

The ABCs of DCC POWER DISTRICTS p.50



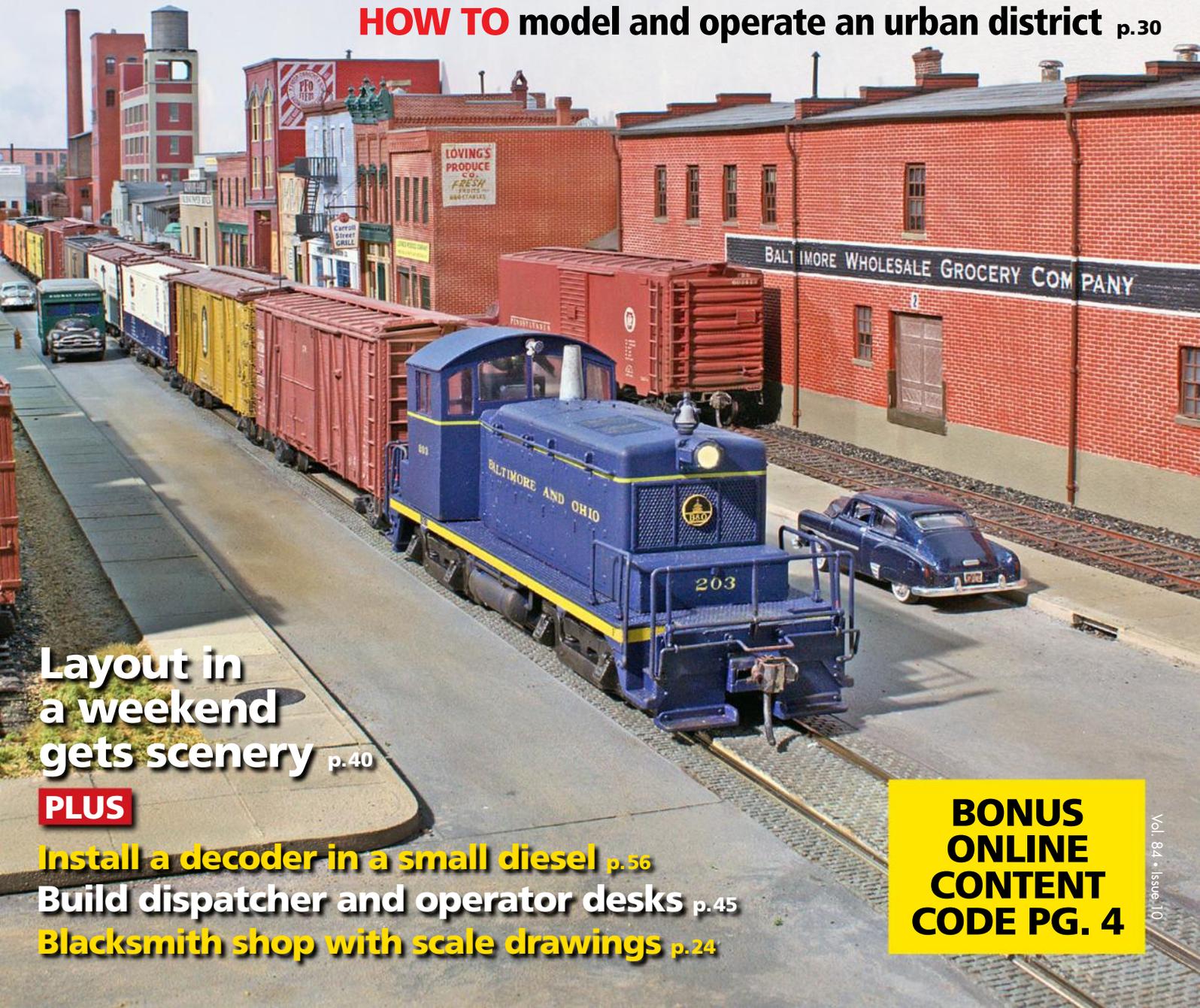
Model Railroader

**Bachmann GS-4
reviewed** p.58

October 2017
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Tracks in the street

HOW TO model and operate an urban district p.30



**Layout in
a weekend
gets scenery** p.40

PLUS

Install a decoder in a small diesel p.56

Build dispatcher and operator desks p.45

Blacksmith shop with scale drawings p.24

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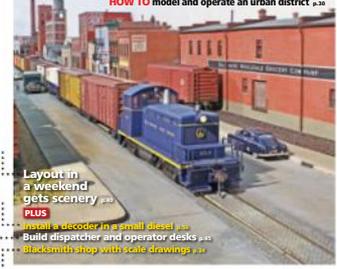
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Install a decoder in a vintage Kato PLUS
 Build dispatcher and operator desks

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Blacksmith shop with scale drawings

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On the cover: Street running was high on Paul Dolkos' preferences list for his Baltimore Harbor District layout. Paul Dolkos photo



Next issue

In November, Paul Dolkos and Pelle Søborg share tips on photography, we visit an O scale Pennsylvania RR layout, British Columbia Ry. stars in a track plan, and more!



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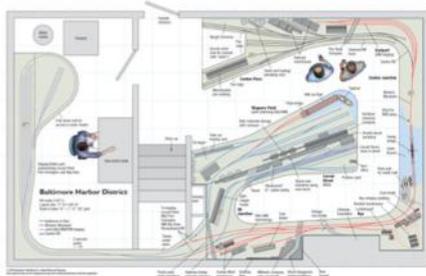
COVER STORY ONLINE EXTRAS



Paul Dolkos' HO scale Baltimore Harbor District

Frequent contributor **Paul Dolkos** is building a model railroad inspired by the Baltimore waterfront in 1955. Turn to page 30 to read about his most recent project – completing the street-running industrial area called Carroll Street. This month web visitors can download the photo of switching action along Carroll Street to use as a computer desktop. Look for the link under Online Extras at www.ModelRailroader.com.

TRACK PLAN DATABASE



New plans added every month

Find more than 500 layout ideas in the Model Railroader Track Plan database, including the plan for Paul Dolkos' HO scale Baltimore Harbor District. Search for track plans by scale, size, and type. *Model Railroader* subscribers can also download a printable copy of any plan in the database.

MR VIDEO PLUS



Layout video tour

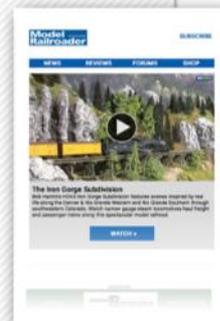
Want to see more railroading along the Baltimore waterfront? Model Railroader Video Plus subscribers can watch an exclusive layout tour hosted by Paul Dolkos, the designer and builder of the Baltimore Harbor District. If you're not an MRVP subscriber, be sure to check out the free preview video. Click on the link under Online Extras at www.ModelRailroader.com.

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When anything is possible

My name is Hal Miller. Some of you I've met. And to everyone else, hello.

Some of you have seen my name in the magazine. Some of you I've met at shows. Others I've been fortunate enough to guide on tours of *Model Railroader's* offices. And a few of you may have seen me on Model Railroader Video Plus, hosting the ongoing "Roundhouse" series.

I've been part of the *Model Railroader* team for a little over five years as managing editor. A lot of my work has been behind the scenes on the production side of the magazine, making sure all the parts of it, and every special edition we put together, are done well and that they get to you on time.

Prior to that, I was editor of MR's sister magazine *Model Retailer*, which connected me with model railroad manufacturers and

the hobby shops that sold their products.

It was trains, however, that brought me to Kalmbach Publishing Co. *Trains* magazine, that is, where I worked as managing editor for the better part of a decade.

I'm an O scale modeler, and like many of you, I have a layout that might get done someday, if I can quit waffling between prototype railroads I want to model. Taking a freelanced direction isn't out of the question, either.

We're in an interesting time for our hobby. Never before have there been so many products with so much detail. Never before has there been the ability to produce almost any part and structure that has ever existed on the prototype. Never before have we had so many sound and control options.

Maybe most importantly, we live in a time when there

has never been so much information about everything, including prototype and model railroads. Data and photographs that used to take an act of (or at least the Library of) Congress to get are now frequently as close as our Internet-connected computers and smart phones.

In short, almost anything has become possible.

Which brings me back to my model railroad and my issue of intermittent indecision. Having all this information is good, as it allows us to model as close to a prototype as our abilities allow.

On the other hand, if, like me, you find many railroads fascinating and modelgenic, and you can get good to great information on all of them, then it leads to mental gridlock and what some like to call "paralysis by analysis."

So for now, I'm sticking to modeling the early 1960s



Rock Island in the southwest. At least for the next week.

But seriously, the common thread in the hobbies I've been a part of is the people. Model railroading has been pretty exceptional in this regard. Shows, operating sessions, and other events bring us all together. I'm looking forward to the possibility of meeting you at one of those gatherings soon.

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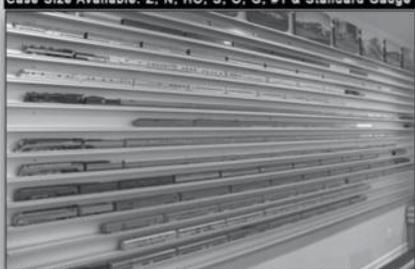
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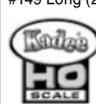
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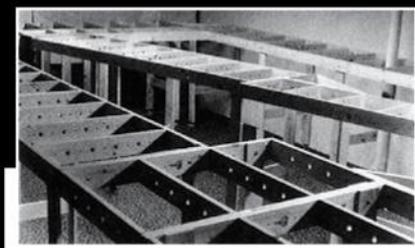


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HO scale



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Industry news

• New managing editor at MR.

Jeff Reich is *Model Railroader's* new managing editor. He has worked at Kalmbach Publishing Co. for 17 years, first as managing editor and editor of *The Writer*, then as editor of *Model Retailer*, Kalmbach's former trade magazine for hobby shop owners. Jeff grew up watching the North Shore interurban and Chicago & North Western passenger trains going to and from Milwaukee.

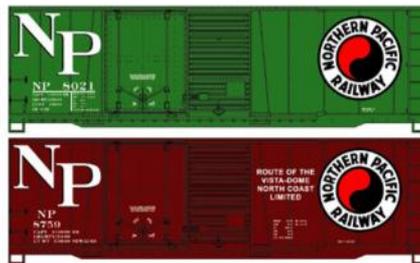


HO scale locomotives

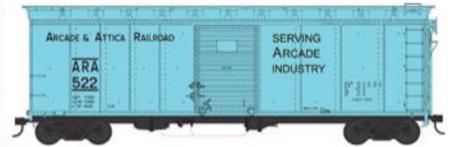
• **Electro-Motive Division SD70M-2 diesel locomotive.** Providence & Worcester and Vermont Ry. (both Florida East Coast patchouts). Two road numbers per scheme. Prototype-specific details, wire grab irons, and McHenry scale couplers. Direct-current model with 8- and 9-pin plugs for Digital Command Control decoder, \$209.98; with dual-mode SoundTraxx Tsunami 2 sound decoder, \$309.98. May 2018.

Genesis series. Athearn Trains, 800-338-4639, www.athearn.com

HO scale freight cars



• **Assorted freight car kits.** Northern Pacific 40-foot combination-door boxcar (single car, \$17.98; two-pack, \$34.98). Great Northern (Vermillion Red with *Empire Builder*-style lettering) 40-foot double-door boxcar, \$17.98. Klemme (Iowa) Co-Op, Lincoln Grain Inc., and Percival (Iowa) Grain Pullman-Standard 4,750-cubic-foot-capacity three-bay covered hopper (single car, \$19.98; three-pack, \$58.98). Pacific Great Eastern 50-foot plug-door boxcar with exterior posts, \$17.98. Southern Pacific (Texas & New Orleans reporting marks) 40-foot single-sheathed boxcar, \$17.98. Injection-molded plastic kits with plastic wheelsets and Accumate couplers. Accurail, 630-365-6400, www.accurail.com



• **40-foot boxcar.** Arcade & Attica RR; Buffalo Creek; Canadian Pacific ("Canadian Pacific Railway" lettering and Action Red with Multimark and "International of Maine Division" lettering); Delaware & Hudson ("The Bridge Line to New England and Canada" herald); Erie Lackawanna (gray, maroon, and yellow); New York, New Haven & Hartford (black with orange doors); New York Central (green); Ontario Northland (dark green); Penn Central (green); Rock Island ("Route of the Rockets" slogan); and Wellsville, Addison & Galeton. Metal wheels. Three road numbers per scheme. February 2018. Bowser Manufacturing Co. Inc., 800-327-5126, www.bowser-trains.com



• **Pullman-Standard PS-1 50-foot double-door boxcar.** Denver & Rio

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Grande Western. Two-piece self-centering trucks and no. 2100 scale couplers. \$36.95. Kadee Quality Products Co., 541-826-3883, www.kadee.com

H0 scale structures

• Two-story house with garage.

Injection-molded plastic kit with two front wall and porch options. Garage can be built with single or double doors. House measures 5" x 2 1/2" x 4 1/16". Garage measures 3 1/8" x 3 1/8" x 2". \$39.98.

Cornerstone Series. Wm. K. Walthers Inc., 414-527-0770, www.walthers.com

H0 scale details and accessories

• **Lobster traps.** Unpainted resin castings. Eight-pack, \$7 plus \$3 shipping.

Frenchman River Model Works, 701-256-2129, www.frenchmanriver.com

• **Bucyrus RB17 crane and front shovel.** Civilian and military versions. Factory-assembled, painted, and weathered resin models. Front shovel, \$61.04; crane, \$65.52. Produced by Artitec,

available from Reynauld's Euro Imports, 630-365-6340, www.reynaulds.com

N scale locomotives



• **General Electric P42 diesel locomotive.** Amtrak 40th anniversary (phases 1, 2, and 3, one road number each).

Factory-installed Digital Command Control motor decoder, body-mounted Kato couplers, and directional golden white light-emitting-diode headlights. \$160. Kato USA Inc., 847-781-9574, www.katousa.com

• **26-ton Climax geared locomotive.**

Nn3. Cast-pewter kit with photo-etched brass parts, Magne-Matic couplers, 3-D printed front truck, and Fox Valley Models metal wheels. Designed to fit Searails PowerMax power truck (sold

separately). Price to be announced. Showcase Miniatures, 334-750-3276, www.showcaseminatures.net

N scale freight cars



• **14-panel three-bay hopper.** Great Northern (new road numbers); Chessie System (Western Maryland reporting marks); Clinchfield (post-1972 stenciling); Conrail (new numbers); Denver & Rio Grande Western; Great Lakes Carbon (single car and two-pack); New York Central (single car and two-pack, new numbers); Richmond, Fredericksburg & Potomac (single car and two-pack); and South East Coal Co. Six numbers per scheme unless noted. Die-cast metal slope sheet, hopper bay, and center sill; injection-molded plastic sides, ends, and hopper doors; and Fox Valley Models metal wheels. Single car, \$24.95; two-pack, \$49.90; and three-pack,

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HO scale



Pacific Car & Foundry 50-foot insulated boxcar. This new Walther's Mainline boxcar is decorated for Santa Fe Refrigerator Despatch ("Shock Control" lettering); Chicago & North Western; Baltimore & Ohio ("Insulated Cushion Underframe" lettering); Chicago, Burlington & Quincy ("Burlington Refrigerator Express" lettering); Denver & Rio Grande Western (Aspen Gold, silver, and black); and Pennsylvania RR (shadow keystone). The model is offered in two road numbers per scheme and is also available undecorated. The boxcar has Proto-Max metal couplers and 33" turned-metal wheelsets. It retails for **\$24.98**. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

\$74.85. Bluford Shops LLC, 618-822-6833, www.bluford-shops.com

N scale structures



• **Picker's Paradise.** Includes two repurposed trailers; photo-etched metal spear-point fence; laser-cut office, sign, platforms, and stairway; detail parts; and full-color sign sheet. \$45.95. Trackside Series. The N Scale Architect, 607-746-8416, www.thenarch.com

O scale freight cars

• **Pullman-Standard PS-2 three-bay covered hopper.** New paint schemes: Domino Sugar; Erie Lackawanna; Gulf,

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ATHG65250 - NS #9-1-1 with sound
Photo Credit: Tim Blaisdell

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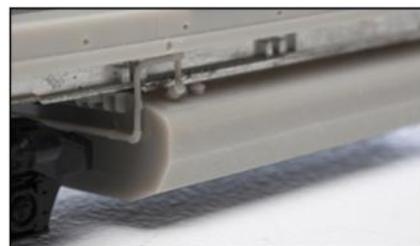
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Z scale locomotives



• **General Electric ES44AC diesel locomotive.** BNSF Ry. Three road numbers. Prototype-specific details, directional light-emitting-diode headlights, working ditch lights, traction tires, can motor with dual flywheels, and optional snow plow. American Z Line, 614-764-1703, www.americanzline.com

Z scale freight cars



• **Greenville 7,100-cubic-foot-capacity 60-foot double-plug-door boxcar.**

New paint scheme: Penn Central. Single car and four-pack. Metal wheels, separately applied brake wheel, and Auto-Latch couplers. American Z Line, 614-764-1703, www.americanzline.com

Electronics/controls

• **Sound upgrade retrofit kits for assorted Bowser and Stewart diesel locomotives.** With 8-pin socket: Alco C-628 and C-630; Baldwin VO-1000, VO-660, S-8, S-12, and DS4-4-1000; Electro-Motive Division F3, F7, and F9; and Montreal Locomotive Works C-630M. With 21-pin socket: Alco C-430, C-628, and C-636; Electro-Motive Division F units, SD40-2, and

SD40-2F; small Baldwins; and Baldwin AS-16, AS-616, and RS-12. Includes ESU LokSound sound decoder with 8- or 21-pin socket, speaker with enclosure and wire harness, and instructions. \$110. Bowser Manufacturing Co. Inc., 800-327-5126, www.bowser-trains.com

Decals

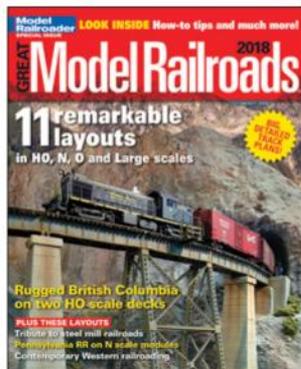


• **Assorted HO scale boxcar decals.** Burlington Northern Pullman-Standard 50-foot boxcar with exterior posts (1972+ and 1990+ repaints) and Milwaukee Road Pacific Car & Foundry 50-foot boxcar with exterior posts (1973+). Each set completes one car. \$7 each. ICG Decals, home.mindspring.com/~paducah/

• **Ferromex AutoMax articulated auto rack.** HO scale, \$8.25; N scale, \$6.75. Microscale Industries, 714-593-1422, www.microscale.com

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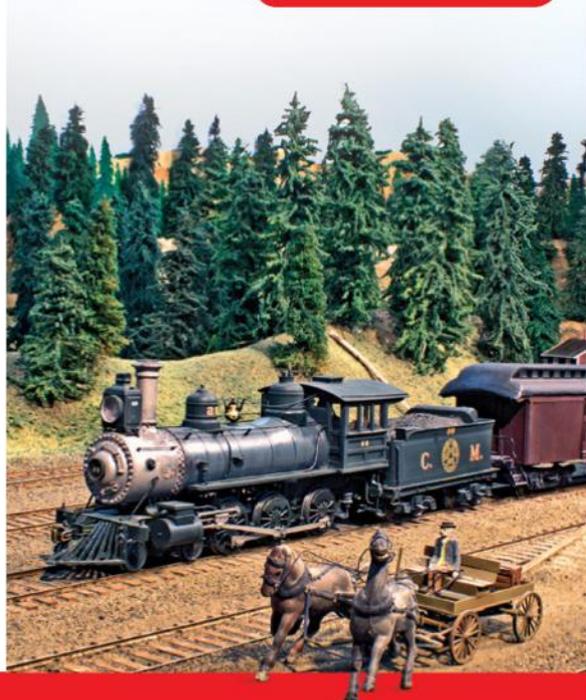


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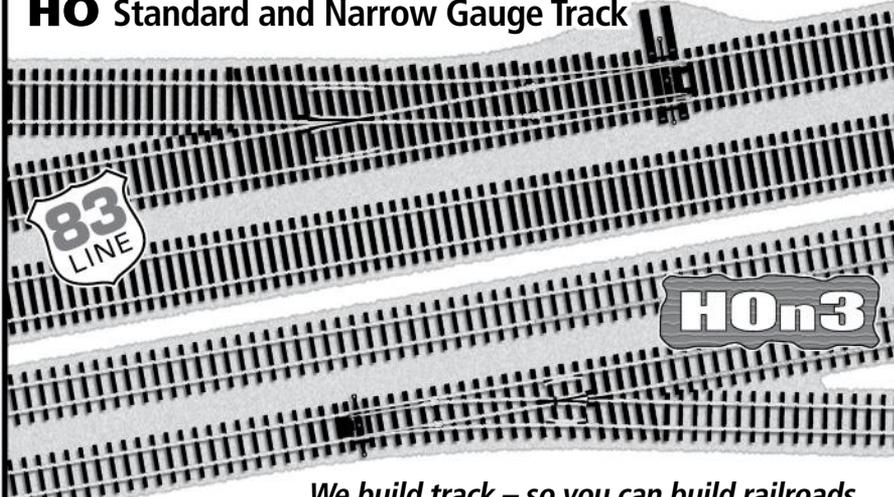


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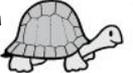
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Wait, don't load that freight until the barge is tied up! Howard R. Lloyd photo

Rail and marine safety always

The master of the barge pictured on pages 42 and 43 of your July issue is surely a most imprudent mariner. Allowing crew to load a vessel that is not fast to the dock, even by a single line, is incomprehensible!

John Chadwick, Nepean, Ont.

You have a good eye for detail, John. I'm sure the barge master is about to tie her off. The deckhand was a little over-zealous wanting to load. – Ed.

Good ol' Rocky Top

Wow! A railroad plan in the August issue that runs by my front yard: "CSX up on Rocky Top"!

I've lived near the north switching lead of the West Knoxville Yard for many years (I can hear them switching as I write).

There are a few things that might be of interest about this location:

- West Knoxville Yard is probably named for the old town of West Knoxville, absorbed by the city of Knoxville over a century ago (it's next to downtown and no longer considered "west").
- The Tennessee River Bridge and the south yard lead were once two legs of a wye. The third leg went around the south and east sides of the University of Tennessee main campus to the passenger station and yard. The station is preserved as a STEM [Science, Technology, Engineering and Mathematics] high school, but the tracks were pulled up to make the grounds for the 1982 World's Fair.
- The yard never had a backshop and transfer table, but it did have a small

roundhouse and turntable near the wye until the 1970s.

- The curve in the yard is around the south and west sides of the UT main campus, dividing it from the Agriculture Campus.
- Willoughby Junction, at the north end of the switching lead, is a crossing with Norfolk Southern, with a four-track interchange yard.
- Rocky Top is about 25 miles north of Knoxville. It was named Lake City until a few years ago, and before that it was Coal Creek. The recent name change was in hopes of attracting an amusement park.

Thanks for a great design idea!
James David Mason, Knoxville, Tenn.

On the right track

When I received the July issue of MR, I said, "Oh boy, another track issue."

I was pleasantly surprised. All the articles were great and very informative. This old dog learned some new tricks! Thanks!

Rick Neibert, Canton, Mich.

Fishing for Tuna

In your editor's note in August's issue, you comment about fanciful model railroad names. The Tuna Valley RR wasn't named after the fish, but after Tunan-gwant Creek (some refer to the creek as Tuna) located in Bradford, Pa. It appears that Mr. Schierer may have lived in the area of Tuna Creek.

On the Baltimore & Ohio (now Buffalo & Pittsburgh) RR that passed through town, at the north end of a long siding, the area is called Tuna. I don't think the Tuna Crossroads was originally there.

Today, when Buffalo & Pittsburgh sets out tank cars full of Bradford oil from the American Refining Group to be picked up by train, they are stored at the north end of the siding at Tuna. I often see the tank cars there when I drive north on Route 219. They are also stored closer to the loading area south of Tuna.

Jeff Damerst, St. Marys, Pa.

I loved your editorial in the August issue about the more playful layout names from years ago — the puns, the in-jokes, and other word play.

The definitive articles on prototypical naming and herald design are by R.L. Warren in the April 1995 *Layout Design News* (LDN no. 13). He did a great statistical analysis to research the patterns of prototype names and heralds (e.g., railroad vs. railway; city names vs. state names; percentage of square heralds, circle heralds, oval heralds, diamond heralds, etc.).

The article is a great primer on how to create plausibly prototypical names for a freelance layout.

I wanted to tell any readers who weren't aware of the Layout Design Special Interest Group what fantastic publications they produce. Clearly, the art of layout design is much more than simple track planning. More information about the LDSIG can be found at www.ldsig.org.

Jim Robertson, South Orange, N.J.

I was pleasantly surprised by the August editor's note. That was a good synopsis of the booklet. I was a bit disappointed by the fact you didn't mention it was addressed to A.C. Kalmbach.

Banks Wallace, Duncansville, Pa.

We didn't mention it, but we're glad you did. Thanks! –Ed.

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A worker adjusts the automatic tie-down mechanism on a new 1973 Lincoln Continental as it's loaded into a Detroit, Toledo & Ironton enclosed auto rack car at Lincoln's assembly plant in Wixom, Mich. Note the cars are loaded to one side to let the drivers out. Ford Motor Co. photo

How are auto racks loaded?

Q Living in Flint, Mich., as a child in the 1960s, I often watched the auto racks loaded with trucks and cars rumbling through town. I'm now interested in modeling a portion of an auto factory at the final point where they load the autos on the auto racks. What type of buildings and track arrangement would I find in a typical facility? And how are the autos loaded into the cars? Thanks.

Steve Rose, Fenton, Mich.

A From the era you're modeling until today, auto racks have been loaded the same way. The cars open at both ends, and are equipped with bridges to link the decks from one car to the next. A movable ramp is wheeled up to the rearmost car, and autos are driven into the car, then through all the linked cars up to the front. The ramp is then repositioned to another deck, and that deck is loaded with automobiles. When all cars are loaded, they're secured for transport. For more detail on this fascinating process, read "Add operation with an auto-rack unloading terminal" by Andrew Lincoln in *Model Railroad Planning 2012*.

So to model an assembly plant, all you need is a large paved lot full of new autos, a loading track, a few storage tracks, and a movable ramp. (A-Line Products makes a plastic one in HO scale; TrainCat Model Sales makes Z, N, and HO versions in brass.) The plant itself can be modeled as a structure flat against the backdrop.

Q Is there a way to replace those plastic pins that hold the trucks onto cars with a real screw?

Roger Aderholdt, Clarksdale, Miss.

A Associate editor Cody Grivno has made videos demonstrating the technique of replacing press-fit truck kingpins with screws. There's one on the Expert Tips page of our website; go there and search for "tapping screw holes." Marty McGuirk wrote on the same techniques in the Back To Basics column in our December 2000 issue. If that isn't in your back issue stash, you can find it in our All-Access Archive, a web-based subscription service that gives you access to our entire back issue catalog. Go to www.modelrailroader.com/AllAccess.

Q I have recently redone part of my N scale layout to convert it to Digital Command Control. I'm using the Bachmann E-Z Command control system. My problem is this: When I first turn on the system, everything seems fine, but when I stop a locomotive that's been running, it doesn't totally shut off. It's still getting power, even if I switch to another engine. I've checked my wiring and all seems to be all right.

William Semanko, Junction City, Kan.

A I presume you're using a locomotive that has also been converted to DCC with the installation of a decoder. (Some DCC systems allow you to run a direct-current locomotive, but we don't recommend it.) I'd also guess that locomotive is sound-equipped, and what you're experiencing is that the sound keeps going after the locomotive stops.

This is normal. Unlike direct current, on DCC systems, track voltage is constant; the voltage sent to the locomotive's motor is governed by the decoder on board. So when a sound-equipped locomotive stops, the sound will drop to an idle, but it usually won't stop on its own. If this bothers you, mute the sounds (usually function key 8) or use the shutdown sequence. Also see if your decoder has a "quiet mode" that can mute sounds automatically when the locomotive stops.

Now, if your locomotives keep moving after you've turned them down to speed step 0, you've got another problem, one that can't be properly diagnosed in

Send questions and tips to associate editor Steven Otte at AskMR@MRmag.com.

the space allotted. (Though I'd start by putting the locomotive on a programming track and resetting the decoder to factory specs.)

Q Are decals available for Bill Darnaby's Maumee Route in HO scale? In fact, are decals available for other famous freelance model railroads such as the Virginian & Ohio, Allegheny Midland, and Utah Belt?

John Walker, Hancock, Md.

A Over the years, a number of decal makers have produced decals for several of the lines you mention. You can usually find them for sale online, either from the manufacturer or on auction sites like eBay. Just be aware that the older a decal sheet is, the more fragile it gets, so you might want to protect your purchase with a coat of liquid dust film before soaking and applying it.

Q How do you keep a layout's scenery free of dust over the years?

Terry Vincent, Casula, NSW, Australia



When modeler Howard Lloyd built the lighting valance over his layout, he added hooks to hold a removable dust cover. Howard Lloyd photo

A We've published a few articles detailing different approaches to this problem, the most recent of which was in our June 2012 issue ("Add a valance and dust cover" by Howard Lloyd, see above). The most common approach is a flexible cloth or plastic curtain or drop cloth hung from ceiling to fascia. Other modelers have used removable stanchions or supports to hold a horizontal dust cover over the layout (see Jim Hediger's "Workshop" column in our December

2009 issue). If you hit upon a better solution to this eternal problem, let us know.

Q About 10 to 15 years ago, your magazine ran a story by Sam Posey, the author of *Playing with Trains* (Random House, 2004). The article was a bible of information on how to achieve distance and perspective when creating a layout. If the article is available in the storage area or a copy of the magazine or a reprint is available, I would be very happy to pay you for your time and expense spent finding it for me.

Lee Herron, West Palm Beach, Fla.

A You're thinking of "The magic of illusion," an article that ran in our December 2001 issue. If that issue isn't in your collection, you can purchase a back issue by contacting our Customer Sales & Service department at 877-246-4879 or ModelRailroader@CustomerSvc.com. You can also read the issue online if you subscribe to our All-Access Archive, mentioned in the answer to Roger's question on the previous page. **MWR**

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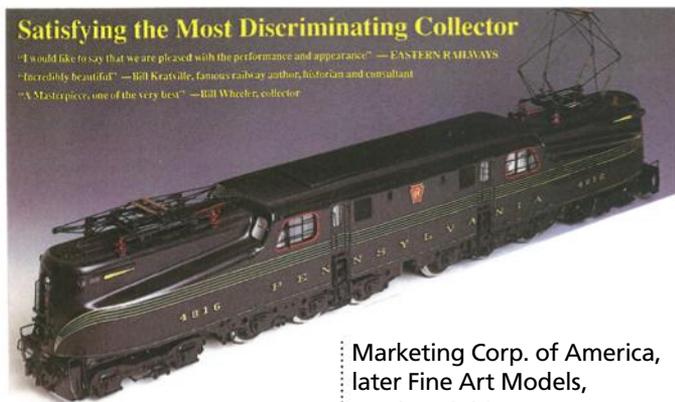
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How Märklin's 19th century Gauge 1 became the 20th century's LGB large scale



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German model train manufacturer Märklin standardized our gauges circa 1890, establishing 1, 2, 3, 4, and then 0 (zero) in 1895. In 1919, the British were working a smaller H-I, Half-One Gauge, known later as S.

In 1923, Bing in Germany created smaller Half-0 gauge, or HO. Gauge 1 manufacture died after World War I, with smaller homes being built in recovering countries, hampered by postwar inflation. Smaller and cheaper 0 became the preferred size.

Lehmann Patentwerk revived Gauge 1 in 1968 as LGB, for Lehmann Gross-Bahn, which means Lehmann Large Railway in English. It became popular as large garden electric toy trains, either wired or battery-powered.

Made primarily of plastic, it spawned a new industry led by LGB, Märklin, Aristo-Craft Trains, Bachmann, USA Trains, Kalamazoo Toy Train Works, and

Marketing Corp. of America, later Fine Art Models, produced this museum-quality 1:32 proportion Pennsylvania RR GG1.

Faller. The companies also offered lines of waterproof large-scale plastic structures and accessories, mostly of European prototypes.

LGB track, the old Märklin Gauge 1, serves as 18" narrow gauge at 1:13.7 proportion all the way to 4'-8½" standard gauge at 1:32 proportion, with several stops in between.

Perhaps the most exquisite Gauge 1 models were Marketing Corp. of America's 139 Pennsylvania RR GG1s – correctly numbered 4800 to 4939, just as the 139 prototype



THE GG1 WAS AVAILABLE WITH A WOOD DISPLAY STAND WITH PLEXIGLAS COVER, TRACK, WEATHERED TIES, AND A SECTION OF OVERHEAD CATENARY. - KEITH

GG1s were – in Brunswick Green and Tuscan Red as appropriate. Of museum quality, the 1:32 proportion models had sprung end and cab doors, slide-opening cab windows, functioning drop couplers, and too many other details to include here. They were designed to run on scale Gauge 1 track.

The GG1s were produced in May

and June 1989. The Marketing Corp. of America (now known as Fine Art Models) GG1 was made for a discerning market. A promotional color portfolio listed no price, but then one would expect to pay highly for museum-quality models.

The company also offered 139 sets of seven streamlined Fleet of Modernism passenger cars, with fully detailed underbodies and correctly lighted interiors with seating. The GG1 was available with a wood display stand with Plexiglas cover, track, weathered ties, and a section of overhead catenary, truly a unique model for display or operation.

Earlier, mass market Gauge 1 trains saw scale models of varying quality. A fine example from 1977 is Bachmann's Spectrum 1:20.3 proportion, 36-ton, two-truck Ely-Thomas Lumber Co. narrow gauge Shay, with smoke, sliding cab windows, backhead detail, and open fire door with a light-emitting diode glowing in the firebox. It also had all the action expected of its gears, pistons, and crankshaft linkages. Bachmann offered (and continues to offer) several different steam locomotives and cars, individually



The Bachmann Spectrum 36-ton Shay appeared in Wm. K. Walthers' 1977 *Big Trains Catalog*. The 1:20.3 proportion model offered a high level of detail and an American prototype in a market then filled with European models.

and in sets, for various interests, tastes and budgets.

Aristo-Craft sold 1:32 proportion steam and diesel locomotives: a B&O no. 5300 *President Washington* Pacific, one of 11 roadnames, with smoke; electronic steam, hiss, and chugging sounds; and matching full-length 12-wheel heavyweight passenger cars.

There were 15 Alco FA and FB, and 17 Alco RS-3 liveries, plus 15 General Electric U25B diesels with smoke and a speaker. Numerous freight and passenger cars completed the line. Aristo-Craft also sold matching truncated, liveried, fluted streamlined passenger cars.

G gauge, as Gauge 1 became known, had come far in the home and garden, and catered to a wide variety of interests. In Wm. K. Walthers' 1977 *Big Trains Catalog*, G gauge occupied 119 pages, compared to 112 for O, the latter a mix of ¼-inch scale, ¼-inch scale tinplate, and tinplate, much like the blend of G gauge sets. If only the Märklin family in 1890 could have foreseen how widely Gauge 1 would be interpreted, covering so many different interests! **IMR**

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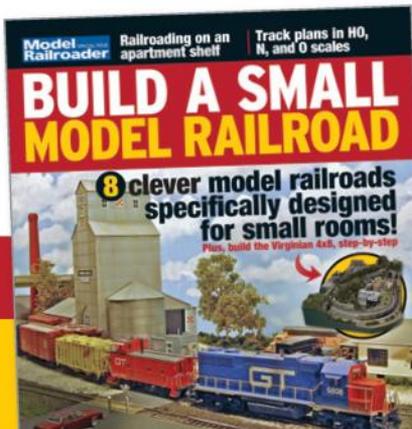


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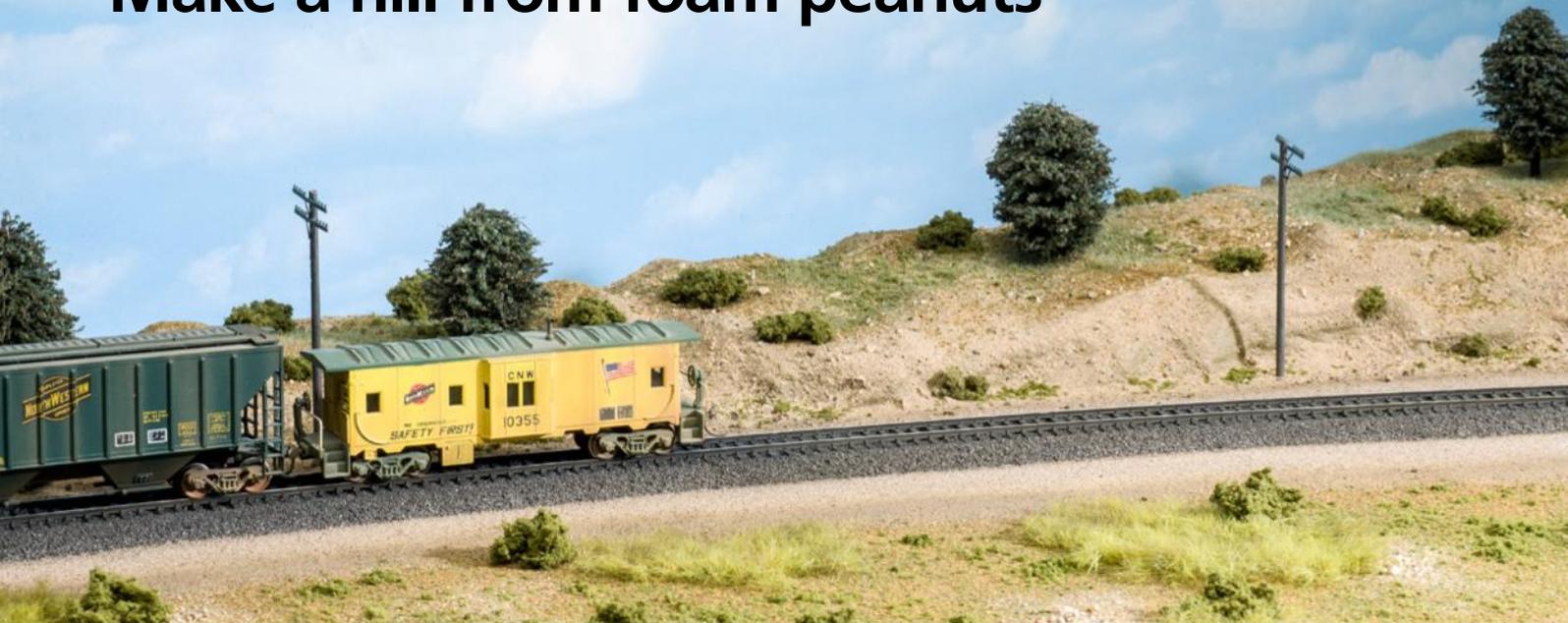
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P30735

Make a hill from foam peanuts



I grew up in Minnesota's Red River Valley, which is about as flat a terrain as you'll find in the continental United States. How flat? Well, a railroad friend who moved to the area from Texas told me, "It's so flat up here you can watch your dog run away for five days." But no area is truly flat, and one of the easiest ways to add elevation to your model railroad is with hills.

Over the decades we've presented several different techniques for modeling hills, from the tried and true

plaster-impregnated gauze over a cardboard web to extruded-foam insulation board. While those techniques still work, I'd like to share another method using extruded-foam packing peanuts and masking tape.

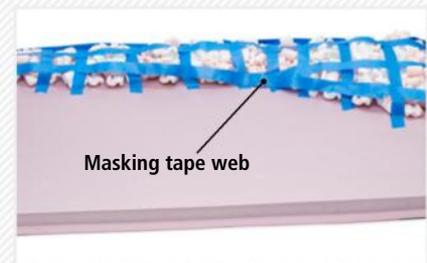
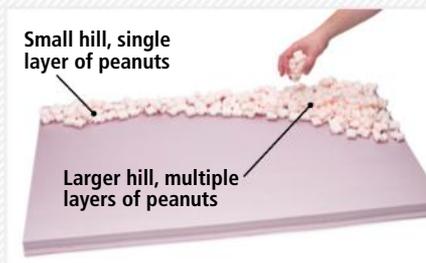
I credit this idea to Model Railroader Video Plus associate producer Kent Johnson, who used packing peanuts and masking tape on a project layout for our sister magazine *Classic Toy Trains* back in 2009. Roughing in the shape of a hill can be accomplished in less than an

Associate editor Cody Grivno made this hill-covered diorama using packing peanuts, masking tape, and plaster-impregnated gauze. Bill Zuback photos

evening. The only thing that takes time is waiting for the plaster-impregnated gauze to dry.

If you're looking to add some elevation to your model railroad, try modeling hills with extruded-foam packing peanuts and masking tape. This technique will work on model railroads in any scale.

STEP 1 PICKING AND PLANTING PEANUTS



Before you start dumping packing peanuts on your model railroad, be aware that not all peanuts are the same.

Extruded-foam peanuts, which I used for this project, are available in a variety of colors. The "S" shape design helps the peanuts interlock, preventing them from settling.

In recent years biodegradable packing peanuts have become more widely used. These peanuts, which look like white cheese puffs, are made with an organic starch and dissolve in water. Don't use these peanuts for making hills

— unless your goal is to have a scene that looks more like a collapsed cake.

A single layer of peanuts is sufficient for small elevation changes. If you want larger, rolling hills, build up the peanuts in layers.

To keep the packing peanuts from shifting around, I secured them to the extruded-foam insulation board with a web of masking tape. I used blue painter's tape here, but any masking tape will do the trick.

STEP 2 PLASTER AND PAINTING



I then covered the masking tape web with plaster-impregnated gauze. Let the gauze drape into the peanuts, creating an uneven terrain, as shown in the image above. I've found two layers of gauze is sufficient to cover the peanuts and masking tape.



Once the plaster was dry, I painted the hillside with a flat, earth-toned latex color. I thinned the paint slightly with water. This helps the paint flow into holes in the gauze. Unpainted plaster has a nasty way of showing through the finished scenery as bright white spots.

STEP 3 SCENERY



I'm not a fan of applying scenery to wet paint, as the scenery material tends to absorb the color. Instead, I applied the scenery with diluted white glue (about 75 percent glue, 25 percent water). Working in manageable areas, I applied the glue with a paintbrush.

With the glue still wet, I applied Quikrete no. 1159 Tubesand. This product can be found at most home centers. Once the glue dried, I dumped the excess sand into a bucket for use on other projects.

To capture the look of hills in Nebraska and Wyoming, I left the high spots as bare sand, and filled in the low spots with Woodland Scenics nos. T1349 Green Blend and T1350 Earth Blend Blended Turf.



The Tubesand absorbed the thinned white glue, so I needed to secure the turf. First, I used a pipette to apply 70 percent isopropyl alcohol. Then I applied Woodland Scenics Scenic Cement.

With the glue still wet, I sprinkled Woodland Scenics no. T1363 Coarse Green turf into the areas where I applied the Blended Turf. Then I used a GrassTech USA GrassTech I static grass applicator to apply Woodland Scenics no. FL635 Medium Green static grass flock.

If you're looking to add hills to your model railroad, try the packing peanut method. In a weekend's time, you can turn your layout from the Plywood Pacific into a model railroad with realistic scenery. [IMR](#)



The Octagon Blacksmith Shop on Raymond Howard's HO scale Seneca Lake, Ontario & Western RR hides a switch motor from view. Raymond photographed and measured the local structure after finding it in an online listing of stone buildings.

CASTING PLASTER WALLS for a scratchbuilt structure

Build an octagonal blacksmith shop to hide a switch motor

By **Raymond Howard** • Photos by the author

A few years ago, I'd become annoyed by an old section of my HO scale layout, the Seneca Lake, Ontario, & Western RR (SLOW). It was a poorly conceived and unrealistic logging operation. I removed it and started over, creating a limestone quarry to represent a local industry here in the Finger Lakes region of central New York State.

As I was rebuilding part of my layout to add the quarry, I added a turnout that I wanted to power with a Tortoise by Circuitron switch motor. Because a hidden track ran under the turnout location, I had to place the switch motor on top of my layout benchwork to provide clearance for the track below ❶.

That worked well for lining the turnout, but now I had to hide the Tortoise, and still have access if I ever needed to make adjustments. I spent some time pondering the situation.

A solution presents itself

Doing unrelated research, I ran across a website listing old cobblestone buildings and round barns in New York state, particularly some found in the Finger Lakes region, where my layout is set.

One of the listed buildings was only a few miles from my home. It's an octagonal blacksmith shop in Alloway, N.Y., built in 1832 of cobblestones, and still in use as a storage building by a farmer. I took a drive to check it out.

I discovered it would be a perfect size and type of building to have on my layout to hide the Tortoise machine. Not only that, since it's about 1925 on the SLOW, my new quarry, Seneca Stone Corp., would've certainly needed the services of a blacksmith, as would the farmers in the area. It would fit right in with other structures in this rural scene.

A quick drive back to Alloway with my camera and tape measure gave me photos and a set of measurements to use ❷.

Casting the walls

That was the easy part. Now to find a way to make the cobblestone walls so they would be believable. I settled on Hydrocal plaster cast in a mold.

Before I made the mold, I had to make a master. I started with a rectangle of plywood the size of the wall. I nailed thin wood sides slightly taller than the plywood to the base, lining the sides with Scotch tape on the inside. The Scotch tape will keep the glue I used next from sticking to the wood.



❶ **Tortoise needs a shell.** Raymond installed a Tortoise by Circuitron switch motor on the surface of his layout to clear a track that runs beneath. The blacksmith shop will conceal it from view.



❷ **The building as it looked in 2014.** The front door appears to be the same as in photos from the early 1900s. A horseshoe is nailed to the wood beam over the door.



❸ **Making a master.** Raymond built his master on a piece of plywood. He glued individual pebbles to the wood with white glue, then added rock dust and secured it with thinned glue after wetting the surface with alcohol.



❹ **Making the mold.** The wood sides in ❸ were removed from the master. Then Raymond glued the master to a thin sheet of wood. He coated it with several layers of liquid latex rubber to make the mold.



5 The eight wall castings in order. Each wall shows the combination of doors and windows needed for that particular wall. Raymond made 15 castings from the mold, seen above the walls, before he produced the eight needed sides.



6 The completed sides. Excess drywall mud, used to fill the gaps around the doors and windows, was scraped off after this photo was taken.



7 Making the octagon. Raymond assembled the walls of the building using tinted drywall mud, which was also used to fill gaps at the corners. He placed the building over a printout of the plans to ensure he had the correct shape.

I placed sand pebbles, row by row, onto white glue to create the rows of cobblestones. When that was set, I spread rock dust from the prototype quarry I was modeling onto the master and glued it in place with 70 percent alcohol followed by diluted white glue (just like ballasting). This gave the proper contour for the “cobblestones” in the wall, and a better texture (3 on the previous page).

I removed the wooden sides from the plywood, leaving my stone wall in place. The result was a wall that had the look and texture of the building I was modeling. The plywood provided the thickness I’d need for the finished casting.

I attached a thin piece of wood covered with Scotch tape to the bottom of the wall and plywood (4 so that the mold of the wall could be made. I brushed on several layers of liquid latex rubber to create the mold, then carefully removed the mold from the master.

Now I could pour the Hydrocal walls for the building. I cut openings for the doors and windows after removing the castings from the mold. I used a small diamond bit in a Dremel motor tool mounted in a Dremel Workstation for added control.

The hard part was correctly cutting the doors and windows into the walls without making a mistake or breaking a wall (5). In all, I ended up pouring 15 walls before I was finished with this part of the project. By the time I had finished, I think I finally knew how to do it!

Next I stained the Hydrocal castings to approximate the colors of the prototype. I used some of the extra walls as test pieces. It took several mixes to get colors I was satisfied with.

I cut and installed wood beams over the doors and windows in each opening. Then I cut scale lumber and installed it in the openings to fit the windows I used.

I built the doors from scale lumber and placed them in the openings. I used two different shades of gray paint to create the old, weathered look of both the doors and windows.

I drybrushed dark gray over the lighter shade. I filled spaces where the wall didn’t exactly fit the door and window frames with drywall mud tinted to match the walls. I used several different shades of paint to highlight individual stones in the cobblestone.

All eight wall sections were finished and ready to be assembled before I started to put the octagonal building together. Notice the wall edges have been filed to an angle to allow them to fit together when assembled (6).

I used more of the tinted drywall mud to cement the walls into an octagonal shape. I used a printout of the drawing of the building to make sure the sides were a proper octagon when cemented together (7 on the previous page).

Now, the blacksmith shop needed a roof. I cut the basic roof sections from thin plywood. Using the drawings Harold Russell made from my research, and the Pythagorean Theorem ($a^2 + b^2 = c^2$, where c is the length of the roof piece and a and b are the rise and run), I figured out the exact dimensions needed. I used my small Micro-Mark table saw to

make the cuts, then I was ready to assemble the parts into a roof.

I started by taping the eight roof sections together with masking tape while they lay flat on the workbench. There was a gap between the last two sections. When I joined the last sections and taped them together, they formed a peak with the proper shape and roof pitch. With that done, I reinforced the seams with Pliobond contact cement (8 on the next page).

I painted both sides of the roof black to ensure the plywood, tape and contact cement were hidden after the roof was complete. Then I glued the roof to the walls. Now I started to work on the eave detail, as seen on the prototype photo (9 on the next page).

When building anything like this, be sure the roofing material matches your era and location. My research on early 20th century roofing showed cedar shingles were commonly used in the Finger Lakes area. I cut individual shingles from scale 1 x 6, 1 x 8, and 1 x 10 lumber to make the finished roof.

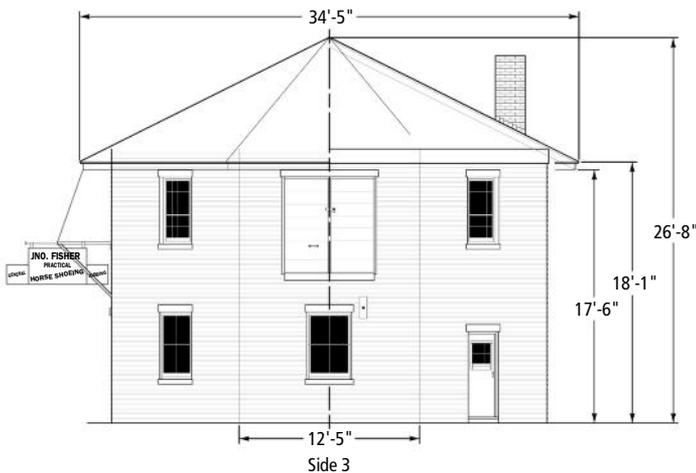
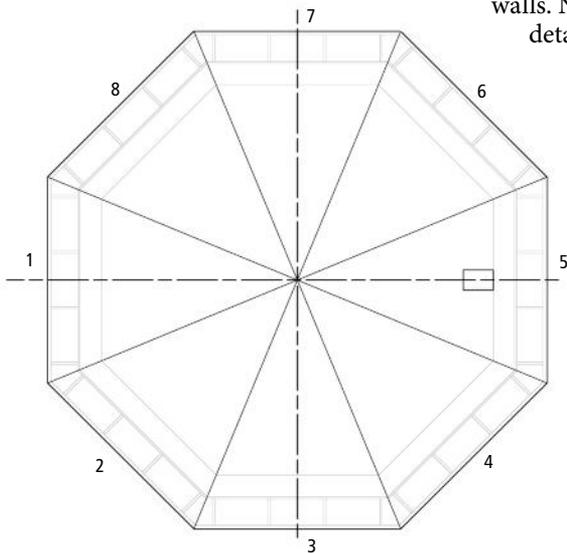
There are slightly more than 4,400 hand-cut "cedar"

Blacksmith shop background

My research found a document from 1867 or 1868 that lists the owners of the blacksmith shop to be brothers John and Frederick Fisher. The sign over the door of the shop from a 1909 postcard reads, "JNO Fisher Practical Horse Shoeing General Jobbing." I have no idea who actually owned the building in 1925 (the year my layout represents).

The shop is also called the Hale Blacksmith Shop in some other references. Both the real-life shop and the model have an upside-down horseshoe over the door. I've been told by several people that I did it wrong, so I looked it up. Depending on time and place, businesses and homes put the horseshoe upside down to "pour out" the luck on customers, family, and friends. Today you usually see the horseshoe "holding" the good luck.

— Raymond Howard



Drawn for *Model Railroader* magazine by
HAROLD W. RUSSELL

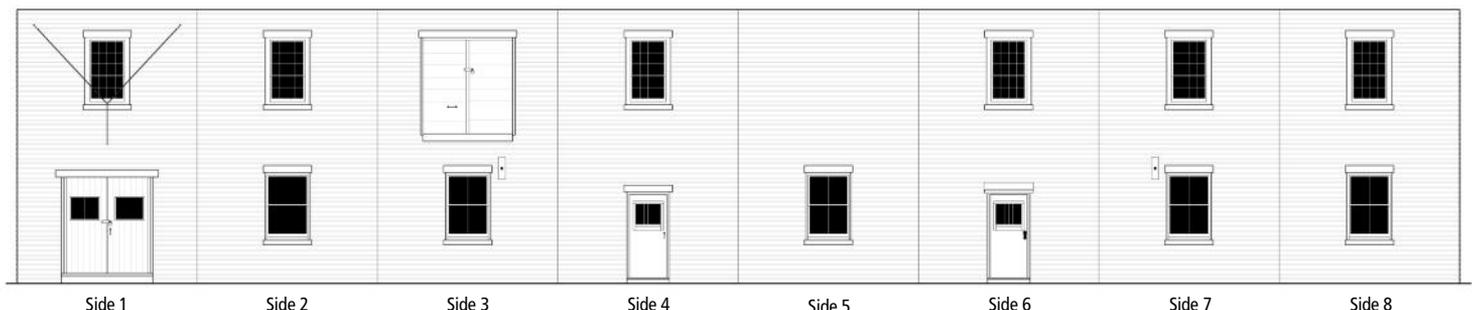
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8 Roof construction. The bottom side of the roof shows the construction technique. Pliobond adhesive reinforces the taped connections of the roof panels.



The prototype



The model

9 Eave details. Raymond replicated the eave details using HO scale 2 x lumber, based on photographs he took of the full-sized building.



10 Thousands of shingles. The shingles are individual pieces of scale 1 x 6, 1 x 8, and 1 x 10 lumber glued in place.

shingles on the roof. I used white glue to attach each individual shingle in place, row by row, overlapping the shingles just like on the prototype **10**.

To stain the shingles, I started with a diluted solution of India ink, then several thinned paints (a dark boxcar red, light gray, and then white) until I finally got a color that looked like old creosote-tipped cedar shingles.

Once the shingles were completed, I fabricated a sign for over the door to match an early 20th century photo I found of the shop.

With the building complete, I test-fitted it on the layout. I completed the scenery around the finished model to give it a look that's similar to what it might've looked like back in 1925.

The only commercial products I used were the windows (Northeastern Scale Lumber) and the chimney (Scale Structures Limited). Everything else, including the doors and the windows in the doors, was scratchbuilt.

Sometimes, the solution to a modeling problem can be found near where you live, and you just might have to scratchbuild it. Give it a try! **MR**

Raymond Howard was born and raised on a farm near Canandaigua, N.Y., in the Finger Lakes region. He's a volunteer at the Rochester & Genesee Valley Railroad Museum in Rush, N.Y. He had the good fortune to meet a gentleman by the name of Harold Russell at the very first National Model Railroad Association event he attended.

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TRACKS IN THE ST

1 An Electro-Motive Division SW1 leads an inbound train at Carroll Street on the HO scale Baltimore Harbor District. This scene features 7 feet of street running.



REET

Building and operating Carroll Street on the HO scale Baltimore Harbor District

By Paul Dolkos • Photos by the author



Street running, or a section of track that runs along a public street without separation, was high on the list of must-haves when I designed my HO scale Baltimore Harbor District layout. Such a scene would work especially well for my model railroad's industrial waterfront switching theme. During my layout's 1944 time period, Baltimore had more than 7 miles of street-running railroad.

Carroll Street is the street-running section of my Baltimore Harbor District. It's located across the aisle from Highlandtown ①. (I described building the Pratt Coal Co. in the January 2012 *Model Railroader*.) Although there is an actual Carroll Street in Baltimore, it never had rails running along it. I simply like the name, as the street's namesake was one of the founders of the B&O RR.

The scene wasn't finalized when my track plan was published in *Model Railroad Planning 2010*. An overall photo ② and updated plan of Carroll Street are on pages 32 and 33, respectively.

A backdrop divides a 4-foot-wide peninsula between Carroll Street and Wagners Point. [See the December 2015 and January 2016 issues of *Model Railroader*. – Ed.] Seven feet of Carroll Street's 12-foot length features track in the pavement, which is enough to capture the look and feel of street running.

A bit of history

Early in United States history, cities such as Baltimore developed around ocean ports, including densely packed industrial areas. By the time railroads emerged as a dependable means of transporting goods, there were few private rights-of-way available where tracks could be laid to reach customers. Cities and industries needed railroad access, so the solution was to lay rail in the streets.

Over time, as privately owned automobiles and the trucking industry gained prominence and industries relocated, much industrial street trackage was abandoned.

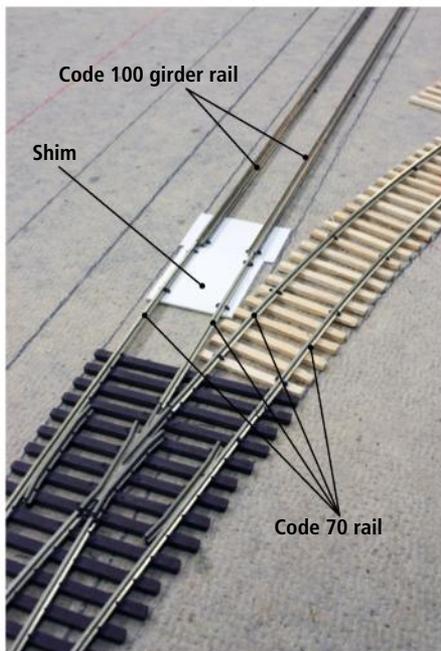
Today, only about 100 such areas remain in the United States.

In addition to streetcars and industrial lines, other types of

MORE ON THE WEB

• The photo at left is this month's computer desktop wallpaper. Download the image for free at ModelRailroader.com.

2 Carroll Street. The Carroll Street scene shares a peninsula with Wagners Point on the other side of the sky backdrop. In addition to the industries along the backdrop, the Carroll Street line connects to a three-track produce yard, at left.



3 Girder rail. For all the street track, Paul spiked Orr girder rail directly to the Homasote roadbed. Girder rail is code 100 and features an integral flangeway. At transition locations, Paul had to shim the shorter code rail he used for ballasted track.

trains could be found running down the street. I provide some modern examples on page 35.

Rails in the street

For all my street trackage I used Orr girder rail **3**, which is available from Custom Traxx (www.customtraxx.com). Typically used for both streetcars and industrial lines, girder rail includes an integral flangeway that forms a U-shaped channel in profile. I spike the rail directly to my Homasote roadbed without any ties.

The Orr girder rail is code 100, which is taller than the rail used elsewhere on my layout, but the oversize rail isn't obvious when it's buried in pavement. I used styrene shims **3** to match the heights of the girder rail with smaller code track at locations where the street track meets a ballasted right of way.

There are alternatives to girder rail that were used by the prototype and can be replicated by the modeler. A second rail can be butted up or turned on its side along each running rail to create flangeways. Angle iron, ties, and timbers

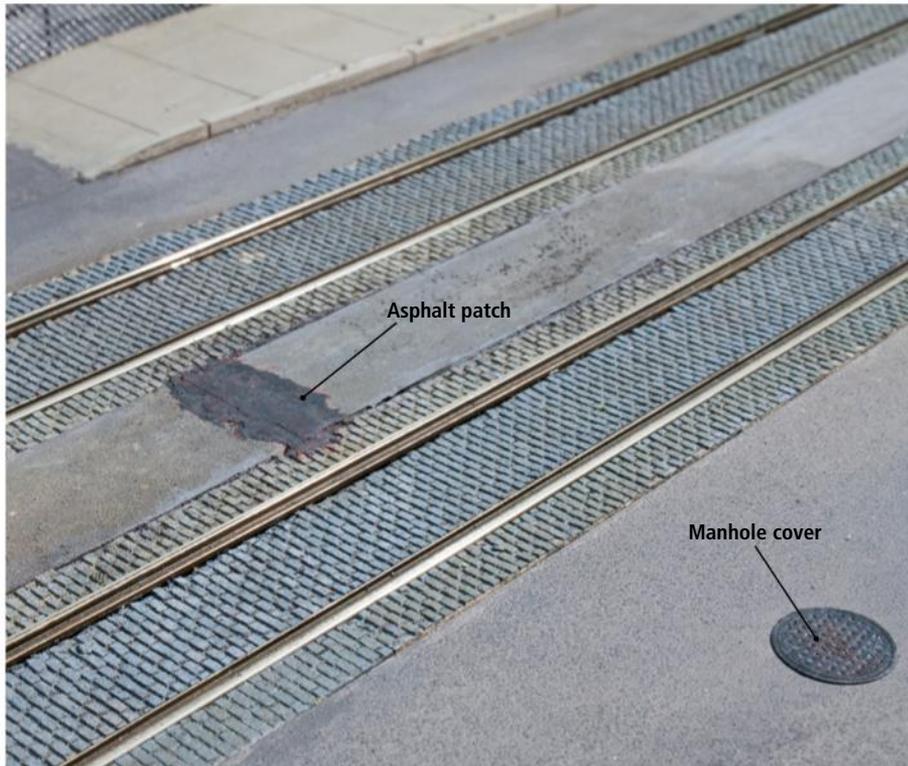
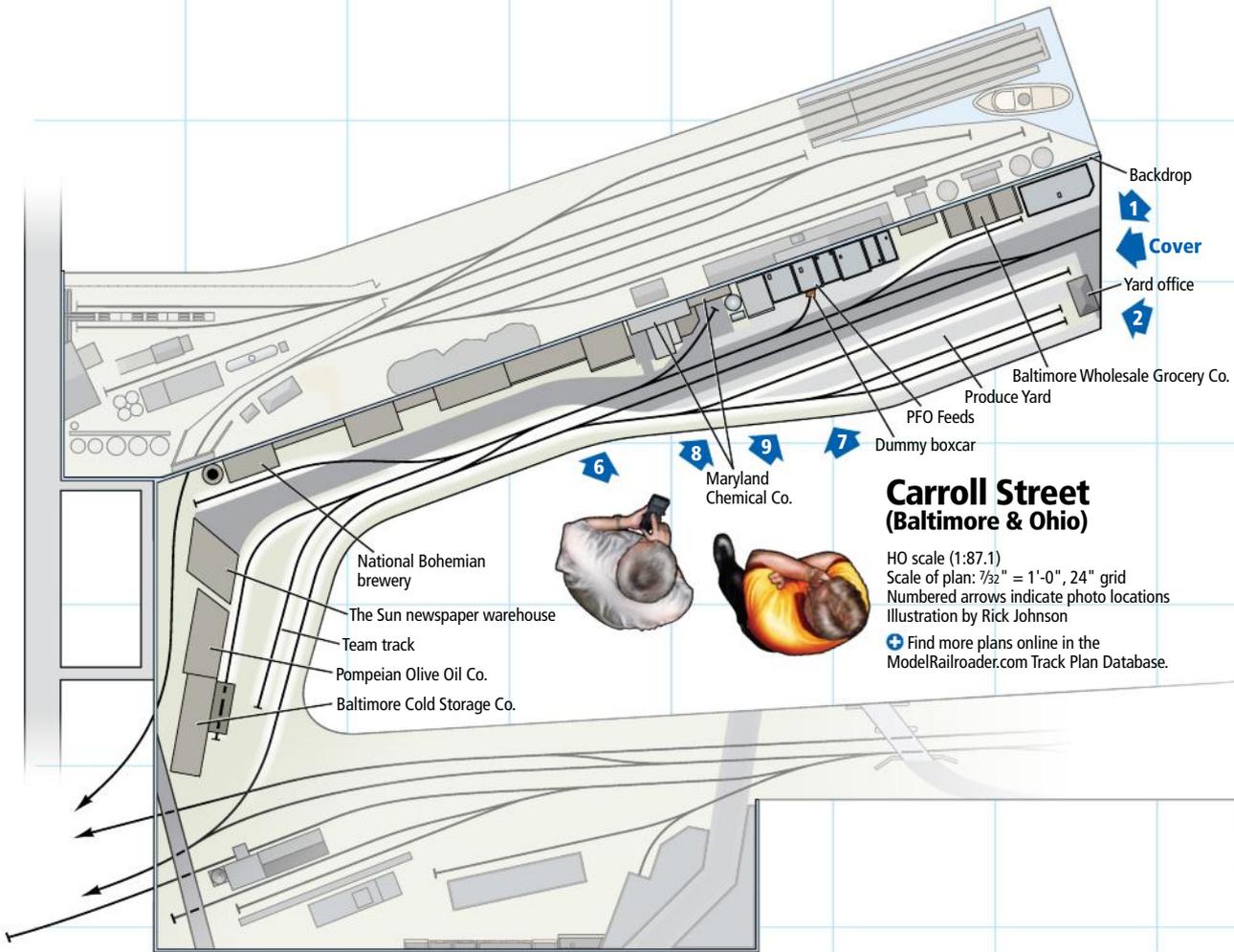
were also used inside the running rails. These flangeways can be modeled with styrene angle or scale lumber.

There are a few different approaches to model the asphalt or concrete pavement around the rails. Paperboard or styrene sheets could be fitted along the rails, but make sure to leave space for the flangeway along the inside of the rails.

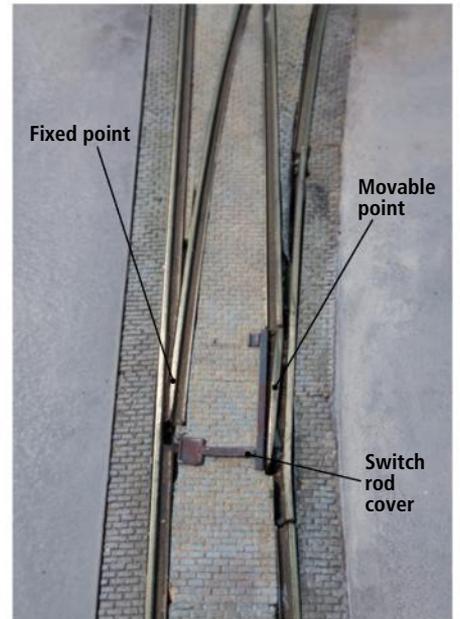
Early installations of street track often used paving blocks (pavers) on either side of the rails. Theoretically the pavers provided easier access to the rails for maintenance, although most train crews that I've talked to who worked street track note that repairs were infrequent.

Pavers are about an inch larger in length and width than standard-sized bricks. Therefore, to model pavers with a plastic or paper brick-textured sheet, I recommend using a slightly oversize pattern. For my Carroll Street scene, my friend and *Model Railroader* author Bernie Kempinski engraved a custom paver pattern on paperboard with his laser cutter.

I cut the sheets to fit around and between the straight track sections. A finished section is shown in photo **4**.



4 Pavers between rails. Paul had pavers laser-cut into paperboard sheets, then cut them to fit. Pavers or any other street material should be slightly lower than the rails. Details such as asphalt patches and manhole covers further add to the realism.



5 Single-point turnout. Following the prototype, Paul used girder rail to scratchbuild single-point turnouts for the street track. The movable point is located ahead of the fixed point to guide the car through the selected route. Paul detailed the turnout with a switch rod cover over the pavement.



Guardrails removed

6 Two-point turnouts. Paul used two-point turnouts at the beginning of the street-running section. Where the turnout was embedded in pavement, he removed its guardrails. The pavement is a combination of styrene sheet and paving powder.

For a curved section or turnout, I made a template by laying a sheet of paper over the rails, then rubbing a pencil back and forth over it. This pencil rubbing showed the outline of the rails. After cutting out the paper between the outlines, I had a template to use for cutting the paver material.

I also used Arizona Rock & Mineral asphalt paving powders in some locations. I mix the fine black rock powder with white glue and water to form a paste. When this type of filler material, or materials like plaster or spackling, is used to model streets, the flangeways should be scraped clear before the material hardens.

The street or paver surface should also be .015" to .020" below the top of the rail **4** on the previous page. This makes it easier to clean the track without marring the surrounding pavement.

Turnouts in the street

Most turnouts used for prototype street tracks have a single movable point rail instead of the two found on standard turnouts. This minimizes the number of moving parts that can get clogged with street debris.

For some single-point turnouts, a crew member moves the point rail with a

pry bar to line the route. Other examples are equipped with switch rod mechanisms concealed by metal plates in the street. To align one of my HO scale single-point turnouts, I made a 90-degree bend in a length of brass rod, soldered one end to the movable switch point, and attached the other to a slow-motion switch machine.

[For another modeler's take on this type of turnout, see "Build a single-point turnout" in the July 2017 *Model Railroader*. – Ed.]

On a single-point turnout, the movable point rail is located slightly ahead of the fixed-point rail. The movable point guides the wheels on one side of the truck either to the left or right, so that when the wheels on the other side reach the fixed point, they are aligned for the correct route.

Since train movements over them are usually 5 mph or less, single-point turnouts work fairly well. However, flange grooves in pavement caused by derailed car wheels weren't uncommon around industrial street track. Thankfully, the cars were relatively easy to rerail because their derailed wheels couldn't drop between the rails as they do during derailments on ballasted track.

I scratchbuilt the single-point turnouts on my layout. A finished example is

shown in photo **5** on the previous page. Since they have only one moving part, I find single-point turnouts easier to build than two-point turnouts.

Not all turnouts used in street running are single-point, so those who don't want to scratchbuild could install commercially available two-point turnouts with a reasonable degree of realism.

Modelers who use two-point turnouts should note that more cutting and fitting of the paving material will be required to accommodate the dual-point movement. I used two-point turnouts at one end of Carroll Street **6**. I suggest removing the guardrails, as they won't be necessary in street running. The flangeway formed by the pavement and the rail will keep wheels aligned.

Complex trackwork

Because a city's street grid wasn't usually built with a rail system in mind, railroads often had to use some complex track arrangements to reach industrial customers. Three-way turnouts, diamond crossings, and crossings across turnouts are examples of the special trackwork that was necessary.

Some of the earliest street trackwork of the 19th and early 20th century was originally laid to accommodate 36-foot

cars, and even those were a tight fit. It became even more precarious in later years as the same track was used for 40-foot or longer cars.

Especially difficult were spurs that curved 90 degrees into a building **7**. Spotting rolling stock in such locations could require coupler extenders to provide extra coupler swing. Crews could also use chains to pull a car from its spot to a section where a coupling could be made. In these cases, a switchman would ride the car with his hands on the brake wheel in case the tow chain broke.

Carroll Street track arrangements

On my layout the track runs down the center of a street that's 5½", or 40 HO scale feet, wide. It's a realistic width that accommodates two HO scale tracks side by side to provide a runaround as shown in **8** on the next page. There's also enough room for vehicles to pass trains and a few parking spaces.

A three-car siding running parallel to the street serves a grocery wholesaler. A chemical wholesaler has a siding that curves diagonally into its facility.

There's a 90-degree spur into the feed dealer **7**. With a curve radius of less than 10", there was no way to make the spur operational. Instead, I built a half boxcar that sticks out of the doorway slightly but never gets picked up.

On prototype railroads, if space was too tight to run a spur into a location, freight cars could be spotted on the street in front of the industry. Vehicle traffic was relatively light in these industrial areas, and the freight cars were loaded and unloaded quickly. I have the option of spotting a car or two in front of some of the Carroll Street businesses located along the backdrop.

Most of the switching on Carroll Street takes place in the produce yard, shown in **9** on page 37. Its three tracks have a 21-car capacity. Although any type of car can be spotted there, it's primarily the destination for refrigerator cars loaded with perishables.

At the end of the peninsula opposite the produce yard, the street-running section turns to ballasted track. The industries in this section include a brewery, newspaper warehouse, an olive oil distributor, and a cold storage company.

Operating Carroll Street

There are 35 car spots on Carroll Street. During a typical operating session, the spot utilization is 50 to 60



A Richmond, Fredericksburg & Potomac trailer train rolls south down Railroad Avenue on the reserved center-of-the-street right-of-way through Ashland, Va., in 1984. Passing businesses, residences, and a college campus, this street trackage remains in operation today as part of CSX.

Street running on the main

Street running doesn't only occur in an industrial switching setting. Sometimes, rails are laid in pavement because it's the only route available for a main line. A river, mountain, or other landscape feature could make a route along a paved street the only option. In years past, local residents were so eager to have a railroad serve their town that they didn't view tracks in the streets as a problem.

Examples of such mainline street running include Norfolk Southern's line through Brownsville, Pa., or CSX's center-of-the-street reservation track through Ashland, Va., shown above. Such scenes may inspire modelers who have no interest in industrial switching to include street running on their layouts.

After all, many layouts have tracks running through a series of towns that have depots with streets, businesses, and residences behind them. Why not combine all these elements into a relatively narrow pathway down the center of the street? Such a scene could permit narrower benchwork and wider aisles. It would certainly set the scene apart from others on the layout. — Paul Dolkos



7 90-degree spur. A sharply curving spur into a building was a common sight in an industrial district. With a less than 10" curve radius, this spur into the feed dealer is purely cosmetic, as is the half-boxcar sticking out of the loading door.



8 Runaround track. The 5½" wide street accommodates two HO scale tracks. This allows for runaround moves when switching.

Switch lists instead of car cards for operation

On many model railroads, shuffling through a deck of car cards is a necessary but tedious part of an operating session. Each card has information specific to a single car and is used to route the car to various destinations.

On my HO scale Baltimore Harbor District, car cards are kept in a desk file and crews never see them. As the head clerk on the railroad, I use the cards only when filling in the destinations on the specific switch lists that are given to each train crew at the start of an operating session.

Unlike a waybill, a switch list isn't a legal shipping document. It's an informal reference aid used by crews. On the prototype, crews could use forms or jot down their own lists on the back of a scrap of paper. In the modern era, crews may make their switch lists on a tablet computer.

Two switch list examples are shown. On the left is a standard form from the Baltimore & Ohio RR called a switching order. On the right is a simplified version for my layout made with Excel spreadsheet software.

The critical information on a switch list is each car's reporting mark, number, and location where it's to be

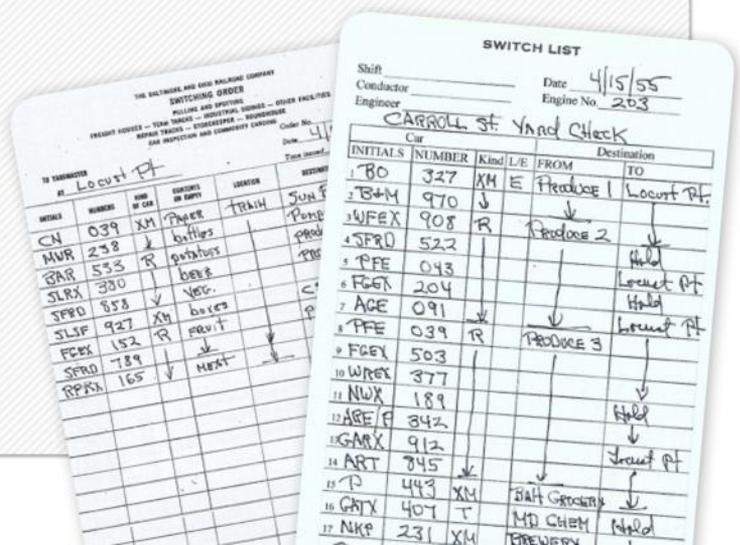
No matter if it's a facsimile of prototype paper work (left) or a simplified version made on a computer, a switch list makes life easier for a train crew during a model railroad operating session. As on the prototype, the single sheet lists the critical information for each car in a consist.

spotted. Other information such as car type and lading may also be included.

On the prototype a crew member making a switch list might only write a single letter of a car's reporting mark and only the last three digits of its car number.

Filling out switch lists gives me an opportunity to walk the railroad and visualize the operations. I may also try to set up more complex situations to challenge my operators.

The switch lists have gotten positive reviews from my crews. This informal piece of paperwork is just as useful on a model railroad as it is on the real thing. – Paul Dolkos





9 The produce yard. A Fairbanks-Morse H-12-44 switches reefers at the produce yard, which has a 21-car capacity. The details that help bring the scene to life include figures, vehicles, and a pile of dunnage at the end of the driveway.

percent, and it takes two hours to complete the switching tasks. Usually, I assign one person to the Carroll Street job. A second person could work as a conductor, but I avoid two-man crews on this assignment because of a 28" to 36" aisle width. The space gets especially tight if someone is working the industries across the aisle.

Initially I established the job as starting in staging, running to Carroll Street with the inbound consist, making pickups followed by setouts, then returning to staging. This arrangement works well as long as the crew doesn't have too many inbound or outbound cars to handle. If there's a glut of cars, the crew can quickly run out of track space.

To avoid this situation I came up with an alternative scheme. The job starts with the engine at Carroll Street at the beginning of the session. The crew picks

up all outbound cars, which are usually empties, then returns to staging. After exchanging the outbound empties for inbound loads, the crew heads back to Carroll Street to make the setouts. This approach ensures that there's enough track space for the switching moves.

All my operators, including the Carroll Street crew, get a track map showing the car spots as well as a card explaining the procedures of a specific job. At the start of a session there's a general briefing, but the printed material usually answers most of the questions.

Instead of car cards, I give each crew a switch list of the originating consist coming out of staging, as described on the previous page. The Carroll Street crew will also find another switch list waiting for them that features three possible actions for each car spotted at the industries and sidings: pick up for return

to the yard (staging), "hold" or don't pick up, and spot an "off-spot" car. This last action occurs when a car at a previous session couldn't be spotted in the correct location because space wasn't available.

As on other areas of the Baltimore Harbor District, Carroll Street can be run as a standalone model railroad as well as part of the larger layout. Unlike other assignments on the railroad, there aren't any interactions between other trains. Therefore I can run the Carroll Street job by myself and have a complete operating experience for an evening.

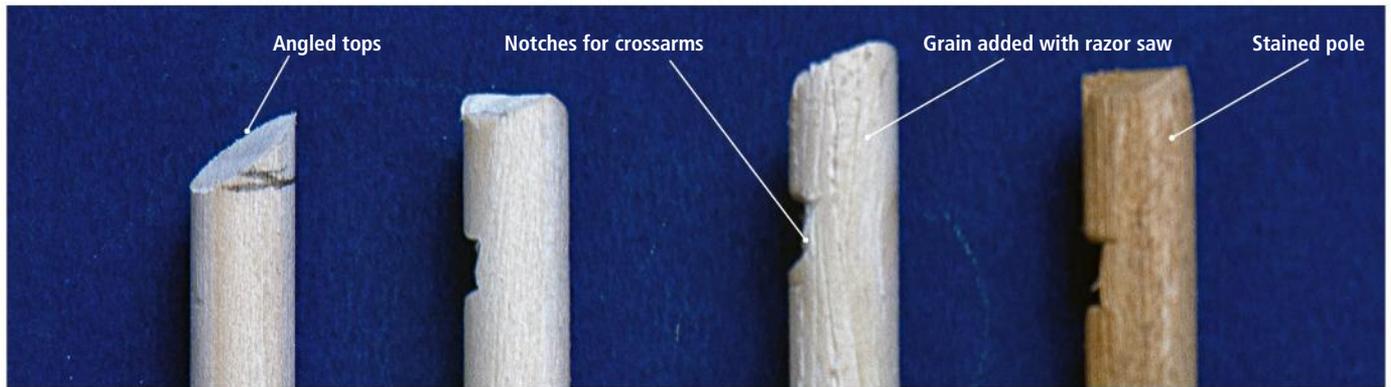
With its street-running scenes, Carroll Street is a visual and operational highlight of my HO scale Baltimore Harbor District. **MR**

Paul Dolkos is a frequent contributor to Model Railroader and its special issues. He lives in Alexandria, Va.



The completed utility poles on Michael Tylick's On30 Marshfield & Old Colony RR layout are used both for the railroad and local electric and phone service. The height of the poles varies by type and clearance; Michael measures this by eye, and finds poles that are somewhat shorter than prototype seem to look best. Most of his are 20 to 30 scale feet tall. Poles should be placed with crossarms alternately facing and away from each other for strength, as on the prototype.





MODEL SIMPLE UTILITY POLES

These lineside details are easy to make with common items

By Michael Tylick • Photos by the author

A little more than a century ago, electricity and telephones seemed almost as wondrous as cloud services and smartphones do today. We now enjoy the convenience of truly mobile communications, but many of us can remember a time when virtually every gadget was connected by wire.

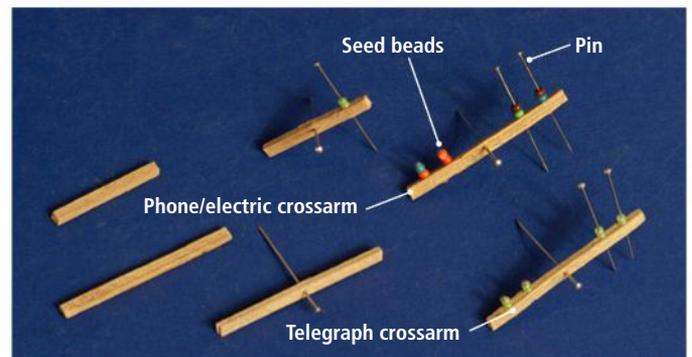
To model that on a railroad, we need lots of utility poles. HO scale modelers are blessed with many commercial pole offerings, but larger scales have only a few metal castings and toy train products to choose from. And as the scale becomes larger, the

correct material becomes more important; wood starts to look more like itself than metal or plastic ever will.

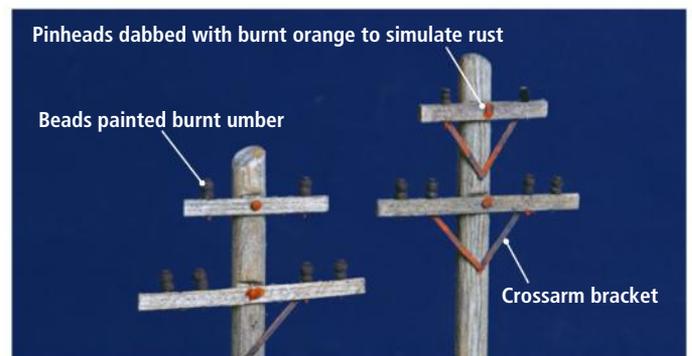
My poles are representational of the prototype, but not completely faithful to it. Utility and communications poles are built for their function, and each one is constructed to suit its site. Even in HO scale I found it expedient to build my own. It doesn't take much longer than preparing and kitbashing a commercial pole. **MR**

Michael Tylick is a frequent MR contributor who lives in Marshfield, Mass.

The poles are made from birch dowels – $\frac{1}{4}$ " for O scale, $\frac{7}{16}$ " for F or G scale. This is slightly undersized but looks about right. Some poles are tapered, but this is difficult to accomplish with models. The top is either angled or vee-cut to shed rain. Notches are cut to receive crossarms. Poles are distressed by dragging a razor saw perpendicular along the pole in the direction of the wood grain. The wood is sanded lightly to remove fuzz. Stain the wood with washes of raw sienna and burnt umber acrylic craft paints, followed by a wash of India ink and alcohol. The bottoms of the poles are whittled to a taper to make it easier to insert the pole into its hole - no need to be neat. The dowels are about 10 inches long; any extra will be buried in the scenery.



Crossarms are cut from $\frac{1}{16}$ " x $\frac{1}{8}$ " stripwood about 6 feet long for O scale. The insulators are made from two seed beads (three for G scale) pinned into the wood. Insulators are placed nine inches from the end of the crossarm and 15 scale inches from each other. Clear blue, green, and uncolored beads can be used too. Clip the pin ends with a hard-metal cutter.



Crossarm brackets are cut from .040" cardstock and attached with cyanoacrylate (CA). They're painted with charcoal acrylic craft paint and weathered with burnt orange. Beads simulating ceramic insulators get a dab of burnt umber; clear beads don't need painting. Poles are rarely touched, so acrylic paint with a few drops of white glue adheres well.



LAYOUT IN A

With a little more time, adding scenery and details helps bring this small switching layout to life

By Paul Boehlert

Photos by the author

LAST MONTH, I WROTE ABOUT the adventure of building a small HO switching layout in a weekend. After starting with just a pile of raw materials on a Friday evening, it was a thrill to set out the first car at an industry on Sunday afternoon.

My brand-new small layout may have been operational after just two-and-a-half days of construction, but it certainly wasn't finished. I built the layout on a bi-fold door. Half of the door is the layout surface, and the other panel is the backdrop.

A small layout requires only a simple control system, so I wired a direct-current power pack to a single bus. Each piece of track is connected to the bus with feeder wires.

Since that first weekend I've worked on the layout a little, operated it often,

and had a few surprises as well as a lot of fun. Here's what's been happening.

A name suggests itself

I originally intended to call the layout something generic like the 35th Street Industrial District. But all the planning sketches and worklists had LIAW, for "Layout In A Weekend," written in big letters at the top of the page.

After a while I gave in and adopted those letters as my reporting marks. Now the shop crew can letter a home-road boxcar or two.

Scenery, such as it is

The LIAW doesn't have majestic mountains or sweeping vistas, but it still



WEEKEND UPDATE

benefits from scenery. A variety of scenic colors and textures makes any layout look bigger and more detailed because there's more to catch the eye. I covered the extruded-foam insulation board surface with three colors of dirt and two colors of static grass (one a blend of several shades), plus coarse ground foam for weeds.

Sanded grout in charcoal gray works well to represent cinder ballast. This dry material is easy to use. The mixed grout has Portland cement and sand in it, so it sets hard. Just spoon some onto the track, shape it with a soft-bristled brush, and mist thoroughly with plain water. It's economical, too; 10 pounds of grout cost just 10 bucks at a home improvement store.

In the April 2015 Workshop Tips column, Alan Norris described using a Ferry-Morse seed sower to apply ballast.

Thanks to Alan's tip, this little gardening gadget is now my go-to tool for all types of ground cover. I use the graduated openings in the cover to regulate the flow of whatever material I'm applying.

A happy little accident

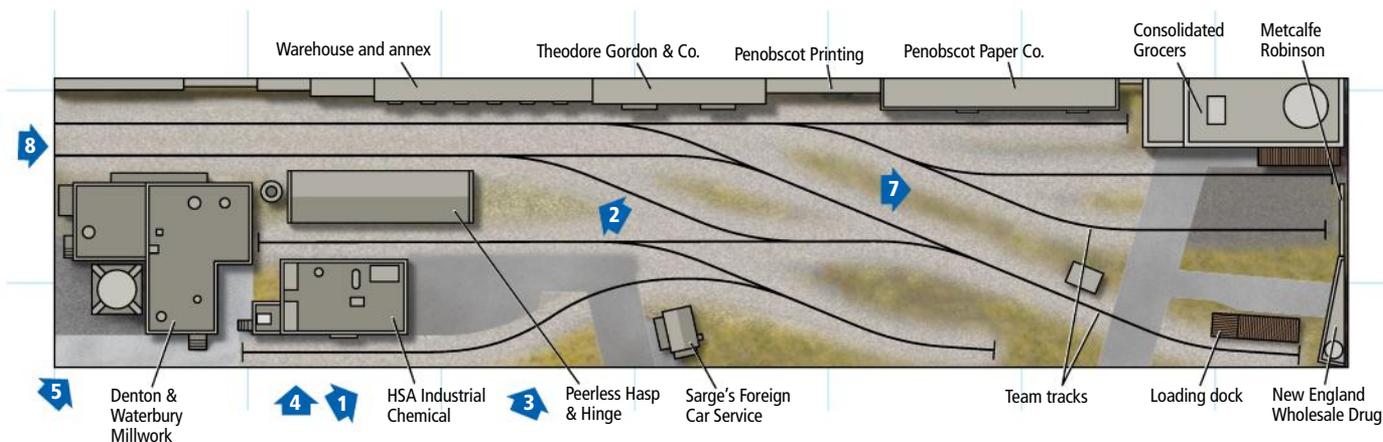
Television landscape-painting guru Bob Ross often said that there are no mistakes, only "happy little accidents." Intending to model late autumn, I loaded my static grass applicator with some drab brownish-green and tan grass. When applied to a patch of bare ground, however, the static fibers lay flat rather than standing up. The batteries in my applicator were dead.

Before scraping it all off and starting over, however, I realized that those

1 A lone switcher spots freight cars on Paul Boehlert's HO scale Layout In A Weekend (LIAW). Adding scenery and details to the layout took a little more than a weekend.



A Ferry-Morse seed sower makes a handy tool for applying ballast and other types of ground cover.



Layout In A Weekend

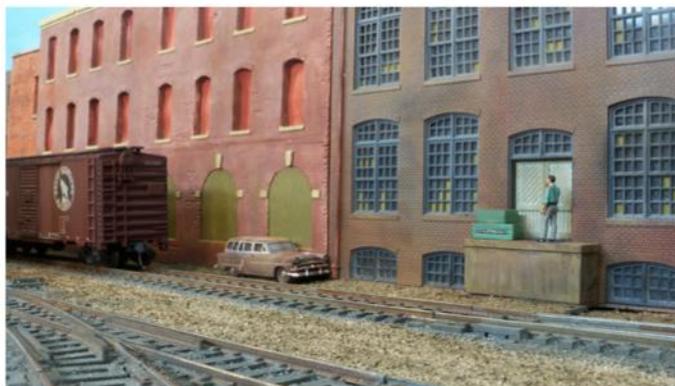
HO scale (1:87.1)
 Layout size: 18" x 80"
 Scale of plan: 1" = 1'-0", 12" grid
 Numbered arrows indicate photo locations
 Illustration by Rick Johnson

Find more plans online in the
 ModelRailroader.com Track Plan Database.

The layout at a glance

Name: Layout In A Weekend
Scale: HO (1:87.1)
Size: 18" x 80"
Prototype: freelanced
Locale: southern New Hampshire
Era: 1968
Style: shelf switching
Mainline Run: none
Minimum Radius: 18"
Turnouts: Atlas Snap-Switch

Maximum Grade: none
Benchwork: hollow-core, bi-fold door
Height: 52"
Roadbed: none
Track: Atlas code 100 flex and sectional track
Scenery: extruded-foam insulation board
Backdrop: painted hollow-core door and plywood
Control: standard DC



2 A worker waiting for the boxcar and a well-worn station wagon create mini scenes on the layout. Paint and ballast improve the appearance of the layout's code 100 track.



3 The LIAW's central runaround track is used often. The track plan was adapted from a plan in Mat Chibbaro's *Model Railroading In Small Spaces* (Kalmbach Books, 2011).

flattened fibers resembled the matted grass that's revealed when the snow melts in early spring. The effect was pretty good; so good, in fact, that I did the rest of the layout the same way. The time period on the LIAW has shifted from November 1967 to March 1968, and I never did install new batteries in the grass applicator.

Added details

I find that small layouts look great when they're intensely detailed, so I'm adding figures, gas meters, relay cases, trash cans, crates and boxes, line poles, crossbucks, fences, vehicles and

everything else I can think of. Yes, I have an HO scale kitchen sink, and yes, it will go on the layout. Every detail part was weathered to some extent before being placed on the layout.

Several industries needed signs to identify them for visiting engineers. I made these on my laptop, glued them to some thin cardstock, and toned down the bright white paper with weathering powders. These signs are meant to be temporary stand-ins, but check back in about 20 years – they'll probably still be there.

On the original LIAW trackplan, there was supposed to be an engine shed at the right side of the layout. That spur

makes a great team track, however, and gives me another place to spot a car. So, no enginehouse, and now the railroad is even more interesting to operate.

I also modified the backdrop. One spot on the sky backdrop just didn't look right without a few distant clouds. Rather than risk masking and spraying the finished backdrop, I painted a small cloudbank on a piece of poster stock, using the same colors and techniques as the original clouds I'd painted that first weekend.

When the paint was dry I carefully trimmed the cloudbank to shape, colored its edges, and attached it to the sky. It looks great and blends right in.



4 Paul weathered the roof of HSA Industrial Chemicals with PanPastels applied with a sponge and a soft-bristled brush. The entire job took less than 2 minutes, but was a great improvement to this foreground model.

And speaking of operation ...

After switching cars several times a week for a few months, I couldn't be more pleased with the LIAW's brand of casual, but absorbing, operation. A typical session involves just three pickups and three setouts, but at scale speeds even these few moves take the best part of an hour. That's just right for me, and I can operate whenever I feel like it.

I bought some plastic storage boxes, each of which holds three cars. One of these "op sessions in a box" contains the inbound loads for that evening. When outbound cars are taken off the layout I store them in the same box, which then goes to the end of the line. It's a neat, self-regulating system that can be tailored to reflect seasonal traffic patterns.

When one of my train buddies comes over, we use a switch list to route cars.



5 After operating a few times, Paul added this extension to his interchange track. The rerailer track section makes it much easier to get cars on and off the layout.

But when I'm by myself, I use my paperless operating system, in which each industry receives a different type of freight car. Each car's destination is determined by its type, so there's no need for paperwork. See the original Layout In A Weekend article in the September 2017 MR for more details.

So, what now?

Of course, the LIAW still isn't finished. There are lots more details to add; chain-link fencing, lines on the poles, period-correct Automatic Car Identification (ACI) label decals on freight cars and locomotives, ground



6 The LIAW rests on a metal shelf unit. Paul built the layout on a bi-fold door, and was operating less than 48 hours after he started.

throws for the turnouts, and a host of other projects. I'd like to replace some of the plastic kit-built industries with craftsman kits or scratchbuilt structures.

My layout depicts a generic industrial switching district, but you could build it differently. The LIAW could easily be backdated to the steam era with an 0-6-0T shuffling wooden 36- and 40-foot cars. It would also make a great single-industry plant railroad, perhaps based on author Art Curren's massive Arrowmatic Chemical complex from the May 1995 MR.

I hope the original Layout In A Weekend story in September and this update have conveyed some of the fun I'm having. An enjoyable and satisfying layout doesn't have to take forever. Block out a weekend and build yourself a model railroad – I did. **MR**

Meet Paul Boehlert

Paul Boehlert is a college professor in upstate New York. He has written several articles on small layouts for *Model Railroader*.

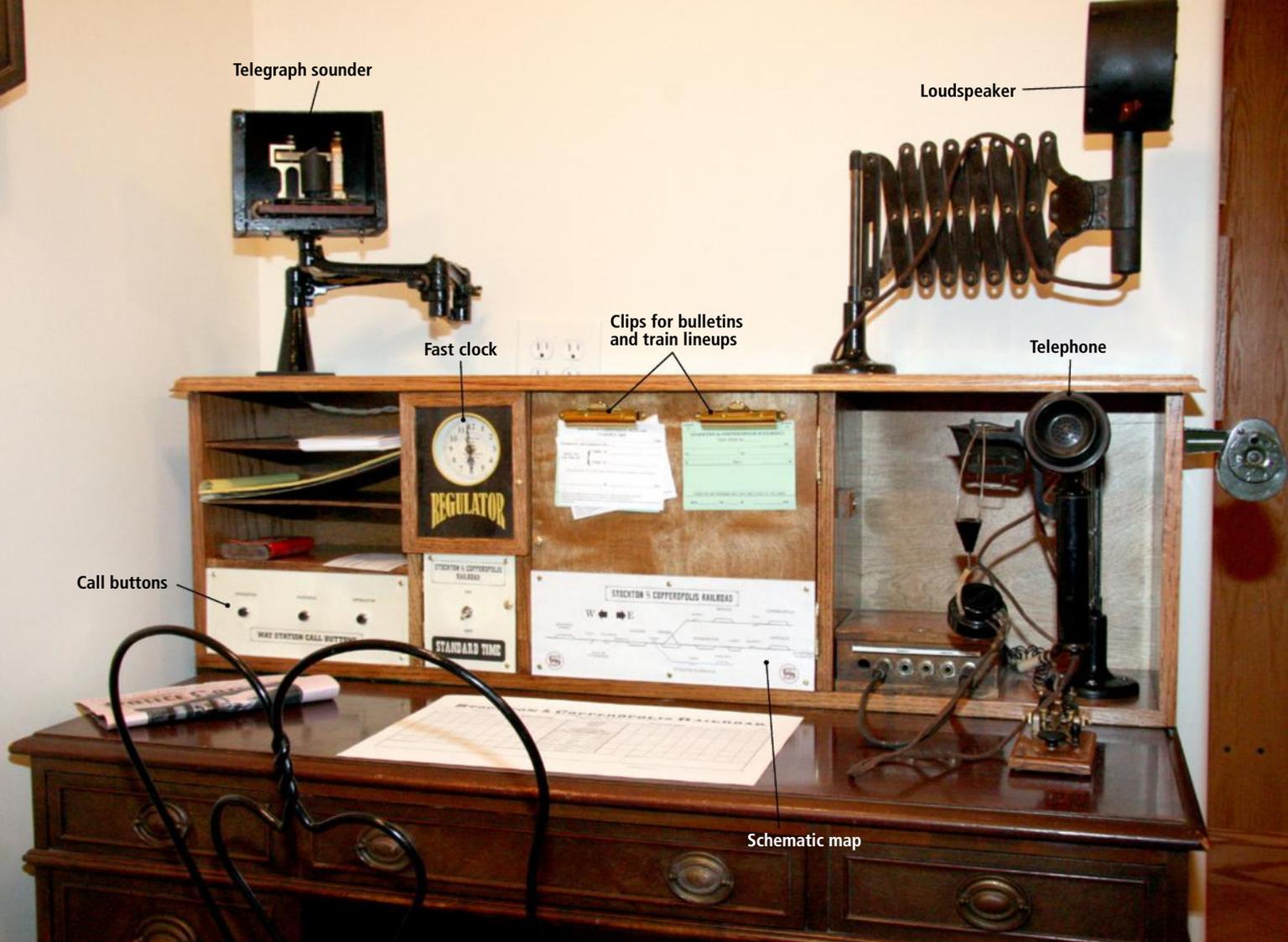
He's also a professional storyteller whose performances regularly include stories about trains.



7 The matted grass in the foreground was a happy accident that occurred because the batteries in Paul's static grass applicator were dead. He liked the effect and changed the setting of his layout from late fall to early spring. The team track replaces an enginehouse in Paul's original plan.



8 Varying the building heights and layering flats for added depth makes the low-relief backdrop at the back of Paul's layout more interesting. The overgrown fenced lot adds some much-needed spots of color.



The dispatcher's console on Don Ball's HO scale Stockton & Copperopolis RR sits on a 48"-wide mahogany desk in the crew lounge area. Don made the console to sit on top of the desk and lend a period feel to the dispatcher's job, while helping the desk fit in with its family room location.

Build DISPATCHER AND OPERATOR DESKS

These aren't just furniture, they support operations on an 1890s-era layout

By Don Ball • Photos by the author

When my layout, the Stockton & Copperopolis RR [See *Model Railroad Planning 2011*. – Ed.], reached the stage where prototype operations could begin, it became obvious that I had to start thinking about the details. Timetable-and-train-order operation was a given for me on my 1895 railroad. A

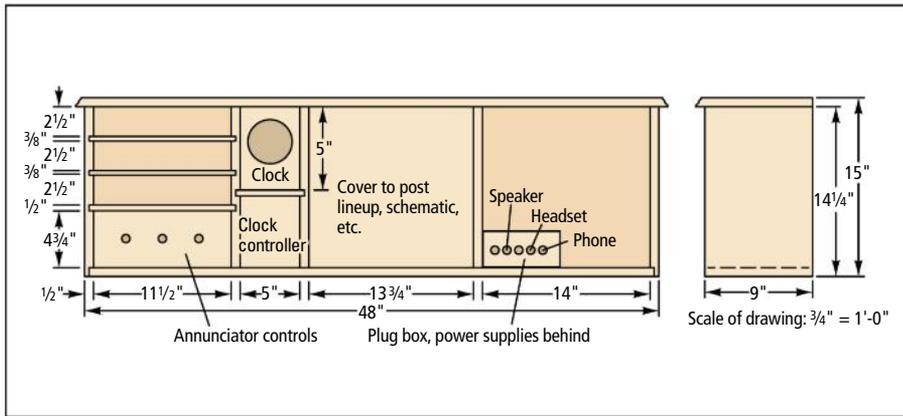
dispatcher keeps the trains rolling by writing train orders to supplement the timetable. An operator copies these orders, and both positions need some sort of desk at which to work.

I put the operator in the railroad room so he could interact with the train crews, while the dispatcher was in the

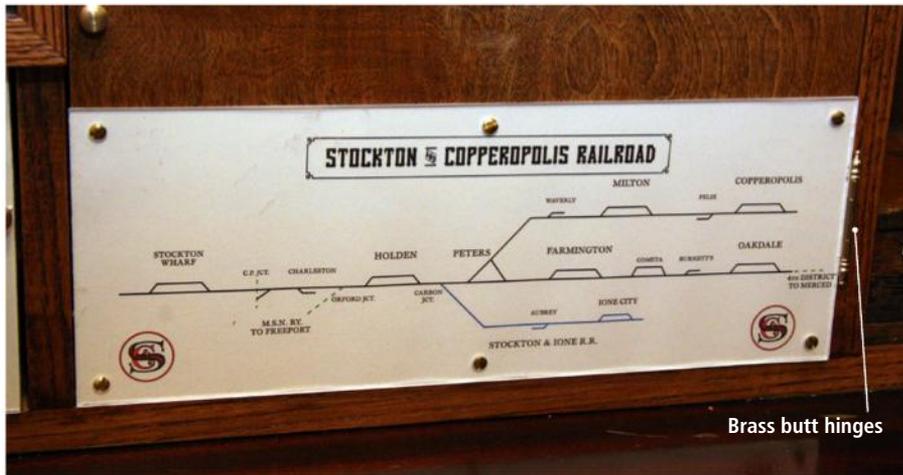
family room/crew lounge adjacent to the railroad. Now I had to figure out just what these desks would look like.

Dispatcher's desk

The dispatcher, or DS, would be in the family room. The room is used for



1 Drawing of the dispatcher's console. Don made the console using standard woodworking techniques.



2 Help for dispatchers. A schematic of the modeled part of the railroad is mounted on the center door of the dispatcher's console. This is handy for visiting dispatchers to familiarize themselves with the railroad. Above the map are clips for holding additional paperwork.

non-railroad purposes as well, so his station had to be compatible with the room. I couldn't just throw up a piece of plywood for a desk. My requirements for the DS were:

- A telephone that could be used to talk to the train crews or the operator.
- A buzzer system to alert the operator and the two yardmasters at Stockton and Oakdale that the DS was calling.
- Provision for a timetable, bulletins, and a map of the railroad for a visiting dispatcher.
- Storage for extra forms.
- A fast clock with an on-off control.
- A telegraph sounder and key.

Though this last item was just to show off the telegraph equipment, I also wanted it to work and connect with the operator.

Woodworking is enjoyable for me, but I didn't want to take the time to build a complete desk. Luckily, I had a 48" wide, 60-year-old mahogany desk. It just fit where I wanted the dispatcher. The task was then reduced to making something to fit on the desk that would not mar its

surface. The self-contained console shown in the lead photograph on the previous page was my solution. It's made of oak, which fits in with the trim used in my family room, and has all of the features I wanted.

At the left end of the console are shelves for extra forms and the dispatcher's copy of the *Police Gazette*. Beneath these are the call buttons for the two yardmasters and the operator. To the right is the fast clock, with its power switch below. Next comes the railroad map and clips to hold bulletins. The far right end of the console has the telephone mounted to it along with some old telephone selector equipment. On top of the console is a telegraph sounder on a swing arm, plus a loudspeaker connected to the train line.

The shell of the console was constructed using traditional woodworking techniques, including dado connections for the shelves. Brass butt hinges and knobs were used for the doors. The drawing in **1** shows the basic dimensions.

When all of the woodworking was done, it was stained the desired color (I used Aged Oak by Minwax) followed by two or three coats of varnish. I'm lucky in that my wife excels at finishing wood and did all that was needed on these pieces.

Wiring considerations

One of the requirements I had was that the console had to be easily disconnected from the layout. This involved using electrical terminal strips, a power strip, and Category 5 cable (Cat 5). Cat 5 is a twisted pair cable for carrying signals such as those in a computer network. It's mostly been replaced by Cat 5e and Cat 6 cable.

When I built the stud walls for the railroad room, I ran two lines of Cat 5 cable to locations where I installed standard sockets to accept RJ45 plugs. These were for the telephone, telegraph, buzzers, and other items. Two of these plugs were also put adjacent to the dispatcher's location in the family room.

Each wire in the eight-wire cable was assigned a function with a couple of spares. The DS console was connected to these sockets by more Cat 5 cable and RJ45 plugs.

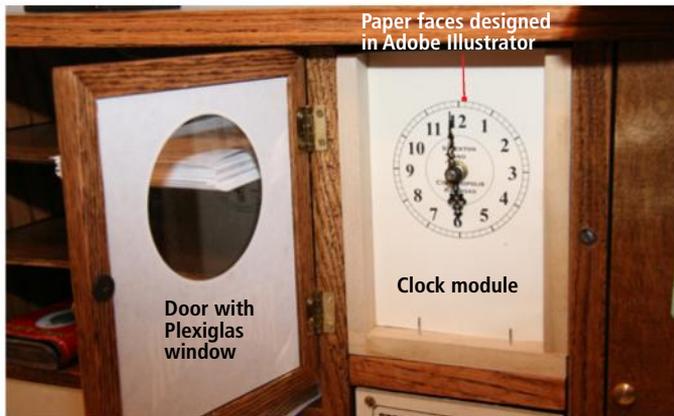
Several "wall wart" power supplies were used for the different features. These were plugged into a power strip, so that only one 110V connection is needed for the console. The power strip can be turned off when the railroad isn't in use. The large door with the railroad map, shown in **2**, can be opened to turn the power on and off or for modifications to the system.

Keeping time

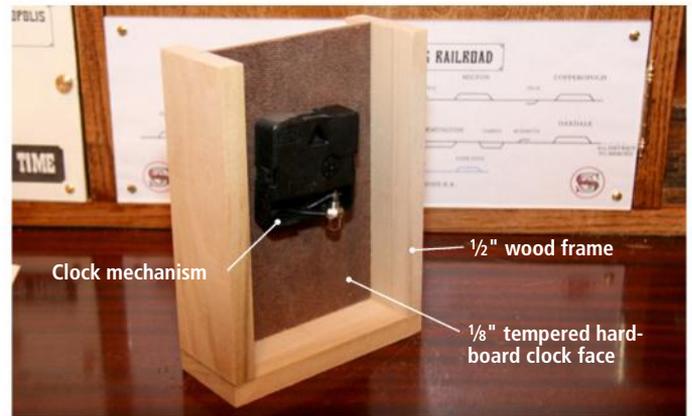
I wanted analog fast clocks in keeping with the railroad's era. The system I chose was made popular by Mike Dodd in a 1999 *Model Railroader* article.

I don't believe these are available any more, but a similar system is made by GML Enterprises. The fast clock controller has several switches for various settings, but the only one that concerns the dispatcher is the one that turns the clocks on or off. This toggle switch is mounted on the front panel of a door that allows access to the rest of the clock's controls.

Many 19th century clocks had the mechanism inside a case with a glass door. See **3** on the next page. Usually, the door had some design or wording on it that hid the clock's interior with the



3 Keeping time. The clock module is set on a shelf behind the clock door. Don printed the clock face and the cover on the door on his computer printer.



4 Clock frame. Don made the clock module using a fast clock mechanism in a holder made of wood and 1/8"-thick tempered hardboard.

exception of the face. The clock mechanism is mounted on a piece of 1/8"-thick tempered hardboard, which slides into a three-sided frame, shown in 4, which, in turn, sits on a shelf in the console.

A clock face was designed using Adobe Illustrator, printed on slightly yellowed paper to give an old-looking appearance, and glued to the tempered hardboard that holds the mechanism.

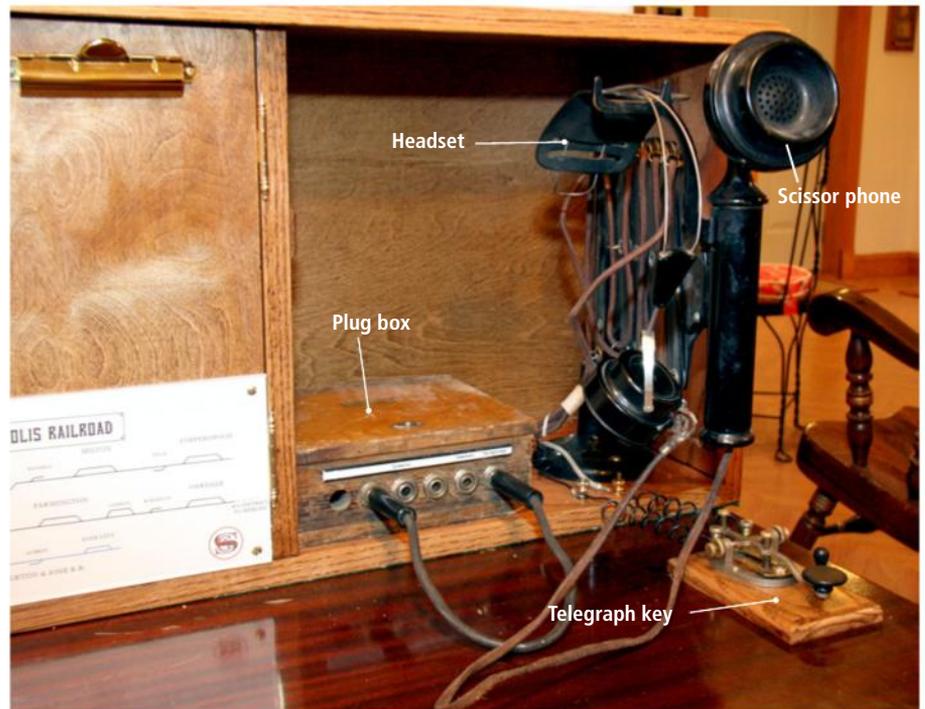
The clock door was made from small wood strips with a rabbet on the back to accept a piece of Plexiglas. I routed my own frame, but a small picture frame could also be used or a door could be built up from picture frame molding. A period-looking cover design for the clock was made, again using Illustrator, printed on plain paper to give it an antique look, then glued to the rear of the Plexiglas. When mounted in the frame, it gives the suggestion of an 1800s-era clock.

The fast clocks use two buses, each handling five clocks. More Cat 5 cable was run to connect the clocks. An additional four-wire socket was installed in the wall for the fast clock system.

Setting up communications

There are many types of telephone systems that can be used for model railroads. I had several pieces of old Western Electric telephone dispatching equipment, see 5, that I used to give the console the right "feeling," but any kind of phones will do.

Mine is an open train line, basically a party line. If someone wants to talk to the DS, he lifts the switch hook and waits for the line to be clear before talking. There's a second line that just runs between the dispatcher and the operator. A foot pedal is provided under the desk so the DS can easily switch from the train line to the operator line.



5 Lines of communication. The scissors phone mounts to the bottom of the console. Don attached felt to the bottom of the phone to prevent scratching the desk top. The small box to the left of the phone is a plug box to select whether the dispatcher will use the scissor phone and headset or a breastplate microphone with headset.

Behind the call buttons are a bell, which lets the DS know a yard is calling, and a buzzer, which sounds when the operator wants to talk.

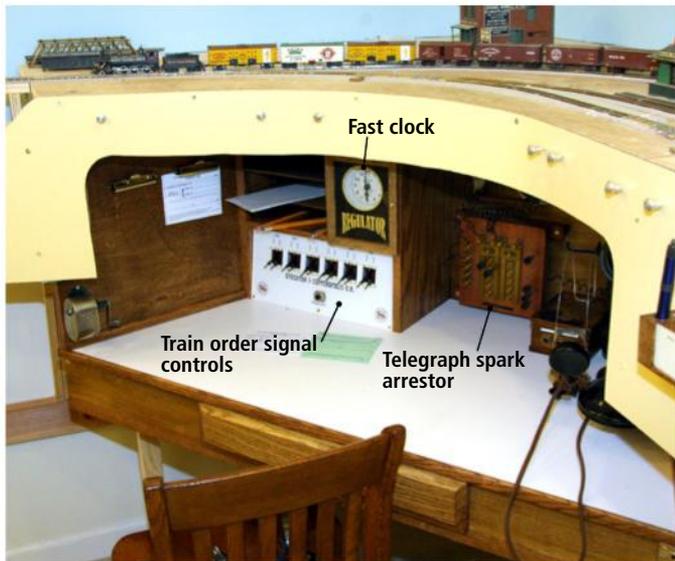
The signs on the console are made from 1/8"-thick Plexiglas. The image is drawn in Illustrator, cut out, then glued to the back of the Plexiglas. This gives a clean surface that won't mar with use, and the sign can easily be changed, if necessary.

Operator desk

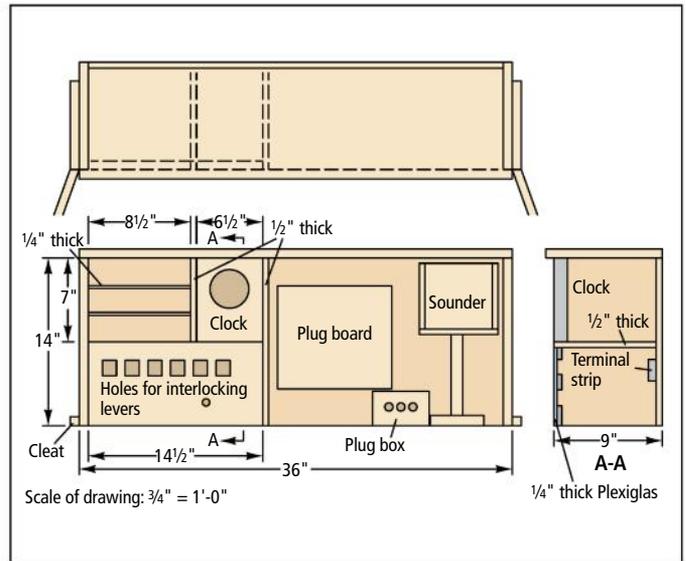
My requirements for the operator's desk were:

- Telephone connected to the dispatcher.
- Buzzer to call the dispatcher.
- A fast clock.
- A control system to operate the train order signals on the railroad.
- A form storage area.
- A telegraph sounder and key connected to the dispatcher.

Since aisle space is always a concern, I planned for the desk to be installed beneath the railroad as much as possible. See 6 on the next page. I did this by making a cutout in the fascia. A couple of 1 x 4 joists resting on the L-girders on the wall at one end, and 2 x 2 legs at the other end, provide the



6 The operator's console. Don built the console partially beneath the layout. It has a telegraph sounder, telephone and fast clock. The operator also controls the train order signals from the panel at the lower left.



7 Drawing of the operator's console. The operator's console sits on a table top attached to the layout's framework. Don built the operator's console with the same techniques as the dispatcher's console.

support for the desk top. The top is just a piece of $\frac{3}{4}$ " plywood screwed to the joists.

I used a piece of oak to finish off the edge of the plywood, and then laminated a piece of Formica plastic onto the desk top using contact cement. A vertical piece of oak was added below the desk-top to form a front into which a small drawer was placed.

The console itself is similar to the one used by the dispatcher. The arrangement of the features is shown in **7**. The left side has shelves for form storage. Beneath it is a bank of switches that can throw the train order signals at each station. I used levers from Hump Yard Purveyance to add a period feel. See "Converting Hump Yard Purveyance levers to electric control" on the next page.

Typically during a session, the DS would call the operator and say "Copy 2 19 west at Farmington." This means that the operator will be writing a Form 19 train order to be delivered to a west-bound train at Farmington. The operator would then set the Farmington west-bound train order signal to "stop" using the levers on the panel.

"Signals displayed westbound" would be the response to the DS, and then the order would be given, read back, and approved. Once the train crew received the order, the operator would restore the train order signal to its normal position. A button to call the DS is below these signal levers.

A fast clock similar to the dispatcher's is also here. The entire right side of the



8 Period equipment. Don outfitted the operator's desk with similar communication equipment to the dispatcher's desk. The plug board at the left connects the incoming telegraph line to the key and sounder.

console contains the phone and telegraph equipment, shown in **8**. Two plywood wings were attached to the sides of the desk to enclose the operating area and block the view of the railroad's underside. A small fluorescent light fixture is mounted in the layout area above the desk so the operator can see what he is doing.

Again, for this desk, RJ45 plugs on a Cat 5 cable are used to connect most of the functions to the main railroad cables. Power supplies are plugged into a power strip mounted beneath the layout. This strip plugs into a socket that's turned off when the railroad isn't in use.

All of the power supplies, with the exception of the light, are plugged into a power strip that is, in turn, plugged into a socket controlled by a switch by the door to the railroad room. The switch is turned off when the layout isn't in use.

My wife found a small oak swivel chair at an estate sale that is just perfect for the operator. Now the dispatcher and operator have decent places to work with all of the equipment they need at their fingertips. **MR**

Don Ball is a frequent contributor to Model Railroader. He wrote about his telephone system in November 2015.

Converting Hump Yard Purveyance levers to electric control

The train-order signals on my railroad are semaphores, each powered by a Tortoise by Circuitron switch motor. To operate them, I could've used single-pole double-throw (SPDT) toggle switches mounted at the operator's position, but I wanted something fancier. Hump Yard Purveyance (www.humpyardpurveyance.com) sells a nifty switch controller that looks a lot like a train-order lever. The Hump Yard Purveyance unit, however, is designed to use control cables rather than to be operated electrically.

It turned out to be easy enough to make a bracket from .020" thick styrene for each side of the switch and attach an SPDT microswitch to it. (See 9 and 10). I used a GC Electronics 35-822 switch (www.gcelectronics.com). All of these switches are then wired to another terminal strip, where cables can be run to the train order signals. (See 11).

The Tortoise motor requires a positive and a negative DC voltage to



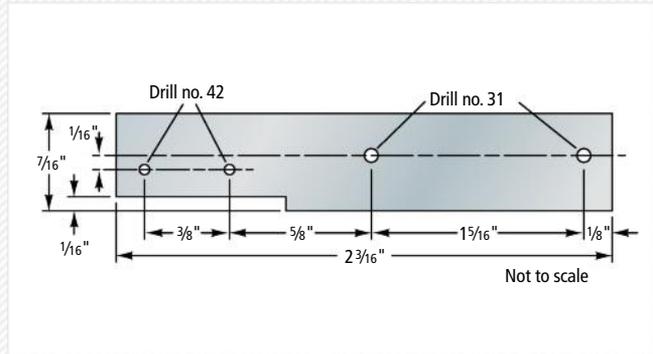
The Hump Yard Purveyance switch levers are mounted in a 1/8" thick Plexiglas panel at the operator's desk. The button used to call the dispatcher is below the levers. The panel is angled to allow a better view of the controls.

operate, one to move the signal up and the other to move it back. I have a common ground running through the layout. Using two power supplies, one negative and one positive, I wired each of them to the switches and to the common ground, shown in 12.

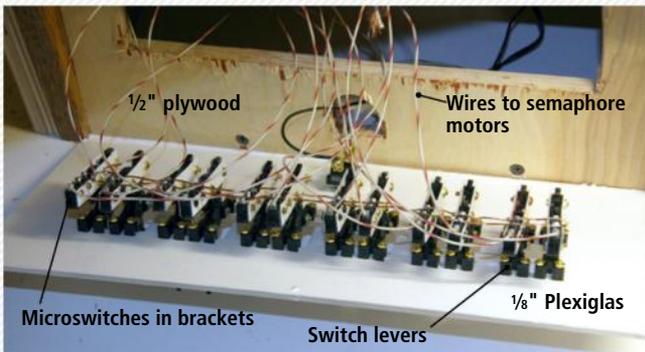
One wire running from the operator's desk to the train order signal Tortoise motor will give either positive or negative voltage depending on the lever position. The common ground is connected to each Tortoise to complete the circuit. – Don Ball



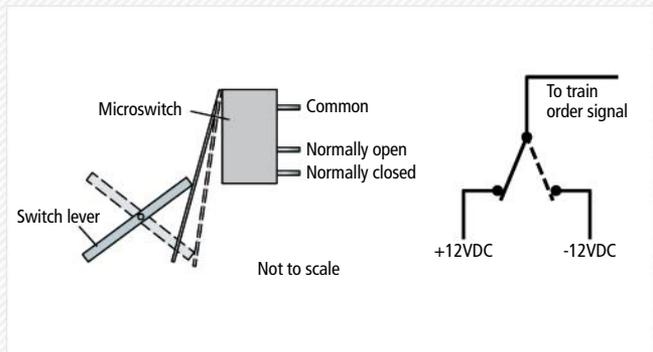
9 Making brackets. The Hump Yard Purveyance switch lever with a microswitch and two easily made brackets make up a very realistic train order control.



10 Bracket drawing. Don made two brackets from .020" styrene sheet as shown for each switch lever. The parts are assembled with small screws.



11 Mounting levers and switches. Switch levers are mounted on a sheet of Plexiglas. A 1/2"-thick piece of plywood provides structural stability.



12 Microswitch wiring. One power supply is connected to each of the contacts on a microswitch with the common contact connected to the train order signal.

ABCs of DCC power district management

This isn't exactly what we mean by power management blocks. DCC Corner columnist and contributing editor Larry Puckett explains how to divide model railroads into blocks to make them run smoothly and reliably.



Dividing your model railroad into blocks improves operation

By **Larry Puckett** • Photos by the author

How many times have you read or heard that blocks are not required for Digital Command Control (DCC)? For many small layouts that may be true, but for most medium to large layouts, blocks can make operations smoother and more reliable.

What do I mean by a block? Any electrically isolated section of track on a layout can be considered a block.

Electrically isolated blocks are created by cutting through both rails at the beginning and end of the desired block and providing separate power connections to each block.

On a direct-current (DC) layout, numerous blocks and related wiring are required to operate more than one train at a time. With DCC you can operate as many trains as your booster can power in one block, so why bother with creating more?

The primary reasons for having blocks on a DCC layout are to balance power needs, keep any short circuits from shutting down the whole layout, and to install a signal system.

Yards and industrial switching areas with numerous turnouts are prime targets for short circuits because wheelsets crossing turnout frogs may contact metal track components of opposite polarity. By placing yards and switching areas in their own blocks, you can isolate these potential trouble spots.

However, as soon as you start creating blocks, you have to power each one. A separate booster for each block is one way to provide power, as shown in ① below. But that approach is a bit of over-kill and can get expensive.

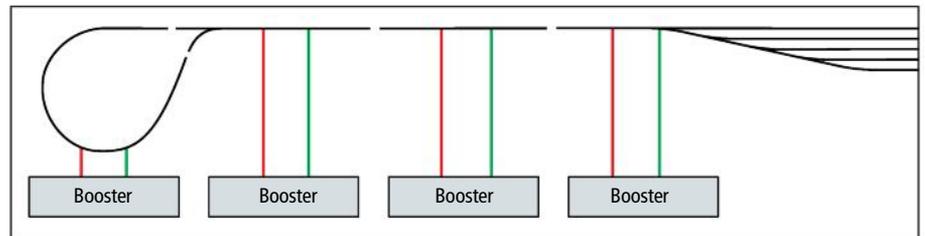
Power management

Power management allows you to take the power from one booster and divide it among several electrically isolated blocks ②. Power-management devices work by assigning a certain amount of current from the booster to each block, with the total actually exceeding that of the booster. The concept is based on the assumption that it's unlikely the maximum amperage will be required in all blocks at the same time.

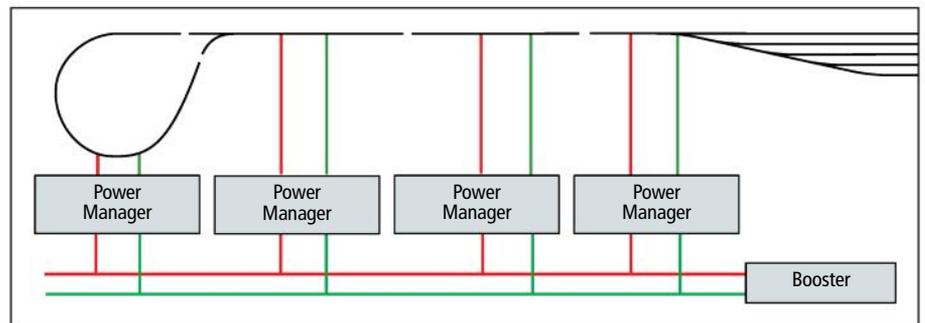
Let's assume you have four blocks and need a maximum of 2.5A for each one, for a total of 10A. Without power management, you'd either have to buy two 5A boosters, one 10A booster, or a combination of smaller boosters. With power management, you may easily be able to use a single 5- or 8A booster to cover the 10A total.

Balancing power needs

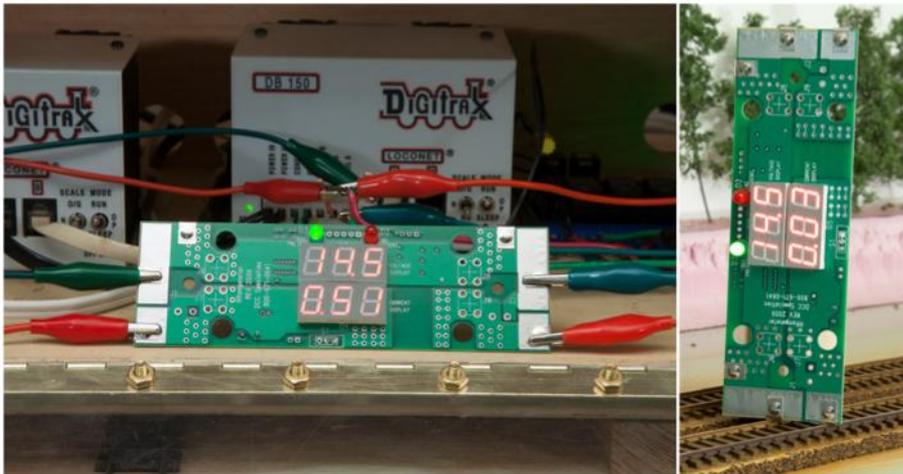
How is this any different from just using one booster to power all the blocks? First, power-management devices provide a circuit breaker for each block. This isolates shorts and also prevents the amperage from exceeding



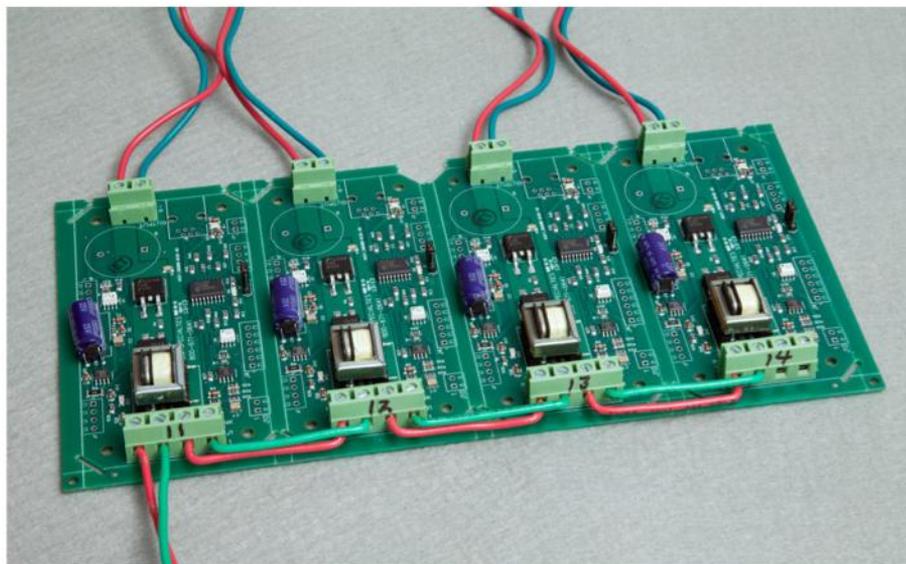
① **Power to the blocks.** One option for powering four isolated blocks on a layout is to power each with a separate booster. Though this approach works, it's not ideal and can quickly get expensive.



② **A better approach.** A more realistic option for powering four isolated blocks is to use one booster and four power-management circuits.



3 Handy tool. The DCC Specialties RRampmeter is capable of measuring the voltage and amperage of a DCC power bus. It can be wired into the bus feed from the booster to check voltage and amperage, as shown in the image at left. It can be used as a portable meter to measure track voltage, as seen in the photo at right.



5 DCC Specialties PSX-4. If soldering isn't your specialty, the PSX-4 might be a better option. All you have to do is cut the wires to length, insert them into the connectors, and tighten the screws.

the assigned trip-current value. The circuit breaker in each power-manager circuit will prevent an overload in any one block from shutting down the booster and stopping operations in other blocks.

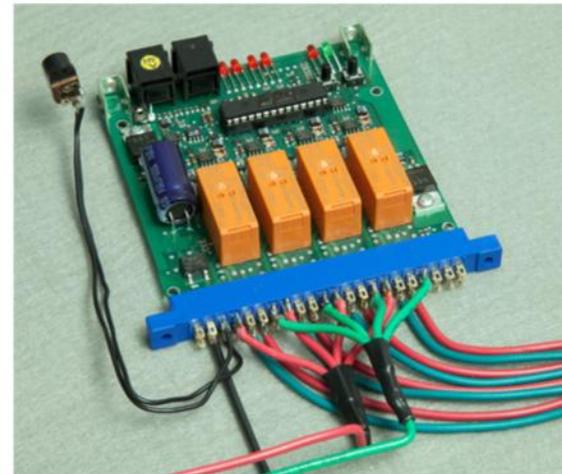
One limitation to power management is the total amperage being used in all the power-managed blocks at any one time can't exceed the rated capacity of the booster powering them. If you underestimate your power needs or end up running more trains in the power-managed blocks than you expected, you can exceed the booster's maximum rating, and it will shut down.

Developing a well-balanced power-management scheme requires estimating the typical current demand within each block. Keep in mind the age of your

locomotives and whether they have sound, a smoke generator, or extra lights. For example, my old Atlas Alco S-2s cruise at about .6A each. But my new Broadway Limited 4-8-4 with lights and sounds on maxes out at about .3A.

Another consideration is whether your passenger cars are lighted or you have accessory decoders drawing power from the track bus. Anything that takes power from the track bus must be added in. One of the best ways to measure your power needs is to wire a DCC Specialties RRampmeter **3** into the block bus and measure the average and maximum current draw directly.

Finally, enter the trip current value into the power manager, and then be prepared to make adjustments in power



4 Digitrax PM42. Wiring the PM42 power manager can appear overwhelming, but once you start, it's easy. Good soldering skills and equipment make the project much easier.

assignments once you've operated the layout a few times.

Power managers

Several manufacturers offer power-management devices. The two I'm most familiar with and use on my layout are the Digitrax PM42 and the DCC Specialties PSX-4. Although the PM42 **4** is designed to integrate with Digitrax equipment, it potentially can be used with any DCC system. The main limitation is that programming must be done with a Digitrax throttle or a computer program that can emulate such a throttle.

Programming is required to change the trip-current value for the blocks (the default is 3A), and to change the speed at which the circuit trips (there are four options), as well as various other functions. The PM42 can be configured for protecting four blocks as either a circuit breaker, automatic polarity reverser, or a combination of the two (although this reduces the total number of blocks that can be managed).

Maximum amperage for the blocks can be set from 1.5 to 12A in 1.5A increments. Although wiring the four outputs may look difficult, I found it fairly straightforward. Good soldering skills and tools make the task more manageable. [See DCC Corner, August 2017. – Ed.]

The PM42 circuit board is powered by a separate 14 to 16V transformer. Should you find that you need more power than is provided by a single booster, you can add another and re-balance the four outputs.

Continued on page 55

Preventing thermal shutdowns



The case on many boosters serves as a heat sink. A large, finned heat sink comprises the rear of the enclosure on Digitrax boosters.



Muffin fans like this one are commonly used to cool power supplies in desktop computers.



Larry built an enclosure for his boosters from Plexiglas and wood. The basic box measures 8" tall, 11" deep, and 24" long. A brass piano hinge makes the Plexiglas door easy to open if any maintenance is required. Magnetic latches securely hold the Plexiglas door shut, which helps keep dust out.



Larry installed the midget fan toward the rear of the enclosure so it blows air on the large, finned heat sinks.



Larry drilled several 1" holes around the box for wiring runs and to allow air to circulate.

One consequence of using power management is that your boosters may be forced to work harder. This could lead to overheating, since most boosters have two amperage ratings: the advertised maximum rating and the unadvertised sustained operating rating.

A common 5A booster can typically maintain that level of output for fairly short periods, after which it will develop a thermal overload and shut down. Most can only maintain a sustained output of about 3A. This is because under a sustained load the electronics in the enclosed case build up excess heat and exceed the preset overload temperature, usually 122 degrees F (50 degrees C).

Heat buildup is dependent on both the load as well as location. If the booster is in the sun or near a heat source, it will shut down faster than in a cool, well-ventilated location. Because the metal case usually acts as a heat sink, units should not be stacked on one another, a transformer, or any other heat source.

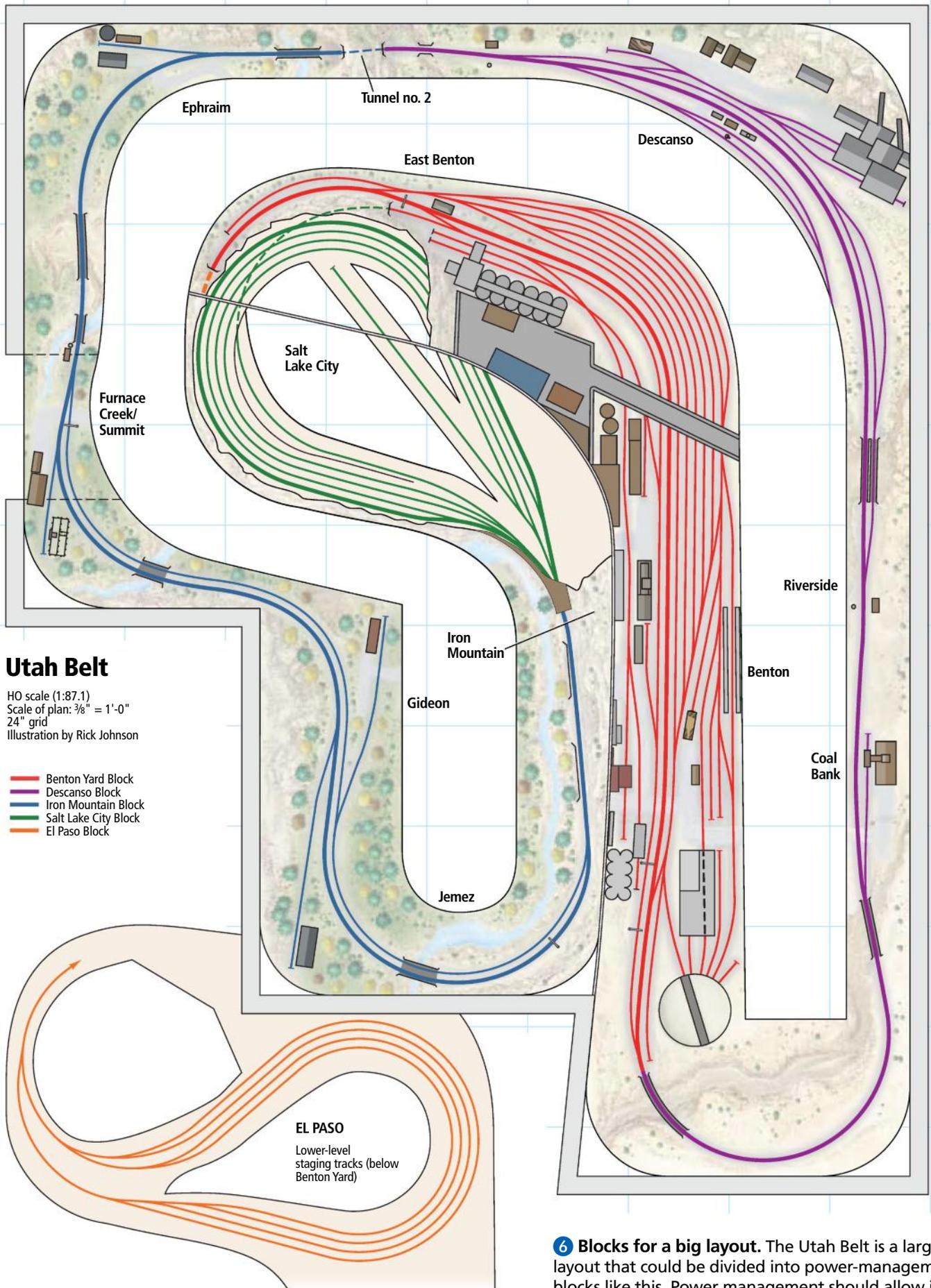
With a properly balanced power-management scheme, booster(s) may need to operate closer to their maximum rating more of the time, instead of the lower sustained rating. By having a small fan blow directly on your boosters, you can reduce thermal overloads. However, if

you have a couple of boosters, power managers, and other electronic devices, it can be more efficient to put them in an enclosure with a fan to provide additional cooling. This also helps organize your components and wiring, and prevents dust from accumulating on the components.

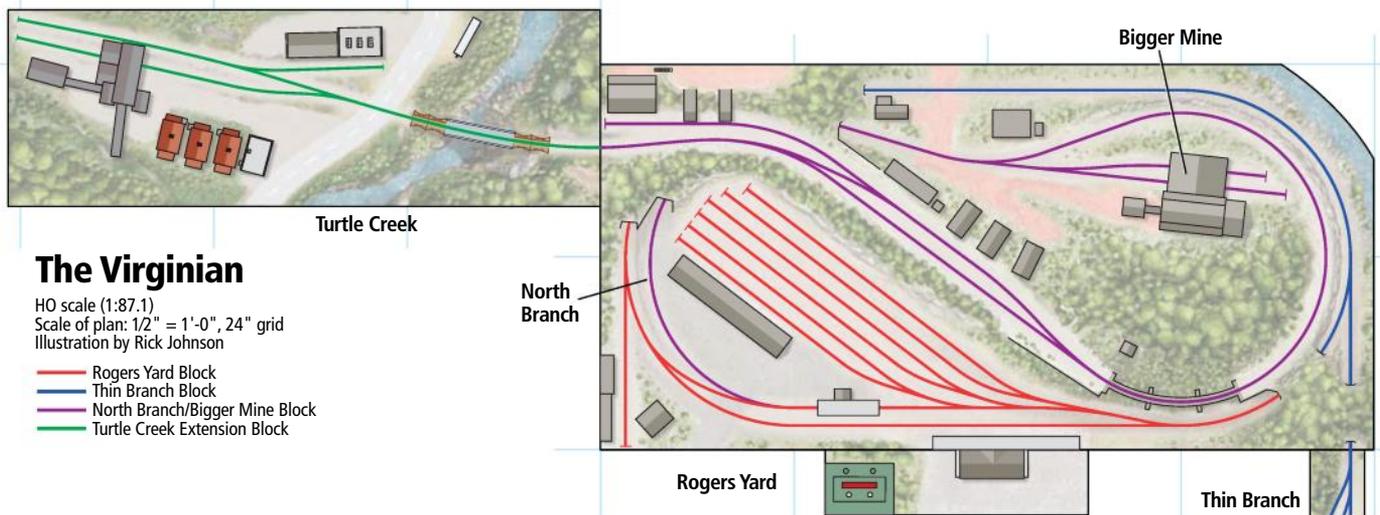
For my boosters I built an enclosure out of wood and Plexiglas. This is a simple box sized to provide an 8" tall, 11" deep, and 24" long interior. The materials consisted of a 6-foot 1 x 12 cut into four pieces for the top, bottom, and sides and a 1/4" x 8 3/4" x 24 3/4" sheet of plywood for the back. I used a 9" x 25" piece of Plexiglas for the door and a piano hinge to allow it to swing down. Finally, I added some magnetic latches to hold the door shut.

Airflow is provided by a midget fan similar to those installed in the back of desktop computers. I chose one that operates on DC power and uses a plug-in transformer for power. The air escapes through the various holes required for all the power and bus wires.

You have the choice of installing the fan so that it blows air in or out. I installed the fan on the inside of the enclosure so it pulls air in. I placed a small circle of furnace filter material in the opening to keep most of the dust out. — Larry Puckett, contributing editor



6 Blocks for a big layout. The Utah Belt is a large layout that could be divided into power-management blocks like this. Power management should allow it to be operated with a single 8A booster.



The Virginian

HO scale (1:87.1)
Scale of plan: 1/2" = 1'-0", 24" grid
Illustration by Rick Johnson

- Rogers Yard Block
- Thin Branch Block
- North Branch/Bigger Mine Block
- Turtle Creek Extension Block

Continued from page 52

The main limitation of the PM42 is that the same trip-current value applies to all four blocks. You can't have one block set to 3A and the rest set to 1.5A each.

DCC Specialties produces the Power Shield series of power managers, typically referred to as PSX. See 5 on page 52. The trip current can be set from 1.27 to 17.8A in 1.27A increments and can be programmed using either jumpers soldered to the board or DCC ops mode programming.

Because the PSX circuits are electrically independent, you can set different trip current values for each block. The PSX can be programmed by all the major DCC systems and can interact with their control buses. In addition, instead of having selectable trip speeds, PSX uses an intelligent logic algorithm that can discern the difference between a short and the current load caused by the in-rush current of sound decoders starting up.

One convenient feature of the PSX is that it's available in several configurations. This is an important consideration when it comes time to decide whether you want your power managers all in one place or distributed around the layout near the blocks they power.

The Digitrax PM42 has all four power-manager circuits on a single board, so all your wiring has to fan out from one location. The PSX power managers are available with one, two, three, and four circuits on a single board. You can scatter combinations of them around the layout with their boosters and shorten wiring runs.

Also, because the circuits are completely independent, if you purchase a board with multiple circuits, they can later be separated along the provided score lines if you decide to go from a central to distributed configuration.

There are a couple things to look out for with power managers. First, low-output boosters can create problems, since they may not be powerful enough to stay on if the power manager has to cycle on and off repeatedly during a full short. To counter this problem, the PSX can be configured to remain off in case of a such a short, and then can be restarted using a remote switch. The unit also offers a power boost mode, which helps some boosters start even with heavy sound decoder loads.

Locating blocks

When dividing a model railroad into blocks, I usually start by isolating yards and switching areas with lots of turn-outs. Next, I focus on staging yards. Finally, I block out long runs of single or double track.

Power management really shines on medium to large layouts like Eric Brooman's original Utah Belt layout. I would break this 325-square-foot layout into five blocks: the main yard at Benton, Descanso and the long section of main-line track associated with it, the long stretch of track from Tunnel no. 2 to Iron Mountain, the hidden reverse loop and staging tracks in Salt Lake City, and the hidden reverse loop and staging tracks in El Paso 6.

Using a PSX-3, I would start with a current draw of 3.81A for the Benton block and 2.54A each for the Descanso and Tunnel no. 2 blocks.

The two reversing loops require special attention. DCC Specialties also makes the PSX-AR, which adds auto reversing to the PSX circuit board. I'd use two of these set to 1.27A each to control the reverse loops and staging tracks at Salt Lake City and El Paso. Since the

7 Blocking a small layout.

The Virginian layout is a small model railroad that can be operated using a fairly low-powered DCC system. The main advantages to be gained from dividing it into blocks is sharing the booster and isolating short-prone areas.

total potential current demand for all five blocks is 11.43A, I would start with an 8A booster to power the blocks.

On the 50-square-foot Virginian project layout, which first appeared in the January through June 2012 issues of *Model Railroader*, Model Railroader Video Plus producer David Popp wired it as one large block. He used a 2A NCE Power Cab DCC system capable of simultaneously operating two or three HO locomotives.

Because of the low amperage output of this layout, it's hard to get much advantage from power management. I would use a slightly more powerful 2.5 to 3A system, such as the Digitrax Zephyr. The best David could have done is divide the layout into four blocks: Rogers Yard, the North Branch and Bigger Mine, the Thin Branch, and the Turtle Creek extension 7.

Using a PM42, David could have assigned a 1.5A trip current to all four blocks for a total of 6A powered by the 2A booster. This would have prevented a short circuit in one block from shutting down operations on the whole layout.

Power management can be a useful tool for operating your model railroad. It can reduce the frustration resulting from short circuit shutdowns and power overloads. All it takes is a little time to balance the power-manager settings for your specific operating scheme. **MR**

Adding sound to a vintage Kato locomotive



Larry Puckett's NW2 heads out with a transfer run on his Piedmont Southern. New, smaller decoders made it feasible to add sound to this venerable Kato switcher.

Kato locomotives are known for being quiet, efficient, powerful models. Its HO scale Electro-Motive Division NW2 switcher is a good example of this, and should be at home on just about any era-appropriate layout.

Although they've been out of production for a few years, there are thousands of them floating around at train shows, swap meets, and internet auctions. I checked eBay and found 40 listed, so if you missed picking one up while they were in production, it's not too late.

My NW2 is a smooth and reliable runner that can out-pull all of my other switchers. Part of the reason for all the power is its weight, which checks in at a hefty 12.5 ounces. However, all that power and weight come at a cost – there isn't room under the hood for even a stray hair!

Kato used a split die-cast metal frame that completely fills the shell. The cab's detailed plastic interior further complicates a sound decoder installation. However, recent developments in miniaturization convinced me it was time to give sound a try.

Initially, I was challenged to find a place for the decoder. I didn't want to sacrifice the cab interior, so I looked for a way to add a decoder under the hood. Because of the tight fit, my only option appeared to be cutting out a space in the chassis. To keep the cutting to a minimum, I selected an ESU LokSound

Select Micro decoder for its small size, excellent performance, and impressive sound quality.

Since I don't have access to a milling machine, I took the crude route and hacked out a rectangle from the front of one half of the die-cast chassis ①. This was actually easier than it sounds, using a Dremel EZ Lock metal cutting wheel.

One cut across the chassis and another lengthwise created a space large enough for the decoder and wires. I made my cuts at the front of the chassis to avoid the motor and flywheel farther back. To make room for the wires going to the cab, I also cut a V-shaped notch in the top of the chassis ①.

With the cutting out of the way,

I moved on to the motor. Power is picked up from the frame halves using metal wipers attached to the motor brushes. I clipped these wipers short, leaving enough for solder pads, and attached orange and gray wires to the bottom and top contacts, respectively. I fed the orange wire up through the plastic frame that insulates the motor from the chassis and fed both wires out through one of the small cast-in holes ②.

Next, I was faced with providing power pickup. Since each half of the frame was designed to conduct track power, I opted to tap that source of power. The original circuit board at the front of the model slides into slots in the frame, providing power for the light-emitting diode (LED) headlight.

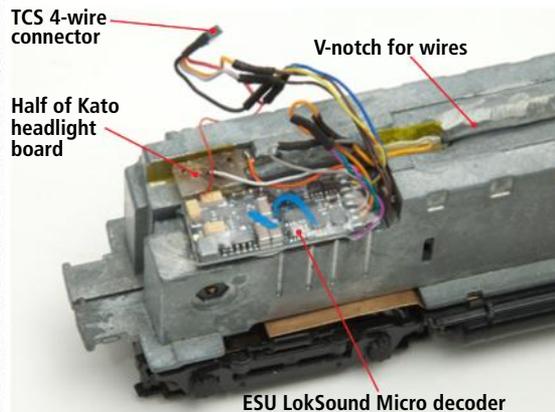
I removed the LED and resistor, then cut the board in half lengthwise. I soldered a red pickup wire to the metal trace on the board and slid it back into its slot, which gave me power from the right rail.

The left rail pickup was a bit more difficult. Since I had cut out the front section of the frame on the left side, I couldn't use the circuit board trick there. Finally, I hit upon a solution. I drilled a .020" diameter hole in the frame next to the decoder and inserted a piece of .020" brass wire. I was then able to solder the black wire from the decoder directly to this wire.

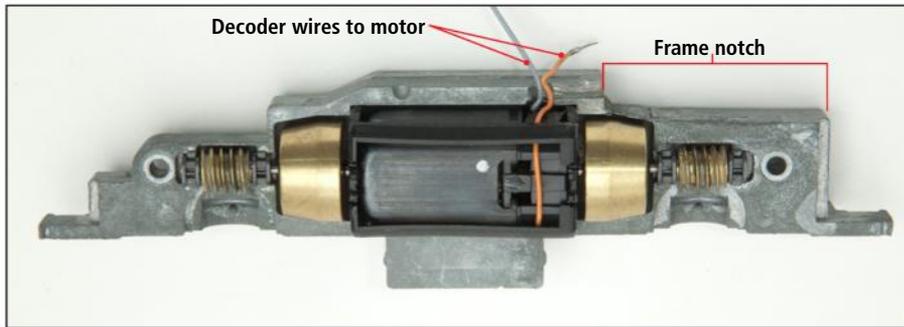
I didn't want to reuse the old LED headlight. It's too large and has an orange tint. I ordered some small surface-mount device (SMD) LEDs on eBay from a supplier in China (no. 0603 SMD LEDs, stores.ebay.com/wehonest-china). These came with the wires already attached. I ordered both warm white and cool white versions.

The warm white was too orange and the cool white had a blue tint. Using an old trick, I coated the cool white LEDs with Tamiya X-26 clear orange paint. A thin coat corrects the color and gives a pleasant golden white light.

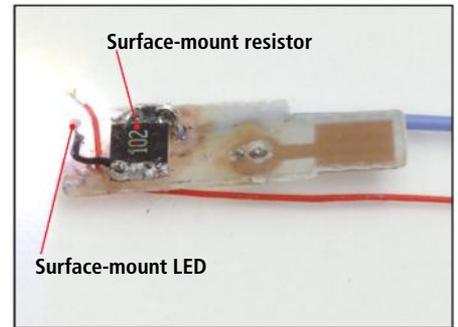
Using cyanoacrylate adhesive (CA), I attached a small surface mount resistor (1,000Ω, ½ watt) to the underside of the old circuit board I used for power pickup. I then soldered the blue wire from the decoder to one side of the resistor and the red (+) wire from the LED to the other side.



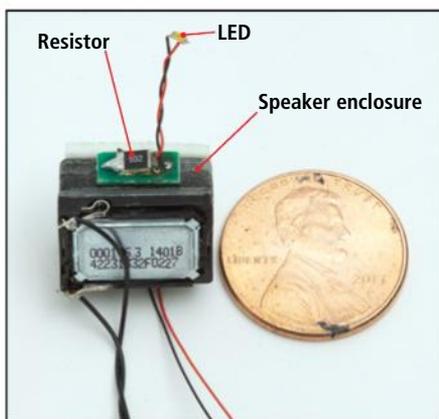
① **Notches here and there.** Larry cut a rectangle from the front half of the die-cast metal chassis for the decoder and added a V-notch on the top of the chassis for the wires.



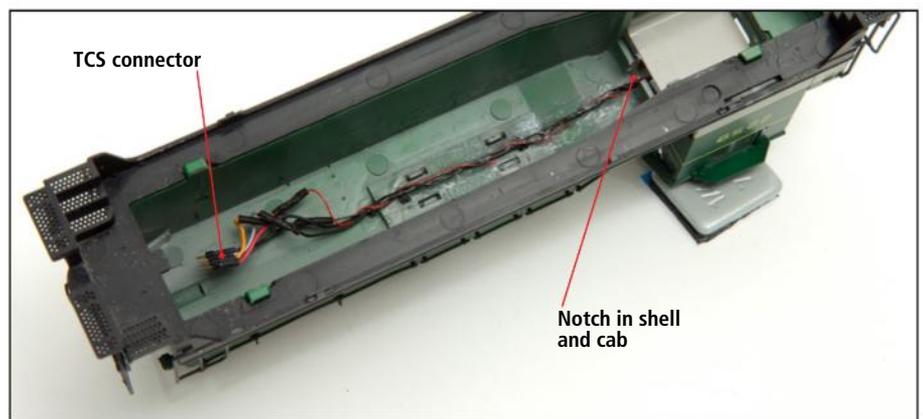
2 Wiring the motor. Larry fed the orange and gray wires up through the plastic frame that insulates the motor from the chassis and out through one of the small cast-in holes. He cut the notch in the frame for the ESU LokSound Select Micro decoder with a metal-cutting wheel in a motor tool.



3 Power and light. Larry glued a 1KΩ surface-mount resistor to the underside of the old light board and attached the wires from the decoder.



4 Light and sound. In a similar fashion, Larry glued a 1KΩ SMD resistor to the side of the sugar cube speaker enclosure and attached the LED to it.



5 Routing the wires. After installing the speaker and light into the roof of the cab, Larry then glued the wires to the cab inside the shell, making sure they were perfectly centered to match the V-notch he had cut into the top of the frame. The TCS connector simplifies locomotive service by making the shell removable.

Finally, I connected the black (-) wire from the LED to the white wire from the decoder **3**. This placed the resistor and LED under the circuit board when installed and lined up with the back side of the headlight insert.

I removed the old headlight enclosure in the cab to make room for a sugar cube speaker. An 11 x 15mm speaker from Streamlined Backshop appeared to be a good fit, and being all black, it wasn't too visible through the cab windows. For the headlight, I used another small LED with an SMD resistor cemented to the back of the speaker enclosure **4**.

A small piece of double-sided foam tape secured the speaker to the roof of the cab with the LED sitting conveniently inside the recess in the headlight. Painting the flanges of the headlight casting and plugging the opening with some putty will prevent the cab being lit up whenever the rear headlight is on.

After installing the windows in the cab, I cut a notch in the front of the cab

insert and a matching one in the rear of the shell for the wires to pass through. While centering the wires in the front of the cab, I installed the cab detail insert, then mated it to the shell. I glued the wires inside the shell, making sure they were centered **5** to match the V-notch I'd cut into the top of the frame.

I used a TCS 4-wire connector for the shell wiring **1**. Since most of the connector wire colors didn't match those from the speaker and headlight wires, I just kept track as I soldered them. With the wires all connected, I mated the male and female ends and slid the shell onto the frame, then moved to the programming track.

My first job was to download and install the correct EMD 567 prime mover sound file from the LokSound website. The LokProgrammer interface and program makes this a quick and easy task. Here's a hint: If you buy a LokSound universal decoder, make sure you ask the dealer to install the correct prime mover sound file for you. A friend installed a LokSound decoder in his steam locomotive and when he turned it on, only diesel sounds came out.

I prefer to do the bulk of my programming using DecoderPro in the Java Model Railroad Interface (JMRI, www.jmri.org), so I added the locomotive to the roster and programmed the address. For a complete introduction to using DecoderPro, I now have a video tutorial series on my website (www.dccguy.com).

The LokSound default settings typically require few changes other than the address, so I was running the switcher in just a few minutes. For more on programming LokSound decoders and to hear the sounds, visit my website. 





Bachmann Sound Value HO scale GS-4

Southern Pacific no. 4449, one of the world's most famous steam locomotives, has been part of Bachmann's HO scale product line for many years. However, this latest release marks the first time Bachmann's GS-4 has come factory-equipped with the firm's Sound Value decoder. Developed in conjunction with SoundTraxx, the decoder provides realistic sound effects on direct-current (DC) and Digital Command Control (DCC) layouts.

Prototype. Lima Locomotive Works delivered 30 semi-streamlined 4-8-4 locomotives to the Southern Pacific in 1941. Classed GS-4 by the SP ("GS" stood for either "Golden State" or "General Service"), the locomotives were painted in the SP's iconic orange and red-orange livery to match the road's streamlined *Daylight* passenger trains.

The GS-4s led *Daylight* trains, including Nos. 98 and 99 between Los Angeles and San Francisco, until 1957.

The only surviving GS-4, no. 4449, was retired in 1958. After being overhauled in the 1970s, the engine led the 1976 Bicentennial Freedom Train and has made many more excursion runs since then.

The model. The HO GS-4's major dimensions are within scale inches of prototype drawings published in the April 1972 *Model Railroader*. The model's drivers measure 77 scale inches, while the prototype has 80" drivers. The gap between the locomotive and tender is about a scale foot wider than the prototype, which helps the model handle 22"-radius curves.

The locomotive and tender are made primarily of plastic. Most of the detail is

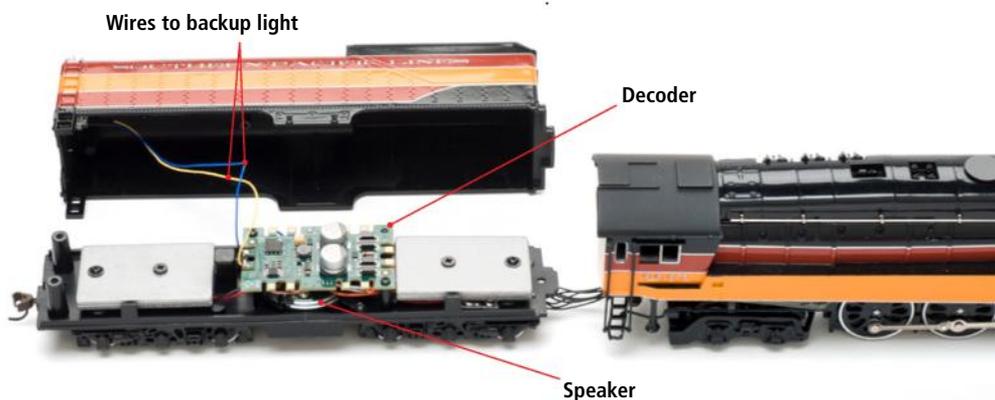
crisply molded and matches the prototype, including rivet seams and boiler bands. The throttle linkage and tender ladders are also molded in. The locomotive and tender handrails are separate metal parts, while the cab side handrails and ladder are separate plastic parts. All the cab windows are open, without any glazing.

With its high-gloss finish, the model is painted to represent no. 4449 as she looks in modern-day excursion service. The paint job matches prototype photos and features sharp color separation and accurately placed lettering. The train indicator boards are blank, but numbers could be added from a railroad alphabet decal set. Train indicator numbers are also available in Microscale Decals set no. 87-1271, Southern Pacific *Daylight* steam locomotives.

The mechanism. Similar to the earlier Bachmann Spectrum-series release, a brass-flywheel-equipped can motor is mounted to the die-cast metal chassis. A worm gear on the front of the motor is connected to a gear box on the third driver axle. The side rods transfer power to the other three driver axles.

A wiring harness connects the electronics in the locomotive to the dual-mode decoder in the tender. A well-enclosed 28mm round speaker is mounted to the tender floor.

The model's heavy frame and powerful mechanism provided a drawbar pull equivalent to 22 free-rolling HO scale passenger cars on straight and level



The Sound Value model features a SoundTraxx decoder and well-enclosed, downward-facing speaker in the tender.



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Conducted by Dana Kawala

PERFORMANCE TESTS

DRAWBAR PULL	
3.2 ounces	22 HO scale passenger cars

SCALE SPEED (DC)	
VOLTS	SCALE MPH
5 (start)	3
7	22
9	40
12	67

SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	2.5
7	15
14	30
28	67

vidual sound effect volume levels and add momentum. A printed quick-start guide was provided in the box, and a list of supported CVs is available on the Bachmann website.

The SoundTraxx Sound Value decoder supports many of the functions of the firm's Tsunami decoder, including the bell, whistle, steam release, and dimmable headlight and backup light. It doesn't have a coupler sound or button-controlled brake.

Out of the box, the whistle sounded too high-pitched. Thankfully, there are three other choices available. After I programmed CV115 to a value of 1, the GS-4 sounded a deep steamboat whistle more reminiscent of the prototype.

The prototype also had an air horn, which is modeled on the Skyline casing of the Bachmann model. However, although an air horn is available as a "whistle" choice when programming CV115, the Sound Value decoder doesn't offer the dual-whistle/horn feature that's available on a Tsunami.

DC performance. On our DC test track, the locomotive sounds started after I applied 6V to the track. I then dialed the throttle back to 5V, and the model rolled at 3 scale mph. At 12V the model reached 67 scale mph.

As I increased and decreased the throttle, the exhaust chuffs nearly matched the motion of the drivers. Other automatic sound effects include the air pumps, a bell that comes on at speeds under 3.5 scale mph, and a single whistle blast that sounds after the locomotive has stopped. A grade-crossing whistle signal sounds when the throttle is quickly

Facts & features

Price: \$399.99 (DCC and sound), \$299.99 (DCC, no sound)

Manufacturer

Bachmann Trains
1400 East Erie Avenue
Philadelphia, PA 19124
www.bachmanntrains.com

Era: 1941 to present day

Road names: Southern Pacific no. 4449 (present-day *Daylight* excursion service), American Freedom Train no. 4449, SP no. 4436 (1946 to late 1950s *Daylight*), Western Pacific (GS-6)

Features

- Dual-mode DCC On Board (no sound) or Sound Value decoder (sound version)
- Electrical pickup on all locomotive drivers and front and rear wheels of each tender truck
- E-Z Mate Mark II couplers mounted at correct height
- Light-emitting diode headlight and backup light
- Minimum radius: 22"
- RP-25 contour metal wheels in gauge
- Weight: 1 pound, 6.7 ounces (engine and tender); 1 pound, 1 ounce (engine only)

track. The GS-4 also pulled six scale 85-foot passenger cars up a 3 percent grade, which is impressive for a steam locomotive that isn't equipped with traction tires.

The model's reliable electrical contact kept the sounds and lights steady around curves and through a yard ladder and crossovers. All the drivers and the front and rear wheels of each tender truck pick up track power.

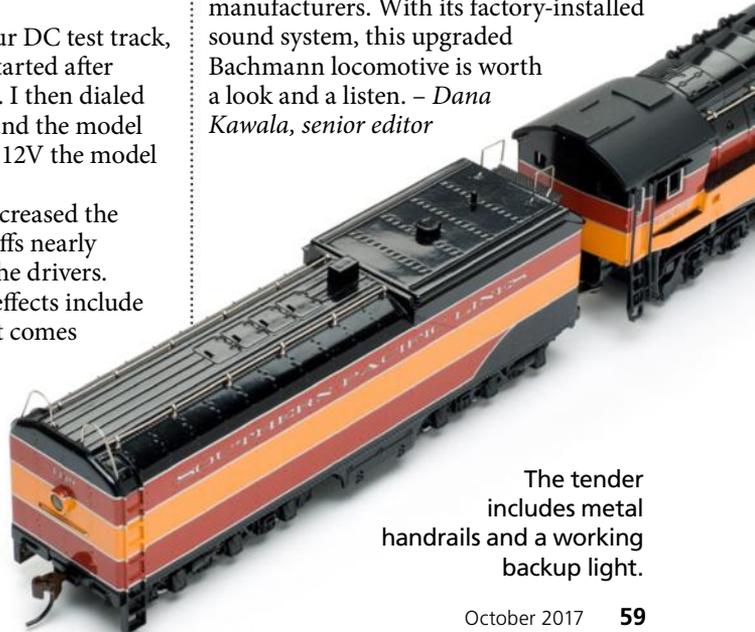
DCC performance. After placing the model on our DCC test track, I heard the thump-thump of the locomotive's air pumps. The Sound Value decoder supports 28 or 128 speed steps; I used the former for our tests. The latter offers finer control, especially at slow speeds.

As I advanced the throttle to speed step 1, the exhaust chuffed and the model crept along at 2.5 scale mph. The HO GS-4 reached a top speed of 67 mph in speed step 28, which is more than fast enough for the compressed distances between stations found on most model railroads. However, the prototype could reach top speeds of more than 100 mph.

The chuffs were a bit out of synch, but I programmed configuration variable (CV) 116 until I found a value that provided a prototypical four chuffs per wheel revolution at 40 scale mph. There is no mechanical cam, so the synchronization isn't perfect at all speeds. Other CVs let me adjust indi-

increased. There are other options for automatic sound effects, but to program them requires a DCC system or a DC sound controller such as a Model Rectifier Corp. Tech 6.

The iconic SP GS-4 remains a popular subject for model railroaders and model manufacturers. With its factory-installed sound system, this upgraded Bachmann locomotive is worth a look and a listen. — Dana Kawala, senior editor



The tender includes metal handrails and a working backup light.

MORE ON THE WEB

Subscribers can watch a video demo of the Sound Value GS-4. Click on the link under Online Extras at ModelRailroader.com



InterMountain HO scale GP10 diesel

A Paducah, Ky.,-rebuilt Illinois Central GP10 diesel locomotive is now available for the first time in injection-molded plastic from InterMountain Railway Co. The HO scale model features railroad-specific details, a die-cast metal frame, and etched-metal grills and step treads.

A rebuilding bonanza. From May 1967 until December 1982, Illinois Central (Illinois Central Gulf after August 1972) rebuilt diesels at its Paducah shops. During the 15-year program, the railroad rebuilt 708 locomotives for the IC and ICG. Of those, 347 were GP10s, IC's designation for rebuilt GP9s.

As with any rebuilding program, there were variations. The first five GP10s retained their high short hood; the remaining locomotives had a low short hood. Early chop-nose GP10s lacked nose headlights. Units built between July 1969 and October 1971 had horizontal "frog eye" headlights on the low short hood. Subsequent units had vertical headlights recessed in the nose.

From April 1969 forward, all GP10s were fitted with a paper air filter, replacing the oil bath air filter used in GP9s. The shape of the housing for the new filter was dubbed an "ox yoke" because of its shape. The horsepower rating of the GP10s also changed during the program.

For a thorough history of the Illinois Central Paducah rebuilds, read "Diesel Rebuilding at Paducah: 1967-1982" in the Sept./Oct. 1999 issue of *Diesel Era*.

Our review sample is decorated as IC no. 8134. The prototype locomotive was built in January 1956 as IC GP9 no. 9134.

The Paducah shop forces rebuilt the locomotive as GP10 no. 8134 in October 1969. Number 8134 later served on the Chicago Central & Pacific from the mid-1980s until 1996, when it returned to the IC after the railroad purchased the CC&P.

The paint on the model is smooth and evenly applied, and the lettering is crisp. There were a few small voids in the ILLINOIS CENTRAL lettering between the doors, but nothing that couldn't be fixed with paint and a fine brush.

The cab features a control stand and three seats, all painted tan. Crew figures aren't supplied with the model, but they'd be fairly easy to install.

The majority of the details match prototype photos I found online. The wire grab irons and lift rings are scale sized, but the can antenna on the roof is slightly oversized.

There were a few minor detail issues, but nothing I'd consider deal breakers. The Automatic Car Identification plates attached to the handrail stanchions and the wind deflectors on the cab sides were omitted, the cab sun shades should be cloth, and the Gyalights between the number boards should have lower visors (and the upper light should be red). The J-shaped nose handrail wasn't original to the 8134. Based on photos, it must have been added sometime in the 1970s.

To separate the plastic shell from the die-cast metal chassis, I removed the front and rear draft-gear boxes and two body screws (one on each side) in front of the fuel tank. The model uses light-emitting diodes for the headlights, class lights, and number boxes. No wires are

tethered to the shell on our sample, making it easy to remove. However, models with rooftop beacons have tethered wires, so use caution when removing the shell.

Inside is a skew-wound motor with dual flywheels. A screw-mounted weight spans the motor, flywheels, and rear truck. Our sample features an ESU LokSound Select sound decoder. The printed-circuit board is attached to the top of the weight with four screws. The speaker is above the rear truck.

Per the four-page operator's guide, InterMountain doesn't recommend operating decoder-equipped locomotives on DC layouts. However, InterMountain offers a 21-pin plug that allows those models to operate on DC. The company notes that some lighting functions may not work properly when the plug is used.

Like most models equipped with DCC and sound, the default address is 3. However, don't expect to hear sound effects right away. You need to select F8 to activate the engine-startup sequence. It takes about 20 seconds for the engine to get to idle before speed commands can be applied.

If patience isn't your thing, you can adjust configuration variables (CVs) so track power activates the engine-startup sequence and the startup delay is deactivated. These changes are covered in the operator's guide.

I tested the model in DCC with NCE's PowerCab. The locomotive moved at 1.3 scale mph at speed step 1. At speed step 28, the model reached 76 scale mph.

I was quite impressed with the GP10's pulling capability. The model pulled 13

PERFORMANCE TESTS	
DRAWBAR PULL	3 ounces 43 HO freight cars
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	1
7	19
14	49
28	76

50-foot freight cars up a 3 percent grade on our Milwaukee, Racine & Troy layout. With a drawbar pull of 3 ounces, the locomotive can pull 43 cars on straight and level track.

Our model's decoder also features ESU's Full Throttle diesel effects package. Function 9 is DRIVE HOLD. This allows you to increase or decrease the engine rev while maintaining a constant speed.

Function 10 is the INDEPENDENT BRAKE feature. The function button must be pushed a second time to release the brake.

RUN 8 and COAST are also included, but not mapped to a specific function key. I followed the instructions available on the IM website to map the functions. RUN 8 puts the locomotive into notch 8 as soon as I applied the throttle. This simulates the locomotive starting out with an extra-heavy load. COAST sets the RPM to idle, and the throttle controls only the speed without affecting the sound. This effect is useful for simulating a locomotive drifting downgrade.

I'm a fan of odd locomotives, but I never thought I'd see a Paducah GP10 in

Facts & features

Price: with ESU LokPilot motor-only decoder for Digital Command Control, \$189.95; with ESU LokSound sound decoder, \$279.95; DC plug, \$5 (free if DCC decoder is returned)

Manufacturer
InterMountain Railway Co.
1224 Boston Ave.
Longmont, CO 80501
www.intermountain-railway.com

Era: October 1969 to 1985 (as decorated)

Road names: Illinois Central, Conrail, Illinois Central Gulf, Iowa Interstate, and MidSouth. See manufacturer's website for other road names.

Features

- All-wheel drive and electrical pickup
- Blackened metal wheels, correctly gauged
- Factory-painted wire grab irons
- Kadee couplers, mounted at correct height
- Light-emitting-diode lighting
- Weight: 14.9 ounces

plastic. A tip of the hat to InterMountain for thinking out of the box.

Many Paducah GP10s are still earning their keep on shortline and regional railroads throughout the country. I wouldn't mind seeing a future run with models lettered for Independent Locomotive Service. – *Cody Grivno, associate editor*

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Bachmann HO scale lighted passenger cars

A pair of smooth-side, full length, lighted passenger cars with interiors is new from Bachmann. The coach and observation are based on New York Central and Pennsylvania RR prototypes respectively, and are available in several paint schemes.

The prototypes. The coach is a near-match to a series of NYC 56-seat coaches built by American Car & Foundry in 1941. The 25-car order was numbered 2645 to 2669. Most of the cars lasted until Penn Central, with many cars going to New York City's Metropolitan Transportation Authority in 1971.

The observation is very similar to a Pennsylvania RR class POS21A sleeper/lounge/observation built by Pullman-Standard in 1938 for the *Broadway Limited* and *Liberty Limited*. The cars were retired in 1960 and '61.

The models. In HO scale, the coach is 85 feet long overall, 10 feet wide, and 13'-3½" tall. All dimensions are within inches of drawings of ACF lot 2141 cars on the Canada Southern website at www.canadasouthern.com. The window arrangement also matches the drawings.

The interior layout is similar to the drawings, except that the interior bulkheads are 1'-5" too close together, and

there are 48 seats instead of 56. The prototype's trucks have a 9'-0" wheelbase.

The observation's length, width, and height are within a few inches of drawings in *The Official Pullman-Standard Library: Vol. 4, Pennsylvania RR*, by W. David Randall and William M. Ross (1988, Railway Production Classics).

The interior layout is missing sleeping compartment bulkheads – there should be two master rooms and one bedroom, but it's a single open compartment. Also, the curved walls and seating areas are missing between the lounge and observation compartments.

The window arrangement matches PRR drawings on Rob's Pennsy home page at www.prr.railfan.net, and the Pullman-Standard drawings, except the rear-most windows on the observation end of the car are about 6" short, creating more space between the windows and the rear door than on the prototype. The trucks are the correct wheelbase.

Glazing is flush-mounted, creating a smooth outer surface. Diaphragms are solid molded-on details, as are all grab irons. Our samples were painted in Southern Pacific *Daylight* colors. The high-gloss paint was smoothly and evenly applied, with sharp color separations. Both cars are similar to some Southern Pacific smooth-side cars.

Facts & features

Price: \$79 each

Manufacturer

Bachmann Industries Inc.

1400 E. Erie Ave.

Philadelphia, PA 19124

www.bachmanntrains.com

Era: 1938 to present, depending on paint

Roadnames: Coach: Southern Pacific, Baltimore & Ohio, Pennsylvania RR, Ringling Brothers & Barnum & Bailey Circus, Union Pacific. Observation:

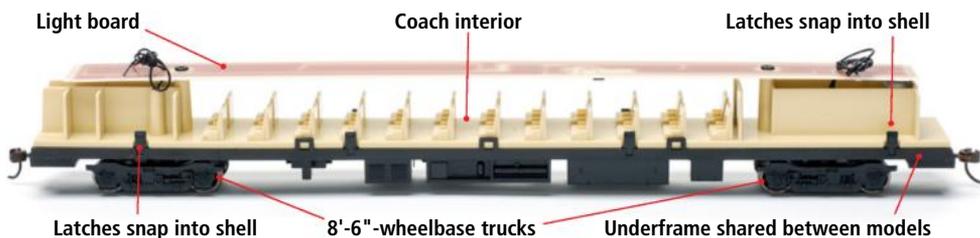
Southern Pacific, Baltimore & Ohio, Pennsylvania RR, Union Pacific. Both available painted silver, unlettered

Features

- RP-25 contour metal wheels, in gauge
- Plastic E-Z Mate Mark II couplers, mounted at correct height
- Weight: 5.7 ounces, 1.3 ounces less than National Model Railroad Association Recommended Practice 20.1

On the layout. The Bachmann smooth-side passenger cars had no trouble passing through the no. 6 turnouts of the Bay Junction yard on our Milwaukee, Racine & Troy staff layout. The cars also negotiated the Atlas Snap-Switches and 18" radius curves on our Beer Line layout. The swinging coupler mounts helped the cars stay coupled around sharp curves.

Although these cars aren't exact duplicates of their prototypes, they do share characteristics of many smooth-side cars, and would make fine stand-ins for many model railroads. If you're in need of some smooth-side passenger cars, be sure to give these a look. – *Eric White, associate editor*



Bachmann's smooth-side passenger cars have surface-mount light-emitting diode illumination. To remove the shell, spread the body over the truck and lift it off.

QUICKLOOK

Kato N scale SDP40F with ESU LokSound

Price: \$250

Manufacturer

Kato USA
100 Remington Rd.
Schaumburg, IL 60173
www.katousa.com

Era: 1988 to 1994 (as decorated)

Comments: Factory-installed sound and Digital Command Control highlight this release of the N scale Electro-Motive Division SDP40F from Kato USA.

We reviewed Kato's direct-current models of the passenger version (see the September 2016 *Model Railroader*) and the freight version (see the May 2017 MR). However, our latest review sample comes factory-equipped with an ESU LokSound Select decoder programmed with the ESU Full Throttle diesel sound package.

Our review sample models Santa Fe no. 5253, which is decorated and detailed the same as the previously reviewed SF no. 5250.

The model features a split die-cast metal frame, a can motor with flywheels, and all-wheel drive and electrical pickup. The mechanism's .9 ounce drawbar pull is enough to haul 20 free-rolling N scale freight cars on straight and level track.

The dual-mode ESU LokSound Select decoder works on direct-current and Digital Command Control layouts. On our DC test track, the sound effects started up at 6V. The model started moving smoothly at 2 scale mph after I applied 7V to the track and accelerated to a prototypical top speed of 100 scale mph at 12V. Sounds in DC are limited to the diesel engine, as the rpm revs up or down with the speed.

On our DCC test track, the model accelerated from 2 to 150 scale mph, much faster than the prototype. However, this top speed, as well as sound effect volume levels, function mapping, and every other aspect of the



decoder, can be programmed using configuration variables (CVs).

A drive-hold feature separates the engine sounds from the locomotive speed control. When I pressed function 9, the locomotive's speed stayed constant, and I then used the throttle to ramp the rpm sound up or down. When I pressed function 9 again, the speed would automatically adjust to match the sounds.

My other favorite feature of the ESU decoder is the independent, function-button-controlled brake.

In addition to the horn, bell, and headlights, other user-triggered effects included the dynamic brake fans, couplers, and the drain valves ("spitters").

Model Railroader subscribers can watch a video of the sound-equipped Kato N scale SDP40F in action at ModelRailroader.com. – Dana Kawala

QUICKLOOK

Atlas O Pullman troop sleeper

Price: \$104.95

Manufacturer

Atlas O
378 Florence Ave.
Hillside, NJ 07205
www.atlaso.com

Era: 1943 to 1945 (as decorated)

Comments: Atlas mobilizes O scale model railroads for war with its latest release, a 40-foot Pullman troop sleeper based on ex-Weaver tooling.

When the United States entered World War II in 1941, the nation's railroads were stressed to their limits moving the men, materiel, and commodities needed for the war effort, on top of their usual business. To get troops from the American heartland to the ports where they would set off for the front required more passenger cars than were available.

The Defense Plant Corp., a wartime subsidiary of the federal Reconstruction Finance Corp., contracted with Pullman

to construct troop sleepers to meet this need. To save time, the company based them on its existing 40-foot boxcar design. The first 1,200 cars, numbered 7000 to 8199, were delivered in 1943 and had side doors with step wells. Atlas O's version models one of these. The second batch, 1,000 cars numbered 9000-9999, had simple step rungs beneath the side doors.

Six screws hold the die-cast metal underframe to the one-piece plastic body. The prototype had 10 triple-deck bunks to sleep 29 soldiers and a Pullman porter. Rather than 10 triple bunks, the Atlas O model has five double bunks (the upper ones wouldn't be visible through the windows anyway) and five bench seats.

All four wheelsets pick up power for the light-emitting-diode interior lighting. I placed the car on our test track and applied voltage. The lights came



on at 2.5V and reached full brightness at 5V.

The model rides on the correct Allied Full Cushion trucks. The turned metal wheelsets were in gauge, and the metal knuckle couplers were mounted at the correct height.

Atlas also offers matching troop kitchen and troop hospital cars, as well as rebuilt express boxcars painted for private railroads. The cars feature full underbody brake detail, wire grab irons, and rubber diaphragms. All the dimensions I checked matched those in prototype drawings published in the December 1943 and December 2001 issues of *Model Railroader*.

A string of these troop cars will make up the highest-priority train your O scale railroad will ever see. – Steven Otte, associate editor

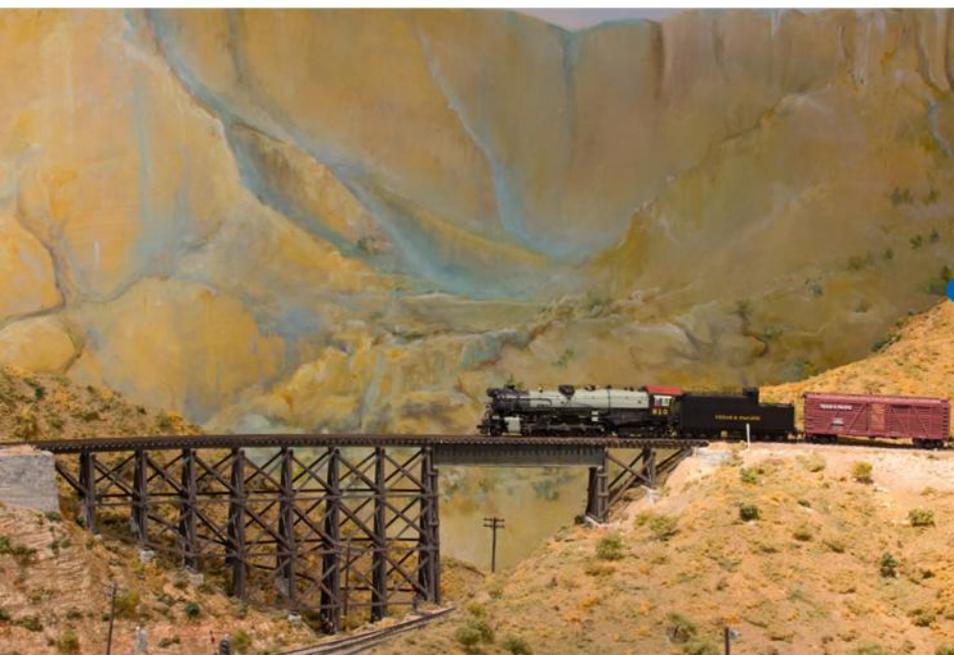


While Oregon Coast RR no. 12 switches stockcars in Portland's busy Union Stockyards, cattle mill about in the pens, awaiting their final fate at the Swift Packing Plant in the background. Mat Thompson of Gainesville, Va., photographed the scene on his HO scale Oregon Coast RR. Mat installed a SoundTraxx Tsunami Digital Command Control decoder in the Bachmann Alco S-4 diesel and lettered it for his free-lanced model railroad.



Port Trenton Transport System

subway cars, on elevated track, slow to a halt at Upton, N.J. The action takes place on Mike Tricker's triple-deck HO scale Baltimore & Ohio layout, which was featured in the June 2013 MR. Mike's friend Mick Moignard detailed and weathered the subway cars. Mike, who lives in London, took the photo.



Texas & Pacific no. 610, a 2-10-4 Texas-type, pounds its way across a trestle in West Texas in the mid-1950s. Built by the late R.D. Moses and his friend Jack Luck, the HO scale T&P is now part of the Jefferson Historical Museum in Jefferson, Texas. Weldon Nash, a member of the Jefferson & Cypress Bayou Model Train Club that runs the layout for the museum, shot the photo. The layout will be featured in the January 2018 *Model Railroader*.



Simple life on the Hungarian prairie is disrupted by the intrusion of a passenger express from Budapest. The double-ended NOHAB-GM locomotive, built in Sweden for Hungarian State Ry. (MAV) in 1963, bears the look of its American-designed forebears. Davide Raseni of Trieste, Italy, built the HO scale diorama and photographed it under natural light.

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Where the 21st century meets the 19th

The Cumbres & Toltec Scenic RR astounds me again and again. America's only narrow-gauge interstate historic railroad, it steams three locomotives almost every day and frequently steams four. It features regularly scheduled operation over 64 miles of former Denver & Rio Grande Western line. And it operates under timetable-and-train-order operation.

This is not your mother's TT&TO! Attention in the railroad's Chama, N.M., dispatcher's office centers on a conventional train sheet and train orders of which Harry Forman and Peter Josserand, the prominent voices of *Rights of Trains*, would approve. In contrast to this time-honored method, crews OS (report departures) via state-of-the-art very narrow band radio. A GPS display tracks train movements.

I visited chief dispatcher Wade Hall last August. He explained that the railroad has considered Track Warrant Control (TWC). This method relies on live, two-way transmission of a dispatcher's instructions. However, 21st-century radio has yet to conquer the C&TS' challenging, remote terrain.

What makes TT&TO more reliable? Communication is the answer.

Until Samuel Morse transmitted his famous message in 1844, trains moved faster than any other form of communication. A printed timetable was the only practical way to inform a conductor of the

movements to be made with his train, as well as the movements of others. Schedules predict where other trains will be. Just as important, they predict where other trains *are not*, making it safe for him to move his own.

The telegraph made it possible for messages to proceed in advance of trains. Charles Minot's first train order in 1851 put this to use, instructing an operator at a distant station to hold an opposing train. Here's the key: The schedule itself showed the movements planned for both trains; Minot's order superseded the schedule so his own train could avoid delay.

Radio could send a train order to a C&TS crew today, but the train could proceed on its scheduled run without further instruction if radio communication fails. On the other hand, a train under TWC would be stuck if it couldn't receive a new warrant by radio before it reached the end of its authority.

The circumstances of the photo above make a good primer in TT&TO decision-making. It shows an extra waiting on the siding at

Cresco, Colo., to meet No. 216, the daily eastbound from Chama to Antonito, Colo.

An appropriate train order might have read: "ENG 484 RUN EXTRA CUMBRES TO CHAMA MEET NO. 216 ENG 489 AT CRESCO." This order informs both crews of one another and directs them to meet at Cresco. Extras are inferior to regular trains,



Timetables and train orders still govern Cumbres & Toltec Scenic RR trains. Here, an eastbound train approaches a meet at Cresco, Colo. on Aug. 15, 2016. Jerry Dzedzic photo

so Extra 484 West cleared on the siding. Number 216 would approach Cresco expecting to find the main track clear.

Suppose the extra's order did not contain "MEET NO. 216 ENG 489 AT CRESCO." The timetable shows No. 216 due at Cresco at 10:44 a.m. This crucial piece of information means that No. 216 cannot occupy the main track beyond Cresco before then, leaving it free for Extra 484 West to proceed. However, Cresco is the only place between Cumbres and Chama that the extra can meet No. 216, and C&TS rules say that extras must clear the time of opposing regular trains by not less than five minutes.

In order to depart Cumbres, the extra's crew must be sure they can get to Cresco and clear the main line by 10:39. If it can't, Extra 484 West

must wait for No. 216 to arrive at Cumbres.

This illustrates a critical difference between TT&TO and TWC. The former gave both trains their orders hours in advance with no need for further communication. The latter, however, demands reliable voice communication. The extra must report clear at Cresco by radio before the dispatcher can give No. 216 authority to pass that point.

The 21st century blinks when it meets the 19th on the C&TS, setting up a good lesson in TT&TO essentials.

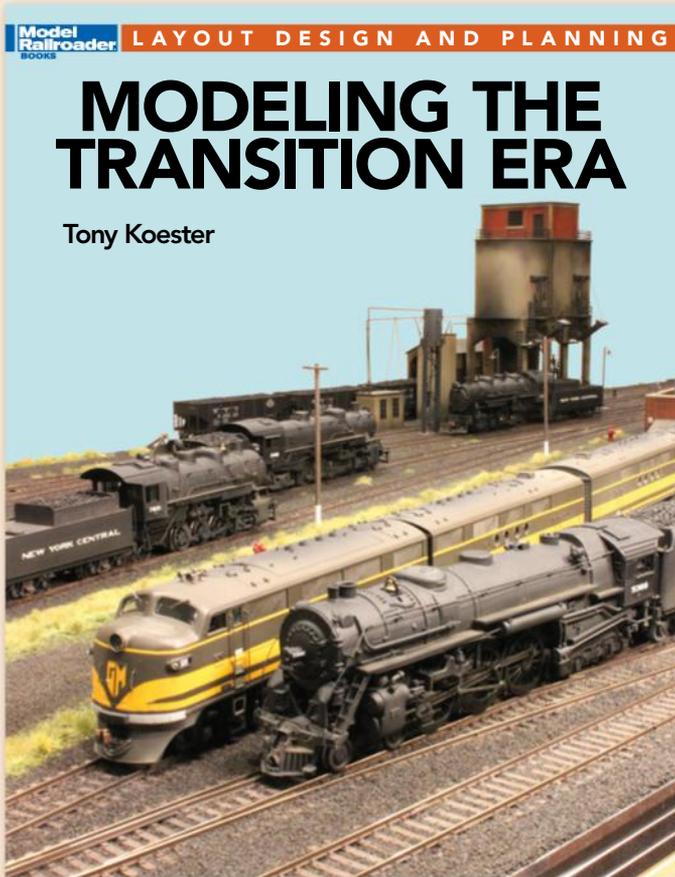
Correction: My August column about dispatching with track warrants has an error. Track warrant 500-003 for the Woodville Job should read: "X BOX 2 PROCEED FROM WOOD TO HILL. X BOX 8 HOLD MAIN TRACK AT LAST NAMED POINT. TWO BOXES MARKED, BOX 2 BOX 8." **MR**



SCHEDULES PREDICT WHERE TRAINS WILL BE. JUST AS IMPORTANT, THEY PREDICT WHERE TRAINS ARE NOT, MAKING IT SAFE FOR A CONDUCTOR TO MOVE HIS OWN. -JERRY

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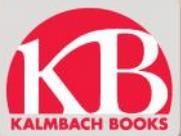


In his all-new book, *Modeling the Transition Era*, expert Tony Koester takes an in-depth look at the time period from the 1940s to 1950s — the most popular modeling era — when railroads were changing from steam locomotives to diesel. The book includes:

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Schedule of Events

CO, DENVER: Rocky Mountain Hobby-Expo, Denver Mart, 451 East 58th Avenue, October 28-29, 2017, Saturday 9:00am-6:00pm; Sunday 10:00am-5:00pm. Admission \$12.00, under 12 free. Trains, RC, Drones, Slot Cars, Diecast and Kits, 120,000sf of manufacturer, vendors, demos, workshops and hands-on activities. Free Parking. Information: Jim Marski 303-345-5031 or www.RockMountainHobby-Expo.com

CT, ESSEX: New Haven RR Historical & Technical Association train show September 9, 2017 at Valley Railroad Co. Modeling clinics, dealers, film & slide shows. Contact Rick Abramson 203-372-0818 or nhrr379@att.net. Information at www.nhrrta.org

CT, FAIRFIELD: 31st Annual Housatonic Model Railway Train Show. The Bigelow Center, 100 Mona Terrace, Fairfield, CT. Sunday October 22, 2017, 10:00am-3:00pm. Operating Layouts, Vendors, Clinics, All Scales. Food Free Parking. Adults \$7.00, under 4 free. Dealers welcome. Housatonic, PO Box 234, Fairfield, Connecticut 06824. Visit www.housatonicmr.org

CT, GREENWICH: Southern Connecticut Model Train Show, Greenwich Civic Center September 24, 2017, 9:00am-3:00pm. Adults \$7.00, under 12 free. Valley HO Trak Layout & more. Clinics, 150 tables; trains, books, artwork, DVD's. Door prizes, free parking, refreshments. Ron's Books, PO Box 714, Harrison, NY 10528, 914-967-7541. ronbooks@aol.com, southerncttrainshow.com.

CT, MANCHESTER: NEW ENGLAND TRAIN COLLECTORS ASSOCIATION TOY TRAIN SHOW, Army & Navy Club, 1090 Main St. September 17, 2017, 9:00am-1:00pm. Adults \$5.00, children under 12 free. Public invited. Contact Dennis Ingalls, 508-285-3963, email: dingalls@comcast.net

FL, DELAND: 61st FLORIDA RAILFAIR. Volusia County Fairgrounds (Tommy Lawrence Arena), 3150 E. New York Ave. (SR 44 and I-4), Saturday, October 7, 2017, 9:00am-4:00pm. Admission: \$7.00 under 12 free. Operating layouts. Miller, 3106 N. Rochester St. Arlington, VA 22213. 703-536-5954. Email rrrshows@aol.com

FL, ENGLEWOOD: Regal Railways presents Toy Trains & Hobby Show/Sale, Elks Club, 415 N. Indiana Avenue Saturday, October 14, 2017, 9:00am-2:00pm. Adults \$5.00. Vendors and operating layouts. Serving lunch items. Contact: Joe at 727-244-1341 or visit: www.regalrailways.com for more information.

FL, KISSIMMEE: Regal Railways presents Toy Trains & Hobby Show/Sale, Columbia Club Ocala, 2000 Neptune Road, Saturday, October 28, 2017, 9:00am-2:00pm. Adults \$5.00. Vendors and operating layouts. Serving lunch items. Contact: Joe at 727-244-1341 or visit: www.regalrailways.com for more information.

FL, LARGO: Swap Meet & Open House at the Suncoast Model Railroad Club, Minreg Hall, 6340 126th Ave. Saturday, September 16, 2017, 9:00am-3:00pm. Admission \$7.00, 18 and older. Children 12-17 \$2.00, and children 11 and younger are free. Free parking. Visit https://www.facebook.com/SuncoastModelRailroadClub?rft=ts

FL, PLANT CITY: H.B. Plant Railroad Historical Society Train Show and Swap Meet. John Trinkle Building, Plant City Campus, Hillsborough Community College, 1206 North Park Rd., Zip: 33563, September 23, 2017, 9:00am-3:00pm. Adults \$7.00, under 17 free w/adult. Contact: Gilbert Thomas, 863-412-3090, E-mail: Thomas_12399@msn.com Website: www.hbplantrr.org

IA, HAMPTON: NCIMRRC Train Show, Franklin County Convention Center, 1008 Central West, Sunday, October 29, 2017, 9:00am-3:00pm. Admission \$5.00. Trains (all scales), memorabilia and collectibles to buy, sell and trade. Individual tables welcome. For information or table reservations contact: Eastside Trains, 641-456-1998, e-mail eastsidetrains@gmail.com

IL, KANKAKEE: Kankakee Model Railroad Club Train Show. Gov. Small Memorial Park Civic Center, 803 South 8th Ave. Sunday, October 22, 2017, 9:30am-3:00pm. Admission: \$3.00, under 5 free, 8' tables \$15.00 and 6' tables \$12.00. Operating layout. Contact lrv at 815-465-2420 or daswoodwerkhous@yahoo.com for more information.

IL, ST. CHARLES: 26th Annual Chicago Railroadiana and Model Train Show. Kane County Fairgrounds, 525 South Randall Rd. Sunday, October 15, 2017, 10:00am-3:00pm. Admission: \$6.00 (includes tax). Tables \$60.00. For information: 847-358-1185, RussFierce@aol.com or www.RRSShows.com

IN, AUBURN: RrX Mania Train Show & Antique Show. Kruse WWII Museum, (National Military History Center), 5634 County Road 11-A; from Interstate 69, Exit 326; Saturday, October 28, 2017, 9:00am-3:00pm. Adults \$5.00, under 12 free. \$20.00 per table, 5+ tables \$15.00 each. Info: www.RrXMania.com or 260-715-2519

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet, IBEW Building, 301 East 8th St., Sunday, November 19, 2017, 9:30am-2:00pm (Chicago time). Adults \$4.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at trains86@frontier.com or 219-778-1186

IN, SOUTH BEND: Notre Dame Campus. NMRA Michiana Division Education and Training Conference. Modeling Like the PROtotype. September 22-23, 2017, McKenna Hall Conference Center, Notre Dame. Clinics, workshops and more. Registration \$35 (\$30 for NMRA members). More information: http://michiana-nmra.org/ or contact Bob Blake, 203-788-1342 or rm7blake@earthlink.net.

KS, WICHITA: 23rd Annual Model Train Show, Cessna Activity Center, 2744 George Washington Blvd. September 23-24, 2017, Saturday, 9:00am-5:00pm; Sunday 10:00am-3:00pm. All gauges, operating layouts, 40+ vendors, repairs, concessions, door prizes. Children's Dept. Admission: \$8.00 Adults, Children under 18 FREE w/Adult. www.WichitaToyTrainMuseum.org

MA, TAUNTON: OLD COLONY MODEL RAILROAD CLUB 17th ANNUAL MODEL RAILROAD SHOW AND SALE, Taunton Holiday Inn, Myles Standish Park, Exit 9 from Route 495. September 24, 2017, 10:00am-3:30pm. Adults \$5.00, children under 12/scouts in uniform free. Contact Dennis Ingalls, 508-285-3963, email: dingalls@comcast.net

MD, TIMONIUM: Great Scale Model Train Show. MD State Fairgrounds, 2200 York Road. October 7-8, 2017, Saturday 9-5, Sunday 10-4. Largest in Mid-Atlantic. 800+ tables. All scales. Free Parking, Great Food. Running 35 years. \$10.00 solo adult, \$20.00 family of any size. Discount coupon and more information: GSMTS.com

MN, WOODBURY: Newport Model RR Club Flea Market & Train Show, Woodbury High School, 2665 Woodland Drive, Zip: 55125. October 14, 2017, 9:00am-2:00pm. Admission \$5.00. Future Show: January 20, 2018. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Ed, 651-233-3310

MO, CARTHAGE: 34th Annual Southwest Missouri Railroad Association Show - Swap Meet. Fairview Christian Church, 2320 S. Grand Ave. October 21, 2017, 9:00am-4:00pm. Adults \$3.00, under 12 free. Tables 8'-\$12.00 or 6'-\$10.00 round tables. Crafters Welcome! Contact Pam Parcell, 417-540-0692, swmra@hotmail.com or 901 East 9th, Joplin MO 64801

MO, NEOSHO: Model Train Show and Swap Meet. LAMPO Center, Saturday October 7, 2017, 9:00am-7:00pm and Sunday October 8, 2017, 11:00am-5:00pm. 8' tables \$12.00 both days. Contact Pam Parcell, 417-540-0692, swmra@hotmail.com or 901 East 9th, Joplin, MO 64801.

MO, SEDALIA: 5TH Annual Sedalia Rails Train Show. Liberty Park Convention Hall, 3rd Street & Highway 65. November 4, 2017 9:00am-3:00pm. Admission \$5.00 Children under 12 free. Dealer tables \$15.00. Operating layouts, ride outdoor steam railway, door prizes and refreshments. Call 660-525-1741 or Email: klbird@embarqmail.com

NC, HENDERSONVILLE-ASHEVILLE: Autumn Rails All Scales Train Show, French Broad eN'pire MRC, Expo Building, WNC Agricultural Center, Boylston Hwy. (NC 280), I-26 Exit 40. October 6-7, 2017, Friday 12:00pm-7:00pm and Saturday 10:00am-4:00pm. Admission \$6.00, dealer tables \$35.00. Free parking. Contact Ray Baldwin, FBAAutumnRails@aol.com or 607-727-9694

NC, RALEIGH: 33rd Annual Neuse River Valley Model Railroad Club Model Train Show. November 4-5, 2017, 9:00am-5:00pm both days. Free Parking. Admission \$9.00, \$1.00 off coupon available at nrvcub.net Children 12 and under free. Vendors wanted. Contact George Lasley glasley@bellsouth.net

NJ, EAST RUTHERFORD: METCA/NYSME Train Show, St. Joseph's School, 120 Hoboken Road, Zip 07073. Saturday, October 28th 2017, METCA/NYSME members 8:00am, Public 9:00am-2:00pm. Admission: \$5.00 Adults 16+, FREE for METCA members, wives, kids. NYSME Club layouts will be open FREE to attendees. Info: www.METCA.org; Bob Amling, nyshows@metca.org- 718-541-8619

NY, ELMIRA HEIGHTS: Upstate NY Chapter TCA Train Show. American Legion Post 154, 236 Scottwood Ave. Zip Code: 14903. Saturday, October 28, 2017, 9:00am TCA members, 9:30am-2:30pm General Public. Adults \$5.00, under 17 free with paid adult. Contact: Chuck 716-390-8216, E-mail: usnyc2015@gmail.com Web Site: www.upstate-ny-tca.com

NY, JAMESTOWN: Upstate New York Chapter TCA Train Show. Northwest Ice Arena, 319 West Third St. Saturday, November 11, 2017, TCA Members 9:00am, General public 9:30am-2:30pm. Adults \$5.00, under 17 free with paid adult. Contact: Chuck 716-390-8216 or E-mail: usnyc2015@gmail.com Web Site: www.upstate-ny-tca.com

NY, KINGSTON: Kingston Model Train and Railroad Hobby Show. Murphy Midtown Center, 467 Broadway. Sunday October 29, 2017, 10:00am-4:00pm. Adults \$7.00, kids under 12 \$2.00, 11,000 sq. ft. Operating layouts, dealer, vendor tables, Thomas the Tank engine and LEGO trains. Information: www.kingstontrainshow.com or e-mail kingstonmtr@aol.com

OH, CLEVELAND: Great Berea Train Show, Cuyahoga County Fairgrounds, 164 Eastland Road, Berea, Ohio 44017. NMRA MCR Div. 4, October 7-8, 2017, NEW SHOW TIMES 10:00am-4:00pm. This is an all gauge Train Show with over 300 tables. 440-785-9907, www.thegreatbereatrainshow.org

OH, HOLMES COUNTY: Old Eli's Train & Toy Show. Heritage Center, Rt. 62 between Berlin & Winesburg, Saturday, October 21, 2017, 10:00am-3:00pm. Adults \$5.00, under 12 free! \$10.00/table, no refund, 150+ tables. Contact: Galen Eli Hoover, PO Box 45, Mt. Hope, OH 44660. Phone: 330-763-1184.

OH, NORWALK: Norwalk's Newest Model Train Show. Ernsthausen Center, 100 Republic Street. October 22, 2017, 10:00am-3:00pm. Admission: \$5.00 under 10 free. For information contact: Larry Nofzt, 9 1/2 A East Main St., Norwalk, OH 44857. 419-681-2563. or www.lerrr.com

PA, HAWLEY: Model Train Show & Sale. Hawley Fire Department, 17 Columbus Ave. Sunday, October 8, 2017, 9:00am-3:00pm. Admission \$3.00, under 12 free with adult. Bill Dellling, 618 Fern St., Hawley, PA 18428, 570-226-3206.

PA, HORSHAM: 12th Annual Main Street Hatboro Train Show. Keith Valley Middle School, 227 Meetinghouse Rd. Saturday, December 2, 2017, 9:00am-3:00pm. \$5.00 adults, under 12 free. 145+ vendor tables in cafeteria and gym. Contact Al Zollers, azollers06@verizon.net or Joe Lutz J040440@verizon.net or www.hatborotrainshow.org

PA, NEW HOPE: METCA 2 HR. Fall Train Trip New Hope to Buckingham Valley PA and back, October 8, 2017, Saturday September 16th 2017. Includes buffet w/desserts, soft beverages. Adult \$60, Children 6-12 \$10, 5 and under Free. Purchase tickets online. Info: www.METCA.org; Contact/Info Sam Deo, esudes@aol.com, 201-757-3507. All Aboard.

SC, CHARLESTON: Charleston Area Model Railroad Club Annual Train Show, Danny Jones Armory Park, 5000 Lackawanna Blvd., North Charleston, SC, November 18-19, 2017. Saturday 9:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$5.00, Children 12 & under free. Active military families are free. For additional information or table rentals, contact the Club at trainshow@chamrc.com or www.chamrc.com

SC, COLUMBIA: Columbia Model Train Show. Jamil Temple, 206 Jamil Road, Saturday, October 14, 2017, 9:00am-3:00pm. Admission \$5.00, under 10 FREE. Over 200 vendor tables. Thomas the Train & Friends, Railroad collectibles. Contact Todd at 843-307-8674, southcarolinatradeshow@gmail.com or www.SouthCarolinaTradeShows.com

SC, MYRTLE BEACH: GMSMRC 8th Annual Myrtle Beach Train Show. Inlet Square Mall, Unit 45, 1025 Hwy. 17 ByPass, Murrells Inlet, SC 29576, 843-651-6990, November 11-12, 2017, Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Adults \$5.00, 12/under free. Vendors: Operating Layouts, Door Prizes, (32,000 sq. ft. available). Contact Joe Corsetti, 843-236-9148, yrusoslo728@aol.com

TX, PLANO: NTC 3rd Annual Fall Plano Train Show. Plano Centre, 2000 E. Spring Creek Parkway, September 30th, and October 1st, Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Adults \$8.00, 12 and under free w/adult. All scales & Tin Plate. Dealer tables, How-To Clinics. Information: Chris Atkins, chris@railroadmodeler.com 469-438-0741. Visit www.dfwtrainshow.com

TX, TEMPLE: 35th Annual Temple Model Train Show. Frank Mayborn Convention Center, 3303 North 3rd St. September 16-17, 2017, Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$7.00, Children 12 and under Free. Discounts for Seniors, Active Duty Military and their dependents. Centra Mod, Inc., PO Box 1264, Temple, TX 76503

VA, VIRGINIA BEACH: Tidewater Division 28th Annual Train Show/Sale September 30 & October 1, 10:00AM-4:00PM Virginia Beach Convention Center, 1000 19th St. Zip: 23451. Admission \$9.00, under 12/Scouts Free. 150+Tables, Layouts, Locomotives, Equipment, Supplies/Tools, Books, Memorabilia Train Doctors, Contact Bill Miller 757-409-3623, Ktsdad1994@cox.net Flyer: http://nmra-mer-tidewater.org

VT, RUTLAND: 6th Annual Rutland Railway Association Model Railroad Show & Swap Meet. College of St. Joseph, 71 Clement Road. September 30, 2017, 10:00am-3:00pm. Admission \$5.00, under 12 free. Model Railroad Vendors, All Gauges & All Ages, Railroad Memorabilia, Layouts, Tables Available. Information: John Schaub, 802-774-8412, call/text

WA, CHEHALIS: Lewis County Model Railroad Club, Annual Fall Railroad Swap Meet and Show. Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 N. National Ave., Zip: 98532. October 14-15, 2017, Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$5.00. Free parking. Contact information: Ted, 360-985-7788 or TedsTrains@LewisCounty.com

WA, SPOKANE: River City Modelers Fall Train Show, Spokane Fairgrounds, 404 North Havana, Sunday, October 15, 2017 from 9:30am-3:30pm. Adults \$6.00, Free under 12. 200+tables of Railroad items for sale, operating layouts, Free-MO, Operation Lifesaver & more. Free parking. For information: Shirley Sample, 509-991-2317 or email shirley@busnws.com

WI, MILWAUKEE: Trainfest, at Wisconsin State Fair Park, 9am to 5pm Nov. 11&12. WISE Div. NMRA. Exhibitors include operating layouts, major manufacturers, modeling clinics, and hobby vendors. Admission information and tickets available at www.trainfest.com Contact us at info@trainfest.com

WI, MONROE: Green County Model Railroaders 39th Annual Model Train Show & Swap Meet. The Stateline Ice and Community Expo, 1632 45th Avenue West. Saturday & Sunday, September 23-24, 2017, 10:00am-4:00pm. For information contact Kevin Johnson, 608-325-9779, www.gcmrrinc.org

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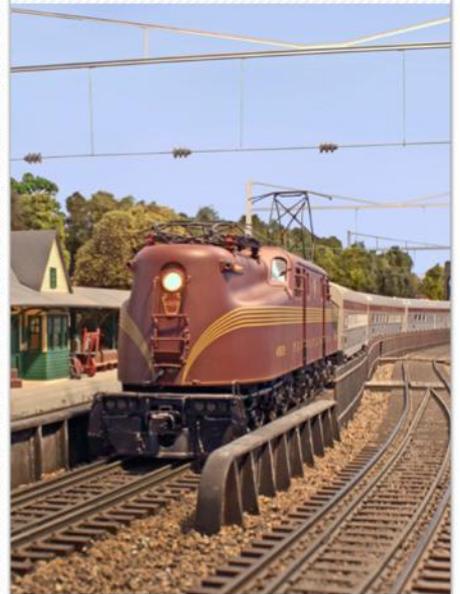
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Variety from a second-hand Rose



The variety evident in July 1963 at Louisville & Nashville's South Louisville (Ky.) shops was enhanced when the railroad acquired Alco cab and hood units from the recently abandoned Lehigh & New England and Rutland. Charles B. Castner photo

Even the larger railroads knew a bargain when they saw it. No sense spending money on something new when something old would do the job, they figured. And that opens up opportunities for us modelers.

It's difficult to hone our interests down to a single railroad. A lot of freelancing is really nothing more than an admission we want to choose something from Column A ... and Column B, and maybe Columns C and D, too.

Even those of us who profess to limit our modeling interests to a single railroad – the Nickel Plate Road in my case – usually build in some form of a Plan B, and maybe C and D, too. The subdivision I chose to model interchanges with quite a few “foreign roads,” including two personal favorites: the Monon and the Chicago & Eastern Illinois. This allows me to have fleets of cars from both railroads that are interchanged with the NKP.

Enough of the C&EI has been modeled at Cayuga, Ind., for me to employ a C&EI local crew to work a grain elevator and the NKP interchange, plus move a passenger train or two in and out of staging.

Monon power is limited to what I can pose on the stubbed-off main line segments at Linden and Frankfort, Ind. But a pair of Monon locomotives show up now and then at Linden after they've delivered the last cut of interchange cars to the Nickel Plate.

I could also pose a New York Central locomotive and a car or two on the former Big Four double-track main that crosses the NKP at Charleston, Ill. A Milwaukee Road caboose is spotted on the 16" length of Milwaukee main line to remind NKP crews whom they're interchanging with at Humrick, Ill.; a pair of C-Liners pop out from behind a view block after they deliver the final cut of NKP interchange cars. And a Baltimore & Ohio local comes out of staging to do

some interchange work at Metcalf, Ill.

I wrote about upping the ante in my August 2015 MR commentary by assuming a foreign railroad needed to detour over your main line because of a derailment or flood damage. The other railroad's train could come out of an extended interchange track, continue over your railroad's main line, and enter a staging yard at one end. An opposing foreign-road train could make a reverse move.

The accompanying photo suggests yet another way to have your cake and eat it, too. The Louisville & Nashville apparently needed some motive power about the time the Lehigh & New England and the

Rutland ceased operations in the early 1960s. They picked up several L&NE Alco FAs and RS-2s and Rutland RS-3s at bargain prices, as this mid-1963 photo attests. Those living in the Northeast have very high regard for those two railroads, and central Appalachia remains a popular modeling venue. No problem: Follow the L&N's example.

In fact, West Virginia short line Kelley's Creek & Northwestern did just that by acquiring a former Rutland General Electric 70-tonner.

To maintain plausibility, if that's a concern, one should keep timing in mind. The scenario illustrated here works only for the early 1960s. Before that, these locomotives weren't available, and not long after, they were retired or repainted into L&N's livery.

Mergers present a similar opportunity. I have been considering modeling the Nickel Plate as it existed in the early 1960s prior to its October 1964 merger into the Norfolk

& Western. Then it dawned on me that if I modeled the months or years shortly after the merger, I could add a Wabash F7 or U25B to a consist, or maybe even an N&W high-hood Century 420 or one of those odd-looking high-hood GP30s. Pure NKP consists would still be the order of the day, but the opportunity to do some interesting foreign-road models would be at hand. **MR**



A LOT OF FREELANCING IS REALLY NOTHING MORE THAN AN ADMISION WE WANT TO CHOOSE SOMETHING FROM COLUMN A ... AND COLUMN B, AND MAYBE COLUMNS C AND D, TOO. - TONY

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