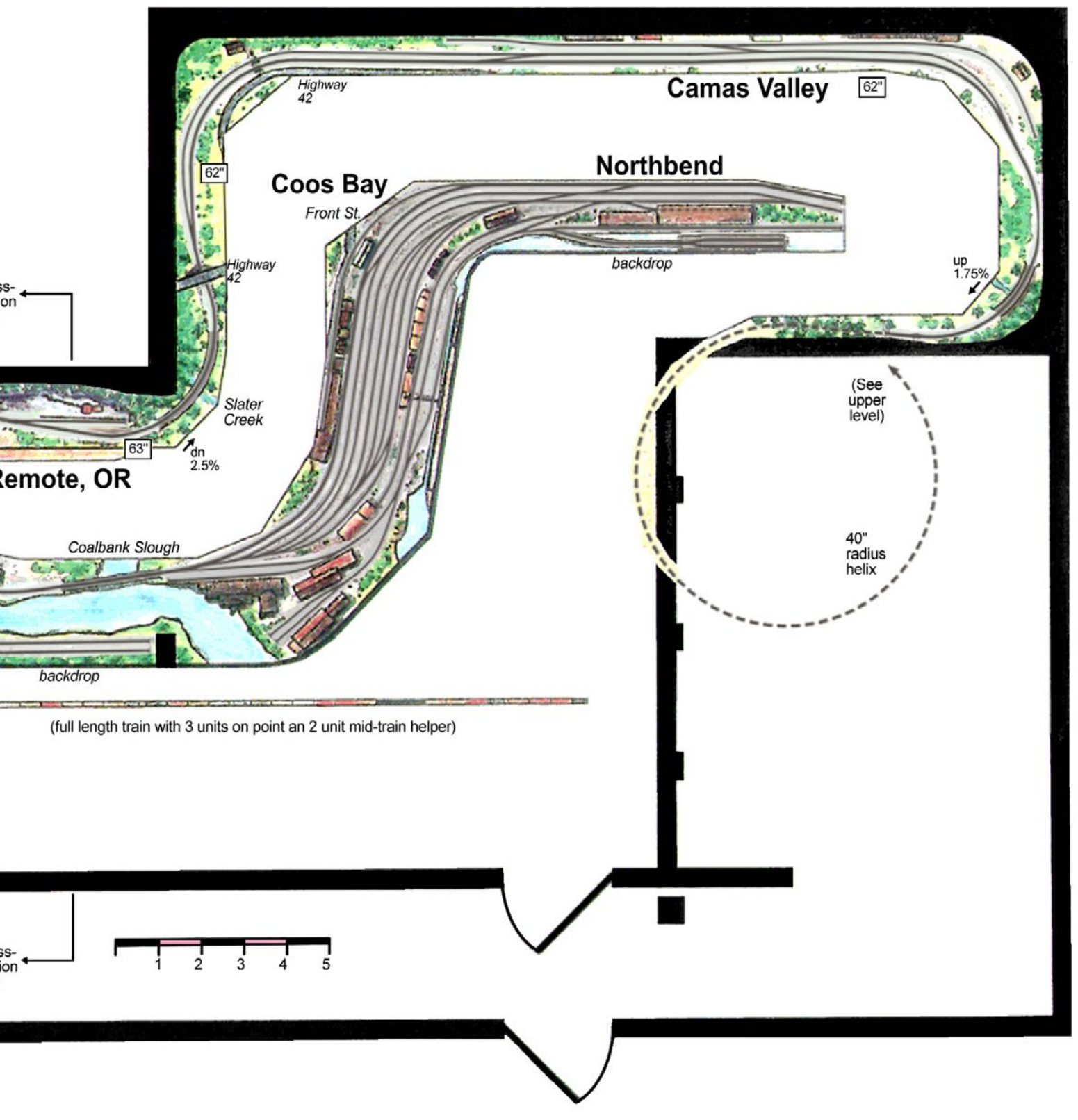
contents



index



2b: Joe Fugate’s Siskiyou Line lower level track plan. When Joe designed his multi-deck HO Siskiyou Line, he depended on the operating potential stats for guidance in refining the lower deck Coos Bay branch and showing its weaknesses.



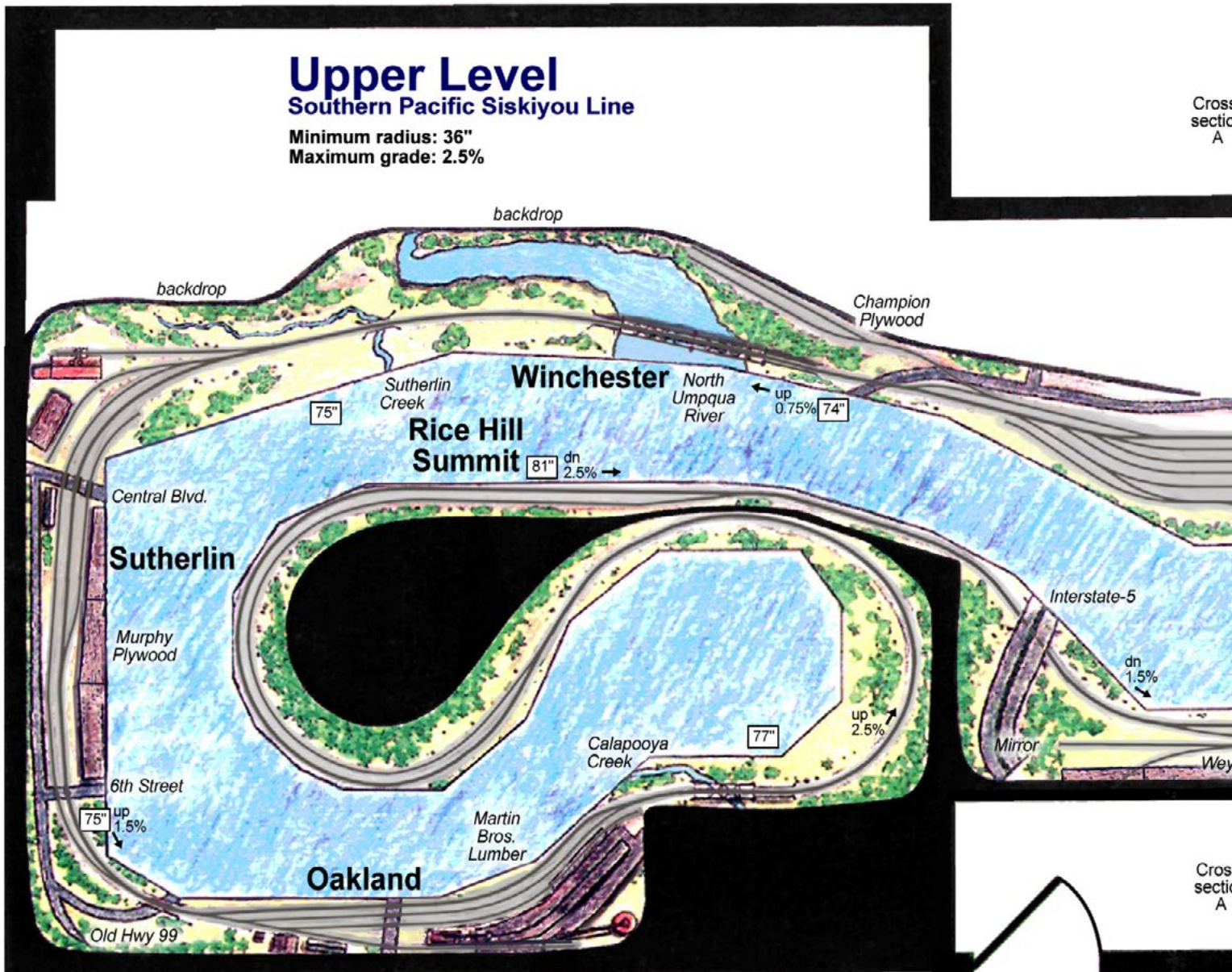
Joe adjusted the plan repeatedly using the formulas until he got the results he wanted. Now that the layout has been operational for over a decade, Joe found what the stats predicted has been very close to how his layout actually operates.



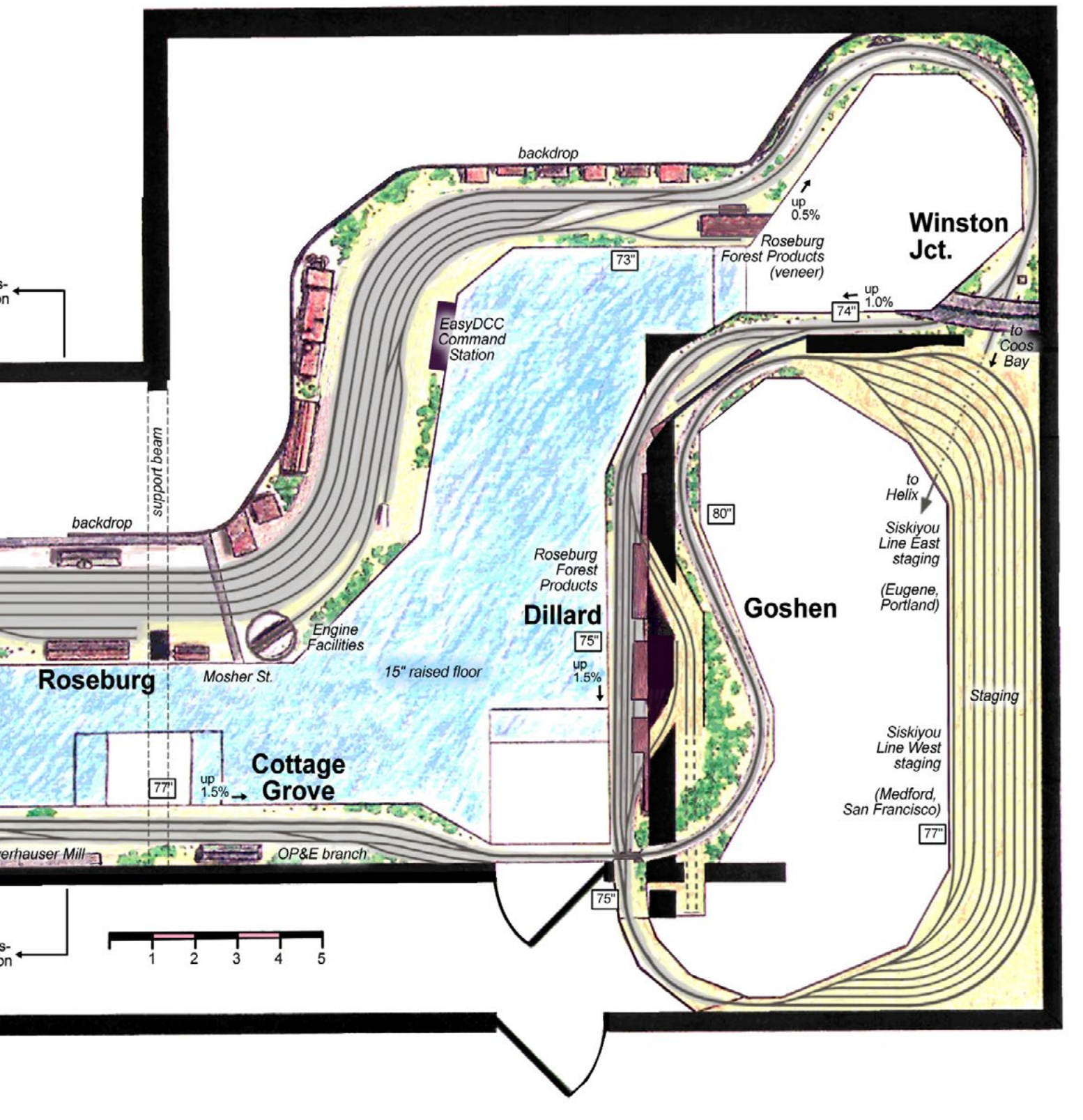
contents



index



3b: Joe Fugate's Siskiyou Line upper level track plan. Joe used the stats in this article to help him design and set the capacity for Roseburg Yard and for his Eugene/Medford staging. Joe has found the number of cars moved and the max cars



capacity stats to both be good predictors of actual experience. Also the dispatching threshold applies to the train sizes Joe runs on his layout and predicts the complexity of dispatching based on train size and Joe's varying passing siding lengths.



contents



index

“Ideally, staging train lengths should more or less equal the corresponding passing train lengths.”

STAGING TRAIN LENGTH (Cars): Write this stat as three values separated by slashes – longest/average/shortest. Longest is the length of your longest staging track in cars. Average is the length an average staging track in cars, computed as: **staging track / number of staging tracks**. Shortest is the length of your shortest staging track in cars.

Ideally, staging train lengths should more or less equal the corresponding passing train lengths. Significantly smaller staging train lengths mean extra switching will be involved in getting a “full length” train into or out of staging. Larger staging train lengths mean full length opposing trains from staging will clog the main. The longer of passing or staging train length should rule in determining typical long train length. The shorter of passing or staging train lengths should rule in determining typical average and short train lengths.

You may notice that staging tracks and passing tracks appear somewhat interchangeable in these formulas. This either/or use of staging and passing sidings reflects an operating session reality (one that was actually exploited by Tony Koester on his AM, by the way) where the layout’s staging can be viewed as “virtual passing sidings”.

For example, the dispatcher could set up a “meet” between opposing trains to occur offstage. To do such a “meet,” one train exits the layout into staging, after which a different train enters the layout – as if a meet had just taken place in an offstage passing siding. If some of the passing sidings on the layout are rather short, this can be a useful technique for arranging meets between longer trains.

OPERATING POTENTIAL

From the basic stats, we can quickly estimate the layout’s operating potential. Way back in June 1968, *Model Railroader* published “Layout plans by formula”, written by Dr. Roy F. Dohn. Dr. Dohn described how to estimate the operating potential of a track plan using some clever formulas he developed by working backwards from actual operating model railroads.

Using his formulas as a starting point, I have developed an updated set of formulas.

MAXIMUM NUMBER OF CARS: A layout can only hold so many cars before it gets difficult to move cars because the destinations are at capacity. This upper limit seems to be around 80% of the total capacity for stationary cars, so we can compute this as: **80% of (storage + staging + passing/2).**

To allow for more cars on the layout, increase the amount of storage and/or staging track, or to a lesser degree, add some passing track capacity. Generally, passing trackage is not intended to be used as permanent storage, so to indicate that some passing siding capacity could be used as short-term storage, a factor of one half is suggested in the formula.

MAX-TO-MAIN: We can take the max number of cars and compare it to the total mainline car capacity to get a sense of how much mainline running a layout has versus how much non-mainline



contents



index

running (that is, switching) it has. Compute the max-to-main value as: **max nbr of cars / mainline track cars** to get a percentage, with the results meaning:

Percentage	Summary	Comments
Under 50%	Mainline focus	Focus is mainline running; little switching
50 - 80%	Mainline emphasis	High amount of mainline running vs. switching
81 - 120%	Balanced	Mainline running and switching balanced
121 - 150%	Switching emphasis	High amount of switching vs. mainline running
Over 150%	Switching focus	Focus is switching; little if any mainline running

NUMBER OF CARS MOVED: The number of cars moved in a typical operating cycle can be computed as: **40% of (staging x 2 + passing + connecting)**. To increase the number of cars moved, we need to increase some combination of staging, passing, or connecting trackage.

Notice staging is particularly effective in increasing the number of cars moved, since for every train that leaves staging, another can move in to replace it, meaning twice the cars can be moved (if they are available elsewhere on the layout). In effect, staging acts as both connecting track and passing track – thus serving double duty.

Another thing we can do to increase cars moved is stop using some track for storage, and designate it instead to be either staging, passing (if trains can legitimately “pass” on this trackage), or leaving it undesignated and always free of stored cars, so by default it becomes connecting track.

TRAINS: We can divide the number of cars moved by our average train length to arrive at the average number of trains we can expect in a typical operating cycle. **Average train length is the smaller of average passing train length or average staging train length.**

One operating cycle is defined as running the layout in a realistic manner until the trains you run begin to repeat. Ordinarily this will be one “24 hour” day according to the modeled train schedule. Depending on our fast clock ratio, the experience of our crew, the reliability of our equipment, the length of a typical run, and the level of detail to which we simulate prototype operating practices, the actual time it takes to complete one cycle could vary from one hour to dozens of hours. Three to four hours is probably a good typical cycle, however.

DISPATCHING THRESHOLD: Compute as: **(3 x shortest passing siding + 2 x average passing siding + longest passing siding) / 6**. Two opposing trains of this size or larger will tend to create a dispatching bottleneck because they cannot easily pass each other except at select sidings. If you want to ease the dispatcher’s workload, keep the typical train length at or under this size.

If you want the dispatcher to more easily manage longer trains, then lengthen your passing sidings. The best way to increase this threshold is to lengthen your shortest passing sidings first. Of course, you need to keep the length of your staging tracks in sync with passing siding lengths as explained above under the train length stats.

Another less obvious tactic to improve this stat (if your passing sidings are smaller than your staging tracks) is to declare very short passing sidings to be switching runaround tracks only (and thus connecting track instead of passing track), thereby removing them from routine consideration as locations where



contents



index

the dispatcher might arrange meets. This tactic also has the effect of increasing the number of cars moved since it creates more connecting trackage.

SOME EXAMPLES

To see how these formulas work, let's take a few track plans from the [MRH Trackplan Database thread](#) and run the stats on them. We've included each track plan with the different kinds of track marked so you can see how the track gets categorized.

CB&Q in Iowa (HO)

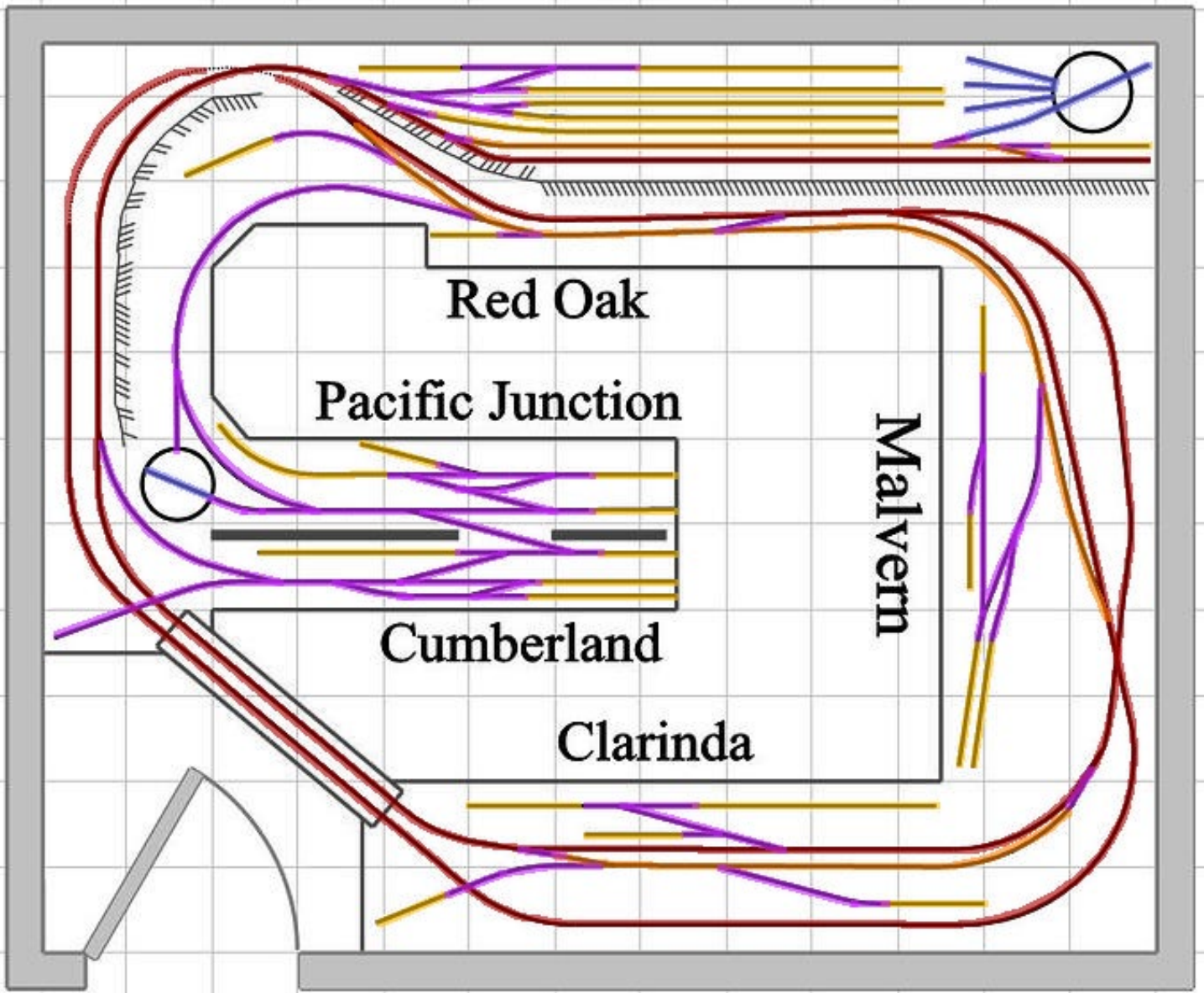
George Booth posted this plan on the MRH website at:







mrhmag.com/track-plan-database?page=1#comment-101734

Room area	150 sq ft
Layout area	86 sq ft (57%)
Number of turnouts	45
Total track	222/444 ft/cars
Mainline track	162 cars
Passing track	54 cars
Storage track	104 cars
Staging track	0 cars
Service track	12 cars
Connecting track	112 cars
Passing sidings	3
Passing length	26/18/14
Staging tracks	0
Staging length	0/0/0
Maximum cars	104 cars
Max-to-main	64%
Cars moved	67 cars
Trains	3.7 (18 cars ea.)
Dispatching threshold	17 car trains



Creston Yard



-  Mainline
-  Passing
-  Storage
-  Staging
-  Service
-  Connecting

Note: This layout design has no staging track.



contents



index

This track plan has no staging trackage, which makes it something of an “old school” design. It can hold just over 100 cars and move 3-4 trains of about 18 cars each in a session. The layout has 45 turnouts, or about one turnout for every 2 square feet of layout area, which makes the trackwork fairly costly, and also will take a good amount of effort to maintain.

Compare this design to the next one, which is also HO and has an almost identical room square footage.

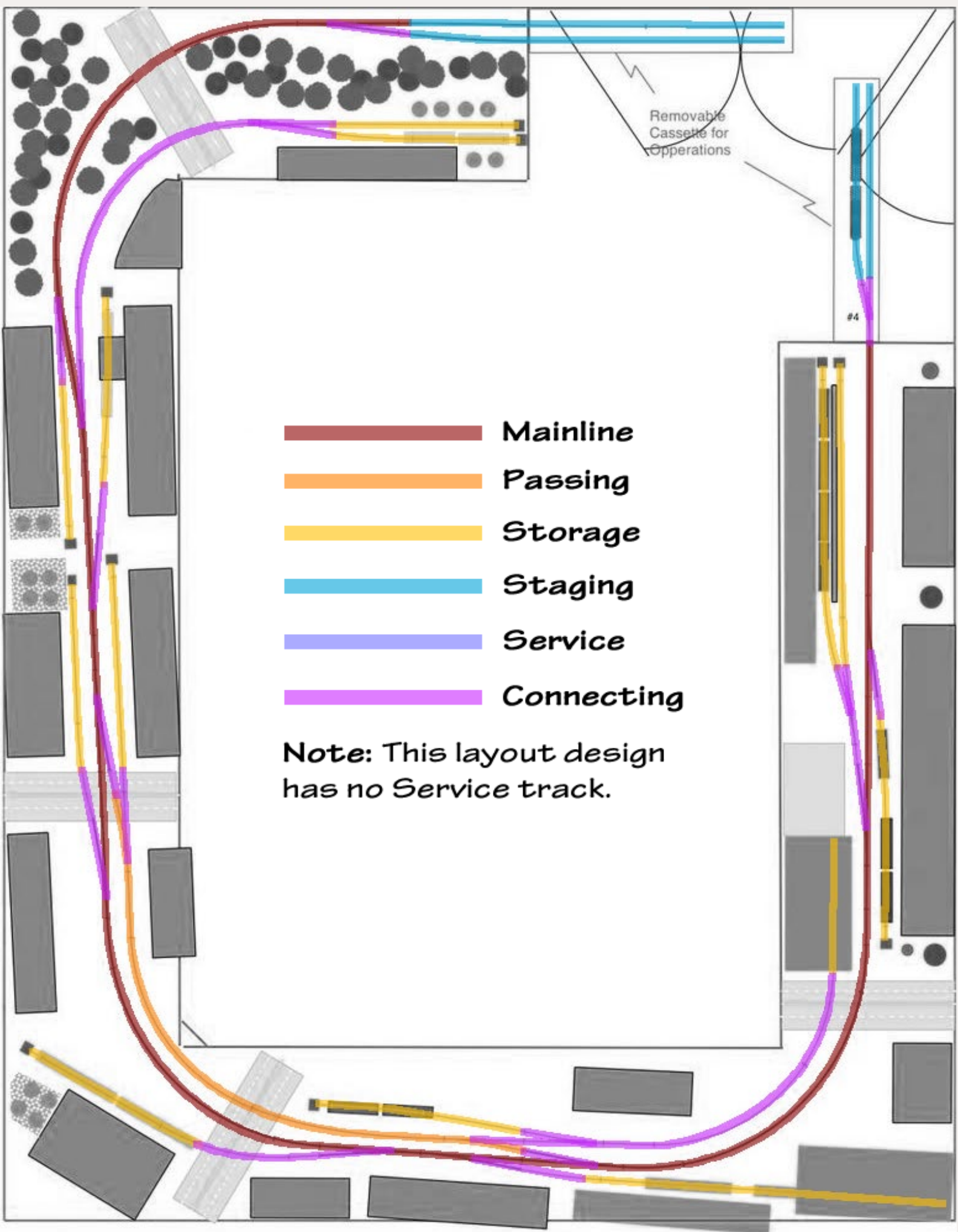
Illinois Rail (HO)

Richard Johnston posted this plan on the MRH website at:

mrhmag.com/track-plan-database?page=4#comment-102148

Room area	148 sq ft
Layout area	73 sq ft (49%)
Number of turnouts	17
Total track	129/358 ft/cars
Mainline track	68 cars
Passing track	16 cars
Storage track	66 cars
Staging track	28 cars
Service track	0 cars
Connecting track	80 cars
Passing sidings	1
Passing length	16/16/16
Staging tracks	4
Staging length	9/7/4
Maximum cars	82 cars
Max-to-main	121%
Cars moved	61 cars
Trains	8.7 (7 cars ea.)
Dispatching threshold	16 car trains





contents



index

This track plan can hold just over 80 cars and move 8-9 trains of about 7 cars each. The layout only has 17 turnouts, or about one turnout for every 4 square feet of layout area. This layout is much less dense than the previous CB&Q layout, which will make it a lot cheaper to build a quite a bit less effort to maintain even though both layouts fit in the same square footage of space.

While this layout has one passing siding, it's quite ample at 16 cars. Since staging is limited to 4-9 cars, trains will be shorter than this.

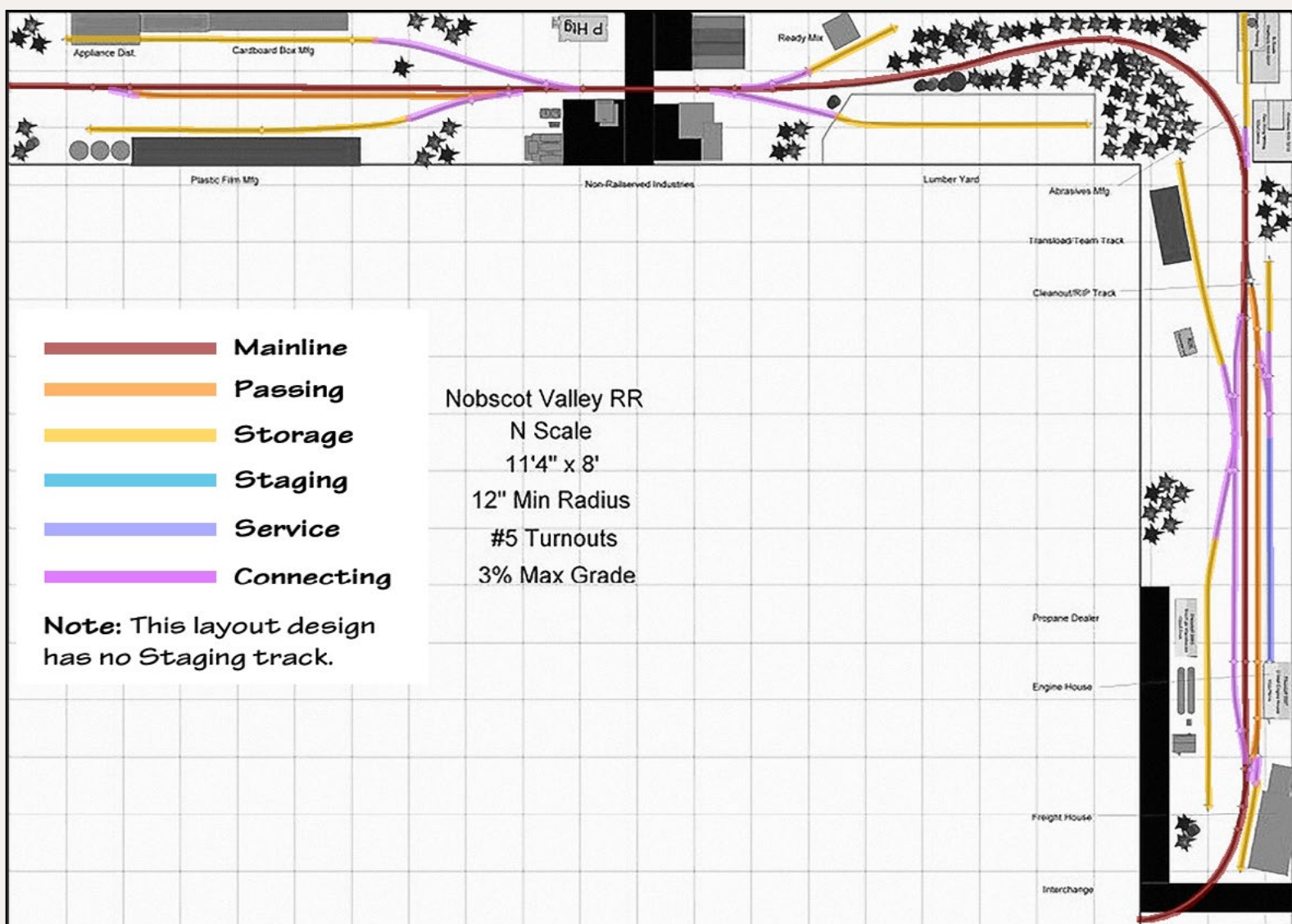
The Nobscot Valley RR (N)

Kevin Theroux posted this plan on the MRH website at:

mrhmag.com/track-plan-database?page=17#comment-159854

Room area	56 sq ft
Layout area	27 sq ft (48%)
Number of turnouts	16
Total track	93/372 ft/cars
Mainline track	76 cars
Passing track	60 cars
Storage track	120 cars
Staging track	0 cars
Service track	8 cars
Connecting track	108 cars
Passing sidings	2
Passing length	32/30/28
Staging tracks	0
Staging length	0/0/0
Maximum cars	120 cars
Max-to-main	158%
Cars moved	68 cars
Trains	2.3 (30 cars ea.)
Dispatching threshold	29 car trains





This layout can hold 120 cars and move 2 trains of about 30 cars each. The design has 16 turnouts, or about one turnout for every 1.5 square feet of layout area (equivalent to 1 turnout per 3 square feet in HO), which makes the density on this layout moderate as to cost and maintenance effort. This plan's turnout density is greater than the Illinois Rail design, but less dense than the CB&Q design. The typical train length of 30 cars and a dispatching threshold of 29 cars means the dispatcher may find it challenging to get two full-length trains past each other without some planning.

A FINAL EXAMPLE: MY SISKIYOU LINE

Then of course, there's my own HO Siskiyou Line layout. These stats actually reveal some design tricks I used to get everything to fit. Look closely and see if you can spot what I did.



contents



index

Room area	810 sq ft
Layout area	689 sq ft (85%)
Number of turnouts	122
Total track	1078/2156 ft/cars
Mainline track	706 cars
Passing track	338 cars
Storage track	516 cars
Staging track	336 cars
Service track	18 cars
Connecting track	242 cars
Passing sidings	10
Passing length	44/33/12
Staging tracks	11
Staging length	43/30/10
Maximum cars	816 cars
Max-to-main	116%
Cars moved	500 cars
Trains	16.7 (30 cars ea.)
Dispatching threshold	22 car trains

The Siskiyou Line was designed for long trains in the spirit of the prototype SP, so the average length train is 30-33 forty-foot cars. Notice the variation between the shorter and longer passing sidings is enough that most trains will exceed the dispatching threshold of 22 car trains. Dispatching this railroad can become a challenge since two average length or longer trains will only be able to meet at a few select passing sidings. However, this little design trick allowed me to squeeze in more towns and still have a reasonable amount of single track between the towns

The mainline length of 706 cars compared to the max car capacity of 816 gives a main-to-max value of 116%. These two values are closely matched, meaning the mainline running and switching are



fairly balanced on my layout, with a slight leaning toward switching over mainline running (getting close to the 121% cutover level).

Also notice my layout has an 85% space usage percentage, as compared to the other single deck track plans that all have a space usage of about 50%. Multi-deck designs typically push well beyond 50% space usage, with some triple-deck designs (generally, the third deck is hidden staging) exceeding 100%.

Looking at the maximum cars needed on the Siskiyou Line, one gets faint-hearted realizing 500-800+ cars will be needed for full operation! What have I gotten myself into?



4: Joe has found the formulas and stats shown here that he computed while designing the Siskiyou Line have been proven out in over a decade of op sessions on the Siskiyou Line. Thanks to these formulas, Joe's layout dynamics are pretty much as expected.



contents



index

SUMMARY FORM

If we were to enhance published track plans with these stats, we can use a summary form, as illustrated here. Taking the example layouts above and condensing their stats down into summary form we have:

H0 CB&Q in Iowa (George Booth)

Room area: 150 sq ft
Layout area: 86 sq ft (57%)
Number turnouts: 45
Total track: 222 ft
Train length: 18 cars
Maximum capacity: 104 cars
Main vs switching: Mainline emphasis (64%)
Cars moved/session: 67 cars
Trains: 3.7
Dispatch threshold: 17 car trains

H0 Illinois Rail (Richard Johnston)

Room area: 148 sq ft
Layout area: 73 sq ft (49%)
Number turnouts: 17
Total track: 129 ft
Train length: 16 cars
Maximum capacity: 82 cars
Main vs switching: Switching ephasis (121%)
Cars moved/session: 61 cars
Trains: 8.7
Dispatch threshold: 16 car trains

N Nobscot Valley (Kevin Theroux)

Room area: 56 sq ft

Layout area: 27 sq ft (48%)

Number turnouts: 16

Total track: 93 ft

Train length: 30 cars

Maximum capacity: 120 cars

Main vs switching: Switching emphasis (158%)

Cars moved/session: 68 cars

Trains: 2.3

Dispatch threshold: 29 car trains

H0 SP Siskiyou Line (Joe Fugate)

Room area: 810 sq ft

Layout area: 689 sq ft (85%)

Number turnouts: 122

Total track: 1078 ft

Train length: 30 cars

Maximum capacity: 816 cars

Main vs switching: Balanced (116%)

Cars moved/session: 500 cars

Trains: 16.7

Dispatch threshold: 22 car trains

As you can see, with these stats, we can truly plan a layout, whether big or small. And we can finally compare layouts quickly in a meaningful way – allowing us to appreciate more than just their good looks.



contents



index



Photo courtesy of DaveMinshall

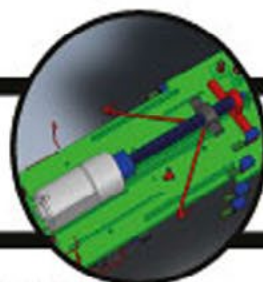
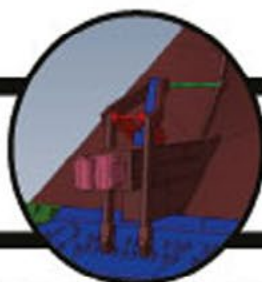
YEAH, ITS TRUE. WE HAVE A SINGLE TRACK MIND.

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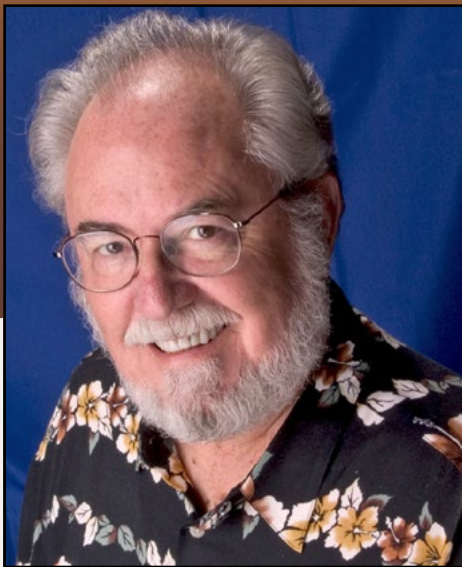
- KADEE couplers
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- CODE 88 stainless steel wheels
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October 2014: The latest model railroad products, news & events

by Richard Bale and Jeff Shultz

Armand Mazzetti 1933-2014

Armand P. Mazzetti, a leading dealer of brass model trains, died September 11, 2014. He was 80 years old. In 1968, Armand established "The Caboose," a part-time basement hobby shop in Wolcott, CT. The enterprise eventually grew into an international mail order and Internet retailer serving brass collectors and modelers throughout the world. Armand loved dealing with customers at "The Caboose" and remained active in business until his retirement in 2012. Armand's regular job was a high school science teacher. After serving his country in the U.S. Army, he earned a teaching degree from the University of Connecticut in 1963. In later years Armand earned additional masters degrees from Wesleyan University and Southern Connecticut State University. Armand is survived by his wife, Tara, a daughter, Kristin, and two grandchildren ...

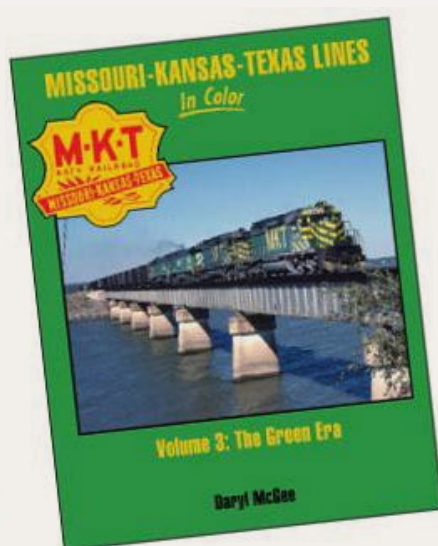
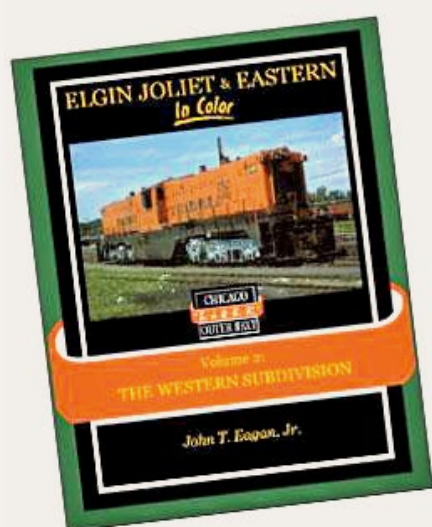
Lake Junction rebuilding after fire

Lake Junction Models, LLC (lakejunctionmodels.com) suffered a major structure fire that also destroyed manufacturing



equipment, work in process, and finished inventory. Owner Bill Hoss told MRH that rebuilding efforts have not proceeded nearly as fast as he had initially hoped. One bright spot for the St. Louis, MO firm is that all data files were successfully salvaged from the computers destroyed in the fire. New mold-making tools and production casting equipment have been purchased and should be on line this month. Acquisition of new laser cutting equipment has been delayed pending completion of a new building. In view of the red tape, permits, and usual construction delays, Hoss said it will be another two to three months before things return to normal. In addition to its standard line of HO scale structures, passenger cars, and cabooses, the company provides custom CAD design and laser cutting services...

NEW PRODUCTS FOR ALL SCALES



New releases from **Morning Sun Books** (morningsunbooks.com) include “*Elgin Joliet & Eastern in Color Vol. 2: Western Subdivision*,” by John T. Eagan, Jr., and

“*Missouri-Kansas-Texas Lines in Color Vol. 3: The Green Era*,” by Daryl McGee. Also new is “*Burlington Northern Power In Color Vol. 2: Locomotives #3000-6255*,” in which author Stephen M. Timko details GP40/50, RS2/3, C415-424-425-636, B30-7A, FA1/2, U-boats, SD7/9/24 and others that resulted from the merger of the GN, NP, CB&Q, SP&S, and SLSF. Visit the above website for pricing.



LARGE SCALE PRODUCT NEWS



Bachmann (bachmanntrains.com) is selling a large scale Durango & Silverton fire suppression tanker. The ready-to-run model operates on 45mm track. It is

available now at an MSRP of \$105.00.

O SCALE PRODUCT NEWS



Atlas-O (atlaso.com) has scheduled the release of several 40' wood refrigerator cars for the second quarter of 2015. The models represent cars rebuilt in the late 1930s and early '40s. In addition to the MDT version shown here, the O scale models will be available decorated for LRX-

Lackawanna Refrigerator Line, Pere Marquette, and PFE-Union Pacific. A Union Refrigerator Transit car displaying a red, white, and blue Minneapolis & St. Louis herald is also in the release.



contents



index



Bachmann (bachmanntrains.com) has introduced a new On30 model of a 50-ton center-cab Whitcomb diesel locomotive. It comes with DCC

for speed, direction, and lighting. The locomotive has an MSRP of \$435.00. It has factory installed speakers and is ready for the addition of 16-bit Tsunami plug-and-play sound module that is sold separately at an MSRP of \$129.00. Features of the ready-to-run model include soft white LED directional headlights, eight-wheel drive, dual brass flywheels, metal handrails, photo-etched grilles, and a detailed cab interior with engineer, gauges, and control stand. Unlettered decorating schemes include orange/cream, red/yellow, and yellow with black stripes, as shown here. A fully decorated version is also available for Midwest Quarry.



Additional new On30 items from Bachmann include two double-sheathed wood boxcars decorated with data only.

The ready-to-run models are available in a choice of oxide red or mineral red. They have an MSRP of \$58.00 each.

Morgan Hill Models (morganhillmodels.com) is selling a limited-edition kit for a 22' water tank car. The On3/On30 kit is composed of pre-cut Mount Albert basswood and laser-cut ends. The tank is assembled from individual boards applied



to a pre-formed core. Detailed instructions and weathering suggestions are included along with all necessary hardware except

trucks and couplers. Visit the above website for pricing and availability.



San Juan Car Company (san-juancarco.com) has released a new O scale ready-to-run tank car. The well-detailed model is based on a group

of 18 frameless prototype tank cars that frequently had their trucks changed back and forth from narrow gauge to standard gauge between 1946 and 1953. The model comes with standard gauge 2-rail Bettendorf trucks and a new O scale coupler.



Decorating schemes include UTLX (yellow), UTLX-Gramps, and PNRX – Pioneer Oil & Refining. The model has an MSRP of \$89.95.



contents



index

HO SCALE PRODUCT NEWS



Accurail (accurail.com) has released several new HO scale items including a kit for this NYC stock car. The

model represents a basic 40' wood stock car from the steam era. The kit is also available decorated for Pere Marquette.



Also new is an HO scale kit that assembles into this P-S 4750 cu.ft. triple-bay covered hopper decorated for ATSF. A kit is also available for a CSXT version of the same car.



Accurail has released kits for three versions of a 40' Pennsylvania Railroad steel boxcar.

In recognition of Trainfest, which will be held in Milwaukee next month, Accurail will release several special kits decorated for railroads that operated in the greater Milwaukee area. They include a Green Bay & Western 40' PS-1 boxcar; a trio of 40' Wisconsin-themed billboard reefers; a WSOR-Wisconsin



& Southern P-S 4750 grain hopper in three numbers; and the Soo Line ACF triple-bay covered hopper shown here.

Check the Accurail website for pricing information.

Athearn (athearn.com)

has scheduled the release of EMD F-unit diesel locomotives for April 2015.

Road names for the HO scale Genesis series models will be Denver & Rio Grande Western, Canadian National, Seaboard Coast Line, and Lehigh Valley.



Standard DC non-sound A units will have an MSRP of \$169.98. They will be DCC-

ready using Athearn's Quick Plug technology. Sound-equipped A units have Soundtraxx Tsunami DCC decoders and will list at \$269.98 each. Paired A-B units will have MSRPs of \$309.98 and \$489.98 respectively.



Athearn's May release will include Ready-to-Roll models of EMD GP40X diesel loco-

motives decorated for Santa Fe, Norfolk Southern (Horsehead scheme), and Southern Pacific.

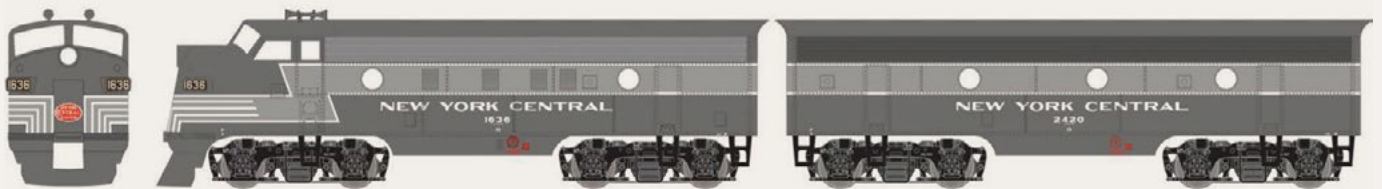


contents



index

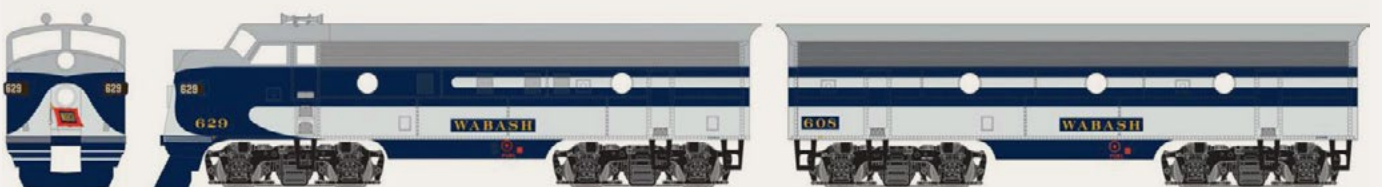
A DCC-ready GP40X model will have an MSRP of \$99.98.



Also coming from Athearn in May are standard (non-Genesis) versions of EMD F7 diesel locomotives. Paired A-B models will have an MSRP of \$129.98. A units will list at \$84.98.



Single A units with one headlight will be available decorated for New York Central, Reading, and Chesapeake & Ohio.



A units with dual headlights on the nose will be available for Burlington Northern, Union Pacific, and Wabash.

Athearn's May schedule includes the release of six economy-

priced 72' streamline passenger cars. The Ready-to-Roll models will have an MSRP of \$29.98.



Road names will be New York Central, Burlington

Northern, and

Union Pacific. Car types include a baggage car, RPO (top), diner, dome car (above), coach, and round-end observation (below).



Although these models were originally introduced more than 40 years ago, the tooling has been well maintained and upgraded over the years. Recent upgrades reflected in this run include improved window glazing, Celcon trucks with metal wheelsets, and Talgo truck-mounted McHenry operating knuckle couplers.

A new production run of 50' outside braced plug-door box-cars is also

listed in Athearn's May release. The HO scale Ready-to-Roll models will have an MSRP of \$25.98.



contents



index

Road names will be Santa Fe, Chesapeake & Ohio, Penn Central,

Reading, Lehigh Valley, and Delaware & Hudson.



Three numbers each will be available on a new run of ACF 5250 cu.ft. quad-bay

Center Flow covered hoppers. Introduced by ACF in the 1960s, the rounded body of the Center Flow design provided structural strength as well as an inducement to gravity unloading.



Road names in Athearn's May release will be Archer Daniels Midland,

American Hoechst, El Rexene, Firestone, GATX, and Columbian Plastics.



Completing Athearn's May release schedule will be a group of Ford F-100 panel trucks decorated as emergency vehicles. They include Police (black and white), Police (all black), Fire Rescue (red), Ambulance (white), and Fire Chief (red with black fenders).



All have rubber tires and a red non- functioning warning light on the roof. A UPS truck is also in the mix. The F-100 trucks have an MSRP of \$24.98.



Atlas Model Railroad Company (atlasrr.com) will release its HO scale

GP40-2 diesel locomotive during the first quarter of 2015 in several new decorating schemes. The models will be available for standard DC operation (Silver series at \$159.95 MSRP) and with LokSound DCC decoder (Gold series at \$269.95 MSRP). The LokSound Select Dual-Mode decoder allows the locomotive to be operated on DC as well as on DCC layouts. Road names include Florida East Coast in two versions including a pink ribbon Breast Cancer Awareness scheme.



Additional GP40-2 paint schemes will be Chessie System-C&O, Chessie

System-B&O, Chessie System-WM, Conrail, Ferromex, and Kansas City Southern. Previously released schemes available in this run with new road numbers include Southern Pacific and Western Pacific.



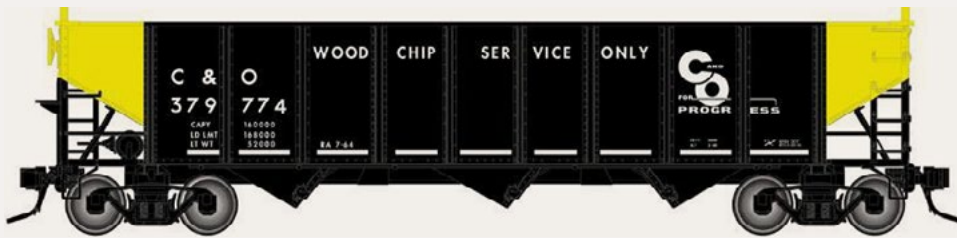
Atlas is including an undecorated GP40-2 in this run. It will come with



contents

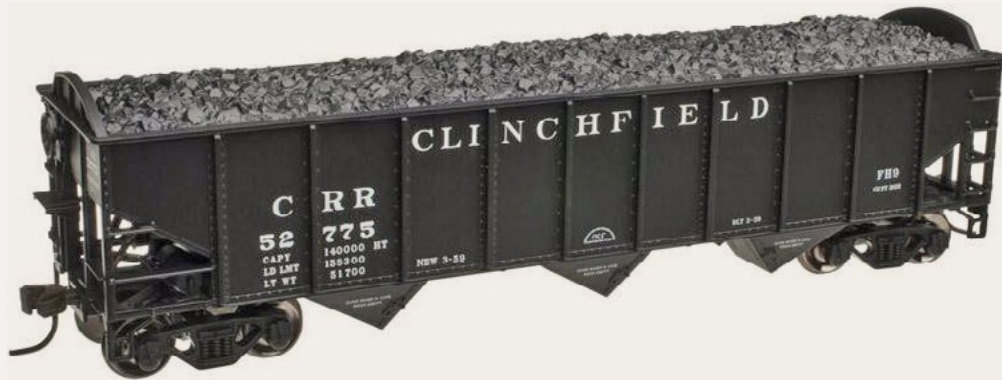


index



here, road names will be Burlington (BN repaint), Cambria & Indiana, Reading

& Northern (anthracite logo), Union Pacific, Grand Trunk Western, and Clinchfield (below).



This Atlas HO scale ready-to-run model will have an MSRP of \$23.95. An undecorated version will list at \$18.95.



Blackstone Models (blackstonemodels.com) has reissued a limited number

of Denver & Rio Grande locomotive No. 345 in the distinctive bumblebee scheme. The HOn3 ready-to-run model replicates the class C-19 prototype as she appeared in the classic 1951 Western movie *“Denver & Rio Grande.”*

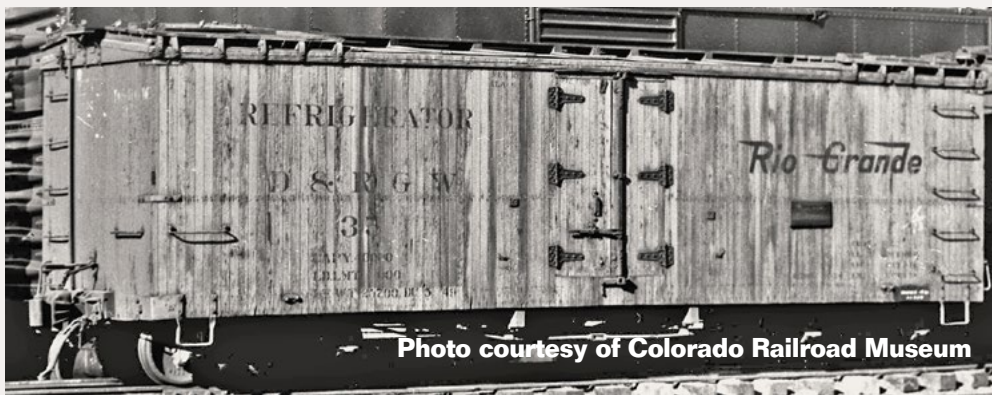
Additional features include a road pilot, fluted domes, box headlight, flared-side tender, wood-panel cab sides, a pair of single-stage compressors, and a diamond stack. The ready-to-run model comes with a custom dual-mode SoundTraxx Tsunami digital sound decoder. It is available now at an MSRP of \$499.95.



contents



index



Blackstone is taking reservations for the initial release of a new Denver & Rio Grande

Western 30' refrigerator car. American Car & Foundry built the prototype cars in 1908. Blackstone's HOn3 model is based on cars that D&RGW rebuilt in 1926 with Murphy roofs.

Paint schemes will include freshly-shopped ART-American Refrigerator Transit with yellow sides, and red roof and ends. Additional liveries include three D&RGW schemes – Flying Grande, Moffat Tunnel, and Royal Gorge Route in eight road numbers each. The estimated MSRP is \$55.95. Visit the above website for more information.



Bowser (bowser-trains.com) is producing a GMD version of a SD40-2 diesel locomotive. Rather than being a variation on a standard US production locomotive, Bowser developed the model as a Canadian-built GMD. Features include GMD-style steps, unique grab irons, an electric bell, special snow shields, an offset sill, and three operating class lights. It will be available for standard DC operation as well as with ESU LokSound Select for DCC.



Decorating schemes will be Dakota, Minnesota & Eastern; Ontario Northland Railway (as delivered in green with yellow and red stripes, no ditch lights); Ontario Northland Railway (yellow body, blue highlights, blue chevrons); British Columbia Railway (two tone green); British Columbia Railway (red and blue with white stripe and white hockey sticks); and six variations of CP Rail's Pac Man scheme.



Bowser is also producing a special run of Ontario Northland locomotive No. 1733. The GMD SD40-2

diesel is decorated in yellow and blue with a single large white chevron. Reservations and sales for No. 1733 are being handled exclusively by North Bay Area Museum Society. For complete information or to make a reservation visit retail@discovery-northbay.com.

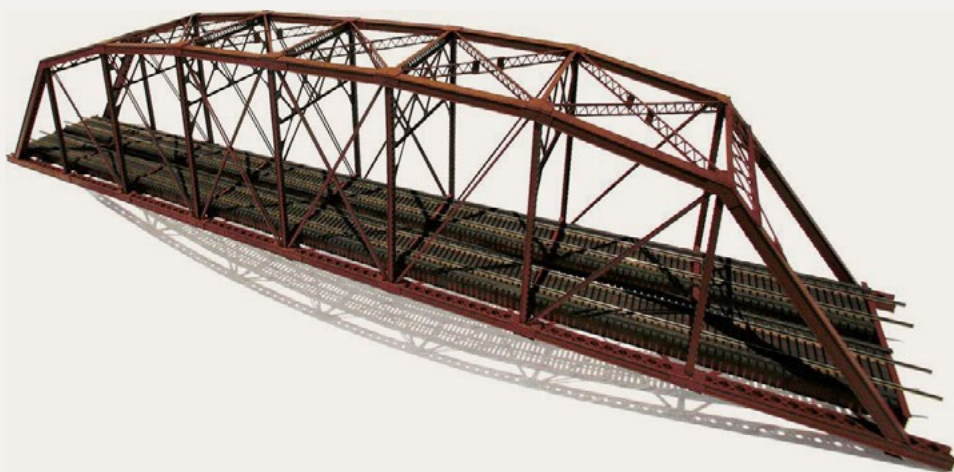
In other news from Bowser, owner Lee English reports that they have recently acquired a Micro SLA industrial 3D printer. It will be used to create detailed small castings for prototype use and to produce burn-outs for lost-plastic casting. English said the new equipment will also be utilized to expand the selection of products under the Cal Scale brand, as well as to make new detail castings for Bowser's Executive Line locomotives.



contents



index



Central Valley Models (cvmw.com) continues to expand its selection of kits for beautifully detailed HO scale bridges. The newest kit

builds into this 200' double-track steel truss bridge. Orders are being accepted at the introductory price of \$119.95 including free shipping within the lower 48 states. A tentative release date has been set for late this month or early November.



Classic Metal Works (classicmetalworks.com) says it plans to produce HO versions of 1960 Ford trucks ranging from a half-ton F-100 pickup to a

heavy-duty F-600. The series will be marketed under the Mini Metals brand beginning with the F-100 pickup shown here in a preliminary computer drawing.

Mini Metals HO scale vehicles available now include a 1941/46



Chevrolet dump trucks with rear-wheel splatter guards and positionable dump beds. Paint schemes are black with red dump bed, all black, and two-tone gray with black dump bed.



Pickup versions of the 1941/46 Chevrolet are available as wreckers or tow trucks decorated in oil company schemes for Sinclair, MobilGas and Texaco (above).



The third group in the current vehicle release is International Harvester Metro delivery vans. They are decorated for Nabisco Oreo Cookies, Sears Roebuck & Company, Swift's Meats, Pabst Blue Ribbon Beer, Kellogg's Rice Krispies,

and Carnation Milk. For additional information or to order direct visit buy-hobbies.com.



Fos Scale Models (foslimited.com) has introduced an HO scale craftsman kit for "Gardiner's Tack, Field, and Farrier," a one-stop shop for rural and agricultural needs. Livestock feed is available and customers can browse through the tack supplies while the farrier fits new



contents



index

shoes on their horse. The long, narrow building has been extended over time, giving the structure plenty of textures and character.



The kit features laser-cut walls of clapboard and mat board, corrugated roofing and wall siding, and some board-by-board construction. Additional details include laser-cut roof cards, metal and plastic detail parts, and Tichy plastic windows. Detailed instructions, construction templates, and color signs are all provided. The finished structure, as shown in the photos, has a footprint of 3" x 15".

The model can also be built in an L configuration. The kit is priced at \$159.95. The scenery, vehicles, figures, and animals in the illustrations are not included in the kit.

InterMountain Railway (intermountain-railway.com) is

booking reserva-

tions for EMD FT A- and B- diesel locomotive sets. The HO scale models have several etched metal details including metal screens for the roof, the fan, and the dynamic brake openings. In addition to the Erie Lackawanna scheme shown here, the ready-to-run locomotive will be available decorated for Santa Fe (red



and silver warbonnet), Reading, St. Louis & Southwest, Missouri Pacific, Milwaukee Road, Chicago Burlington & Quincy, Northern Pacific, EMD Demonstrator, and Rio Grande.



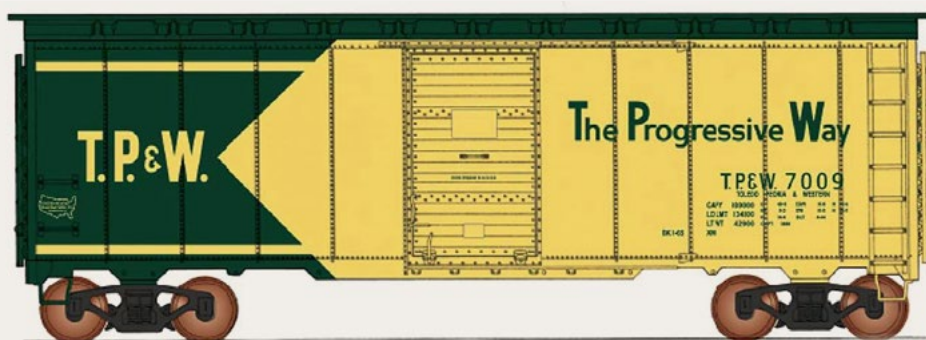
The locomotives are sold as an A-B pair which includes the cab unit and the booster. Both units are powered with DC and DCC functions and are also available with optional ESU LokSound sound. The MSRP for the pair is \$439.95 with sound and \$329.95 for non-sound versions. Availability is planned for April or May of 2015.

Also scheduled for release in April/May is another run of 1937 10'6" modified AAR box-cars. In addition



to the Southern Railway and Toledo, Peoria & Western versions shown here, the HO scale ready-to-run model will be available for the following roads: Duluth, South Shore & Atlantic; Rock Island; Canadian Pacific (script); Fort Worth & Denver; Chicago & Eastern Illinois; Erie Lackawanna; Missouri-Illinois; and Chicago & North Western (Route of the Challengers slogan).

The 1937 box-car will have an MSRP of \$36.95. An undecorated version will be available at an MSRP of \$19.95.



contents



index

InterMountain's April/May schedule includes the release of 4750 cu.ft. triple-bay, rib-side covered hoppers. Decorating schemes will include Delaware & Hudson (above), Allied-Mills, Dawson Soy Products, Penn Central, Norfolk & Western, Kansas City Southern, Sands of Iowa, Denver & Rio Grande Western, Union Pacific, and NEW Cooperative (below).



The HO scale ready-to-run model will have an MSRP of \$39.95. An undecorated model will be available at \$19.95.



Kadee Quality Products (kadee.com) is working toward a

December delivery date for a GM&O 50' boxcar with 9' Creco six-panel doors. The HO scale ready-to-run model is based on a 1961 prototype that was repainted in January 1969. Note that the car has a full height ladder on the right but no running board.



Kadee's December schedule includes a CMO-Chicago, St. Paul, Minneapolis



& Ohio 40' boxcar with a Route of the '400' Streamliners slogan. The model is based on a prototype built in 1953 with 6' Youngstown doors. Both of the Kadee models mentioned here have an MSRP of \$35.95 each.



Monster Model Works (monstermodelworks.com) is selling an HO scale kit based on the historic Robertson Paper Company in Bellows Falls, Vermont. Laser

engraving is used to produce the well-aged 3D brick walls of the HO scale kit. Peel and stick material is provided for the tarpaper roof. Additional details include engraved brick corners and rooftop pipes, historic signage, instructions and weathering tips.



The finished HO structure has a footprint of 9.125" x 6.250" x 3.3125" tall. Built in 1882, the structure was certified as an historic site in 1990. The mill was served

by both the Boston & Maine and the Rutland Railroad into the 1970s. For additional historical information about the structure Google "Preserve Robertson Paper."

Rapido Trains (rapidotrains.com) has announced a new series of mid-train dome cars based on a Budd prototype. The HO scale ready-to-run cars will be finished in Rapido's highly-regarded



contents



index



proprietary stainless steel finish that involves spraying each model with a series of different finishes at different temperatures.



There is a long list of features worth noting on these models. The interior is fully detailed with see-through arm rests, window blinds at random heights,

and track-powered lighting including interior dome lights. Underbody details include air conditioning equipment; battery boxes; generators; air reservoirs; water tanks; and all air, steam, and electrical lines. Also operating diaphragms with etched-metal end gates, individual grab irons, and correct trucks with metal wheelsets.

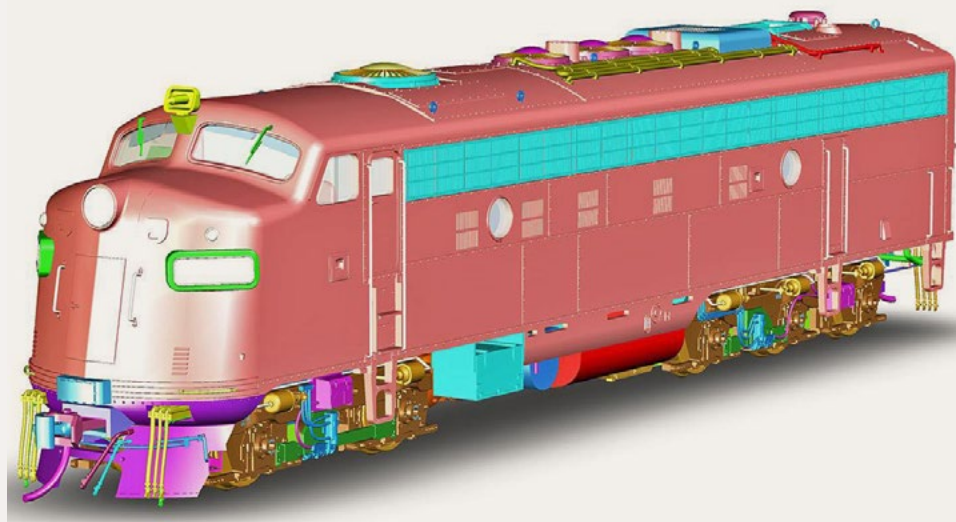


Road names with several car numbers per scheme include Amtrak Phase I, Baltimore & Ohio, Canadian National (noodle scheme), CN

(green), Canadian Pacific (maroon), CP (red), Delaware & Hudson, Illinois Central, Missouri Pacific (Eagle scheme), Norfolk & Western, Seaboard Coast Line, VIA Rail Canada (original scheme), Wabash, and stainless steel (unlettered).



Rapido's mid-train dome cars have an MSRP of \$109.00. The order deadline is November 17, 2014, with delivery in the first half of 2015. For reservations or additional information go to rapidotrains.com/buddome.html.



Rapido shared these CAD renderings of its forthcoming EMD FL9 (New Haven class EDER- 5) locomotive. Rapido is working toward delivering both

HO and N scale versions of the unique FL9, a dual-power locomotive capable of diesel-electric operation as well as functioning as an electric locomotive powered from a third rail.

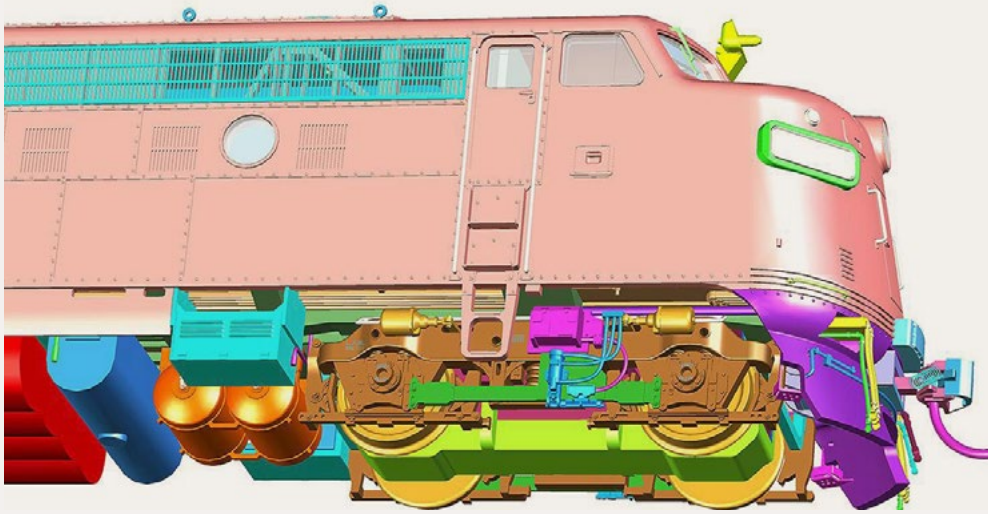
Due to weight restrictions on portions of the New Haven line, the FL9 was built with a three-axle rear truck giving it a B-A1A wheel arrangement. Flexicoil trucks were used since they provided room for the pneumatically operated third shoe and its



contents



index



associated equipment. This CAD provides a good view of the four-wheel front truck.



The newest addition to **Sylvan Scale Models'** (sylvanscale-models.com) excellent line of HO scale resin vehicle kits, it

this 40' low-floor diesel transit coach. The kits sells for \$49.95.



Also new from Sylvan is a group of 1950-1968 White 3000 COE trucks. The single-axle tractor is available at \$17.95. It is shown here with Sylvan's T-008 Furniture

Van. Coming releases in HO scale include 1934 Ford 3-window coupe and sedan delivery, 1946 Ford trucks with various bodies, and 1940s-era REO trucks. Visit the above website for more information.



Walthers (walthers.com) is selling an HO scale 50' 100-ton triple-bay open hopper at an MSRP of \$24.98.

The original tooling on this Mainline series model has been modified to improve the stirrup steps and grab iron depth. In addition to the Conrail model shown here, road names include CN, Bessemer & Lake Erie, Chesapeake & Ohio, Illinois Central, BNSF, and CSX/NYC (ex-Conrail).



Walthers has released a Trainline series track cleaning boxcar with a replaceable spring-loaded

abrasive pad. Roadnames include Denver & Rio Grande Western, Amtrak, Canadian National, and Pennsylvania Railroad. The car is available now at an MSRP of \$24.98.



This 53' GSC flat car is available from Walthers decorated for the Nickel Plate

Road, Santa Fe, Baltimore & Ohio, PRR, Erie and Union Pacific.

The HO scale ready-to-run model is based on an early piggy-back flat car that handled 32', 35' and 40' trailers. The model is fitted

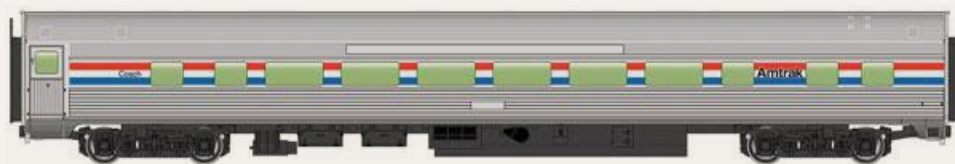


contents



index

with original-style trailer hitches, rub rails, and bridge plates. Walthers Mainline series model has an MSRP of \$24.98.



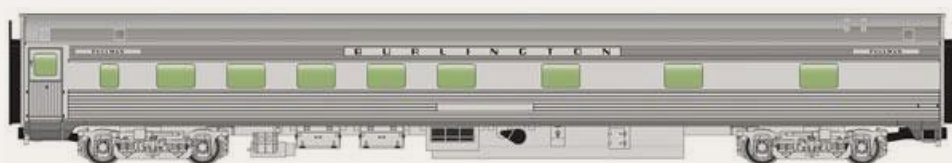
Walthers has released details on a group of four economy priced 85' Budd passenger cars. The cars will be available decorated for Amtrak Phase III, Santa Fe, CB&Q, Canadian Pacific, New York Central, VIA, Pennsylvania Railroad, Union Pacific, Southern Pacific, and undecorated. Body types include a large-window coach that will be released in November, shown above in Amtrak's Phase III scheme.

Walthers has released details on a group of four economy priced 85' Budd passenger cars. The cars will be available decorated for Amtrak Phase III, Santa Fe, CB&Q, Canadian Pacific, New York Central, VIA, Pennsylvania Railroad, Union Pacific, Southern Pacific, and undecorated. Body types include a large-window coach that will be released in November, shown above in Amtrak's Phase III scheme.



A combination baggage-lounge car, shown here in UP livery, is scheduled to be released in December.

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The remaining cars will be released in January. They include a 10-6 sleeper, shown for CB&Q, and a diner, shown decorated for PRR.

The remaining cars will be released in January. They include a 10-6 sleeper, shown for CB&Q, and a diner, shown decorated for PRR.



Walthers is quoting a November release date for a 50' Evans smooth side



boxcar. The HO scale Mainline series model is based on a prototype introduced in the early 1970s. Walthers' original tooling has been upgraded with thinner corner steps and enhancement of the door gussets. In addition to the Penn Central car shown here, road names will include Conrail, Canadian National, and Western Pacific. The ready-to-run model will have an MSRP of \$24.98.

N SCALE PRODUCT NEWS



Athearn
(athearn.com)
will release several new ver-

sions of a UTC 33,900 gallon LPG tank car in May. The N scale Ready-to-Roll model will have an MSRP of \$26.98. Late versions of the car with an extended platform and offset ladders will be available for Procor Limited-Anhydrous Ammonia (above), and Procor Limited-Anhydrous Ammonia (white tank).



Decorating schemes on early cars with end lad-

ders will include UTLX-Anhydrous Ammonia, Procor Limited-Methylamine Anhydrous, UTLX-Propylene, and Procor Limited-Baladiene Stabilized (above).

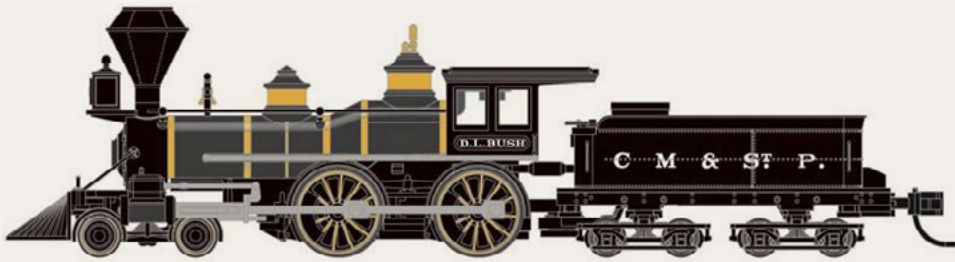
Atlas Model Railroad Company (atlasrr.com) is working on several N scale items for release during the second quarter of 2015. The schedule includes new paint schemes for Atlas's Masterline series 4-4-0 steam locomotive. In addition to the



contents



index



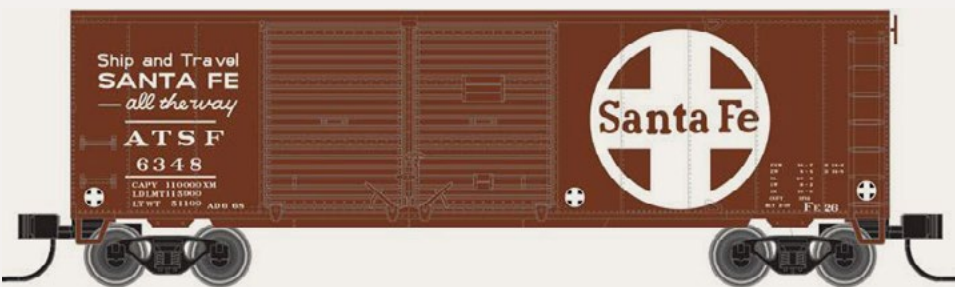
Chicago, Milwaukee & Saint Paul (left); the ready-to-run model will be

available for Detroit & Lima Northern; U.S. Military Railroad; and Baltimore & Ohio (below).



The classic American-type steam engine will also be available painted

black with gold trim but without lettering.



Atlas has included a re-tooled Trainman series 40' double-door boxcar in the second

quarter release. Tooling upgrades include reworked sides, Youngstown doors, and Improved Dreadnaught ends. In addition to the Santa Fe car shown here, decorating schemes on the N scale ready-to-run model will be Gulf, Mobile & Ohio; Norfolk Southern; Pennsylvania Railroad; Southern Pacific; and Union Pacific. The model will have an MSRP of \$19.95. An undecorated version will list at \$14.95.



Atlas will reissue its N scale Trainman series of "beer-can" tank cars with new road names in the second quarter of 2015. Decorating schemes on the

distinctive cars will be GATX-NALCO, GATX- Cargill, UTLX– Occidental Chemical, ECUX–Exxon Chemicals, GATX-Velsicol Chemical, and GATX- Dow Chemical.



The ready-to-run tank cars will have an MSRP of \$18.95. An undecorated version will have an MSRP of \$13.95.



Bachmann's (bachmann-trains.com) N scale EMD GP7 diesel locomotive is available in

three new road names. They are Denver & Rio Grande Western, Jersey Central, and Rock Island. In addition, Bachmann has re-issued a Pennsylvania Railroad version with a new road number (8803). Features of the ready-to-run Geep locomotive include blackened metal wheels, all-wheel drive, LED lighting, and a dual-model NMRA-compliant DCC decoder for speed, direction, and lighting. The model has an MSRP of \$139.00.



InterMountain Railway (intermountain-railway.com) is booking reserva-

tions for EMD FT A- and B- diesel locomotive sets. The N scale ready-to-run models have several etched metal details including metal screens for the roof, the fan, and the dynamic brake openings. In addition to the Erie Lackawanna scheme shown



contents



index

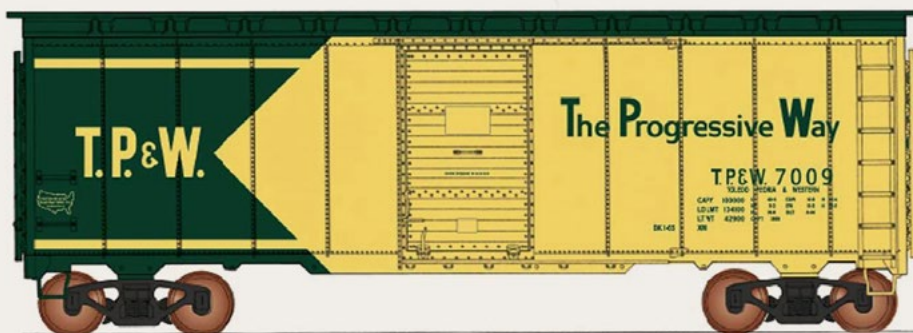


here, the ready-to-run locomotive will be available decorated for Santa Fe (red and silver warbonnet), Reading, St. Louis & Southwest, Missouri Pacific, Milwaukee Road, Chicago Burlington & Quincy, Northern Pacific, EMD Demonstrator, and Rio Grande.



Also scheduled for release in April/May is another run of 1937 10'6" modified AAR boxcars. In addition

to the Southern Railway and Toledo, Peoria & Western versions shown here, the N scale ready-to-run model will be available for the following roads: Duluth, South Shore & Atlantic; Rock Island; Canadian Pacific (script); Fort Worth & Denver; Chicago & Eastern Illinois; Erie Lackawanna; Missouri-Illinois; and Chicago & North Western (Route of the Challengers slogan).



The 1937 boxcar will have an MSRP of \$24.95. An undecorated version will be available at an MSRP of \$11.95.

InterMountain's April/May schedule includes the release of 4750 cu. ft. triple-bay, rib-side covered hoppers. Decorating schemes will include Delaware & Hudson (above), Allied-Mills,





Dawson Soy Products, Penn Central, Norfolk & Western, Kansas City

Southern, Sands of Iowa, Denver & Rio Grande Western, Union Pacific, and NEW Cooperative (below).



The N scale ready-to-run model will have an MSRP of \$24.95. An

undecorated model will be available at \$11.50.



Kato (katousa.com) plans to release this new N scale steam locomotive to dealers next month or

in early December. Note that the rim of driver number three is missing on this pilot model. For more information on this new Union Pacific FEF-3 locomotive visit our September report at mrhpub.com/2014-09-sep/land/#144. For information on disassembly of the locomotive and DCC installation instructions go to youtube.com/watch?v=FBEeNdMQJFs.



Micro-Trains Line (micro-trains.com) has released several new N scale



contents



index

ready-to-run models including this BNSF 89' tri-level closed auto rack car. Bethlehem delivered the prototype in 1975. It was rebuilt and repainted in 2014 with BNSF's current logo as seen here on the model.



What makes Micro-Trains' 50' 14-panel steel gondola different is the removable

cover that resembles a standard boxcar roof. The prototype was built in 1964 for steel mill service. Note "Cut Sheet Car" stenciled on the side.



Although shown here as a pair, Micro-Trains is selling these 50' box cars with double Youngstown doors singly.

They are based on prototypes SP built in their Sacramento Shops in 1955. The wider opening made them suitable for rapid loading and unloading by fork lifts.



According to Micro-Trains, this N scale ready-to-run 39' single-dome tank car, including its decorating scheme, is

based on a group of 25 cars AC&F built in 1923. The cars were ordered by Pan American Petroleum & Transportation Co., a

holding company for Mexican Petroleum controlled by the Los Angeles oil baron, Edward Doheny.



Micro-Trains is selling this 40' double-sheathed wood reefer. Ice was used to cool and help stabilize explosives and chemicals during

shipping. The N scale ready-to-run model is decorated for HPCX- Hercules Powder Co., an important West Coast supplier of dynamite.



Micro-Trains is offering this 33' twin-bay composite side hopper with a removable coal load. AC&F built over 3000 of

these cars during WWII with the wood sides saving thousands of pounds of steel. The design allowed the wood to be easily replaced with steel siding after the war.



The prototype of this Micro-Trains new 50' rib-side boxcar was built by National Steel Car in 1979.

Among the spotting features are the large plug door, the nearly flat aluminum roof, and the box corrugated non-terminating ends.



contents



index



Completing this month's listing of new models from Micro-Trains is this 100-ton triple-bay rib-side hopper car. The

ready-to-run N scale model comes with a removable coal load. The prototype was one of a group of 250 cars Bethlehem Steel Corporation built for Union Pacific in 1962. For availability and pricing on Micro-Train products see your dealer or visit the above website.



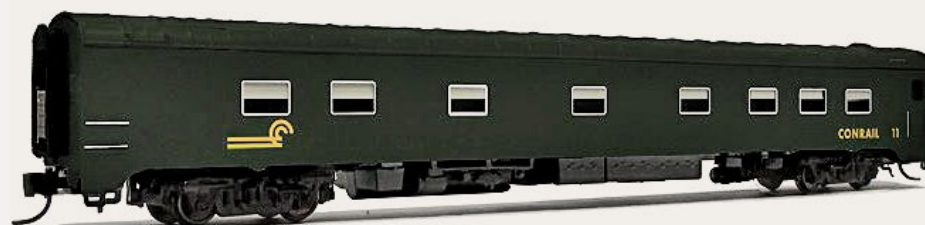
Rapido Trains (rapidotrains.com) reports that it will release selected N scale passenger cars

decorated as executive cars for Burlington Northern (above), CSX (below), and Conrail (bottom photo).



Car types include a duplex sleeper, 10-5 sleeper, and a leg-rest coach. The MSRP for

these cars is \$59.95 each.



The BN cars may be ordered directly from Rapido in sets of four only,

or from an authorized dealer. The Conrail and CSX cars will

be available to dealers exclusively from Portman Hobby Distributors (914) 737-6984.

Z SCALE PRODUCT NEWS



Micro-Trains Line (micro-trains.com) is selling Z scale F7 A- and B-unit diesel locomotives decorated in Great Northern's Big Sky Blue scheme. Both units are powered with the F7A having an MSRP of

\$119.95. The B-unit has an MSRP of \$99.95.



Also new from Micro-Trains is this 39' single dome tank car decorated for Kan-O-Tex Refining Company (Kansas-Oklahoma-Texas).

The Z scale model has an MSRP of \$23.95.



contents



index

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Briefly noted at press time...

... Lawrence Dale Edwards 1921-2014

Dale Edwards, co-founder of Kadee Quality Products, passed away September 19, 2014. He was 93 years old.

Dale, and his twin brother Keith, launched their company in 1940 with a small selection of HO turnout kits. Using the first initials of their names, they called their new enterprise Kadee. Operations were temporarily halted during WWII while the brothers served in the U. S. Army Air Corps.

Machinists by trade, the Edwards brothers began working on an operating HO scale coupler that looked like the real thing. At the time, there was nothing on the market that by any stretch looked or functioned like a prototype coupler. In the early 1950s they developed an HO metal coupler with a working knuckle that rapidly became the de facto standard for



model railroad hobbyists interested in operations. Continued development over the years included magnetic uncoupling, delayed uncoupling system, and most recently, the Whisker self-centering coupler.

Kadee moved from Los Angeles to Spokane, Washington, then back to LA before settling permanently in Oregon in 1955. The brothers developed a highly successful line of N scale freight cars they marketed under the Micro-Trains brand name. Dual management is often challenging and in 1990 the brothers chose to split the company with Keith taking Micro-Trains and Dale continuing to manage Kadee.

Under Dale's leadership, Kadee® Quality Products Company built a new 22,500 square foot plant in White City, Oregon. At the present time the company has more than 30 full-time employees with all of Kadee's more than 600 products being manufactured entirely within the White City facility.

Dale led the company into an entirely new product line in the mid-1990s with the successful introduction of an HO scale 40 foot PS-1 boxcar car that set a new standard for prototype accuracy in an injection molded model. Additional car body types featuring the same dedication to authenticity soon followed.

After turning the day-to-day management of the business over to his son Larry, Dale continued to explore new ideas and develop innovative products including self-centering trucks, delayed magnetic un-coupling, electro-magnetic un-coupler, magnetic core actuator, truck pin post assembly, a two-piece equalized truck, and the aforementioned Whisker® coupler. After Larry retired, Dale's son-in-law, Alan Vezzani, was appointed president and general manager.

Throughout his retirement years, Dale continued to follow the activities of the family business and remained a creative influence in new product development. He continued to hone



contents



index

Briefly noted at press time **Continued ...**

his skill as a machinist and was asked to write the Tool & Die Makers Apprenticeship Program for the State of Oregon.

Dale was preceded in death by his wife Grace and twin brother Keith, who passed away in July 2012. He is survived by his five children; Larry, Jacque, Bonnie, Melinda, and Douglas, and several grandchildren. ■



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contents



index

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contents



index

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Selected Events



October 2014

CANADA, ONTARIO, BRAMPTON, October 4-5, annual Brampton Model Railway Show with 33,000 square feet of N, HO, O, and G scale operating displays. At Brampton Fairgrounds, 12942 Heart Lake Road.

CANADA, QUEBEC, LAVAL, October 4-5, the North Shore Train Show, at Complexe Multi-Sports, 995 rue Bois-de-Boulogne. Info at salondutrainrivenord.org.

CALIFORNIA, BANNING, October 11-12, Second Annual Banning Train Fest, with modular layouts, vendors, displays and children's rides, plus NMRA-PSR Cajon Division meet with model and prototype clinics, model contest, and time-saver switching layout. At Banning Community Center and Banning Schools Gymnasium at George Street and San Gorgonio Avenue. Info from Ed Ball at 951-237-9818.

CALIFORNIA, ROSEVILLE, November 8-9, International Rail Fair at Placer County Fairgrounds, 800 All America City Blvd. Featuring American and European operating model railroads, large selection of vendor tables, plus Thomas, Lionel, and live steam riding train. Junior Engineer Badge program for kids. Info at internationalrailfair.com.

CONNECTICUT, ORANGE, October 12, 22 Annual Model Train Show, at High Plains Community Center, 525 Orange Center Road (Route 152). Sponsored by New Haven & Derby Model Railroad Club. Info at newhaven-derbymodelrailroadclub.org.

FLORIDA, MELBOURNE, October 25, Brevard Train Expo, at Melbourne Auditorium, 625 E Hibiscus Blvd. Details from Rail Rody at 321-914-3888.



ILLINOIS, NAPERVILLE, October 9-11, 21st Annual Naperville RPM Conference, hosted by Joe D'elia at Sheraton Lisle-Chicago Hotel, 3000 Warrenville Road, Lisle. Info at railroadprototype-modelers.org/naper_meet.htm.

ILLINOIS, SCHAUMBURG (Greater Chicago area), October 2-5, iHobby Expo, general hobby trade and consumer show hosted by the Hobby Manufacturers Association at Schaumburg Convention Center. Exhibits reserved for trade only on Thursday and Friday until 2 PM. Info at iHobbyExpo.com.

INDIANA, HIGHLAND, October 25, Model Railroad Show and Swap Meet hosted by Ridge Model Railroaders, at St. James the Less Church Hall, 9640 Kennedy Ave. For information contact Bob at 219-838-7545.

MICHIGAN, MUSKEGON, October 26, Fall Model Train Show, sponsored by Muskegon Railroad Historical Society, at Golden Token Hall, 1300 E. Laketon Ave. Info at mrhs-online.org.

MINNESOTA, ST. JAMES, October 4, NMRA-Thousand Lakes Region Prairie Lakes Division Fall Meet and 25th Anniversary Celebration of The Roundhouse Train Club, featuring operating layouts, modeling contest, vendors, door prizes, swap meet, and clinic presentations. At National Guard Armory, 521 Armstrong Blvd. North. Info from Bill Nelson at walleyjnelson@hotmail.com.

NEW JERSEY, NEW BRUNSWICK, October 11, 14th Annual Mass Transit and Trolley Modelers Convention, sponsored by NYC Model transit Association and the Shore Line Trolley Museum. At Rutgers Gymnasium annex, 130 College Ave. Info at nycmodel-transit.org/meetdetails.htm.

NEW JERSEY, SCOTCH PLAINS, October 25-26, Second Annual NJ LD Sig/Op Sig and RPM Meet, featuring clinics, RPM events, swap meet tables, and layout tours (Sunday), at Union County Vocational-Technical School, 1776 Raritan Road. Sponsored by NMRA, NER, Garden State Division. Information at hansmanns.org/ld-op-nj/index.htm, hansmanns.org/ld-op-nj/index.htm.

OHIO, WEST CHESTER, October 11-12, NMRA Mid-Central Region, Cincinnati Division 7, 47th Annual Model Railroad Show. At Lakota West High School, 8940 Union Centre Blvd. Info at cincy-div7.org.

TEXAS, FOREST HILL, October 11-12, Texas Western Train Show, featuring model train modular layouts, vendor displays, clinics, nearly 100 sales tables, contests, door prizes, and free parking. At Forest Hill Civic and Convention Center, 6901 Wichita Street. Info at twtrainshow.com.

WASHINGTON, CHEHALIS, October 11-12, All Scales Annual Fall Model Railroad Swap Meet and Train Show, sponsored by Lewis County Model Railroad Club. Event at Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 North National Avenue. Info at lewiscountymuseum.org/model-train-show-swap-meet.

November 2014

AUSTRALIA, NEW SOUTH WALES, ARMIDALE, November 15-16, Bi-Annual Convention of the New England Model Railway Club Inc, at Armidale Bowling Club, Dumeresq Street. Preregistration required. Phone 61-02-6732-5711 for information.



CANADA, BRITISH COLUMBIA, BURNABY, November 8-9, Trains 2014 32nd Annual Model Train Show featuring operating trains, dioramas, kids activities, and vendors. For registrants there are operating sessions (November 7), clinics, model contests, layout tours, a prototype modelers meet, and banquet. At Cameron Center, 9523 Cameron Street. info at bctrains.sbcrailway.ca.

CANADA, ONTARIO, HAMILTON, November 1, Hamilton and District Layout Tour. Home and club layouts in Burlington, Beamsville, Fenwick, Caledonia, and Hamilton. Guide books will be available in October at local model railway shops. Info from Brandon Bayer at brandon1@cogeco.com.

CALIFORNIA, LOS ANGELES, November 15, 16, 18, 22 and 23, annual Fall Open House of Sierra Pacific Lines, one of the largest HO scale layouts in the world with over 30,000 feet of hand laid rail. At Pasadena Model Railroad Club, 5458 Alhambra Avenue.

INDIANA, DANVILLE, November 22, NMRA Central Indiana Division Train Show, at Hendricks County Fair Grounds. Info at cid.railfan.net.

MAINE, BREWER, November 22, Eastern Maine Model Railroad Club Show with operating layouts and dealer tables, at Jeff's Catering, 15 Littlefield Way East, West Industrial Park. Info from Geoff Anthony, at dahak@roadrunner.com.

MICHIGAN, EAST LANSING, November 9, Lansing Model Railroad Club Show and Sale, at Michigan State University Pavilion, 4301 Farm Lane.

NEW YORK, BALDWIN, November 1, NMRA Sunrise Trail Division Annual Convention featuring clinics, modular layouts, model and photo contest, bargain tables, door prizes, and more. Baldwin United Methodist Church, 881 Merrick Road. Info at sunrisetraildiv.com.

PENNSYLVANIA, MONACA, November 13, Beaver County Fall Model Train Show, at Center Stage, 1495 Old Brodhead Road. Info at bcmrr.railfan.net.

WISCONSIN, WEST ALLIS, November 8-9, Trainfest Model Railroad Show, featuring manufacturers exhibits, numerous clinics, and operating layouts. At Wisconsin Exposition Center, State Fair Park, 8200 West Greenfield Avenue. Info at Trainfest.com.

Future 2014 (by location)

FLORIDA, PALM BAY, December 21, HO Scale Module Display, at Franklin T. Degroot Memorial Library, 6475 Minton Road. Sponsored by Palm Bay Model Railroad Club.

Future 2015 (by location)

AUSTRALIA, CANBERRA, March 28-29, 2015, 27th Annual Canberra Model Railway Expo, hosted by Canberra Model Railway Club, at University of Canberra High School, 104 Baldwin Drive. Info at canberra-model-railway-club.webs.com.

CALIFORNIA, NEWARK, May 13-17, 2015, NMRA Pacific Coast Region Convention, at Newark-Fremont Double Tree by Hilton Hotel, 39900 Balentine Drive. Info at pcrnmra.org/conv2015.

CALIFORNIA, SANTA CLARA, February 5-7, 2015, O Scale West and S West 9 Convention, Hyatt Regency Hotel, 5101 Great America Parkway. Hotel reservations at 800-233-1234. Details including vendor information at oscalewest.com.

FLORIDA, COCOA BEACH, January 8-10, 2015, Prototype Rails RPM meet hosted by Mike Brock, at Cocoa Beach Hilton Hotel, 1550 North Atlantic Avenue. Info at prototyperrails.com.



OREGON, PORTLAND, August 23-30, 2015, NMRA National Convention, at Double Tree by Hilton Hotel Portland. Info at nmra2015.org.

OREGON, PORTLAND, August 28-30, 2015, National Train Show, at Portland Expo Center. Info at nmra2015.org/trainshow.

PENNSYLVANIA, PHILADELPHIA, May 15-17, 2015, Biennial Meet of the East Penn Traction Club, at Pennsylvania Convention Center. Info at eastpenn.org/2015_meet_announcement.htm.

TEXAS, HOUSTON, September 2-5, 2015, 35th National Narrow Gauge Convention. Info at nngc-2015.com.

WASHINGTON, BELLEVUE, April 16-18, 2015, 30th Annual Sn3 Symposium, at Bellevue Sheraton Hotel, 100 112th Ave NE. Info at sn3symposium-2015.com.

Future 2016 (by location)

COLORADO, DENVER, 2017 National Narrow Gauge Convention.

INDIANA, INDIANAPOLIS, July 3-10, 2016, NMRA National Convention and National Train Show. Info at nmra2016.org.

MAINE, AUGUSTA, Sept. 7-10, 2016, 36th National Narrow Gauge Convention. Info at nngc2016.org. ■



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[Other – Bonus Extras](#)

[Other – Cover](#)

[Other – Derailments](#)

[Other – Events](#)

[Other – Hobby Marketplace](#)

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Model what's common

Reverse Running: Stepping outside the box with a contrary view

by Don Hanley

How often do you visit a layout, or look at a magazine, and see all of those neat, unique creations? They can be bridges, buildings or rolling stock. While those pieces are eye-catching, should our layouts be populated with so many unique buildings, or signature pieces of rolling stock?



If that is what you want, then go for it. However, I believe that a majority of us want to create an every-day scene or overall impression on our layouts. At least, I know that I do. How do you achieve it? One of the key techniques is to model what is common.

How do you determine what is common? Rolling stock is relatively easy. Study photos, equipment registers, and any other data that you can get your hands on. Look for car types, road names, and any other features that you determine convey a realistic feel of the time and era that you are modeling. You may need to limit yourself to one or two “signature” pieces of rolling stock or motive power. As humans we have an amazing capacity to rationalize anything. One or two special pieces is one thing, but a whole fleet of them turns into a confusing mishmash.


Study the architecture of the buildings, their layout and overall appearance, and how they relate to each other. Those

structures with the turrets at the front corner are neat, but one or two in a town are all that is needed to convey the idea. You don't need one on every corner. Look for simple, common buildings. Remember, someone had to pay for the building and they were as likely to be concerned with cost as much as we are today. A rectangular building is much less expensive to build than one with a bunch of corners and angles. Yes, you can find those stand-out buildings, but are they common?

Many of us have seen the layout with a 2,400-square-foot factory that produces enough product in a day to warrant two or three 40-foot box cars. An industry that can handle that many boxcars more than likely will have 240,000 square feet of production space, if not more. And, not everything arrives and leaves by rail.

OK, you don't have enough space for that size of an industrial building. While selective compression is warranted to a point, there is a point where it goes too far. Not to worry, just model the loading/unloading dock area and have the rest of the building represented on the backdrop, or in the aisle space.

When you are planning the industries that will be on your layout, take your time to think about the space needed to service the industry. Where do trucks deliver materials? Where do they load shipments? This can include parking space for automobiles, and truck docks with room for trucks to turn and back in. Nothing can kill the overall look of a well-modeled scene faster than having an unrealistically small space for trucks and autos. Our eyes will see it, and our minds will immediately know that something is wrong.

In the future, take some time out to think more about the space, and the overall composition of your scene. 



contents



index

Derailments

humor and bizarre facts (allegedly)



GHOST TRAIN

This video shows moving old steam locos from Wolsztyn Steam Depot to a railway museum at Powodow, Poland. This video has been carefully edited to hide the shunting diesel pushing/pulling the locos, so it looks like these derilict steamers are moving under their own power *without steam!* It's all somewhat eerie looking and when running without steam these old rusting locos make chilling metallic clanking sounds ... clearly earning the title "Ghost Train."



For the love of model trains

Coming in November

- Eric Warhol details an extended-vision BN caboose
- Painting and finishing a resin box car
- Tool shed: Files, riflers and reamers
- Geoff Bunza looks at battery power
- Hiding modular structure seams
- ...and lots more!



Scott Sackett

“Wow dad! You must have used a lot of weathering powder to get our car to look so crummy!”

Coming next issue



contents



index