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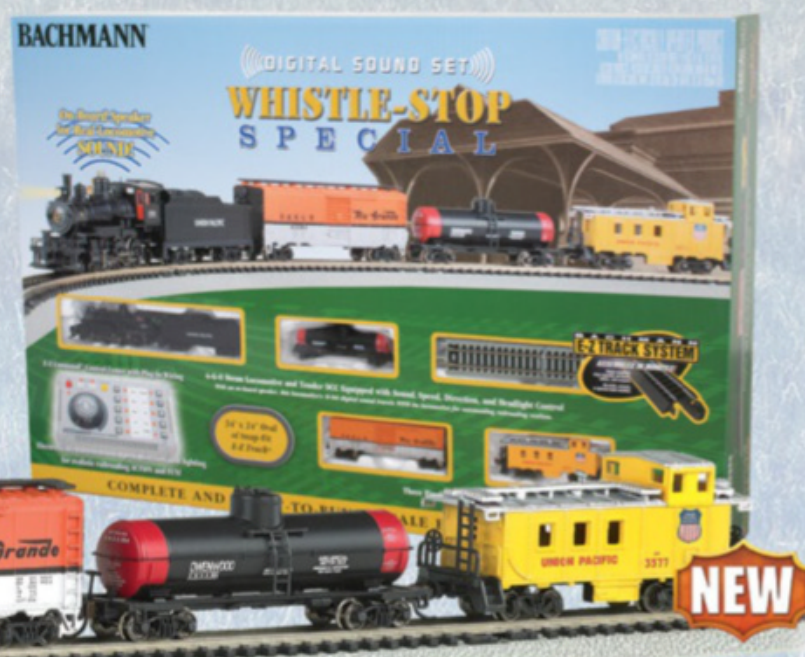
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MODEL SPACE-SAVING INDUSTRIES P.34



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train tested** p. 56

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Inspired by steam

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A half-century on the Virginia & Truckee p.28

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On the cover: Steam rules on Gary Hoover's HO scale Norfolk & Western, inspired by the photos of O. Winston Link. Gary Hoover photo



Next issue

In May, we visit Tom Oxnard's spectacular HO scale B&M layout. Plus, make a rustic fence, build a long-span bridge, put a diesel to the scrapper's torch, and more!

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Chase steam on the N&W

The latest update on Gary Hoover's HO scale tribute to the Norfolk & Western Ry. of the 1950s begins on page 38. The layout features many scenes inspired by famed N&W photographer O. Winston Link. Find even more photos of this exceptional layout at ModelRailroader.com/HooverN&W

PRODUCT REVIEW



Athearn HO scale SD45T-2

On page 58, we review this new sound-equipped HO scale diesel. In this online video you can watch it work a freight along the *Model Railroader* staff's layout, the Milwaukee, Racine & Troy. Visit ModelRailroader.com/ATHSD45T-2

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Wire-free layout lighting

Want to learn more about the Dwarvin Lamplighter optical fiber system? In this exclusive step-by-step video, Group Technical Editor Cody Grivno shows you how he lit up the scene on page 26. Visit MRVideoPlus.com/Lamplighter. Model Railroader Video Plus subscribers have access to exclusive HD videos covering all aspects of the hobby. Sign up today at MRVideoPlus.com/27deal



Contributing editor Tony Koester tried out the ProtoThrottle from Iowa Scaled Engineering on his O scale Wingate project layout. In this online demo, senior editor Dana Kawala shows how to use the throttle to simulate prototype operation. Find the video at ModelRailroader.com/PT



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Planning a picture-perfect layout



Gary Hoover's HO scale Norfolk & Western layout includes scenes inspired by a famous series of images. Gary Hoover photo

Legendary photographer

O. Winston Link's evocative photographs of the last days of steam on the Norfolk & Western Ry. inspired Gary Hoover's 24 x 49-foot HO scale layout, which is featured on our cover this month. Gary's basement-size layout includes highly detailed mainline, branchline, rural, and city scenes – and more!

"I wanted to re-create some of Link's famous photos in HO scale," Gary notes in his article, starting on page 38.

An example is shown here. It's Gary's recreation of a Link image entitled "Old Maude bows to the Virginia Creeper."

Link is primarily remembered for photographing N&W's steam engines at night, dramatically lit by

dozens of flashbulbs. Link also carefully posed people and automobiles in many of his compositions.

But Link could also be spontaneous. His 1958 photograph of a horse bowing to the iron horse is an example.

Link was waiting to record the arrival of the branchline passenger train at the little depot in Green Cove, Va. A few minutes before the train was due, a horse pulling a sledge loaded with firewood came along. Link asked the brothers hauling the wood to be in his photograph. As the train approached, the horse tossed her head and Link pressed the shutter release.

Planning gets you where you need to be, but it's talent that delivers the results.

In an article appearing in *Model Railroad Planning 2015*, Gary shared his thinking and the steps he would



take to build his dazzling tribute to N&W steam.

The latest edition, *Model Railroad Planning 2020*, is now on sale. It's an opportunity to see what today's best builders are doing and get new ideas for your layout. Learn more at our website: ModelRailroader.com/MPR20

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HO scale



Alco C-420 diesel locomotives. Atlas Model Railroad Co. offers new road numbers on Phase I low nose diesels decorated for Delaware & Hudson (two numbers), Lehigh & Hudson River (two numbers), and Lehigh Valley (three numbers) and Phase IIb low nose units lettered for Lehigh & Hudson River (one number) and Monon (three numbers). The

HO scale Master Line model has prototype-specific details, separately applied detail parts, and golden white light-emitting-diode headlights. Direct-current models sell for **\$169.95**. Versions with a dual-mode ESU LokSound Select sound decoder are priced at **\$279.95**. Atlas Model Railroad Co., 908-687-0880, atlasrr.com

Rapido Trains Inc. celebrates 15th anniversary

Rapido Trains Inc., manufacturer of North American prototype HO and N scale locomotives, freight and passenger cars, and accessories, as well as British-outline models, celebrated its 15th anniversary in November 2019.

Jason Shron, president of Rapido, shared some highlights of the company's first decade and a half in volume 119 of *Rapido News*, the manufacturer's online newsletter. "We've grown from a one-man show with one resin kit and some decals to one of the larger model train manufacturers in North America."

Among the early offerings from Rapido Trains Inc. were an HO scale 4-section, 4-bedroom, 8-duplex roomette sleeper and an 80-seat coach. Retired *Model Railroader* senior editor Jim Hediger reviewed the cars in the January 2007 issue, noting that the coach and sleeper were "among the best-detailed mass-produced models we've ever seen."

Shron notes that there have been a few bumps along the road. "The HO scale TurboTrain looked amazing, but ran like a pregnant hippo on crutches," Shron said. "But still we soldier on. With each new challenge we get stronger."

Over the years Shron has added several members to the Rapido team, almost all of them model railroaders, including industry veterans Bill Schneider (project manager) and Craig Walker (United States sales manager).

The Rapido Trains product line continues to grow, which you can learn more about on the manufacturer's website, rapidotrains.com.

Shron thanked his customers for their loyalty over the past 15 years. "You, our customers, have shown faith in us and continue to support us," Shron said. "We love that you love our trains, and without you all of this would have been a pipe dream."

HO scale locomotives



- **Electro-Motive Division GP9 diesel locomotive.** Atchison, Topeka & Santa Fe; Boston & Maine (two-tone blue); Illinois Central (orange and white); New York, New Haven & Hartford (black and orange); Precision National (green and yellow); and Rock Island (blue and white). Four road numbers per scheme; also available undecorated (DC only). See-through steps and molded drill starter points (detail kit sold separately). Direct-current model, \$139.98; with dual-mode ESU sound decoder, \$199.98. Walther's Mainline. Wm. K. Walther's Inc., 414-527-0770, walther's.com

HO scale freight cars

- **Assorted freight car kits.** Milwaukee Road 40-foot ribbed-side boxcar (1963 billboard-style scheme), \$18.98.



Baltimore & Ohio Pullman-Standard 40-foot PS-1 boxcar (9-1963 with Capital Dome herald), \$18.98. Chicago, St. Paul, Minneapolis & Omaha 36-foot Fowler boxcar, \$18.98. Chesapeake & Ohio 41-foot steel gondola (black with "Chesapeake & Ohio" lettering and "C&O for Progress" herald; single car, \$18.98; three-pack, \$55.98). Injection-molded plastic kits with plastic wheel-sets, modeler-installed brake appliances, and Accumate couplers. Accurail, 630-365-1173, accurail.com

- **General American 20,000-gallon general service tank car.** Alaska RR (five road numbers [two single cars and one three-pack]), Emery (white with GATX reporting marks in four numbers), GATX (black with Clean, Oil, Test & Stencil panels and Automatic Car Identification tag; black with "Service Driven" logo; and white), and Reagent Chemical & Research. Six road numbers (three single cars and one three-pack) per scheme unless noted. Separate, factory-applied brake wheel and ladders; 70- or 100-ton roller-bearing trucks with rotating bearing caps; and body-mounted McHenry scale couplers. Single car, \$51.98; three-pack, \$149.98. November 2020. Genesis series. Athearn Trains, 800-338-4639, athearn.com



- **Gunderson Multi-Max auto rack.** Union Pacific (yellow with "Building America" slogan and TTGX reporting marks), BNSF Ry. (orange with CTTX or TTGX marks and white with BNSF marks), Canadian National (yellow with white herald and CTTX marks and yellow with red herald and TTGX marks), Canadian Pacific (white with Soo marks), CSX (yellow with "boxcar" herald, "How Tomorrow Moves" slogan, and CTTX or TTGX marks), Kansas City Southern (white and yellow schemes with CTTX marks in two road numbers each and yellow with TTGX marks), and Norfolk Southern (yellow Thoroughbred scheme with TTGX marks). Four numbers per scheme unless noted. Prototype-specific details, photo-etched metal side panels, and 28" machined metal wheels.

N scale

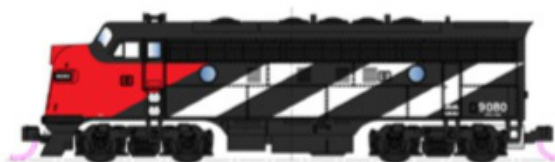


Russell snow plow. New paint schemes on this Atlas Master Line model (\$32.95) include Burlington Northern; Ann Arbor; Bangor & Aroostook; Erie Lackawanna; Maine Central; Penn Central; Soo Line; and Toronto, Hamilton & Buffalo in one road number per scheme. The N scale snow plow has a weighted, detailed underframe; window glazing, and a coupler on the rear only. Atlas Model Railroad Co., 908-687-0880, atlasrr.com

\$74.99. Spring 2020. Rivet Counter line. ScaleTrains.com, 844-987-2467, scaletrains.com

- **Atchison, Topeka & Santa Fe class Fe-Q, Fe-R, and Fe-V 50-foot sectional sheathed automobile boxcars.** Kits feature one-piece cast-urethane body and cast-urethane detail parts, Hi-Tech rubber air hoses, Yarmouth Model Works etched-bronze corner steps and eyebolts, proprietary decals covering all versions of the car, and instructions. Without trucks or couplers, \$47 each; with Tahoe Model Works or Kadec trucks and code 110 or code 88 wheels, \$54 each. Westerfield Models LLC, 303-658-9343, westerfieldmodels.com

N scale locomotives



- **Electro-Motive Division F7A and F7B diesel locomotives.** Canadian National (F7A and F7A-B set). Direct-current models: F7A, \$90; F7A-B set, \$175. With Digital Command Control motor and light decoder: F7A, \$170; F7A-B set, \$335. With ESU LokSound sound decoder: F7A, \$290; F7A-B set, \$575. June 2020. Kato USA Inc., 847-781-9500, katousa.com

N scale freight cars

- **Bay-window caboose.** Baltimore & Ohio (dark blue), Chessie System

(Chesapeake & Ohio reporting marks), Northern Alberta Rys. (gray, yellow, and blue), Rock Island (red), Southern Pacific (brown and orange), St. Louis Southwestern (Cotton Belt, brown and orange), and Union Pacific (North Platte Service Unit and Railroad Police with Southern Pacific reporting marks). Three road numbers per scheme. Separate, factory-applied wire grab irons; new truck tooling, including axle-mounted generator; and body-mounted McHenry scale couplers. \$30.98. December 2020. AthearnN. Athearn Trains, 800-338-4639, athearn.com

N scale passenger equipment



- **Canadian National Transcontinental 7-car passenger set.** Ex-Milwaukee Road (MILW) Skytop lounge-observation car *Trinity*; ex-Union Pacific (UP) baggage car no. 9160; ex-UP coach no. 5712; ex-Pennsylvania RR Pullman 10-roomette, 6-double-bedroom sleeper *Terra Nova River*; ex-MILW Super Dome *Fraser*; ex-UP ACF diner no. 1350; and ex-MILW Pullman 10-6 sleeper *Vermillion River*. Includes bookcase packaging. \$250. Kato USA Inc., 847-781-9500, katousa.com

N scale structures

- **Branchline depot.** Laser-cut wood kit with scribed wood siding, interior flooring, and exterior wood deck platform;

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News & Products



HO scale

Pullman-Standard PS-2CD 4,750-cubic-foot-capacity three-bay covered hopper. Tangent Scale Models offers this covered hopper (\$48.95) decorated for Chessie System (7-1973 in 12 road numbers), Conrail (1978+ Penn Central patchout, one number), CSX (1998+ Chessie System patchout, two numbers), CSX (1989 early repaint, four numbers), Garvey Grain (12-1973, four numbers), Penn Central (2-1974, six numbers), and NAHX (1997+ PC restencil, one number). Tangent Scale Models, 828-279-6106, tangentscalemodels.com

train order and station sign boards; Victorian-style end roof eave brackets; positionable window sashes; rolled roofing; and white metal smokejack. Tab-and-slot construction and peel-and-stick windows, doors, trim, and roofing. Depot with waiting room platform measures 1 3/4" x 1 1/2" x 1 3/8". \$16.95. American Model Builders Inc., 314-646-8588, laserkit.com

N scale details and accessories

- **Assorted intermodal containers.** 20-foot corrugated-side container: Bridgehead, Capital, and Lotus. 40-foot smooth-side container: Japan Line, NYK Worldwide Service, Seatrain, and United States Line. 40-foot corrugated-side container with logo panels: Container Transport International, Trans Freight Lines, SSI, and NYK Worldwide Service. 40-foot high-cube corrugated-side container: Hapag-Lloyd, "K" Line, Maersk

Sealand, and Ocean Network Express (magenta). Injection-molded plastic with inter-box connecting pins and magnetic connecting system. Two-pack, \$29.65 to \$29.95. Jacksonville Terminal Co., 904-253-3430, jtcmodeltrains.com

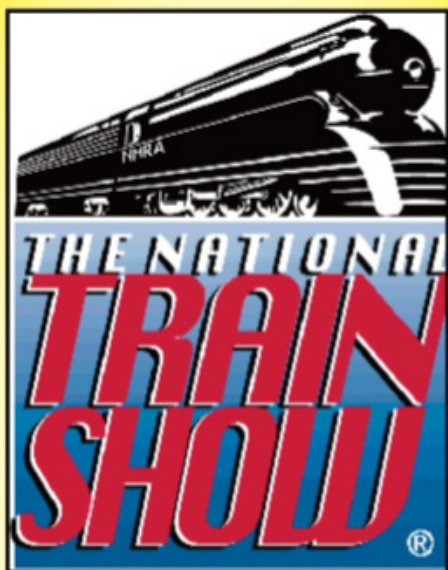
Z scale passenger cars



- **Pennsylvania RR smoothside lightweight passenger equipment.** 4-bedroom, 4-compartment, 2-drawing-room sleeper (Pennsylvania in letter-board and Pullman sublettering): *Imperial Lawn, Imperial Park, Imperial Point, Imperial Ridge, and Imperial Trail*. Diner (nos. 4507 and 4511). Observation car (*Mountain View and Tower View*).

Continued on page 16

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Showcase



1 40-foot American Association of Railroads modernized 1948 boxcar. Penn Central, Great Northern, Lehigh Valley, Union Pacific, and Burlington Northern are among the schemes on this HO scale Walthers Mainline freight car. (\$27.98). Wm. K. Walthers Inc., walthers.com

2 Evans 53-foot double-plug-door boxcar. New road numbers are available on this HO scale Atlas car decorated for British Columbia Ry. The

Master Line model (\$29.95) has 70-ton roller-bearing trucks and Accumate couplers. Atlas Model Railroad Co., atlasrr.com

3 Iwata NEO CN double-action airbrush. This gravity-fed airbrush is now available in the Kalmbach Hobby Store. The Iwata airbrush (\$59.99) has a .35mm needled and nozzle combination, a detachable .24 ounce fluid cup, and a .05 ounce color cup. The airbrush has an optimal working

pressure of 8 to 20 psi. Kalmbach Hobby Store, KalmbachHobbyStore.com

4 Flexible dry stack rock walls. Blasted rock (HO and O scales) and fieldstone (all scales) vinyl sheets are new from Chooch. The 3½" x 11½" flexible vinyl sheets (\$14.99) measure. Chooch Enterprises, choochenterprises.com

5 General Electric C39-8 diesel locomotive. CSX is one of eight paint schemes on this HO scale Rivet

Counter line model. Direct-current models with a 21-pin connector sell for \$169.99. Versions with an ESU LokSound 4.0 dual-mode sound decoder are priced at \$259.99. ScaleTrains.com, scaletrains.com

6 Wabash National 53-foot plate trailer. Athearn Trains released this HO scale trailer (\$29.98) in six schemes. It features a positionable rear bogie, vinyl tires, and printed mudflaps. Athearn Trains, athearn.com



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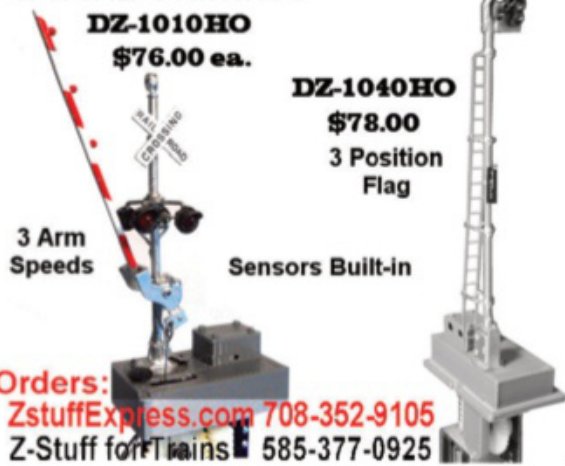


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News & Products

HO scale

Gulf, Mobile & Ohio cupola caboose with tongue-and-groove siding.

This laser-cut wood kit from American Model Builders has scribed side and end walls; tab-and-slot and peel-and-stick construction; a laser-cut underframe, end platforms, end railings, queen posts, sunshades, and power brake wheels with stands; cast-resin platform steps and brake gear; Tichy Train Group plastic turnbuckles; a white metal smokejack; brass wire; decals; and jigs for bending grab irons and ladders. The HO scale kit (\$64.95) doesn't include trucks or couplers. American Model Builders Inc., 314-646-8588, laserkit.com



Continued from page 12

United States Mail Railway Post Office (nos. 6595 and 6598). Etched-metal stirrup steps, flush window glazing, AutoLatch couplers, and add-on details. American Z Line, 614-764-1703, americanzline.com

Layouts



• **Horned Owl layout building kit.** For Z, N, and HO scales. Kit contains four 20" x 32" foam board modules, internal ribs, four bridges, viaduct, two mountains with tunnels, waterfall, bolts, white glue, and T-pins. Includes illustrated handbook and 90-minute construction video. Completed layout measures

3'-4" x 5'-4". \$349. QuickieLine Kit. RR in a Box, rrinabox.com

Scenery



• **Scrap metal.** Aluminum, brass, copper, steel, iron, and stainless steel. For car loads or scrap piles. Sold in 5 7/8" x 6" resealable bag. \$9.95 each plus \$8 shipping per order. K.I.S.S. Method Inc., kiss@kissmethodinc.com

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• **Crescent Lines American Car & Foundry 4,600-cubic-foot-capacity Center Flow covered hopper.** Accurail HO scale kit decorated for the Crescent City Model Railroad Club. One road number. \$30 plus \$6 shipping for first car and \$2 shipping for each additional car ordered to U.S. addresses. Road number decal sets, \$4. Payment to CCMRC. Crescent City Model Railroad Club, 601 N. Lester Ave., Metairie, LA 70003-6131 **MR**

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Resurrected Gorre & Daphetid no. 10 pulls a train on Kenichi Matsumoto's Denver & Green River Northern RR HO layout in Japan. Kenichi Matsumoto photo

Reviving a John Allen locomotive

I'm at a loss for words after reading Charlie Getz's article on Kenichi Matsumoto's restoration ["Miracle in Monterey: The restoration of G-D Line no. 10," February]. I was and still am a huge fan of John Allen's work. While I never had the pleasure of seeing his layout or meeting him, I do know two people who operated the layout on several occasions. (I have to admit I'm a little jealous of them.)

A huge thank-you to both Mr. Getz and Mr. Matsumoto for such a great story and restoration.

*Peter Sanchez
Federal Way, Wash.*

I had to comment on the restoration by Kenichi Matsumoto. A great article and a wonderful restoration.

My parents got me a Lionel train set when I was young, which got me into model railroading. Then I discovered HO scale in the 1950s, courtesy of school library copies of *Model Railroader* and other magazines. My parents then got me my first HO set, with a Varney Dockside 0-4-0.

I started following the many articles on John Allen: his original not quite 4 x 8, which was incorporated into his next much larger G-D Line, and then into his third and last G-D Line. I appreciated his sway-backed cars, weathering, western scenery, photography, sense of humor (I remember

a dinosaur in one of his vignettes), and his many ads for Varney using his layout and/or buildings.

A much appreciated article. Keep up the good work.

*John E. Lincoln
St. George, Utah*

Congratulations to Charlie Getz for his very interesting article about the restoration of John Allen's locomotives. Congratulations, also, to Kenichi Matsumoto for his outstanding restoration work. Mr. Matsumoto is clearly an artist who has honored another artist through this effort.

*Paul A. Carlson
East Lansing, Mich.*

"Miracle in Monterey" was familiar to me in many ways. Recently my uncles' locomotives and rolling stock, as well as unassembled kits from their model railroad, came into my possession. To my surprise, after a thorough cleaning nearly every locomotive ran like new. I have memories of operating those Varney locomotives 50 years ago. It is satisfying to have them restored, upgraded, and operating on my own layout these many years later.

*Geoff Golden
Pella, Iowa*

Inspiring Wingate

I met Tony Koester and the Wingate layout ["Build Wingate in O scale," January] at the 2018 O Scale National Convention in Rockville, Md. At that time, Tony said the layout was going to be featured in the magazine in a few months. I waited and waited for the series. At last!

In a slide presentation, Tony showed attendees the layout one building at a time and explained the logic behind it

all. I'm a retired guy who's never finished a layout, but Wingate makes me want to complete one. Hats off to Tony.

*Dick Donaway
Sioux City, Iowa*

Unmistakably Howard Zane

When I picked up my copy of the February issue, I knew right away that the cover featured Howard Zane's wonderful layout ["Going home on the Piermont Division"]. I've seen this layout

several times in person, and each time it just leaves me in awe! I could spend hours gazing at this masterpiece and still wouldn't see all its craftsmanship in a single visit. And Howard is a most generous host when it comes to answering questions about the layout.

Thank you, Howard, for sharing this unique work of model railroading art, and thanks to MR for allowing it to grace your pages once again.

*Dale Ridgeway
Bishopville, Md.*

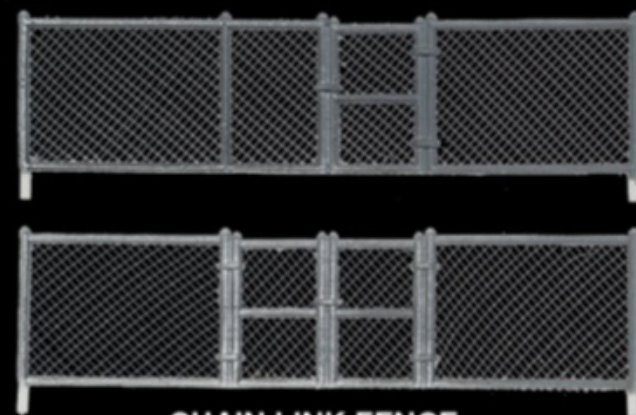
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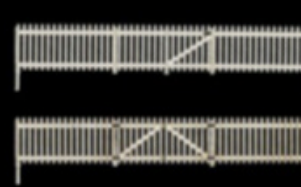
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In our October 2018 issue, Bob Kingsnorth showed how he used music wire in brass sleeves to control distant turnouts using ground throws mounted closer to the fascia. Bob Kingsnorth photo

How to line turnouts on thick benchwork

Q I'm building an N scale layout on a hollow core door covered with 2" thick extruded-foam insulation board on top. I'd like to remotely control a few of the turnouts that aren't easily reachable from the front of the layout. Any suggestions on how to operate these turnouts? The thickness of the foam plus the door seems to me to be a problem. Thanks for any ideas.

Rob Wesley

A An under-table switch machine will operate a turnout through that much thickness of benchwork if the actuating wire is replaced with a stiffer one that will resist flexing. Look in your hobby shop or online for tempered music wire, which is usually sold in 1-foot or 3-foot lengths. The thicker the wire, the stiffer it is. Try .020" diameter and go up from there if the wire still flexes too much. Be sure to cut it only with a specially tempered hard-wire cutter, because music wire will ruin ordinary wire cutters or rail nippers. (Ask me how I know this.)

Another option is to control your turnouts with a ground throw or similar control mounted near the fascia, and transmit the movement to the points with a choke cable or similar arrangement. The guide tube for the actuating wire can be buried in the layout surface, run under intervening structures or track, and concealed with scenery. Take a look at Bob Kingsnorth's article "Installing ground throws in the foreground" in our October 2018 issue. If that magazine isn't in your personal back-issue stash, sign up for our online Archive at ModelRailroader.com/Archive.

sion, where the frog and closure rails are powered by one or the other point rail contacting the powered stock rail. This works fine in theory, but many modelers (including us) find that the area of electrical contact between those two rails is too small to be reliable. It takes only the tiniest amount of dust, loose ballast, or wheel crud to kill the current. If you're using Digital Command Control, we recommend soldering a jumper to the frog/closure rail/points assembly and connecting it to an automatic polarity switch like a Tam Valley Frog Juicer.

Q I read with great interest the article "Linden Street Freight Station" that appeared in *Model Railroad Planning 2019*, and I have a question. In the track plan appears a turnout labeled "lap switch." What is it, and how does it work? Thank you for your help.

Paolo Tavano, Aosta Valley, Italy

A A lap switch, also called a three-way switch, is one incorporating two switch assemblies, so a train entering from the points end can leave via any of three routes, rather than the two of a conventional switch. It's called a "lap" switch because the point-to-frog sections overlap each other (as opposed to two conventional switches that just lie really close to each other). The second switch's points contact the first's closure rails.

Usually, one route diverges right, one left, and the middle proceeds straight through. But, keeping the old saying "there's a prototype for everything" in mind, there may have been switches in the real world in which both diverging routes went to the same side, or none of the routes were straight. Three-way turnouts, and other complex assemblies like single-slip and double-slip turnouts, are most often found in urban, dockside, and industrial applications, where trains have to thread their way between buildings, streets, and wharfs.

Q In your June 2018 issue, you explained how to modify Peco Electrofrog turnouts. I use N scale Code 55 Peco Electrofrog turnouts right out of the box with no modifications. All I do is follow the instructions. Those instructions say to power only the single track ("toe end" in Peco-speak) of the turnout. The two tracks joining the other side don't send power to the turnout. I electrically isolate them by cutting the rails with a razor saw.

Everything works fine. What am I missing by not doing it your way?

Eberhard Jaeckh, Portland, Ore.

A You're not missing anything, because N scale Peco Electrofrogs aren't wired the same as the HO scale ones. HO scale Electrofrog turnouts come with jumpers under the rails that you can cut to electrically isolate the frog, and a wire to power the frog separately. But you don't have that option with the N scale ver-

Q Every review I've seen of locomotives with 3-axle trucks says "minimum radius 18", 22" recommended." So do they run on 18" radius curves or not? It seems to say that it might or might not, but you won't know until you buy one.

Dave Nugent, Canton, Ga.

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

A In theory, they should. But at the smaller radius, the locomotive will be much less tolerant of less-than-perfect trackwork, and it might not behave well when coupled with long-wheelbase cars like passenger cars. That's why a higher "recommended" radius is listed. Not to mention, longer locomotives just look more realistic on broader curves.

Q I have a 5 x 9-foot oval layout based on the Black River Junction built by the *Model Railroader* staff in the January-April 2007 issues. Some of my trains will be long (20-30 cars or more), as I'd like to run four m.u.'d diesels on the point. I want to put a signal semaphore near the interchange switch, a tilt board near the corner of the crossing nearest the extension, and a train order semaphore at the Black River Depot. Can I operate these with Tortoise by Circuitron slow-motion switch motors, or is the layout too small to have electronically activated signals between each of these blocks?

Pieter Terwilleger, Tryon, S.C.



The semaphores outside the station on our Black River Junction project layout could be operated by slow-motion switch motors. But an extra-long train could confuse occupancy detectors. Bill Zuback photo

A In HO scale, a 40-foot freight car is about 6 inches long, and a typical road diesel is 7-9 inches. A train of four m.u.'d diesels and 20-30 freight cars will, therefore, be between 12 and 18 feet in length – a bit much for a layout with a 30-foot mainline run. The length of your train

will matter to your signal system if you plan to run them by track occupancy detection circuits. An automated signaling system might get confused when the front end of your train is entering one town while the back end has yet to depart the previous one. But if you plan

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to trigger your signals manually, with switches on the fascia for instance, you can control them however you like.

The bigger question is whether you'll be happy watching such a train chase its own tail from station to station. Shorter trains, with one or two locomotives and 6-10 cars, will look more realistic and can offer just as much operating enjoyment as long ones.

Q I was wondering if you have any tips for adding realistic chalk marks to the sides of railcars that doesn't require decals or anything of that nature. I want something that can be added and erased as wanted, quickly in minutes, just like the real thing.

Robert Perez

A I don't know of a method that could be as easily erased as real chalk, but for a realistic look, white artist's pencils are available at art supply stores or online. Keep them sharpened to a needle point and use a light touch on a flat, smooth

surface with some "tooth" to it, such as a car sprayed with flat paint or Dullcote.

Q I have an Erie two-bay covered hopper, no. 4065, capacity 101,000 lbs., with eight square hatch covers and sawtooth-angled hopper gates. Is this prototypically accurate? If so, what material could be carried without leakage through these gates?

Dave Burket, Talmadge, Ohio

+
A CAR WHOSE
HOPPER GATES
LEAKED SIGNIFI-
CANTLY WOULD BE
SENT TO THE RIP
TRACK.

A Though I couldn't find a record of a prototype Erie covered hopper with that car number, what you have is a model of a very common type of freight car, which I can tell you something about. Since it's a short car with a high weight capacity, it must be designed to carry a dense lading. And since it's a covered hopper, its lading must need to be protected from the weather. This says cement hopper to me, though the car could carry another moisture-sensitive lading like sand, flour, sugar, or carbon black.

As for leakage, hoppers are designed to carry even finely-grained ladings securely, and one whose hopper gates leaked significantly would be sent to the RIP track for repairs. Lost lading is lost money. However, some small amount of leakage can and does happen, which means it wouldn't be out of place for you to mark the area between the rails at these cars' loading and unloading facilities with a touch of light gray weathering powders to represent spillage.

Q I'm building an N scale layout. How long should I make a transition from flat to a 2 percent grade to avoid sharp humps or dips?

Robert Beadle, Nelson, Wis.

A Ideally, the transition area should be at least twice the length of the wheelbase of your longest car or locomotive. As long as you don't place any subroadbed joints at the beginning or end of the grade, the plywood's inherent resistance to bending should keep your grade changes gentle enough naturally. **MR**

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From classy brass to battery HO

Model trains have always ranged in price from inexpensive to costly. A hundred years ago, Ives was the prestigious tinplate line, and Hafner was the entry level option. O scale was always expensive, the “rich man’s” hobby for its cost and space required to operate. More affordable HO had Varney at one end, and Gilbert’s 1938, thrifty die-cast TruModel line at the other. It was true entry-level HO scale.

Post World War II saw new companies running the gamut from Varney to mid-priced Mantua/Tyco to affordable Revell and HOBBYline. But the 1960s were troubled for scale and tinplate alike. Mail order houses/department stores Sears, Roebuck & Co. and Montgomery Ward were losing entry-level tinplate sales due to rising manufacturing costs, and foreign-made HO seemed a good alternative.

Wards was first in 1957 with Marx’s Hong Kong-made line, the simplest set priced under its lowest electric O-27 gauge, but not low enough.

HO experienced rapid growth in Japanese brass from the early 1950s with simple, inexpensive International



In the 1950s and '60s, the top of the HO scale market was Japanese-made brass locomotives.

Models to highly detailed, hand-crafted 1960s *crème de la crème* from importers such as Pacific Fast Mail and Balboa. Low production numbers meant Japanese manufacturers could produce a wider variety of accurate prototypes with greater realism at higher prices.

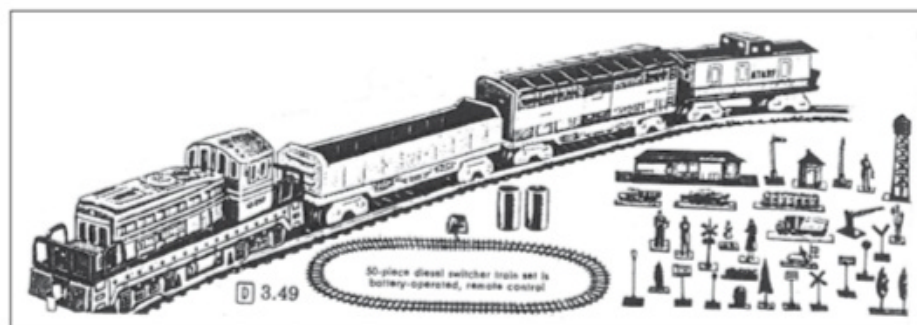
Exquisitely detailed brass locomotives ranged from articulated Big Boys to compact geared logging models. It was truly a golden age.

But Sears and Wards

needed something cheaper: bottom-line HO geared to kids. The retailers sought imports to keep their lowest dollar sales intact. They were toys rather than scale, and they managed to slip under the radar, unnoticed by most hobbyists and mercifully, little mourned today.



HO EXPERIENCED RAPID GROWTH IN JAPANESE BRASS FROM THE EARLY 1950S. — KEITH



This set from Sakai of Japan included cardboard cutouts.

In 1963, Sears cataloged a set with a plastic, HO scale Alco-style whistling, smoking 0-6-2 and tender; two plastic cars; an oval of track; and a lithographed controller/tower that held four extra-cost D-size batteries. It was identified only as “Made in Japan.” An MT logo on the tower tells us it was an unnamed Masotuko Toys product. Marx matched it in price with its plastic \$4.89 Hong Kong-made set with controller/station and track. It required three D-size batteries. More sets appeared in Canadian Simpson-Sears catalogs, MT and obscure battery-powered, lithographed tin brands: German Distler, Belgian Cragston, Japanese

Sakai, unidentified by name or country of origin, some with oversize cutout cardboard accessories.

Ultimately, Tyco, Mantua’s RTR HO line, entered 1966 Wards and 1967 Sears catalogs, with small to medium-sized sets and accessories. In 1968, besides Tyco, Sears carried Rivarossi’s Indiana Harbor Belt 0-8-0 and Fairbanks-Morse C-Liner. Revell and Aurora N scale outfits soon appeared, a recognition of the growing interest in scale model railroading, and seeing that mail order tinplate was about finished as was battery-driven HO.

And, exquisite Japanese brass never lost its cachet – in any scale! **MR**



Sets such as this ready-to-run steam outfit from Tyco were typical of a growing interest in scale models.



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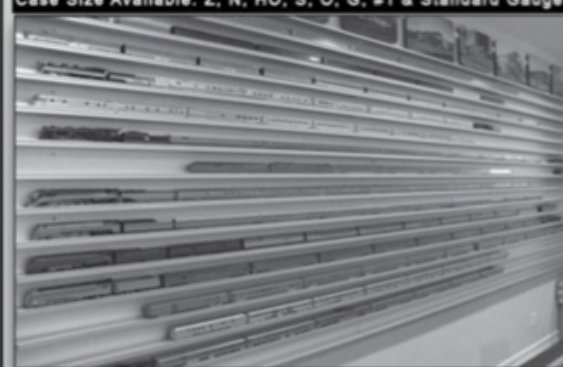
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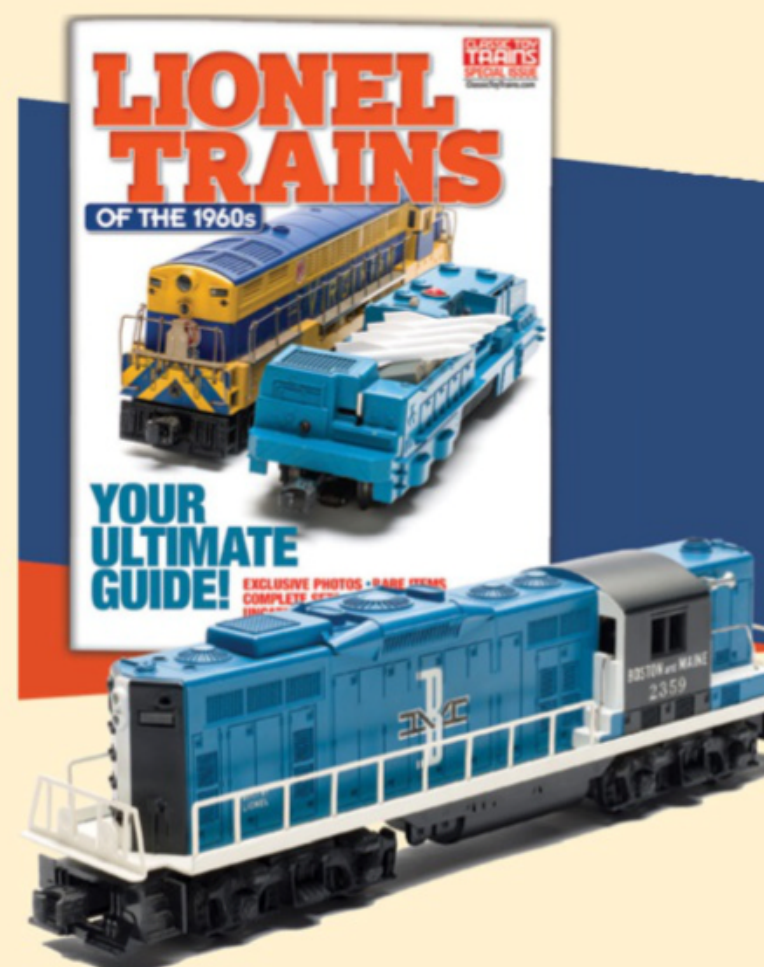
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Wire-free lighting with optical fiber

In the May 2011 issue of *Model Railroader*, former editor Neil Besougloff wrote about building and installing the commuter station at Williams Bay on our HO scale Milwaukee, Racine & Troy staff layout. As part of the project, he installed five Model Power no. 500 lamp posts with incandescent bulbs.

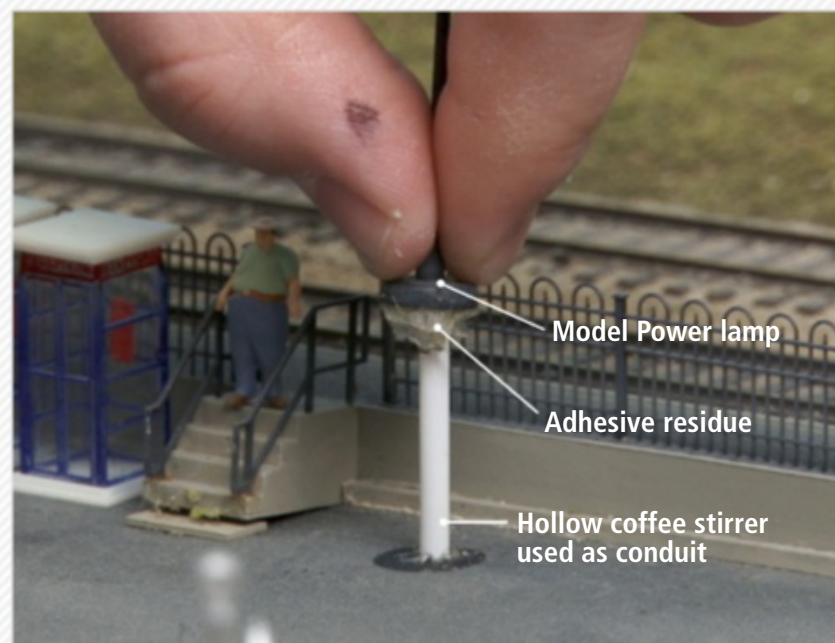
At the 2019 National Train Show in Salt Lake City, we met Michael Groves, owner of Dwarvin Enterprises (dwarvin.com). He was displaying an innovative line of N, HO, and O scale street and structure lights with optical fibers attached. In addition to the lamps, he was also demonstrating the Lamplighter, the light source for the end glow optical fibers.

Since the incandescent lamps at Williams Bay were never connected, this seemed like a good place to try the Dwarvin products. The system is easy to expand, which means we can add lights in the commuter station parking lot and along East Geneva Street. Since the lights don't dissipate heat, we may add lights to the interiors and exteriors of nearby structures.



▶ Watch Cody Grivno install the Dwarvin Enterprises optical fiber lighting system at Williams Bay on MRVideoPlus.com.

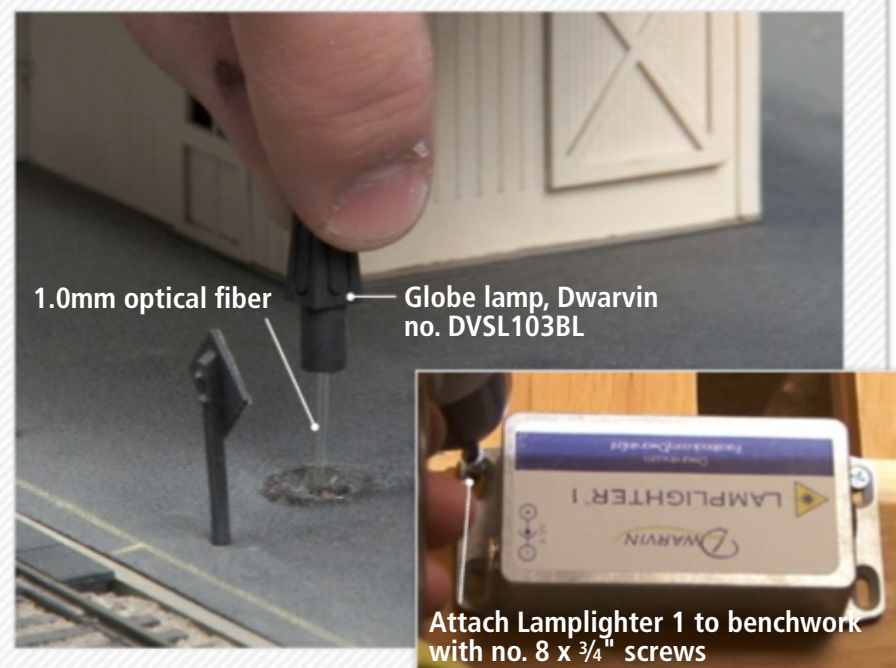
STEP 1 OUT WITH THE OLD



Before I could install the Dwarvin HO scale globe lamps (no. DVSL103BL), I had to remove the Model Power lamp posts. The leads for the incandescent lamps weren't connected, but a tacky adhesive had been applied to the base of each lamp. To avoid tearing the Woodland Scenics N scale foam Track-Bed platform, I gently twisted each lamp to break the glue joint. Once the base was separated from the platform, I pulled straight up, making sure I removed the hollow plastic coffee stirrer in each hole that was used as a conduit.



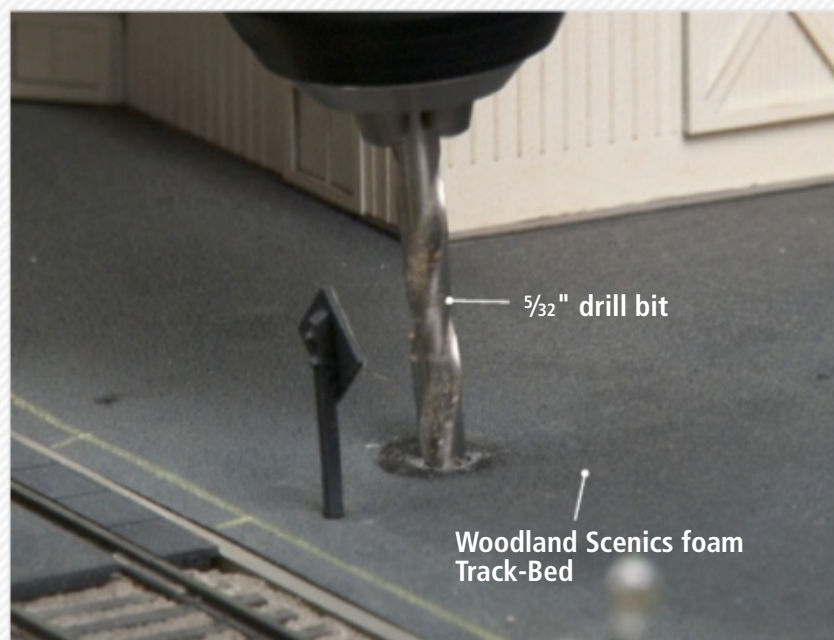
STEP 3 INSTALLATION



The optical fiber is sturdy, so I was able to feed it through each hole without using a hollow coffee stirrer as a conduit. Once I fed each three-foot length of fiber through the hole, I grabbed the lamp by the base and gently pressed it into the hole.

I then installed a Lamplighter 1 box to the benchwork. The light source for the fibers can hold 13 1.5mm fibers, 28 1mm fibers, or a combination of the two.

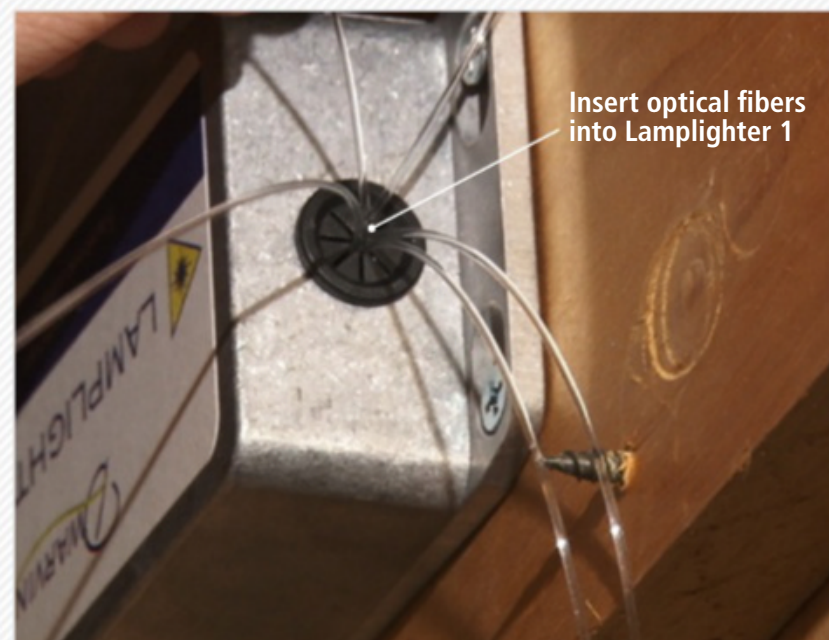
STEP 2 WIDENING THE HOLES



When the Model Power lamps were installed, 1/8" holes were drilled beneath each one to install the hollow plastic coffee stirrer conduit and the wire leads. The 3-D printed Dwarvin globe lamps have a 5/32"-diameter tube below the base where the optical fiber is inserted.

In order for the Dwarvin globe lamps to seat properly, I enlarged each hole with a 5/32" drill bit. I operated the drill at slow speed so I wouldn't tear the foam station platform. If necessary, back the bit out periodically to clear any swarf.

STEP 4 LET THERE BE LIGHT



I inserted the five 1.0mm optical fibers from the globe lamps into the Lamplighter 1. Don't look into the light source when the Lamplighter is turned on, as it's very bright. Then I put the barrel connector from the wall wart into the jack on the opposite end of the box.

I had an extension cord at the ready so I could plug in the Lamplighter 1 after I crawled out from under the layout. When I plugged in the box, the lights illuminated instantly, adding visual interest to an already well-detailed Williams Bay station scene. 



1 Virginia & Truckee 4-4-0s no. 22 and 11 lead a passenger train bound for Carson City, Nev., on Donn Tolley's HO scale model railroad. The 21 x 21-foot layout is set in northwestern Nevada in 1888.

A half century on the **VIRGINIA & TRUCKEE**

This 21 x 21-foot HO scale model railroad started with a \$10 purchase in 1963

By Dave Rickaby • Photos by the author

For many baby boomers, the path to model railroading started with a Lionel or American Flyer train set under the Christmas tree. But Donn Tolley's hobby journey started in 1963 when serving in the U.S. Air Force in Japan. He went into a store and stumbled upon a selection of brass locomotives next to the jewelry counter. After looking over the inventory, he purchased a brass HO scale Porter 2-6-0 Mogul for \$10.

When Donn returned stateside in 1964, he built his first HO scale layout on a 4 x 8 sheet of plywood. Another 4 x 8-foot sheet of plywood was added when Donn and his family moved to Wisconsin two years later.

In 1968 Donn and his wife, Rose, moved into their current home in Fitchburg, Wis., a suburb of Madison. At that point, the layout had scenery and structures. Donn was busy buying a variety of HO equipment, among them Virginia & Truckee (V&T) 2-4-0 no. 21, the *J.W. Bowkers*.

Though Donn had a new home and a layout, he wasn't sure what he wanted to model. The decision was made easier thanks to his children. When his daughter, Kimberly, was 5, she put her infant brother, Paul, on top of the layout. According to Donn, the only railroad items that survived the incident were the Porter Mogul and the V&T 2-4-0. With those engines intact, Donn started researching the Virginia & Truckee.

Turning back the clock

Donn had a limited amount of space when he started work on his current



② A work train with V&T 2-6-0 no. 20 on point rumbles past Comstock Mine. Donn's locomotive fleet consists largely of second-hand brass steam locomotives.

model railroad. He originally considered switching to N scale, but at that time V&T locomotives weren't available in 1:160. As he researched the full-size railroad, Donn learned that the V&T operated small locomotives and short-wheelbase freight and passenger cars.

The small equipment and short trains would look good on his layout's 18" radius curves. Donn was also intrigued by the mines served by the V&T and the logging operations on the nearby Lake Tahoe RR. After much research, Donn set his HO scale V&T in 1888.

The walk-in model railroad measures 21'-7" x 21'-10" and features two small peninsulas. The layout is designed for point-to-point operation, but reverse loops on both ends make continuous running possible for open houses.

Donn built the layout in sections, starting with the Carson City area, using

L-girder benchwork consisting of 1 x 4 girders and stringers and 2 x 2 legs. Over the years, he added the peninsula between Carson City and Virginia City. Donn finally finished the Virginia City addition around 2010. The addition forced Donn to relocate his workbench. The staging yard beneath the logging camps has three two-foot tracks.

The track is largely code 83 flextrack, though some is handlaid. Donn weathered the track with an airbrush and rust brown paint. He ballasted the track with Highball Products cinders.

The turnouts on the layout are from Donn's original layout. However, he began handlaying turnouts to increase yard space. Further research on the V&T indicated that the full-size railroad used stub switches. Donn's turnouts range from no. 3 to no. 10. Most are operated with Hanksraft motors, which are



3 The Carson City, Nev., yard is at the midpoint of the layout. Here, 2-6-0 no. 19 brings a work train past the enginehouse. The harp-style switch stand castings in the foreground are by Precision Scale Co. and Kemtron.



4 Little River RR 2-4-4-2 no. 126, on loan to the Virginia & Truckee, pulls a freight upgrade on its way to Virginia City. Donn made his own rock molds using latex rubber. He used Hydrocal to make the castings.

activated when the harp-style switch stands are manually lined.

The slow-motion display motors, many sourced from old beer advertising signs, are powered by a pair of 9V, 1/2A plug-in packs on the wall. Four of these packs control all of the switch motors on the layout. The motors have an in-line resistor attached and draw little current.

Equipment roster

The V&T 2-6-0, 4-4-0, and 2-6-0 steam locomotives are brass models that

Donn purchased secondhand. They include offerings by Model Engineering Works, United, and Pacific Fast Mail. The only brass locomotives Donn purchased new were two V&T engines from Beaver Creek Model Co. The lone plastic locomotive is by Bachmann Spectrum.

The prototype Lake Tahoe RR featured 2-6-0 steam locomotives, but Donn runs Shay and Climax geared locomotives. A 2-4-4-2 Mallet can also be found on the layout. Donn says the locomotive is on loan from the Little River RR.

Donn's rolling stock fleet features plastic AHM and Tyco models that he repainted. The freight and passenger cars still have their original trucks but now ride on metal wheelsets. Link-and-pin couplers would have been prototypical, but Donn uses Kadee knuckle couplers for ease of operation.

Donn found the 50 ore cars for the mining section of his layout on eBay. A club modeling the V&T was offering the single-truck cars, which arrived as plastic cubes Donn had to hollow out. The cars were extremely light, so he added weight to prevent them from derailing while being pushed up the 6 percent grade to the mine. Donn runs the ore trains in six-car sets. The end cars feature Kadee knuckle couplers; the intermediate cars use non-functioning link-and-pin couplers.

Electronics and controls

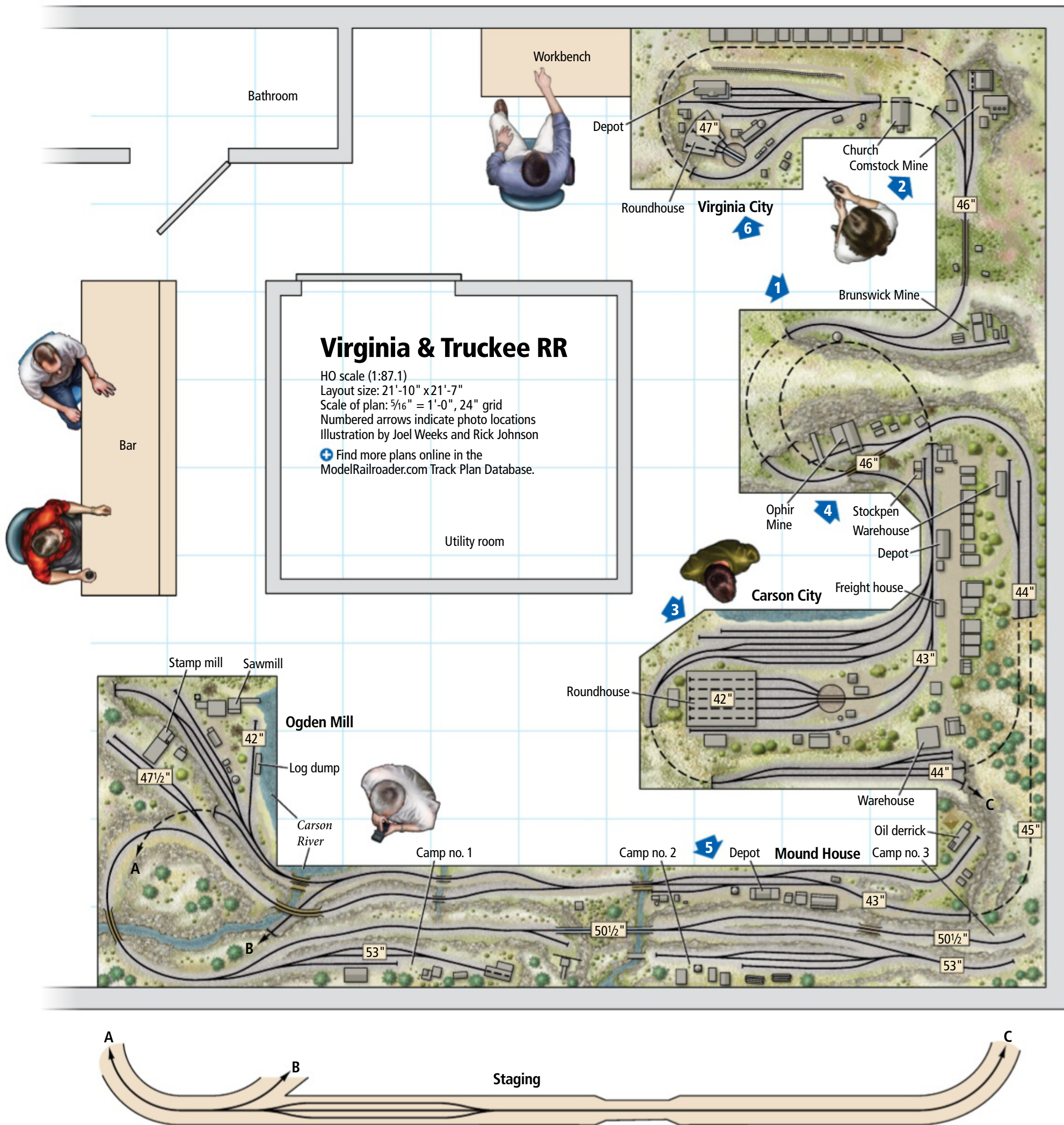
Donn, a retired IBM employee, is a self-taught electronics guru who enjoys designing and building circuitry. In 1974, Donn and two friends built a direct-current, square-wave pulse walk-around system with memory to control trains.

In 1981 Donn interfaced an IBM computer to his throttle system via an electronic board that he purchased. He was able to run the entire layout from the computer, making setouts and pickups at various industries while sitting back and watching the action. This lasted for about a month, until Donn realized that he wanted to be a bigger part of the action, following trains and lining turnouts.

When Digital Command Control (DCC) entered the scene, Donn wasn't quick to make the switch. Around this time, Donn and Rose started work on a garden railroad that used battery-powered locomotives. Donn miniaturized the electronics boards he was using in large scale so they could fit in an HO scale boxcar. Further refinement allowed him to fit a battery inside a steam locomotive tender.

Then SoundTraxx came out with the Econami decoder with Tsunami sound. Donn found a circuit board that acted as a radio receiver that converted a direct-current battery to AC and put the DCC signal to a decoder. This let Donn run his engines on batteries using DCC.

Donn now runs his HO scale layout with handheld throttles and receivers he designed for G scale in conjunction with CVP Airwire T5000 controllers and a



The layout at a glance

Name: Virginia & Truckee RR
Scale: HO (1:87.1)
Size: 21'-7" x 21'-10"
Prototype: Virginia & Truckee RR
Locale: northwestern Nevada
Era: 1888
Style: walk-in

Mainline run: 154 1/2 feet
Minimum radius: 18"
Minimum turnout: no. 3 stub-ended
Maximum grade: 2 percent (V&T), 6 percent (Lake Tahoe RR)
Benchwork: L-girder
Height: 42" to 53"

Roadbed: Homasote
Track: handlaid and code 83 flextrack
Scenery: hardshell
Backdrop: 1/8" hardboard painted blue with Instant Horizons backdrops
Control: wireless battery-operated and Digital Command Control



Meet Donn Tolley

Donn was born and raised in Arkdale, Wis., but now lives in Fitchburg, Wis., with his wife, Rose. They have two adult children, Paul and Kimberly. Donn retired from IBM and Madison Gas & Electric. He also enjoys hunting, fishing, and working on his wife's garden railroad.

Tam Valley Depot DRS1 transceiver. The receiver takes the battery voltage, converts it to AC, and then changes it to DCC. Donn uses rechargeable lithium-ion batteries in his locomotives.

In addition to battery power, Donn also has traditional DCC on his layout. He did this by taking a small printed-circuit receiver board designed for G scale, building a power supply for it, and hooking it up to the layout. Donn has five sound-equipped engines on his model railroad.

Hills, rocks, and water

Donn used plaster hardshell scenery to model the landforms of northwestern Nevada. He placed paper towels soaked in Hydrocal over screen attached to risers or crumpled newspaper taped in place. Once the Hydrocal dried, Donn removed the paper. Each mountain is hollow so he can reach the tracks inside.

The landforms feature rock outcroppings made using various techniques. Some of Donn's earliest attempts at outcroppings were made by stacking pieces of broken ceiling tile. Later, he used lump pieces of coal to make latex rubber molds. Donn filled the molds with Hydrocal and attached the castings to the hardshell.

Donn used a two-step process to color the rock castings. First, he painted the castings dark brown. Then he sprayed a sand/ocher color from above. This simulates light hitting the raised surfaces, leaving the recessed areas dark to suggest shadows.



The rivers on Donn's layout were made using casting resin. He poured the resin in 1/8"-thick layers, adding food coloring as he went. Donn started with blue, added green tints as he advanced towards the top layer, and finished with a clear layer. Donn found using more hardener in the top layer caused the resin to ripple, adding the appearance of motion to the rivers.

Vegetation and structures

Donn has continually upgraded the V&T over the years. He originally used dyed sawdust for ground cover. He has since replaced that with contemporary products from Scenic Express and Woodland Scenics.

Rose is a skilled tree maker, selling her products under the name "Trees by Rose" at model train shows. Many of her trees populate Donn's layout. The deciduous trees are pieces of sagebrush with an airy, nylon poly fiber draped over the branch structure. She then applies hair-spray to the trees and adds fine ground foam to simulate leaves.

The conifers start as carved, painted wood dowels. Rose uses coarse "horse hair" furnace filter material, pushed onto the dowels and glued in place, for the branch structure. She then sprays the filter material with glue and applies

various colors of fine green ground foam. For dead pines, she paints the furnace filter material with brown and grayish-brown paint, omitting the ground foam step.

Donn enjoys building plastic structure kits, kitbashing, and scratchbuilding. He scratchbuilt the Virginia City and Carson City depots using styrene and wood. The model railroad also features plenty of older Atlas and Revell structure kits. Donn kitbashed the enginehouse at Carson City using four Revell two-stall enginehouse kits; he crafted the roof from styrene.

The backdrop is 1/8" tempered hardboard painted sky blue with Walthers Instant Horizons backdrops attached. He also used 1/8" tempered hardboard for the fascia, which is painted brown. Skirting hangs below the fascia, giving the model railroad a finished appearance.

The layout is illuminated with 4-foot recessed fluorescent fixtures with tubes made for store clothing displays.

Operations

Donn has developed an operating scheme for the V&T using a deck of task cards, which he'll start implementing this year. Tasks can include delivering freight cars to industries, running the



5 With a pair of loaded log cars in tow, Lake Tahoe RR Climax no. 7 prepares to head down the switchback out of Camp no. 2. From here it will continue down the 6 percent grade to the log dump pond at Ogden Mill.

A half century of fun

Donn has enjoyed sharing his HO scale Virginia & Truckee layout with others over the years. His model railroad has been open for tours during National Model Railroad Association (NMRA) region meets and division conventions, as well as two NMRA nationals.

Though Donn's model railroad may look complete, he wants to add more figures and details. In addition, he plans on scratchbuilding a 35-ton Climax Class B geared steam locomotive. Donn has enjoyed rebuilding used brass steam locomotives for years, so he's more than up to the challenge.

An innocent trip into a store in Japan started Donn on a lifelong journey in model railroading. That 2-6-0 Porter Mogul he purchased back in 1963 has been repainted and re-gearred twice, but it's still going strong 57 years later. **MR**

Dave Rickaby is a longtime contributor to the pages of Model Railroader magazine. He lives in Marinette, Wis., located in the northeast part of the state.



6 Virginia & Truckee 2-6-0 no. 19 takes a spin on the turntable at the three-stall Virginia City roundhouse. The scenery on the model railroad is a mix of Woodland Scenics and Scenic Express materials.

passenger train, or taking logs from a camp on the Lake Tahoe RR to the saw-mills along the Carson River. When an operator completes a task, the card is moved to the bottom of the deck.

Instead of using switch lists, Donn will employ wheel reports, setting out and picking up certain types of cars as denoted on the task cards. The full-size V&T ran short trains (three cars and a

caboose), which Donn will re-create on his model railroad. Though short train lengths minimize the amount of work, it has the potential to increase the number of trains run during a session.

Donn envisions up to four operators at each session. There will be no dispatcher. Instead, train movements will be by gentleman's agreement, also known as "smoke signal" dispatching.



Two hoppers of bituminous from southeastern Ohio coal mines have been unloaded, and a self-powered crane is loading sand into a bin next to the drying house at the Nickel Plate's Frankfort, Ind., engine terminal on Tony Koester's HO railroad. Tony shares ideas for compact industries that could fit on most any model railroad.



Tony Koester's *Space-Saving Industries for Your Layout* has even more ideas. It's available now at hobby shops and KalmbachHobbyStore.com.

Modeling SPACESAVING INDUSTRIES

Making every square inch count

By Tony Koester

Photos by the author unless noted

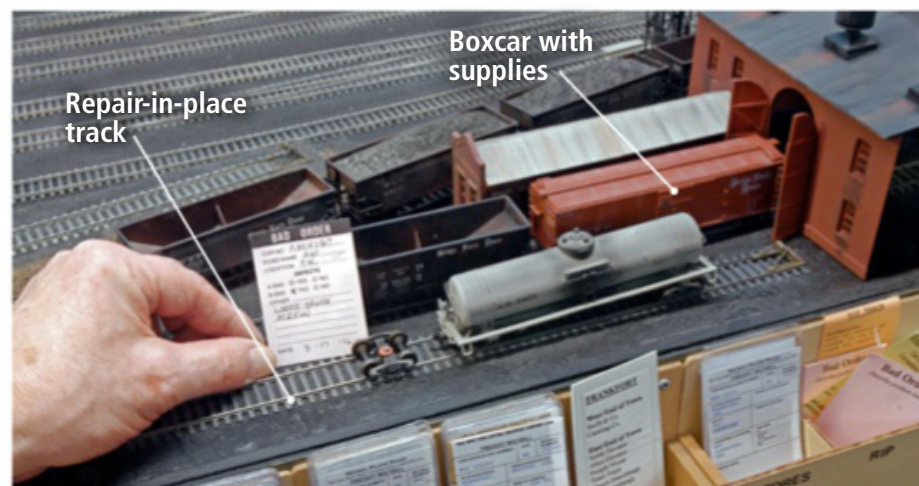
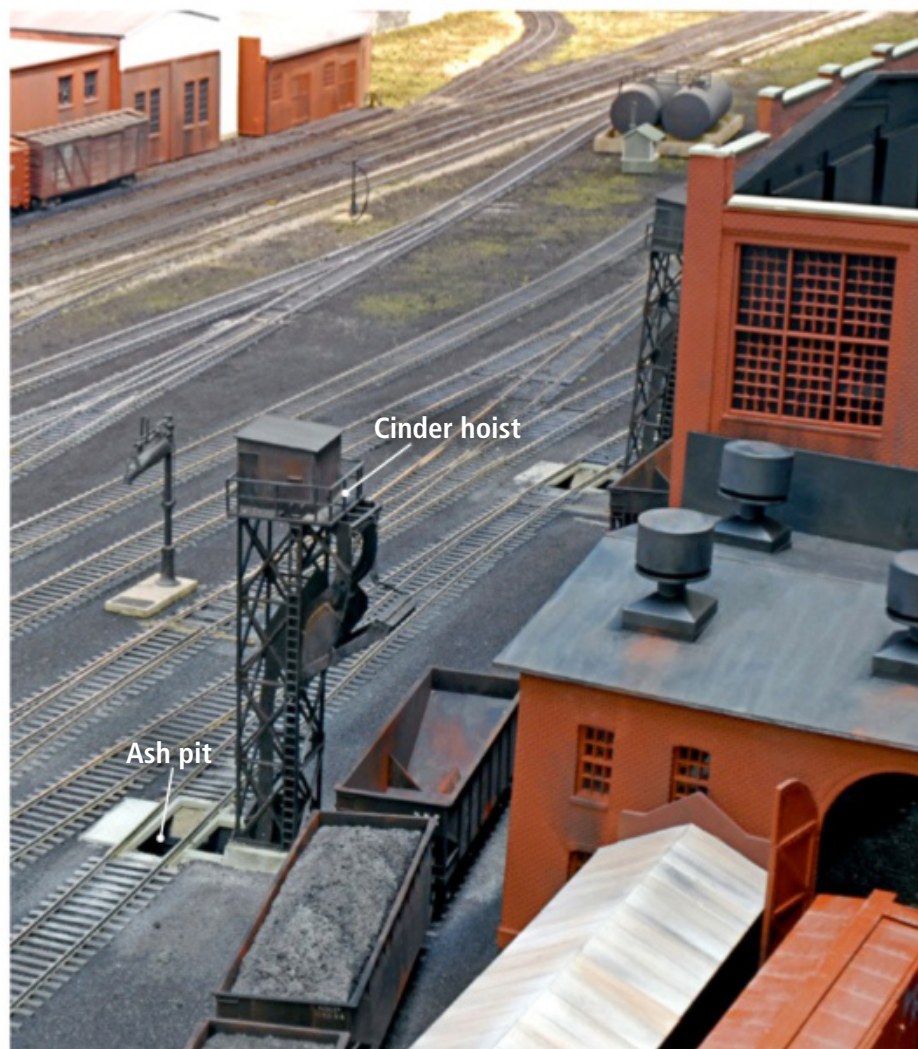
If there's a common characteristic shared by almost every model railroader, it's a lack of space. Whether we have a small shelf layout or a basement empire, there's never enough square footage to do justice to everything we'd like to model.

Among the most important items on our must-have list are those that support the purpose of our railroads. A scale model railroad should reflect the characteristics of its full-size counterpart. That includes its reason for being, its sources of

livelihood, and the industries that supply or use the carloads that make running trains worthwhile.

But one such industry – an automobile plant, for example – could blanket an entire basement. So we often see models of factories barely large enough to house the office staff, let alone space to produce products and store what is produced until it can be shipped. But there are plausible yet compact sources of car loadings, some we may have overlooked as “industries.”

ENGINE TERMINALS AS INDUSTRIES



Engine terminals, for example, are more than just a place to display locomotives. In addition to the hoppers full of coal for steam locomotives shown in the photo on the previous page, coal-burning steam locomotives generated copious amounts of cinders, which were dumped into pits and elevated by ash hoists (this is a Walthers model, above), thus generating car loads like any other “industry.” The cinders were hauled away for use as yard or siding ballast.

Occasional boxcar loads of lubricants and other supplies were also needed.

The boxcar (top right) is delivering supplies from the stores department.

A repair-in-place, or RIP, track is another staple of any busy yard. It need not just be scenery, but rather can be a place where your yard crews shove cars needing repairs – a missing coupler spring or brake wheel, a low or missing coupler, plastic wheels that should be upgraded, and so on. Between the sessions, those repairs can be made and the car(s) returned to the RIP track to be switched back into the normal traffic flow. Voila! Another industry with no structure required.

The bad order ticket tells me what work needs to be done to this car on the adjacent RIP track.

And during the transition era, or for railroads whose steam fleet burned oil, inbound tank cars were required. Some bent pieces of wire form diesel fuel unloading cranes. Drawings for these cranes appear in my book *Space-saving Industries for Your Layout* (Kalmbach Media, 2016).

So without expending an extra square inch of space, your engine terminal has become a valuable “industry.”

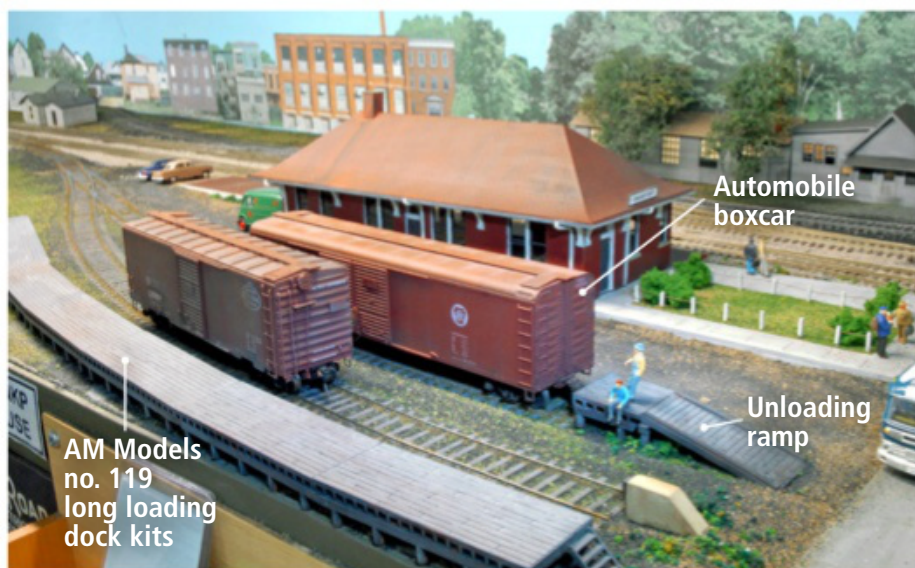
DOUBLE-DUTY UNLOADING RAMP

Paul Dolkos spotted a combination concrete unloading dock and ramp in Alexandria, Va. One block of plaster-coated foam, balsa wood, or other material would quickly produce a model that does double duty as a two-fer: an unloading platform for boxcars and an unloading ramp for farm or road machinery for flatcars.

Paul Dolkos photo



IMPLIED AND 2-D STRUCTURES



Much as I would have enjoyed building the brick freight house at Frankfort, Ind., which I photographed in 1971, there simply wasn't room for it. It also would have made spotting cars difficult on the tracks between it and the station.

I settled on building the platforms using a series of AM Models wooden freight platform kits end to end to show crews where to spot less-than-car-load

(LCL) boxcars for loading and unloading. It's clear to the switch crews where the freight station should be.

At Oakland, Ill., I had a space problem on the other side of the tracks where a Standard Oil dealer's tanks should go. As I was pondering whether I could cut some Grandt Line tanks in half and squeeze them between the siding and

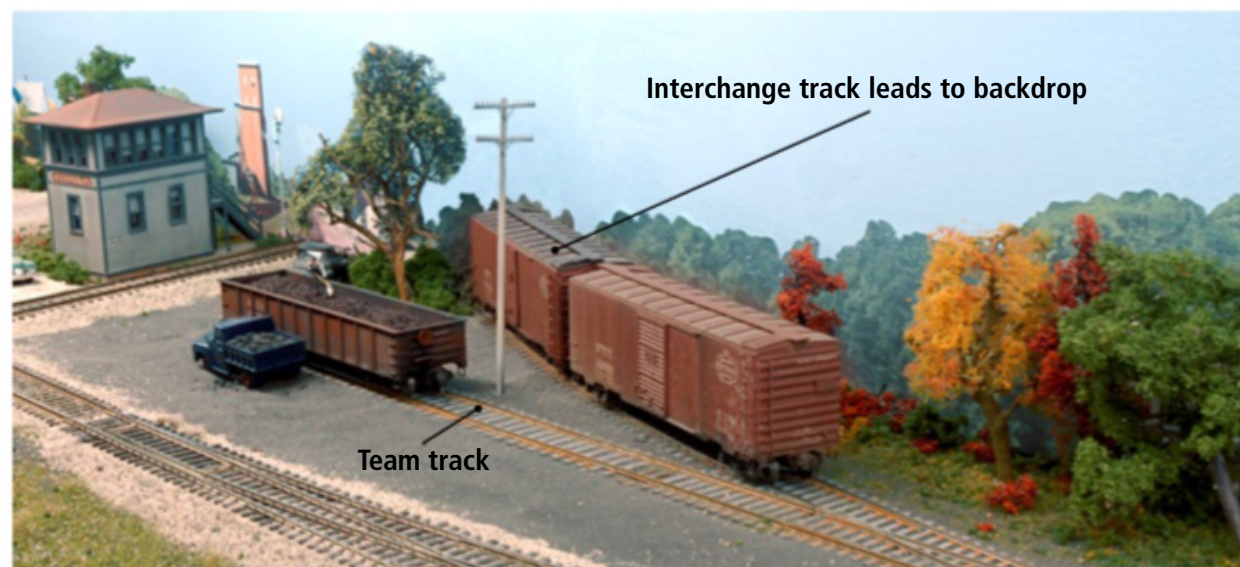
the backdrop, I saw a low-resolution photo of a similar petroleum dealership online, did some minor photo editing, and pasted the photo to the wall.

Two-dimensional photos often look perfect only from a narrow viewing angle, but I believe we're just beginning to realize their potential to resolve scenic challenges. When viewed at eye level, they look very realistic.

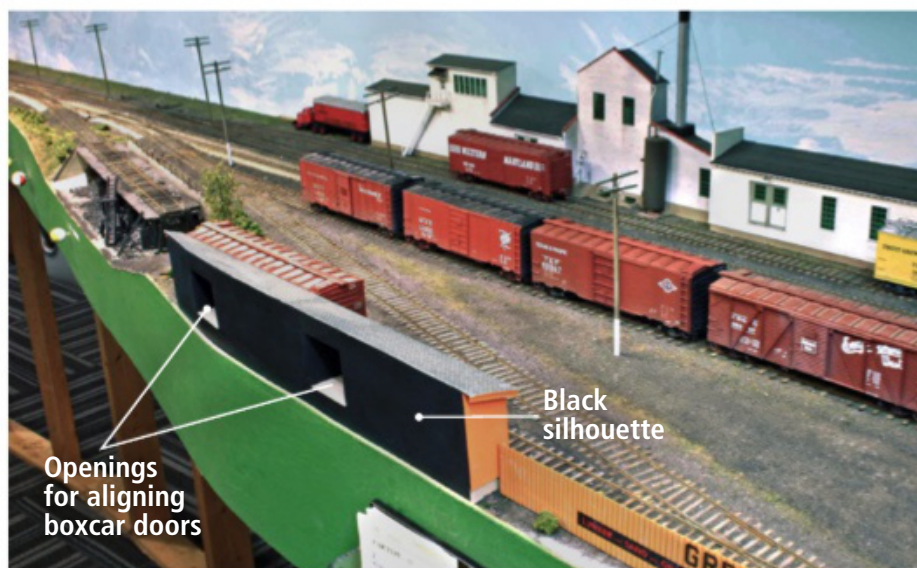
INTERCHANGES

One much-under-represented "industry" on model railroads is the interchange. A low-volume interchange (top) can be nothing more than a stub-ended track butting into the backdrop – here the NKP-Peoria & Eastern interchange at Veedersburg, Ind., on my NKP railroad – or leading off the edge of the benchwork where one railroad crosses another.

Or it can be a long track switched by a live crew or with automation. The NKP and Milwaukee Road exchanged 12,000 loads at the remote interchange near Humrick, Ill., in 1954. I modeled it using Iowa Scaled Engineering's Automated Interchange circuit; cars appear from behind a low view block. The hopper (bottom) is covering an infrared sensor, which shuts off power to two Fairbanks-Morse C-Liners shoving more cars into view. At both Humrick, Ill., and Linden, Ind. (not shown), the hidden to-NKP interchange tracks are 30 cars long. In any case, no structures are required, and the number of cars delivered or picked up is limited only by the length of the siding you can fit in.



TRUNCATED STRUCTURES



With a bit more room, you may be able to build at least part of a structure to represent an important industry. But how do you deal with the truncated part of the structure?

Bill Darnaby squeezed just enough of the lumberyard at Mifflin, Ohio,

between the siding and fascia to show crews were to spot carloads of lumber. The door openings (left) cut through the building help them to accurately align the boxcar doors. Bill painted the part that viewers are to ignore black.

Bill Darnaby photo

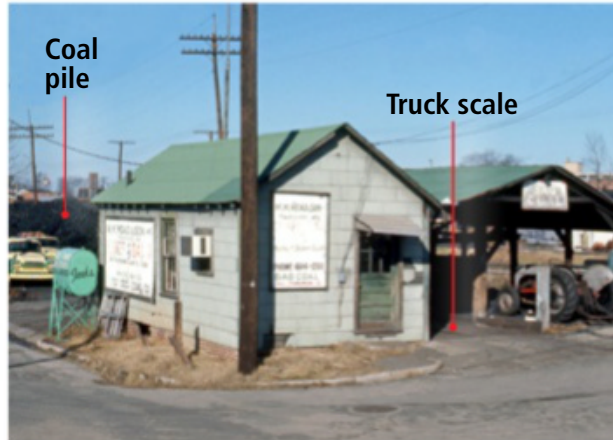


Rather than using the theatrical trick of blackening out the rear wall of a structure or covering it with an upward fascia extension, Gerry Leone took a different aesthetic route and detailed the interior of the structure.

Gerry Leone photo

COMPACT COAL YARD

A siding switched by the Durham & Southern (which ran south from Durham, N.C., through Apex to Dunn), a conveyor, a place to pile coal, an office, and a shed covering a truck scale, and some equipment were sufficient for M.H. Head & Son to eke out a living in the 1970s, although the oil tank suggests they were hedging their bets. A few square inches would suffice for a model of this eye-catching facility.

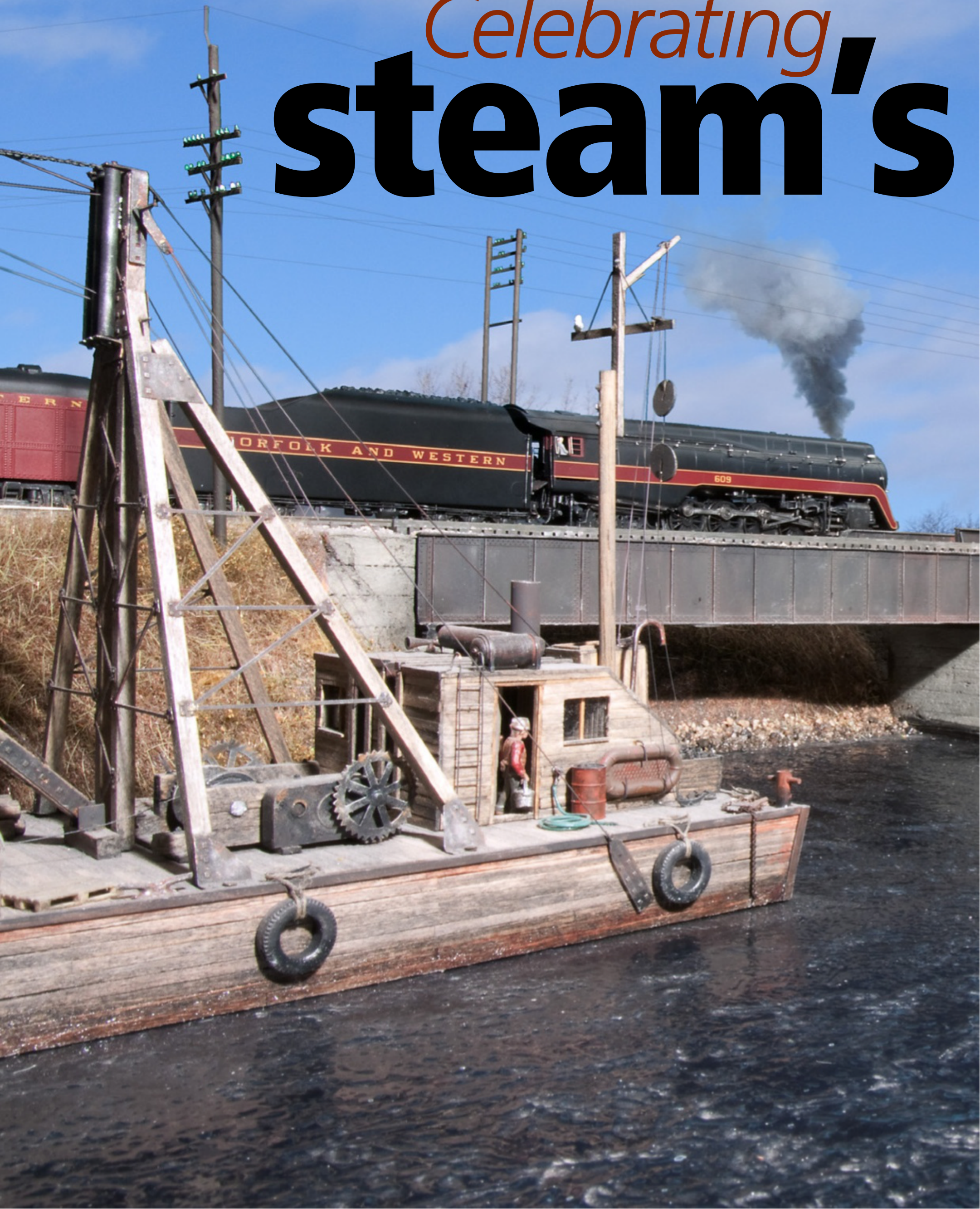


BRIDGE AS OVERHEAD UNLOADER

The shortline Narragansett Pier RR used a deck-girder bridge to unload road salt in Peace Dale, R.I. The railroad already ran over it, and a road already ran under it, so there was no additional work required. The same opportunity awaits the modeler for a variety of hopper-carried products. **MR**



Celebrating **steam's**



last stand

O. Winston Link's images of the Norfolk & Western in the 1950s inspired this basement-sized model railroad

By Gary Hoover • Photos by the author



① Two of the Norfolk & Western Ry.'s finest meet on the Elizabeth River bascule bridge on Gary Hoover's HO scale N&W layout. A streamlined class J 4-8-4 leads the inbound *Powhatan Arrow*, and a class A 2-6-6-4 is on the point of a westbound empty coal train.



② Gary has also used his layout to re-create some of O. Winston Link's famous nighttime photos, such as this scene at a drive-in theater near Laeger, W.Va. He used S scale cars in the foreground, and the on-screen jet is a plastic model he built and photographed and then added to the scene with photo-editing software.

Noted railroad photographer O. Winston Link dubbed the Norfolk & Western Ry. of the late 1950s "The Last Steam Railroad in America." That moniker was also the title of a book published by Harry N. Abrams in 1995, that republished many of Link's iconic, mostly night photos of the waning days of N&W steam power. Those photos, along with the charm of railroading through the Appalachian Mountains, inspired me to plan and build my latest 24 x 49-foot HO scale N&W model railroad.

As I wrote about in *Model Railroad Planning 2015*, the design goal of my new layout was to replicate certain locations on the prototype N&W that would include mainline, branchline, rural, and city scenes along with coal mine operation. Additionally, I wanted to re-create some of Link's famous photos in HO scale by modeling specific locations he chose to make his fabulous images. The layout would also be set in late fall/early winter, as that's when many railfans of that era, including Link, preferred to photograph steam locomotives.

I'd come up with some pretty lofty goals, even for a full-basement-size layout. As is usually the case, compromise was necessary.

For my previous layout, based on the Atchison, Topeka & Santa Fe Ry. (see the October 2005 *Model Railroader*), I set

the time period narrowly to Aug. 29, 1951. I focused on getting the layout configuration as close to the 1:1 railroad as possible. That goal sometimes meant more complexity and compromising scenery for the sake of prototype fidelity.

For my N&W layout, my focus has changed. I kept everything as simple and reliable as possible while creating the scenery and locations I wanted. This goal resulted in some deviation from the prototype in terms of the geographic locations on the track plan. Not all of the layout scenes are in the exact geographical order of the prototype. In some scenes, such as Laeger and Merrimac, not all of the train consists are what typically ran on the prototype N&W at those locations. I've also widened the layout time period to cover the years from 1954 through 1957.

Revisions and a lesson learned

For the most part, the track plan shown in my MRP 2015 article remains the same. However, during construction, I found a few modifications were necessary. These are shown on the revised track plan on the right.

The Abingdon branch was originally going to be a freestanding walk-in scene with a drop-down connection to the main. That plan proved a waste of too much space, so the revised Abingdon branch now features permanent



③ Several scenes around the layout required access hatches. Lamberts Point is shown here with its hatch and the turntable pit removed for access.

The layout at a glance

Name: The Norfolk & Western of the 1950s

Scale: HO (1:87.1)

Size: 24 x 49 feet

Prototype: Norfolk & Western Ry.

Locale: Virginia and West Virginia

Era: 1954 to 1957

Style: multi-level walk-in

Mainline run: 120 feet

Minimum radius: 30" (N&W), 27" (Virginian Ry.)

Minimum turnout: no.8 (main), no. 6 (yards)

Maximum grade: 3.8 percent

Benchwork: 1 x 4 open grids with 2 x 4 legs, 1 x 4 risers, and 3/4" birch plywood subroadbed

Height: 53" (main line), 65" (upper deck)

Roadbed: cork attached to subroadbed with spray adhesive

Track: code 83 flextrack

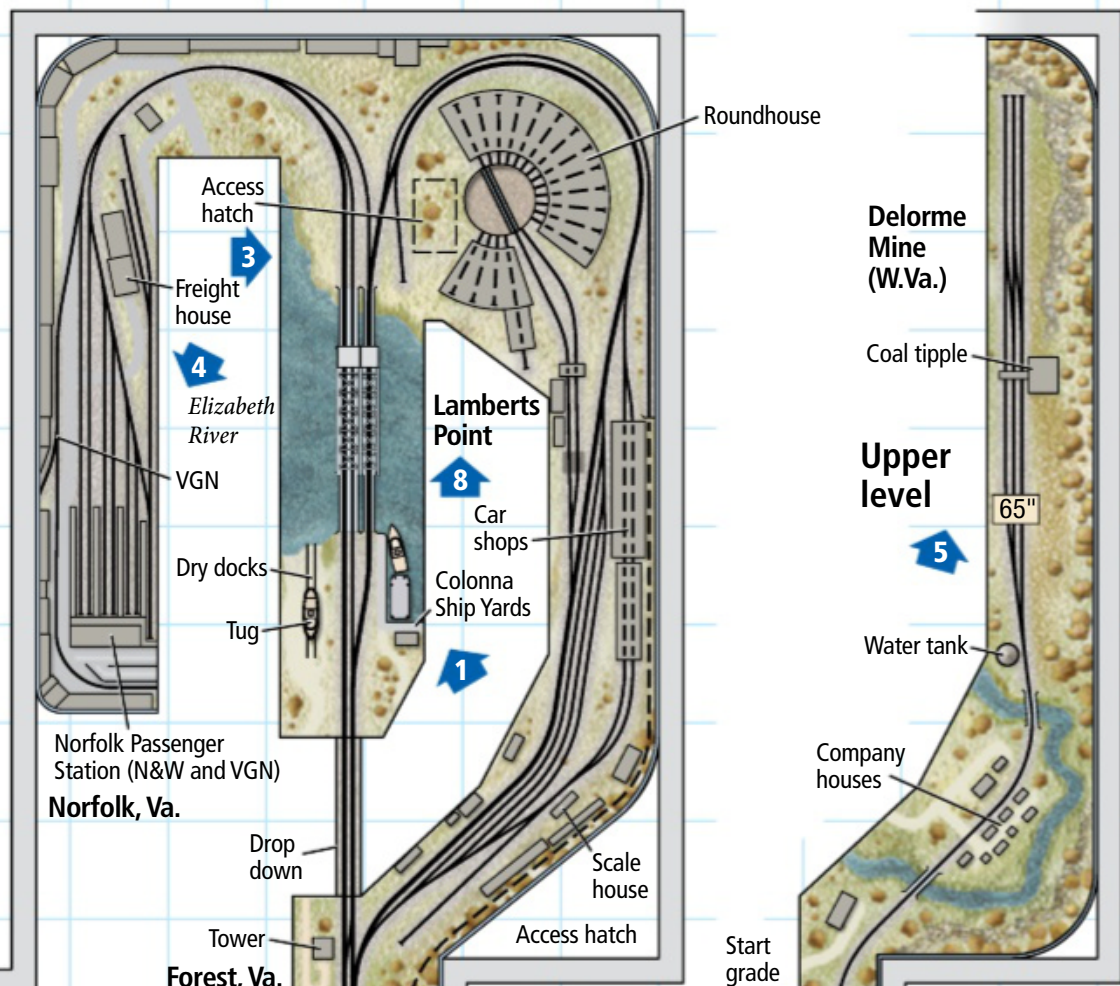
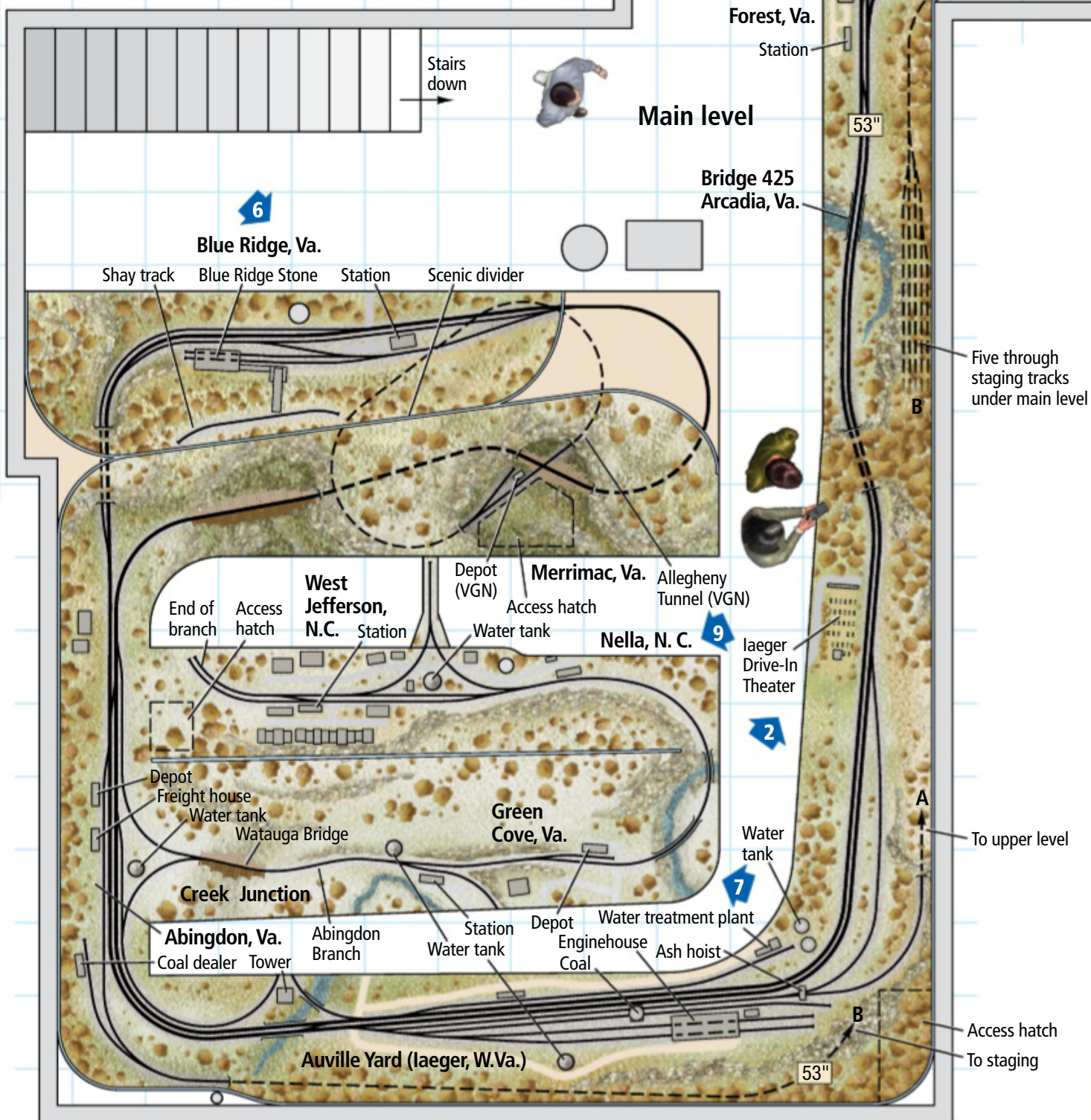
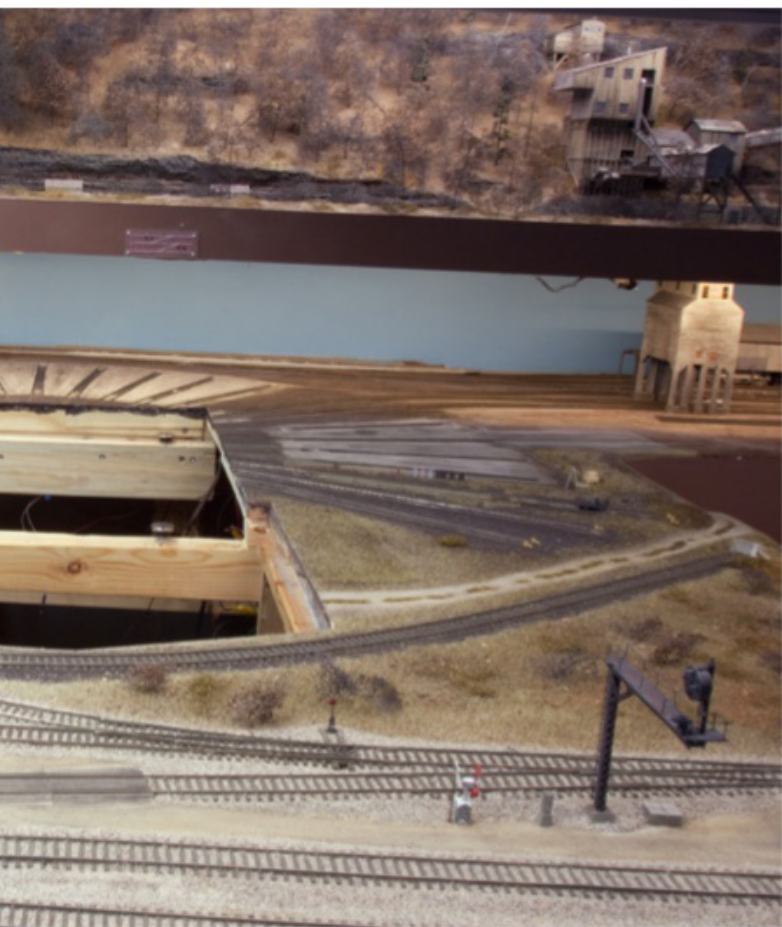
Scenery: carved extruded-foam insulation board

Backdrop: painted tempered hardboard

Control: Digitrax Chief Digital Command Control

benchwork connected to the main layout. There's also a scenic divider running down the middle of this peninsula.

Another revision was at Williamson, which was on the 2015 plan but has been



The Norfolk & Western of the 1950s

HO scale (1:87.1)
 Layout size: 24x49 feet
 Scale of plan: 3/16" = 1'-0", 24" grid
 Numbered arrows indicate photo locations
 Illustration by Rick Johnson
 Find more plans online in the ModelRailroader.com Track Plan Database.



④ A Virginian Ry. 4-6-2 pulls its short train of heavyweights away from the platform as an N&W streamliner stands ready for departure on an adjacent track. The passenger station at Norfolk, Va., served both railroads in the 1950s.

⑤ Under a starlit sky, a class Y3 2-8-8-2 Mallet shoves hoppers at the Delorme mine tippie. Gary scratchbuilt the mine using prototype photos as reference.





omitted on the new plan. I'd designed this location to feature an engine terminal with a roundhouse and turntable. As I started building, I determined there wasn't enough space to credibly model the prototype. Instead, I replaced Williamson on my new plan with the famous railfan haunt of Blue Ridge, Va.

To accommodate a mine run, I'd built an upper deck above the Lamberts Point engine terminal in Norfolk. I installed high-intensity, light-emitting-diode (LED) strip lights under this deck to illuminate Lamberts Point below. The lights can be dimmed to match the brightness of the surrounding area. I regret that I didn't finish the scenery for Lamberts Point before building the upper deck. That's certainly a lesson learned.

Foam rocks and terrain

On my previous Santa Fe layout as well as my first layout, the Missouri,

The Abingdon Branch

Another noteworthy subject of O. Winston Link was the Abingdon Branch. He took photos of the rural line in the mid-1950s. Running between Abingdon, Va., and West Jefferson, N.C., the branch hosted two trains per day, No. 201 south and No. 202 north.

Many of Link's color photos of this branch served as my inspiration. Since I model late fall/early winter, I also took the opportunity to add a light dusting of Woodland Scenics snow. Photos 7 and 9 on pages 44 and 46, respectively, are two of my favorite scenes along the branch. – Gary Hoover

Kansas & Quincy (see the October 2000 *Model Railroader*), I used plaster rock castings and a hardshell scenery base. Those methods worked well, but when I saw other layouts that used foam for the scenery base and rock formations, I was sold and changed my techniques.

The scenery on my layout is made of extruded-foam insulation board. This material is available in 4 x 8-foot sheets

of various thicknesses up to 2 inches at my local home improvement center. To create the general terrain, I started by layering the sheets on top of each other to the desired thickness. I used foam-safe construction adhesive to laminate the sheets together.

After the adhesive fully cured, which took about a week, I used a reciprocating saw to cut the foam to the basic scenery



6 The bare trees help establish the railroad's late fall/early winter setting as class Y4 no. 2084 grinds up the grade past the station at Blue Ridge, Va. The station is a modified laser-cut wood kit from the N&W Historical Society.

7 At Green Cove, Va., locals anxiously await the arrival of Train No. 201. This scene is inspired by the O. Winston Link photo titled "Old Maude bows to the Virginia Creeper." Gary built the depot from another N&W Historical Society kit.





contour. Once that was complete, I used a Dremel Multimax motor tool to sculpt smaller, more detailed areas. I finished by carving rocks by hand with old saw blades, hobby knives, and wire brushes.

I've found the best results for carving rocks come by randomly hacking and picking at the foam. My 10-year-old granddaughter, Brooklyn, loves to help me with scenery work and has this random rock technique mastered.

Next, I spread a thin coat of drywall joint compound over the terrain, but not the carved rocks. I applied a coat of Liquitex Burnt Umber acrylic paint to the drywall mud after it dried. For the carved rocks, I applied washes of Liquitex acrylics in various colors, including Burnt Umber, Burnt Sienna, and Mars Black. I also used additional Mars Black to create shadows and add depth to the rocks. Finally, I added highlights by drybrushing Unbleached Titanium White to the rock surfaces.



8 Electro-Motive Division representatives brief N&W employees on the new GP9 diesels that have arrived at Lamberts Point. Gary scratchbuilt the roundhouse from plastic brick sheet laminated over foam board. The class K1 4-8-2 in the background rides on a modified Walthers/Heljan turntable controlled with a DCC decoder.

Early winter scenery

To model ground cover, I brushed a thin coat of diluted white glue over the dried joint compound, then sifted paver base onto the wet glue. [Paver base is a fine gravel-type aggregate used in the construction of brick paver patios and can be found at most home centers. – *Ed.*] Next, I applied various ground foam, static grass, and Heki pull-apart scenery material to model vegetation. Finally I installed SuperTrees armatures from Scenic Express.

Because I'm modeling the late fall/early winter season, many of the trees have bare branches while some got a light application of foliage. For this I finely ground dried leaves that I collected from my yard. Hairspray secured the foliage to the trees.

Some areas, such as Creek Junction on the Abingdon Branch, received a light dusting of snow ground cover. I've found that plain snow ground cover without sparkles or glitter works best for layout photos. I find that photos of snow scenes that use so-called glittery snow tend to highlight the sparkles too much, making the scene look unrealistic. Once layout photography is complete, I'll go back over a scene with a light dusting of snow containing some glitter.

Given the excessive number of trees on the layout, I've had a lot of fun creating mini scenes tucked away in the forest. For those who visit my railroad during one of the layout tours at the 2020 National Model Railroad Association (NMRA) National Convention in St. Louis, be sure to try to find the bootlegger and his moonshine still hidden somewhere up in the mountains.

Modeling the N&W

There are a few commercially available N&W structure models available, including the excellent laser-cut wood station kits from the Norfolk & Western Historical Society (nwhs.org) and the Forest, Va., tower kit from American Model Builders (laserkit.com). Most of the other structures on the layout are scratchbuilt or heavily kitbashed.

There are plenty of books with black and white and color photos of N&W structures available. The NWHS also has an extensive archive of photos and drawings available online. When I begin a scratchbuilding project from photos, I always assemble a simple cardboard mock-up first to get the proportions as close as possible to what looks right.

A good selection of ready-to-run N&W steam locomotives and rolling stock are

MORE ON THE WEB

See more photos of Gary Hoover's HO scale Norfolk & Western in an exclusive online gallery at ModelRailroader.com



currently available in HO scale. Models of N&W prototypes that have been produced include: A class 2-6-6-4, J class 4-8-4, and Y-class 2-8-8-2 steam locomotives. All of these models feature Digital Command Control (DCC) decoders and excellent sound systems.

Until recently, my N&W layout was a steam-only road. That all ended during a Saturday morning trip to the hobby shop, where two beautiful HO scale Electro-Motive Division GP9 diesels were calling my name. Now these Geeps can be

found in their as-delivered numbers being examined by N&W officials at the Lamberts Point roundhouse in Norfolk. Despite diesels now being on the railroad, all trains are still led by steam locomotives, including a layout-friendly five-car *Powhatan Arrow* pulled by a streamlined J class 4-8-4.

Running trains

Just as the basic design philosophy of my HO N&W was simplified from my

9 The tiny village of Nella, N.C., also known as Husk, is another scene inspired by a Link photo. Hopeful children stand trackside as No. 202 passes by. The train's conductor was known to toss candy to any children he spotted along the route.

previous layout, so was its operation. For example, on my N&W I eliminated the fast clocks that were used on my Santa Fe, 1951, layout.

I've simplified the signal system by eliminating all of the interlocking relays.



Meet Gary Hoover

Gary Hoover enjoys sharing the hobby with his granddaughter, Brooklyn, pictured above helping with scenery work along the N&W.

Gary has written numerous articles for *Model Railroader* and other hobby publications. Both of his previous layouts, the Santa Fe 1951 and the Missouri, Kansas & Quincy, have been featured in MR. He lives in Florissant, Mo.

simple mercury switch that cut power to 2 feet of track on each side of the drop down when it was lowered. While this arrangement worked well in the past, it would do no good for a stay-alive-equipped locomotive designed to run for several seconds over dirty, uneven, or unpowered track.

The mercury switches on the drop-down sections now trigger relays connected to Tortoise by Circuitron switch motors. The switch motors raise or lower a length of music wire up through the center of the track. The raised music wire will physically stop a train from inadvertently going over the edge when a drop down is lowered.

My HO scale Norfolk & Western of the 1950s has been the most enjoyable and rewarding model railroad I've built to date. As of this writing, the trackwork is complete, and scenery is about 50 percent finished.

For the 2020 NMRA National Convention, I'm planning special fan trips on the main line. These trains will be pulled by a double-header of class M 4-8-0 Mastodons. One of these engines, no. 475, has been specially backdated in celebration of the convention. (The full-size N&W also used 4-8-0s to haul fan specials at the 1957 National Railway Historical Society convention in Roanoke, Va.)

So if you're in St. Louis this summer for the NMRA convention, I invite you to visit my HO scale version of "The Last Steam Railroad in America." 

On the N&W layout, one block controls just one signal. Occupied/unoccupied signals from the Digitrax BD1 track detectors feed into Digitrax DS54 stationary decoders, which then drive 12V relays to ensure that the proper signal aspect is shown.

I also haven't included any automated routes in the yards. Instead, operators are required to line every switch individually. I still use Tortoise by Circuitron switch motors connected to stationary decoders to power turnout points and

frogs. However, I've mostly eliminated the use of LEDs in control panels to indicate turnout position.

The N&W layout will support at least four operators: one for mainline trains, one for a helper engine, one for the mine run, and one for switching Auville Yard in Iaeger, W.V.

With the advent of decoders equipped with stay-alive circuits, I found that I had to add a mechanical stop for any track approaching one of the drop-down sections. On previous layouts, I used a

Building **WINGATE** in O scale

PART 4: Maximizing the play value
while operating in a confined area

By Tony Koester
Model photos by the author



You're called for the KC Local, second-class train No. 45, at Frankfort, Ind. It's marked up for its usual 7 a.m. departure and due to arrive at the other division point, Charleston, Ill., at 1 p.m. But that won't

happen today or any other day. The law allows 16 hours to make the run, and it may take close to that again today; even the passenger trains, Nos. 9 and 10, with only three scheduled stops between division point stations, require almost three hours to cover the Third Subdivision.

You find almost new Electro-Motive Division GP9 no. 475 waiting for you on the North Under Track by the coal dock. After checking the various appliances and air brakes, you ease down to the east-bound yard office and pick up a Clearance Form A, which says you have no orders or



① On a small layout, manual operations that take extra time – such as lining switches by hand – add to both the realism and the enjoyment. The high- and low-level stands on the Wingate layout are from All-Aboard Trains; the actuating levers face the aisle for easier reach. This PRR boxcar is being shoved into the feed mill.

messages. With the help of the head brakeman, you zigzag out of the engine terminal and head down the main line to reach the west end of the westbound yard, then back onto your train on Track 2.

The conductor says you have nine loaded and empty cars today, including a

less-than-carload-lot (LCL) boxcar behind the engine. That will change as industries along the line are worked, but you won't handle interchange work, as No. 45's pace isn't fast enough for that. Through and occasionally even fast freights move the hot interchange traffic.

The Wingate series

January: Choosing a prototype and developing a plan for a one-town railroad

February: Using foam board benchwork, handlaying track, and wiring for DCC

March: Adding structures, scenery, and rolling stock

April: Maximizing the operational play value of a compact model railroad



② The Coal House Track is used to unload boxcars loaded with lumber as well as hoppers filled with furnace coal. Nickel Plate Road twin hopper 62748 is rolling to a stop after the local's Geep ran around it and the PRR boxcar for the feed mill.

Air test complete, you get a highball from the rear end and ease past the green manual block signal at WY Tower. There's no work at Jefferson or Clarks Hill other than some LCL cargo to unload. You're making good time all the way to Linden, where you have a boxcar load of shingles and another of lumber to set out. The elevator at New Richmond needs one of your empty boxcars, leaving you with six cars.

You and your conductor are now watching your pocket watches carefully to be sure you can get to Wingate and in the clear for fast freight No. 96, due there at 8:12 a.m. You look back at the caboose and see the boss waving a highball – make a run for the passing track at Wingate, he's telling you. You have two empty boxcars for the Co-op elevator, a carload of bagged feed for the feed mill, and one of lumber for Crabs-Reynolds-Taylor. The latter two setouts require runaround moves, and so might a pickup or two. So you'll be at Wingate for a while.

Making things count

Everything prior to arrival at Wingate is purely hypothetical, as this is a one-town "layout" fed by staging. On a small layout like this one, everything counts for more, as there is less of it to entertain us. Compact layouts, even in O or larger scales, take less time to build, so we can lavish more time on each aspect of the railroad. That includes realistic operation – the prototypical movements of trains and cars.

Since everything is within easy reach, using manually activated couplers is both feasible and realistic. Switch stands ① that move the switch points and flop-over derails, if any, to keep cars from rolling out of sidings into harm's way can be manually operated. In short, automation of any function is not our friend. The more we have to do, the better. Fortunately, devices that may be a bit delicate or hard to operate in the smaller scales tend to be more robust in O.

One reason I built this layout was to use it as a teaching aid. All normal switching operations likely to be faced by a model railroader – both easy trailing-point and more challenging facing-point moves – are required to set out and pick up freight cars in Wingate.

"Trailing point" means that the switch points are behind a car or locomotive entering the siding. Working a siding entered through a trailing-point turnout is simple and obvious: Just throw the switch and back into the siding. A car can be picked up by pulling it out of the siding, then backing it onto the standing train.

"Facing point" means the entrance to a siding is ahead of the locomotive. Picking up a car on the siding is straightforward, but it's then in front of the locomotive. On a model railroad, a run-around move is required to put the car behind the engine. Similarly, setting a car out on a facing-point siding requires that the engine first run around the car before shoving it into the siding. The

PRR boxcar in ① and the NKP hopper in ② are being shoved into the feed mill on the North Elevator Track and into the Coal House Track, respectively, after runaround moves.

Backhauling cars

Since the Third Sub local operates only westbound, how do cars headed east get handled? If there was a storage track easily accessed by an eastbound through freight, the cars would be left there. But that's not the case in Wingate.

Instead, the local crew would add any eastbounds to their train and backhaul them on west to the nearest location where setting them out for pickup by an eastbound freight is straightforward. Those cars might even continue west to the next classification yard, which is Charleston, Ill., where they would be switched into an eastbound freight. If the cars were especially "hot" – not the



case for loads of grain originating in Wingate – the dispatcher might even stop a fast freight to retrieve them.

Train schedules

It may seem a bit silly to worry about train schedules on a one-town switching layout. But as I noted up front, we want to use every device we can think of to maximize the play value of this small model railroad. That could include referring to an employee’s timetable with a schedule. And since Wingate is an actual town on the Nickel Plate Road’s St. Louis Division, we can use the actual NKP timetable for the year modeled as our guide.

Employee timetable No. 67, dated April 25, 1954, shows No. 45 due to leave Wingate at 8:12 a.m. The timetable also shows a meet with superior (by direction) No. 96 here, ③, which means the local can’t leave until 96 shows up (or 12 hours have elapsed). If 96 is running late, Wingate is a “DN” (day-night, open 24 hours every day) station, so it would be possible to get a helping order against a dilatory No. 96 here.

What looks like a train-order semaphore signal (which I have yet to model) in front of the depot is actually a manual block signal. Before 45 leaves town, the operator will ask the next station to the west to hold the block for it. If there are orders or a message for 45, the operator will hang a metal banner (painted yellow for a Form 19 order, red for a more restrictive Form 31) or, at night, a lantern from a rung on the block signal mast.

I could use that signal to indicate whether there’s an open staging track west of Wingate. And a section of Automatic Block Signaling begins not far west of Wingate (milepost 237.7) at milepost 240.9, so a “Begin ABS” signal could be used for that purpose.

I moved the timeframe into the diesel era on this division – after July 1955 – because one Electro-Motive Division GP7 or GP9 or Alco RS-3 or RS-11 is shorter than a class H-5 or H-6 2-8-2 Mikado, the smallest steam power used on Third Sub locals. The tender would take up track space needed for a car.

The local was scheduled to leave the division-point yard at Frankfort, Ind., around 7 a.m., so it was unlikely to encounter nocturnal passenger trains 9 and 10 unless they were running very late. We could arrange for that, however, by issuing the local’s crew a train order listing what trains are still due (each scheduled train’s authority expires 12 hours after the time shown for it to pass

THIRD SUBDIVISION--EASTBOUND												
Capacity of Sidings in Cars	Distance from Toledo	Distance between Stations	STATIONS AND SIDINGS	Hours between which Train Order and Block Stations are Open	FIRST CLASS TRAINS			SECOND CLASS TRAINS				
					10			96	48	98	42	90
					Daily			Daily	Daily	Daily	Daily	Daily
.....	319.0	0.8	Charleston.....	DN	8.58PM							
.....	318.2		Charleston Yard.....	DN	9.05			6.00AM	7.30AM	2.40PM	5.00PM	11.15PM
70	266.5	5.4	Cayuga..... BW	DN	10.04			7.22	10.15 ⁴⁵	4.02	6.45	12.39
131	249.1	7.4	Veedersburg..... B	DN	10.28 ⁴⁵			7.50	11.05	4.34	7.15 ⁴⁷	1.07
74	241.7		Mellott..... B	Exc. Sat. & Sun. 6.45A-3.45P	10.40			8.04	11.30	4.49	7.35	1.21
62	237.7	4.0	Wingate..... B	DN	10.47			8.12 ⁴⁵	11.45	4.57	7.50	1.36 ⁹
88	232.4	5.3	New Richmond..... BW		10.53			8.19	12.01PM	5.04	8.00	1.47
121	228.5	3.9	Linden..... B	DN	10.57			8.25	12.20	5.10	8.10	1.55

THIRD SUBDIVISION--WESTBOUND												
Capacity of Sidings in Cars	Distance from Toledo	Distance between Stations	STATIONS AND SIDINGS	Hours between which Train Order and Block Stations are Open	FIRST CLASS TRAINS			SECOND CLASS TRAINS				
					9			49	45	41	47	43
					Daily			Daily	Daily	Daily	Daily	Daily
.....	206.2	0.5	Frankfort.....		12.55AM							
.....	206.7		Frankfort Yard.....	DN	12.57			3.55AM	7.00AM	1.30PM	5.55PM	9.00PM
.....	223.7	5.9	Kirkpatrick..... B		1.18							
121	228.5	4.8	Linden..... B	DN	1.24			4.33	7.45	2.03	6.35	9.45
88	232.4	3.9	New Richmond..... BW		1.30			4.41	7.55	2.10	6.41	9.55
62	237.7	5.3	Wingate..... B	DN	1.36 ⁹⁰			4.50	8.12 ⁹⁰	2.18	6.49	10.04
74	241.7	4.0	Mellott..... B	Exc. Sat. & Sun. 6.45A-3.45P	1.40			4.56	8.30	2.24	6.55	10.10
131	249.1	7.4	Veedersburg..... B	DN	1.49			5.09	9.10	2.34	7.15 ⁴²	10.28 ¹⁰

③ The NKP timetable’s schedule shows that eastbound fast freight No. 96 is scheduled to meet the local at Wingate at 8:12 a.m. Lacking a helping order, No. 45 has to wait for No. 96 unless it already met the fast freight east of Wingate.

through Wingate) and thereby alerting them to keep an eye peeled for, say, a late-running eastbound No. 10.

The staging yard at both ends of Wingate could be made long enough to allow No. 10 to be staged, as by the late 1950s it was a short train: an Alco PA-1 or boiler-equipped GP9, a head-end car, a coach, and perhaps a diner-lounge and Pullman. If we set the calendar after early 1959, life gets easier for the local’s crew, as Nos. 9 and 10 were taken off. And our motive power choices blossom to include an RS-11 (1956), GP18 (1960), GP30 or RS-36 (1962), and a GP35 or Century 420 (1964).

Alternatively, we might add longer staging tracks at both ends and schedule a short through freight or two. Since Wingate is a Layout Design Element (a visually and operationally recognizable model of an actual location), it could become a key location on a larger model railroad. Other LDEs joined together to form the railroad could also be constructed as portable sections, which suggests this could be the kick-starter for a series of LDEs brought to model railroad and railroad historical society meets.

Indeed, my Wingate’s first outings were to the Nickel Plate Road Historical & Technical Society (nkphts.org) annual

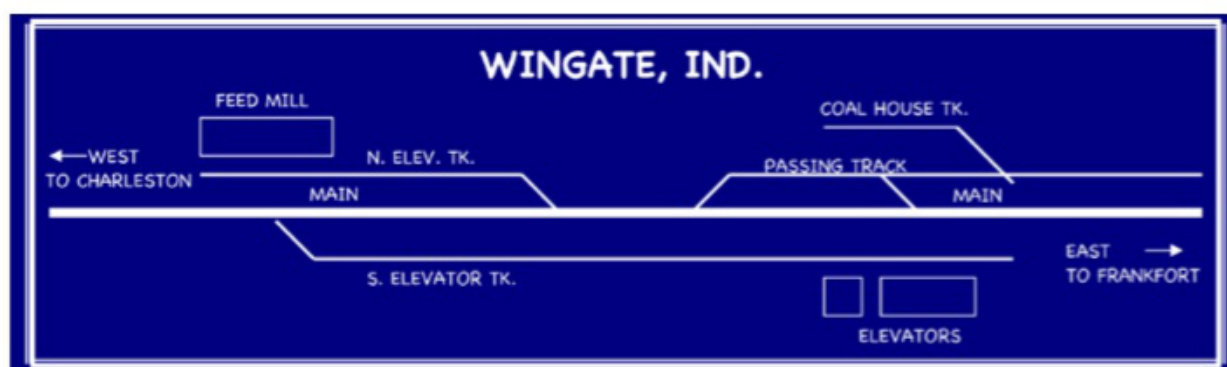
convention in Cleveland in September 2017 and the O Scale National Convention in Rockville, Md., in August 2018.

Routing cars

When No. 45 arrived in Wingate, the conductor had the waybills for cars in his train. He would walk into the depot office to see what work the agent had for him today. He would give the agent the bills for cars being set out and pick up those for cars that will be added to his train. He would then update his Wheel Report accordingly.



④ Two-by-four-inch waybills scaled down from prototype paperwork route cars to industries. They work just like four-cycle waybills.



5 It's easy to use Microsoft Word's line-drawing feature to create a schematic of a town that resembles the ones issued to each station agent. It serves as a switching aid to model railroad crews.

Switching Wingate wouldn't have been a poser for an experienced train crew, so they probably wouldn't have taken time to make out a switch list. But for modelers who prefer working from a list rather than handling waybills, one could be written in a few minutes, adding to the realism and play value of switching Wingate.

A half-dozen of my friends and I grew tired of using waybills that looked like game cards, so we put our heads together to find a more realistic format. Note that we didn't want to create a new car-forwarding system, as is all too often the objective; the prototype had a perfectly good one! All we needed to do was to scale down this paperwork to be more manageable and to fit into existing waybill boxes designed for the near-standard 2" x 4" car cards and four-cycle waybills from Old Line Graphics or Micro-Mark.

We met our objectives by simplifying and reducing the size of prototype waybills (4 on the previous page). They're inserted into clear plastic sleeves that hold two or more waybills. To enhance realism, the local's crew is given a stack of waybills covering not only Wingate but also unmodeled towns along the NKP's Third Sub. These cards, like the cars in their train, are in station order. All they need to do is to set aside the waybills for other towns and work with those with a Wingate destination.

What cars go on which tracks? Each station agent was issued a blueprint diagram book showing the names of each track in every town on that division. Of course, the pros had long ago memorized the track names: Main, Passing Track, North Elevator Track, South Elevator Track, Coal House Track, and Stock

Track. (I didn't have room to model the Stock Track at the east end of town.) As I do on my HO edition of this same subdivision, I posted a track diagram that crews can readily refer to as they match waybill destinations to tracks 5.

Cars billed to the lumber and coal yard (Coal House Track) or the feed mill (North Elevator Track), or empties being retrieved from those tracks, must be run around for switching. Cars to or from the elevators on the South Elevator Track are easy to spot or pick up, and the extra length of that track – needed during the fall grain rush when long strings of boxcars are loaded – provides a good place to leave cars that would otherwise impede switching moves.

To be sure that those of you who are new to switching and especially run-around moves can follow along, "Switching Wingate" below documents each step of the local crew's work from the time they brake to a stop in Wingate until they're ready to leave town on a typical day. Tomorrow's work will be similar, but there will be different cars to set out, and not all of today's setouts will be ready to be picked up.

West of Wingate

Your work done at Wingate, it's time to head on west. Assuming No. 96 has

Switching Wingate

Let's look at the operations of a local train working Wingate in a typical operating session.

1 NKP second-class local freight No. 45 pulls into Wingate on the main with a boxcar containing less-than-carload-lot (LCL) freight, five additional cars, and a caboose. The rear flagman goes back east to protect the rear end (an unscheduled westbound extra could appear at any time). The engineer stops with the LCL car next to the depot for unloading. The waybills show that there are four cars to set out. The conductor walks into the depot to see what additional work the agent may have for him today. He is handed waybills for two boxcars loaded with soybeans to pick up.

2 The conductor signals the engineer to pull ahead, back the LCL boxcar and two boxcars into the South Elevator Track, and pick up the two loaded boxcars. One arriving boxcar is an empty for soybean loading; the other contains wooden grain doors that the section gang will unload for use by the grain elevators. (The grain doors – a stack of wood-plank assemblies – will be nailed to the inside of the door openings to retain the beans.)

3 The LCL boxcar and two loaded outbound boxcars are shoved into the passing track, and the two inbound boxcars are spotted at the elevators.

4 The crew goes back to the train standing on the main to retrieve a boxcar load of bagged feed for the feed mill and a loaded coal hopper for the lumberyard. They pull ahead, leaving these two cars on the short runaround area of the Main Track and run around them so both cars are ahead of the engine.

5 They back into the Passing Track, pull an empty boxcar from the Coal Track, and replace it with the NKP hopper filled with furnace coal. They do the same thing with an empty boxcar at the feed mill and replace it with the PRR boxcar loaded with bags of feed.

6 They run around the two pick-ups and shove them onto the train. The cars left on the passing track are retrieved and coupled behind the LCL boxcar. No. 45 is now ready to leave town, assuming there are no new orders nor any superior-by-direction eastbound freights due at Wingate. The crew also checks the running time to the next passing track to the west to be sure they can get to its east switch and be in the clear of a superior train at least 5 minutes before it's due to leave there. If they won't make it in time, they can always back into the passing track at Wingate to clear up the main line. If not, call in the flagman (five long blasts of the horn) and highball west. – Tony Koester



6 The ProtoThrottle, based on Electro-Motive Division cab controls, adds considerable realism to diesel operations, especially on a small railroad like Wingate with a single EMD Geep being put through its paces.

gone by, the timetable says you have until 10:15 a.m. to meet through freight No. 48, which like 96 is superior to No. 45 not by class but by direction, at Cayuga, not far from the Illinois state line. With more work to do at Mellott and Veedersburg, however, you're certain that you'll have to wait in the hole for 48 well east of Cayuga – maybe even at Wingate.

Then, barring orders to the contrary, the railroad is yours until Madison (East St. Louis)–Buffalo hotshot MB-98, running on No. 98's schedule, is due to leave Charleston at 2:40 p.m. But there's plenty of time to reach safety at Mellott and maybe even Veedersburg, so you look back for the expected highball, acknowledge it with two blasts from the Leslie chime horns, and head west.

A prototype throttle

Another way to maximize the enjoyment and realism of switching a one-town "layout" set in the diesel era is now available: the ProtoThrottle from Iowa Scaled Engineering (iascaled.com) 6. Its front panel resembles an EMD control stand from the time of GP9s up to

the advent of consoles. There are individual handles for the air horn, an 8-notch throttle, a 3-position reverser, and the air brake; 4-position light switches for independent front and rear headlights and ditch lights; a bell button; and additional programmable function buttons. It's compatible with most DCC (but not DC) systems.

The throttle box is a bit larger than most handheld throttles, but a finger strap on the back makes it easy to hold. The cost is comparable to one or two DCC sound-equipped locomotives, but the added realism makes that a fair trade, in my opinion. For more information, visit protothrottle.com, check out Product Reviews in the July 2018 MR, and watch our demonstration video at ModelRailroader.com.

Looking back and ahead

My goals were to do some modeling in O scale, specifically fine-scale Proto:48; model an actual location that was well documented but not included on my HO scale

railroad; build a lightweight, portable layout that could be taken to conventions and train shows; have a teaching tool for basic switching moves; and show modelers who may be considering moving up to a larger scale the potential of working in O scale in a modest, non-permanent space.

Those goals were easily met. I hope they encourage you to set yourself some goals that will continue to expand your enjoyment of our hobby.

As this series concludes, I want to thank a number of O scale modelers who came to my aid when information or parts were lacking and time was short.

Among them are Mike Brestel, Bill Brown, Norm Buckhart, Jim Canter, Warner Clark, Jay Criswell, Gene Deimling, George Greene, Matt Herman, Jim Kerner, Jim Lincoln, Bill McConnell, Michael Petersen, Lou and Cheryl Sassi, Bob Sobol, Larry Stanley, David Stewart, Scott Thornton, and David Vaughn. My sincere thanks to them and everyone else who helped. **MR**

MORE ON THE WEB

Senior editor Dana Kawala demonstrates the ProtoThrottle in a video magazine subscribers can watch at ModelRailroader.com

DCC and sound for a Life-Like GP7



Larry Puckett's revitalized GP7 leads a consist through Charlottesville on his Piedmont Southern layout. Some mechanical tuneups and a new sound decoder got the Life-Like Proto2000 diesel ready for layout duty.

This month I want to continue with my look at adding Digital Command Control (DCC) and sound decoders to legacy locomotives. In January 2020, I showed how I installed a decoder in a Stewart Electro-Motive Division (EMD) F3A that had been gathering dust, so this month I dug a Life-Like Proto 2000 GP7 out of the cabinet.

One pitfall when working with old, unused locomotives is the oil and grease tends to dry up and can become like glue. When I put this engine on a test track, it made a nasty noise and went nowhere. After cleaning all the grease from the gears didn't fix the problem, I pulled the helical gears from the gear towers and found one that was essentially glued to its shaft with dry oil. After a good soaking in WD40, I was able to lube the bearings and gears and get it running again.

Another problem with some old Athearn, Life-Like, and Walthers locomotives is the plastic gears between the axle halves tend to split over

time **1**. This results in noisy, jerky operation, and in extreme cases the locomotive won't even move.

The solution is to replace these axle gears with new ones from Athearn, Walthers, or North West Short Line – if not available at your hobby dealer, there are many on eBay. I replaced all four gears, which is a good idea anyway, since if one is cracked the others likely will soon follow suit. There's a video on my DCC Guy YouTube channel showing how to replace them.

Once I had the model running reliably on DC power, I checked the motor current draw and found it pulling .7 amps (A) – essentially what was reported in the November 1998 *Model Railroader* review. This meant I could safely use a decoder rated for about 1A. To give me plenty of room for the decoder and wires, I removed the original circuit board, leaving just the wires from the track power pickups and motor.

I then installed a SoundTraxx Tsunami2

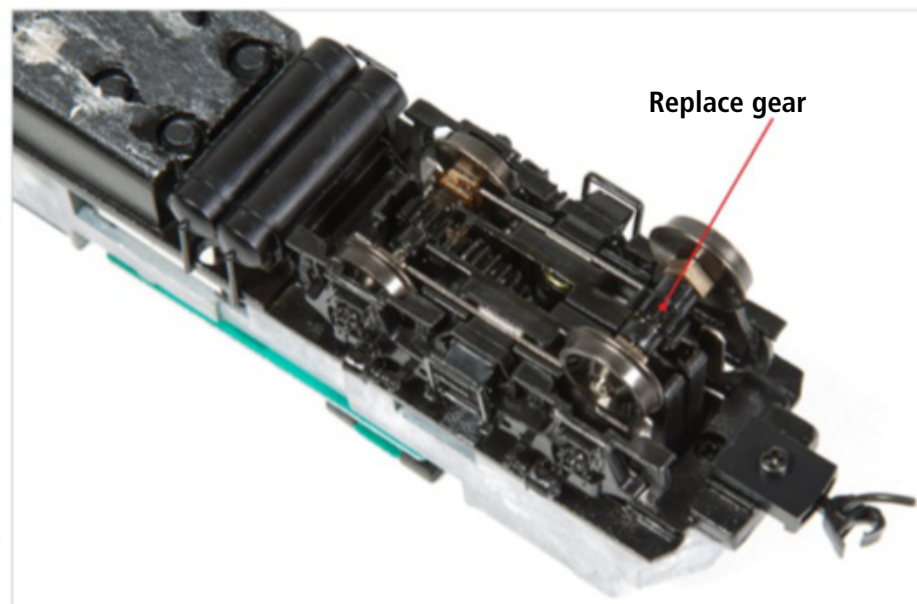
TSU-1100 decoder in the recess along with its small capacitor. The Tsunami2 is among the smallest sound decoders on the market, and with a current rating of 1A, it's more than a match for the motor in this unit. SoundTraxx supplies this decoder in several versions, including one with the appropriate EMD 567 non-turbo diesel engine originally used in these locomotives.

Connecting the wires to the decoder was simple since

they all conformed to the National Model Railroad Association (NMRA) standard. However, given the long production history of this model you can't guarantee this didn't change over time, so check the wire colors on each locomotive before proceeding with your installation.

As with most of my recent installations, I replaced the incandescent bulbs with surface-mount light-emitting diodes (LEDs) I glued to the back of each clear plastic insert using cyanoacrylate adhesive (CA). To help prevent light illuminating the cab, I placed a wad of Uhu-brand black adhesive putty over the back of each LED **2**. Because the LED wires are long and came with the resistors already installed on the end of one wire, I connected them directly to the decoder wires without using a connector harness.

Finding a place for the speaker at first appeared difficult since the chassis weight filled almost all the interior. However, with sugar cube speakers there's always room for one somewhere. In this case, I went with a cab roof installation.



1 New gears. Old Athearn, Life-Like, and Walthers locomotives have plastic gears between the axle halves that tend to split over time, but can be easily replaced.

Bryan Vianco at Streamlined Backshop (sbs4dcc.com) makes sugar cube enclosures that are designed to take advantage of the inside curvature of diesel and steam locomotive cab roofs (3). This allows them to sit high enough in the cab to be essentially unnoticeable from outside. I installed mine using double-sided foam tape after soldering a Train Control Systems (tcsdcc.com) no. 1473 two-wire micro-connector harness to the contacts. I soldered the other end of the wire harness to the purple wires from the decoder.

With all the wires installed, I tidied everything up by applying a piece of Kapton tape over the decoder and wires and made the speaker connection (4). Finally, I folded the long headlight wires into the shell and carefully slid it onto the chassis.

On the service mode programming track, I confirmed there were no shorts, then using DecoderPro in the Java Model Railroad Interface (JMRI, jmri.org), I began the programming process. First, to protect the sugar cube speaker I cut the master-volume configuration variable (CV) 128 setting in half. I do this with almost all my installations since the factory settings are always too loud for my preferences. It also protects the sugar cube speakers, which have a rating of about .7 to .8 watts (W), and the decoder has an output of 1W.

I also set the sound equalizer for micro speakers by programming CV225 to a value of 1. I cut the horn and bell volumes, CVs 129 and 130, down to values of

35 each and the diesel engine sound, CV131, to 100. I also set the quiet mode feature to 30 seconds using CV113.

This feature shuts off the sound after a preset amount of time when the locomotive isn't in use. This prevents auditory overload from having a whole fleet of diesels idling away in a yard area. One thing to remember is this only works if all the functions are turned off, including the headlights.

Speaking of the headlights,

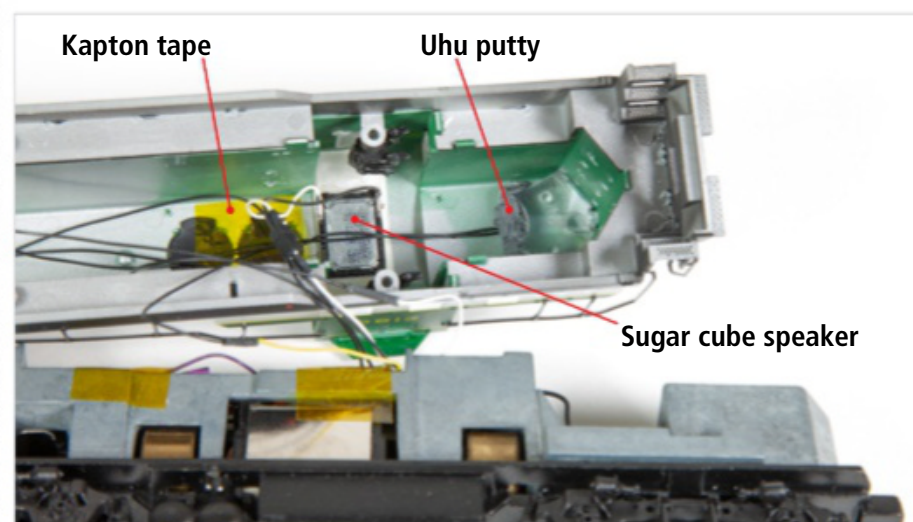
I took advantage of the Tsunami2 lighting features to set up auto-dimming in each direction of travel, and also set the decoder for LEDs instead of incandescent bulbs using CVs 49 and 50. This feature dims the headlight when the engine is stopped, and also can be set to dim a headlight when the locomotive is running in reverse.

For directional control, changes to CVs 57 and 58 are required. Tsunami2 decoders have a special setting that allows you to control the normal brightness of the lighting features using CV64. This came in handy with the really bright LEDs I used for this installation, meaning I didn't have to fiddle with using multiple CV settings or different resistors than those they came with.

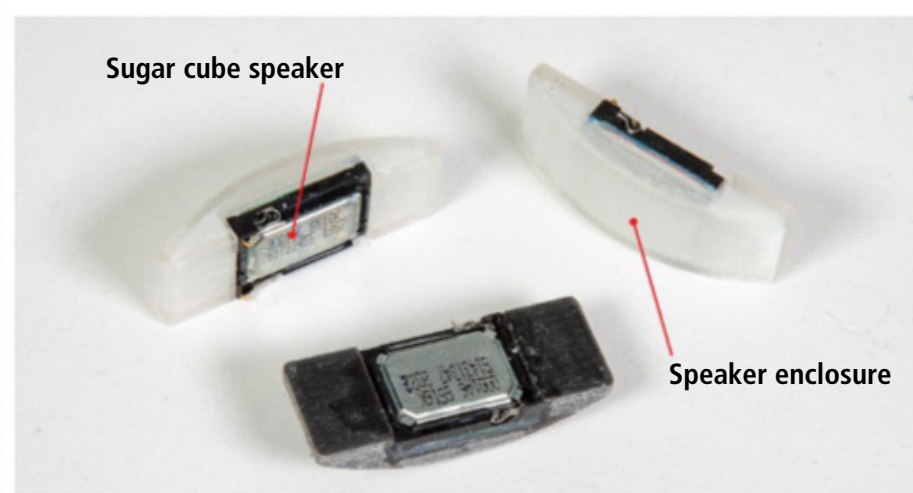
Out on the layout main line, the locomotive responded well to the factory speed settings, but I did program in acceleration and deceleration values of 10 in CVs 3 and 4. Programming on the main allows me to quickly and easily experiment with additional changes to these motor control



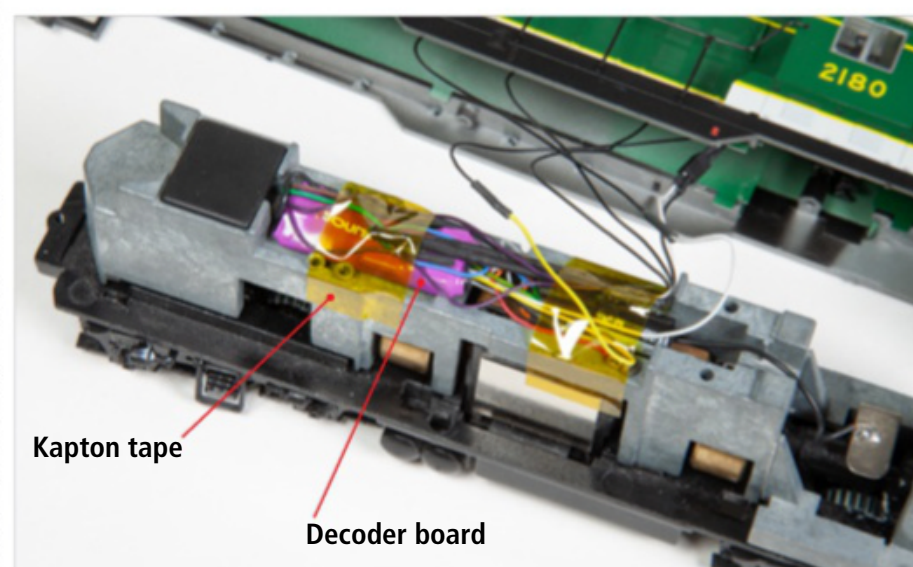
TSUNAMI2 DECODERS HAVE A SETTING THAT ALLOWS YOU TO CONTROL THE NORMAL BRIGHTNESS OF THE LIGHTING FEATURES USING CV64.
— LARRY



2 Light leaks. To help prevent light from the LEDs illuminating the cab, Larry placed a wad of Uhu black adhesive putty over each LED.



3 Fit the curve. Streamlined Backshop makes these sugar cube enclosures that are designed to take advantage of the inside curvature of diesel and steam locomotive cab roofs.



4 Tidy up. With all the wires installed, Larry tidied up the wires by securing them over the decoder with Kapton tape.

settings as well as tweaking the sound settings. These are all covered in detail in the SoundTraxx manuals available on its website (soundtraxx.com).

I'll go over all these programming steps in a video using DecoderPro on my The DCC Guy channel on YouTube, so drop by for the

tutorial. This is such a feature-rich decoder you almost need a program like DecoderPro to take full advantage of all the options. Adding a new decoder and sound to this old locomotive has given it a new lease on life; now I just need to rinse and repeat with the other three GP7s still sitting in boxes. **MR**



Kato USA N scale Chicago & North Western *Peninsula 400*

One thing the Chicago & North

Western Ry. did particularly well was provide seasonal passenger service to the North Woods vacation grounds of northern Wisconsin and the Upper Peninsula of Michigan. Kato's new N scale release depicts the North Western's most popular Streamliner, the *Peninsula 400*, in its 1958 makeover with all-Pullman bi-level rolling stock. This attractive train set includes five cars and an Electro-Motive Division E8 locomotive with the option to add an additional engine to complete the consist.

The prototype. In 1942 the Chicago & North Western introduced its *Peninsula 400* streamliner service between Chicago and Ishpeming, in Michigan's Upper Peninsula. Trains No. 209 and 214 covered this distance, via Milwaukee and Green Bay, in 7 hours and 20 minutes.

In 1958, the CNW upgraded the *Peninsula 400*, *Green Bay 400*, and *Flambeau 400* with 13 new bi-level cars, built by Pullman-Standard. The order called for 10 coaches, one parlor, one combination parlor/coach, and a coach/tap lounge car. The railroad rounded out the new *400* fleet with two diners, a Railway Post Office/baggage/tavern car, and a baggage/tavern/lunch counter car by having Pullman rebuild 1941 streamliner cars and install false roofs to match the height of the bi-levels.

Although the new cars were similar in appearance to the Pullman 161-seat bi-level commuter cars the CNW had purchased in 1956, there were many dif-

ferences. The new coaches featured 96 reclining seats and luggage accommodations. All the cars were also designed to use Head-End Power (HEP), making them 5,000 pounds lighter than their commuter counterparts.

To lead the new cars, CNW modified four EMD E8 locomotives (5021 A/B and 5022 A/B) and two F7s with Cummings HEP systems.

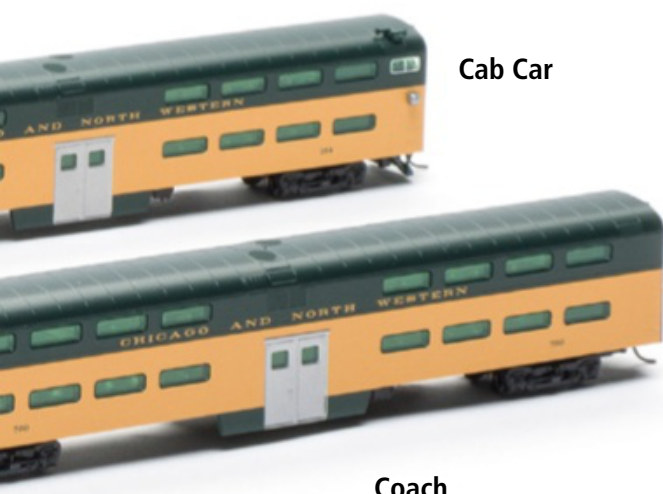
After increasing cutbacks to services in the mid-1960s, the *Peninsula 400* ceased operation between Green Bay and Ishpeming in July 1969, replacing that part of the service with buses. All but one of the 1958 long-distance bi-levels went to Amtrak in 1971.

How it's built. Kato's *400* train set includes five Pullman-Standard bi-level cars and a single EMD E8 locomotive and comes in a bookcase-style presentation box. Kato also offers an additional E8 for separate sale, and the foam liner inside the presentation box has a ready-made spot for it. The models are decorated in the simplified CNW green-and-yellow paint scheme appropriate for its late 1950s Streamliner-era trains.

The set's passenger cars include two 96-seat long-distance coaches; a 60-seat parlor car; and a 48-seat coach/32-seat buffet lounge. The set also includes a 1960-built 155-seat Pullman commuter cab coach. This wasn't part of the initial



The Kato bi-levels feature simplified interior detail depicting commuter seating instead of the long-distance coach or parlor chairs.



PERFORMANCE CHARTS	
DRAWBAR PULL	1.6 ounces 12 N scale passenger cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
3 (start)	7.5
5	47
7	90
9	120
12	160

configuration of the *Peninsula 400* but was used in the final days of service, when the CNW ran the Milwaukee-to-Chicago segment in push-pull fashion.

All five cars feature plastic and metal construction and are cleverly assembled without screws using interlocking tabs. Other than road numbers, the exteriors of the coaches and the parlor car were identical, and the same is true with Kato's models.

The coach/buffet car was unique. The kitchen end had a single service door that replaced one lower window and a pair of shortened gallery windows. Kato has reproduced these details faithfully.

The cab coach has the correct windows and end details on the end with the engineer's compartment. Check out the photo on the upper right corner of this month's cover.

The dimensions closely match the original 1958 and 1960 Pullman drawings for these cars. Most of the details, such as grab irons, doors, cabling, and air tanks are cleanly molded into the body shell and chassis. The cars come with separately applied, non-working diaphragms, and the cab car has separately applied end ladders and airhorn.

The models also feature good renditions of the prototype cars' 41-HL-11 (CIB) low-profile trucks. These include truck-mounted Kato magnetic knuckle couplers, allowing the cars to negotiate Kato's tightest Unitrack radius, 9¾".

The bi-levels include identical molded interior seat inserts, but the castings are representational of commuter car

seating; Kato has made no distinctions between the unique parlor, coach, and buffet seating arrangements. The inserts do, however, make it simple to add figures (sans legs) to give the cars some life. Kato sells an easy-to-install interior LED lighting kit no. 11-211 for its bi-levels. Power is collected through each car's eight metal wheels.

The cab car includes a directional lighting circuit that can be activated using a small slide switch located under the car. It's for use with direct-current (DC) power. When the train is running cab car forward, the LED headlight is lit. When running at the tail of the train, the red markers light. The circuit can be switched to Digital Command Control operation by installing a Kato FL12 lighting decoder.

Motive power. The EMD E8A locomotive with the 400 set is decorated for engine 5022A, one of four E8 locomotives the C&NW upgraded in 1958 by replacing its steam generator with a Cummings HEP generator to provide power to the all-electric bi-level consist.

The model comes with a detailed body shell and includes a few key North Western spotting features, such as two winterization hatches (one for each 567 diesel engine) and blanked-out number boards. I was also impressed with the finely molded grills, and I had to look closely to determine that they weren't photo-etched parts. Unfortunately, the rear portion of the rooftop on the locomotive's shell still depicts a steam generator configuration, and not the vents found in prototype photos of C&NW's HEP-converted E units.

The model's 5.1 ounce heft comes from its sizeable die-cast metal frame, filling nearly the entire locomotive shell. All 12 wheels pick up track power, and the drive train includes two flywheels. The samples ran smoothly on DC power in both forward and reverse. A single E8 has a 1.6 ounce drawbar pull equivalent to 12 N scale passenger cars on straight, level track – far more power than will be required for this small 5-car train.

The E8 is available as a DC-only model or with a factory-installed DCC decoder with or without sound and a speaker. You could easily convert a Kato DC-only E8 to DCC yourself, using a Digitrax DN163K0A or Train Control Systems K0D8-E board-replacement

Facts & features

Price: \$260 (direct current), \$365 (DCC no sound), \$485 (DCC with sound)

Manufacturer

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

Road names

Chicago & North Western Ry.

Era: 1958 to 1971

Features

Locomotive features

- Precision motor with flywheels
- Metal wheels in gauge
- DCC ready
- Weight: 5.1 ounces

Five-car passenger train consist

- Cab car and locomotive had directional LED headlight
- Kato magnetic knuckle couplers mounted at correct height
- Metal wheelsets in gauge
- Weight: 1.2 ounces each, .2 ounce light per NMRA RP-20.1

motor decoder. Adding sound would require a bit more work.

Impressions. Kato's Chicago & North Western 400 is a unique set, to be sure. While the inclusion of the coach/buffet is a nice touch, I would've also liked to have seen Kato offer extra coaches and one of the rebuilt 1941 cars, such as the false roof diner or the RPO/baggage/tavern car to round out the train a bit more.

However, don't be fooled into thinking this set is strictly for the C&NW fan. Although the equipment spent its first 13 years on a host of trains running between Chicago, Milwaukee, and destinations throughout northern Wisconsin and Michigan's Upper Peninsula, the equipment outlived long-distance passenger travel on the North Western by more than a decade. Throughout the 1970s and early 80s, all but full parlor car no. 6400 went on to serve various Midwestern Amtrak trains, including the *Illinois Zephyr*, the *Black Hawk*, and the *Calumet*, to name a few. For greater reach, you could repaint this set for Amtrak, or possibly Kato will offer a similar set in the future. – David Popp, *MR Video Plus*



Athearn HO EMD SD45T-2 tunnel motor

Athearn Trains is launching an HO scale model of Electro-Motive Division's SD45T-2 Tunnel Motor. Though it's part of the manufacturer's Ready-to-Roll line, the model comes equipped with features usually found on Athearn's high-end Genesis-line products. The locomotive is available as a direct-current model or equipped with a dual-mode SoundTraxx Econami Digital Command Control sound decoder.

Prototype history. EMD built 247 tunnel motors between February 1972 and June 1975 for the Southern Pacific and its subsidiary St. Louis Southwestern (known as the Cotton Belt). The term "tunnel motor" refers to modifications made to EMD's SD45-2's cooling system to make it run better in tunnels and snowsheds. The air near the top of a tunnel can get hot and smoky, so tunnel

motors have their air intake grills at walkway level, where the air is cooler and cleaner. On the prototype, you can see through the grills and out the other side; Athearn modified its rear truck's gear tower so as not to obstruct this view on the model. The etched-metal grills are finely made and look great.

Some of these diesels would later operate on the Bessemer & Lake Erie; Duluth, Missabe & Iron Range; Kansas City Southern; and some short lines and locomotive leasing companies, including National Railway Equipment Co. (NREX). The rest would be acquired by Union Pacific when it merged with Southern Pacific in 1995. A few of these diesels are still running today.

A first look. All the dimensions that I checked matched those on drawings published in *Model Railroader*

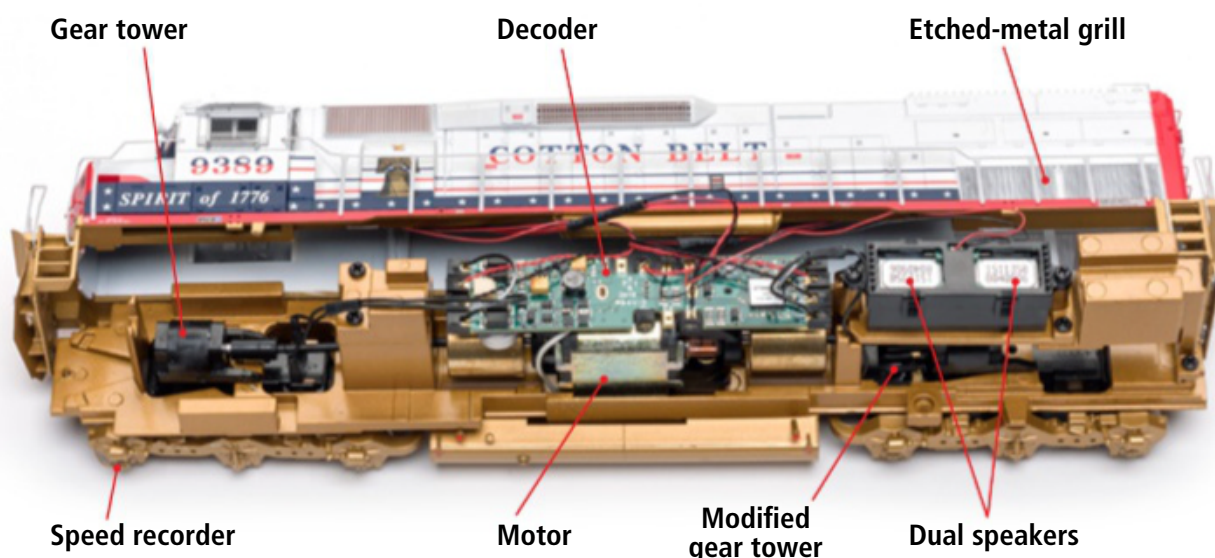
Cyclopedia: Vol. 2, Diesel Locomotives (Kalmbach Books, out of print). The size and placement of details like hand grabs, fans, radiators, dynamic brakes, and hood doors also matched drawings.

The paint on both our samples was smooth, even, and opaque. The tricky color placement on the Cotton Belt Bicentennial paint scheme, particularly the two-color hood lettering and the multi-color insignia, was spot on. The tiniest lettering on both models' stencils and warning stickers was crisp and legible under magnification.

The sample in the SP "bloody nose" paint scheme bears a sticker on its box indicating it's "Primed for Grime." See a photo on page 4. According to the Athearn website, such models have faded base colors, "tattered and torn" heralds and lettering, and paint patches to match the prototypes. The "Southern Pacific" lettering on the locomotive's long hood is distressed differently on each side.

All the blackened-metal wheels are driven, and all pick up power. On our samples, all were in gauge, according to our National Model Railroad Association standards gauge. The McHenry plastic knuckle couplers were likewise mounted at the correct height.

Road test. Since the model was equipped with a dual-mode decoder, which will run under both DC and DCC, I tested the models both ways. After ensuring both sample models ran identically, I performed most of my tests on the Cotton Belt model.



The body shell can be lifted off after removing the draft gear boxes and two screws. Dual speakers situated above the intake grills make for powerful sound.

PERFORMANCE CHARTS	
DRAWBAR PULL	3 ounces 42 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
9.5	1.5
10	3
11	8.5
12	20
14	42
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
0	5
7	36
14	63
21	76
28	80

I ran the locomotive first under direct current. Sound decoders draw a lot of voltage, so when running under DC, I had to turn the power pack up to 6V before the locomotive responded by turning on the lights. The decoder played an authentic engine startup sound sequence when the throttle reached 7.5V. But the locomotive didn't start moving until 9.5V, leaving a very small usable throttle range. At our power pack's maximum voltage, 14V, the locomotive topped out at 42 mph, lower than the prototype's top speed of 65 mph.

Under DCC, I had more control over the locomotive's speed. The engine started out at 5 scale mph in speed step 1 and accelerated smoothly through the speed curve to reach 80 scale mph at speed step 28.

As a six-axle, long-wheelbase locomotive, the SD45T-2 isn't intended for small layouts. It looks best going around broad curves. Nonetheless, the model is built to handle 18" radius curves. It had no problem negotiating the 19" radii and no. 4 turnouts on our Eagle Mountain layout.

Advanced consist. Programming both our sample models' DCC decoder addresses to match their cab numbers was a simple matter with our NCE Power Cab. Since we have two samples, I set up an advanced consist so the two could run together.

I decided to consist them to run back-to-back. Designating the Cotton Belt unit as the lead engine, I selected a consist address of 9 (the only common digit in both cab numbers) and programmed it into that locomotive's Consist Address, CV19. To make the Southern Pacific unit run backward, I added 128 to the consist address of 9 and programmed a value of 137 into that engine's CV19.

Facts & features

Price: direct-current models, \$149.98; with Soundtraxx Econami Digital Command Control and sound, \$209.98

Manufacturer

Athearn Trains
1600 Forbes Way, Suite 120
Long Beach, CA 90810
athearn.com

Era: 1972 to present

Road names: St. Louis Southwestern ("Cotton Belt," Bicentennial scheme, one number), Southern Pacific (bloody nose paint scheme, as delivered in four road numbers and with distressed lettering in one number), Montana Rail Link (fantasy scheme, three numbers), NREX (ex-SP patch-out and white, one number each), Southern Railway of British Columbia (fantasy scheme, one number).

Features

- All-wheel drive and electrical pickup
- DC model: 21-pin NEM decoder socket
- DCC model: SoundTraxx Econami dual-mode sound decoder
- Etched-metal details
- Five-pole motor with dual flywheels
- HT-C trucks with separately applied brake cylinders and speed recorders
- Light-emitting-diode lighting
- McHenry scale knuckle couplers
- Prototype-specific cab and other details
- Weight: 1 pound

SoundTraxx's Econami decoder uses five other CVs – 21, 22, 245, 246, and 247 – to let you customize how a consisted locomotive will respond to function keys and other commands. I checked the Econami decoder user manual (online at soundtraxx.com/manuals) and programmed CV21 and 22 so the bell and horn would work only on the lead engine, but the lights and dynamic brake would respond on both.

A great package. With its HO scale EMD SD45T-2 tunnel motor, Athearn blurs the line between its entry level and high-end locomotives. Etched metal and wire details, prototype-specific cabs and detail placement, and great sound are premium features I'd expect to see on a pricier model. Kudos to Athearn for putting them in a Ready-to-Roll package.

– Steven Otte, associate editor

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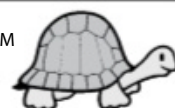
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WalthersMainline HO National Steel Car 5150 covered hopper

A **National Steel Car** 5,150-cubic-foot-capacity three-bay covered hopper has been added to the WalthersMainline HO scale product range. The newly tooled injection-molded plastic model features a one-piece body, a trough-style hatch cover, and 100-ton trucks.

Our sample is decorated as Union Pacific no. 90687, a class CH-100-121 car that's part of the railroad's 90350 through 91499 series. The full-size cars were built by National Steel Car (NSC) between January and April 1996.

Stencils on the full-size UP cars indicate they have a 5,150-cubic-foot capacity. In the *Official Railway Equipment Register* and Umler system, cars in the 90350 through 91499 series are listed as 5,127-cubic-foot capacity cars.

Some of the key spotting features of the NSC 5150 welded-side covered hopper include seven body panels; 11 running board supports on each side; and flat, rectangular jack pads with the lower corners notched. The DVD *Freight Cars Illustrated Vol. 3: National Steel Car Covered Hoppers* notes that the running board extensions were either supported by two triangle-shaped gussets or a V-shaped metal plate; UP cars had the latter. Some NSC 5150s, including the UP cars, have a pair of vertical stiffeners on the ends. The Walthers model is based on cars without the stiffeners.

Information on the Union Pacific website indicates the railroad's covered hoppers in the 4,600- to 5,200-cubic-foot-capacity range are used to transport

corn, wheat, barley, fertilizer, and soda ash.

The WalthersMainline model features a plastic body with separate end cages, a one-piece running board with molded corner grab irons, and a trough-style hatch cover. The slope sheets are separate castings with an air reservoir attached to the one for the B end.

The underbody is a separate piece that's secured to the body with four screws (two above each truck). Two-piece outlet gates are attached to each bay with glue. A separate brake cylinder and control valve is attached to the car's floor on the B end.

Our sample is neatly painted gray with silver running boards and white hatch covers. The lettering and logo placement matches a prototype photo of car no. 90687 I found online. The model accurately has a trademark symbol and ellipsis after the WE WILL DELIVER slogan (some cars have a period). The car ends feature the reporting mark and road number; other end data was omitted.

I compared the WalthersMainline model to prototype drawings published in *The Car and Locomotive Encyclopedia of American Practices* (Simmons-Boardman Books Inc., 1997). The car either exactly matches or is within scale inches of all published dimensions.

I put the covered hopper in a train on our staff layout, the Milwaukee, Racine & Troy. The car operated without

Facts & features

Price: \$29.98

Manufacturer

Wm. K. Walthers Inc.
5601 W. Florist Ave.
Milwaukee, WI 53218
walthers.com

Era: 1996 to present (as decorated)

Road names: Union Pacific, Archer Daniels Midland, BNSF Ry., Canadian Pacific, Illinois Cereal Mill, and Chicago Freight Car Leasing. Four road numbers per scheme; also available undecorated.

Features

- 36" metal wheels on plastic axles, correctly gauged
- Body-mounted Proto-Max metal couplers at correct height
- Separate end cages
- Weight: 5.7 ounces (.9 ounce too heavy per National Model Railroad Association Recommended Practice 20.1)

incident on the main line, and easily navigated the no. 6 turnouts while being spotted at United Cooperative in Williams Bay.

As a covered hopper fan, I'm glad that Walthers added the National Steel Car 5150 to its Mainline series. The covered hopper has nice blend of molded and freestanding details, and its distinct lines will certainly stand out in a train. – *Cody Grivno, Group Technical Editor*

Fleischmann/Roco Z21 Booster and Light Booster

Booster



Light Booster



As a layout gets larger, setting up short-circuit protected power districts becomes more important. These Digital Command Control (DCC) boosters from Fleischmann/Roco make it easy to expand the firm's Z21 Digital system. For this review, I tested both the full featured Z21 Booster and the simplified Z21 Light Booster.

The Light Booster has a single set of 3A track outputs. The Booster has two sets of internally connected outputs that deliver a total of 3A. Although we didn't receive one for review, a dual booster with two independently configurable 3A track outputs (for a total of 6A) is available for an MSRP of \$234.

Set up. The Booster can be connected to the Z21 command station and other Z21 Boosters via the B bus, CDE, or CAN bus. Whatever method is used, it's

important not to mix the bus types if more than one booster is used. The Light Booster has only B bus connections.

Neither the Booster nor the Light Booster include a power supply. The boosters require a switching power supply with DC output and a minimum current of 3A. Fleischmann/Roco sells switching power supplies that would work for the boosters: item no. 10851 for the single booster or item no. 10857 for the dual booster. When multiple boosters are daisy-chained together, each unit requires its own power supply.

Test track. For testing I set up two track sections, electrically isolated with insulated rail joiners. I tested the Light Booster and the fully featured Booster separately. I connected one track section to the main outputs of the Z21 command station and the other section to

the track outputs of the Booster or Light Booster.

I also connected the boosters to an 18V 4A power supply that matched the requirements listed in each product's documentation.

Both the Light and fully featured versions provided reliable power when I ran a locomotive between sections. There was no stalling and no interruption of the locomotive's sound or light effects. The circuit breaker also tripped as it's supposed to when I deliberately triggered a short circuit.

Special functions of the boosters, such as the auto reversing feature, can be turned on or off by using the STOP button as outlined in both instruction manuals. When connected via the CAN bus, the fully featured Booster has additional

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Facts & features

Price: \$174.41 (Booster), \$112.48

Manufacturer

Fleischmann/Roco
Modelleisenbahn München GmbH
Kronstadter Straße 4
81677 München Germany
Z21.eu/en

Distributed in North America by
Heartland Hobby Wholesale
6929 Seward Ave.
Lincoln, NE 68507
hhwonline.com

Features

- Maximum output 3A
- Short circuit detector
- Can be used as an auto reverser
- Connections via B Bus

Additional Booster features

- Adjustable track voltage (12V to 24V)
- Connections via B bus, CAN, or CDE Bus
- DCC brake generator
- Two track outputs (total output is 3A)

In addition to B Bus and track outputs, the fully featured Z21 booster also includes CAN and CDE outputs. The Z-Link socket is for future system expansion.

features that can be adjusted using the Z21 Maintenance Tool software (See Z21.eu/en for more information) or programming on the main (POM) with a DCC throttle.

I used POM via a Z21 Multimaus throttle to set up a brake generator section of track. Following the instruction manual, I pressed the STOP button until the booster's LED flashed green, signaling it was in configuration mode. Then I used the throttle to enter the booster's address, 9806, and set CV111 to a value of 1. If you have a locomotive with this

address, you'll need to remove it until booster programming is complete.

After programming, the locomotive coasted to a stop in the braking track section, but I could still trigger functions like the horn and bell. Additional CVs control auto-reversing, track voltage, and other features. A list is included in the instruction manual.

These plug-and-play DCC boosters from Fleischmann/Roco make it easy to add power districts and enhanced operation to a Z21-controlled model railroad.

– Dana Kawala, senior editor

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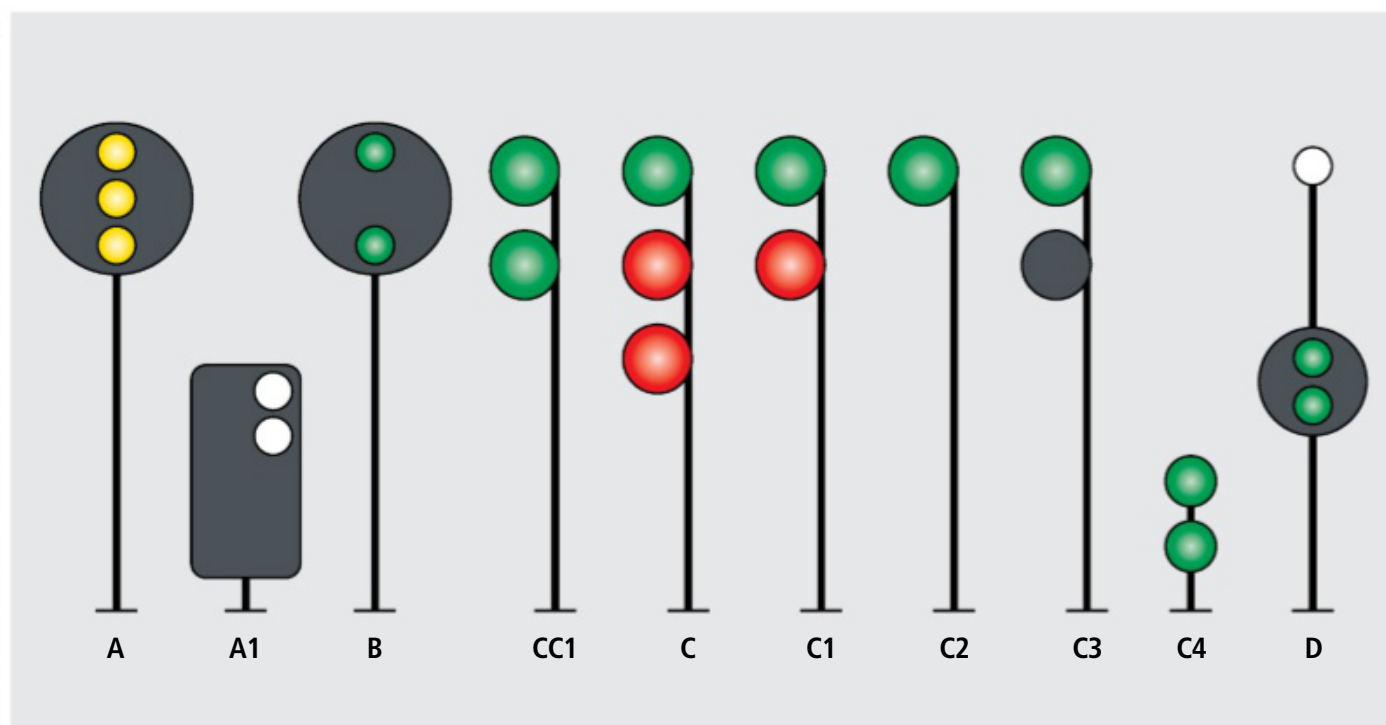
Is my meaning clear?

I sometimes send my work, including drafts of this column, to a circle of knowledgeable friends for review. They include active railroad engineers, retired rules examiners, and Federal Railroad Administration officials. One of them challenged part of a talk I was preparing to give, suggesting that “clear” was an ambiguous term.

He was right! Just for starters: Signals indicate clear blocks, operators clear trains, and trains clear mains.

Every rulebook I’ve studied, the oldest of which dates to the Civil War era, uses “clear” as an adjective meaning empty. A clear block is not occupied by a train, so a train may enter safely. England’s Liverpool & Manchester made red, meaning occupied, and white, not occupied, its standards for signals given by station agents to indicate the condition of blocks by 1839. In that cradle of railroading, the red and white choice of signal colors extended to semaphores when increasing train frequency demanded improved signaling in the early 1840s.

Fred Gamst, an anthropologist whose railroading studies I admire, wrote a paper* that discusses the evolution of colors used in railroad and highway signals. At first, signals were easily visible because railroads ran only in daylight. Illuminated signals came into use when traffic volume demanded night operation. A kerosene lantern was mounted on a mast behind a red lens on a sema-



This excerpt from a contemporary rulebook shows the variety of types of signals railroads use to indicate a clear block. Rick Johnson graphic

phore arm. When the arm was lowered from the stop position, the signal displayed the lantern’s white light, indicating proceed.

The rapid spread of gas and electric lighting made railroad officials express concerns about the use of white. A light in a newly illuminated building in the line of sight of a signal could be mistaken for a false proceed indication. A broken red lens could give the same false indication.

The use of green instead of white was debated for decades; resistance to change is natural. Green finally overtook white by the early 1920s. Even today, however, a wide variety of signals indicate proceed, as seen in the diagram in the current edition of the Northeast Operating Rules Advisory Committee (NORAC)’s rulebook.

Is the meaning clear? Not yet. When an

employee “clears” a signal, the word becomes a verb. A Centralized Traffic Control (CTC) dispatcher will clear a signal hundreds of miles away. An operator cleared a manual-block or train-order signal outside his office. A block signal that “clears” indicates that a train has left the block the signal protects. And timetable-and-train-order (TTTO) operators “cleared” trains, issuing a clearance form at a dispatcher’s orders.

A clearance form or card was used any time a train order signal stopped a train, to document the order(s) given to the train. The clearance form was also issued to document the absence of orders. After delivering the clearance, the operator cleared the signal.

Let’s clear up a few more things. A crew operating in Direct Traffic Control (DTC) territory must notify its dispatcher (DS) that its train has cleared each block through which it passes. Such a DTC radio transmission would be along the lines of “Extra 7859 West, Engineer Jones, I am releasing the Cloy block, 501

p.m., over.” Track Warrant Control (TWC) demands the same when a train clears a warrant’s limits. A warrant with Box 2 reading PROCEED FROM ANNA TO CLOY ON MAIN TRACK has limits of Anna and Cloy. When the train clears Cloy, its crew so radios DS.

Trains also clear main lines by entering sidings. In TTTO operation, after a train left the main track and closed the switch behind it, the crew turned its marker lamps to change the lens displaying to the rear from red to yellow or green, indicating a clear main to a following train. Under TWC, Box 10 could further instruct a train CLEAR MAIN TRACK AT LAST NAMED POINT. The above track warrant example would have the train enter the siding at Cloy.

You see, railroaders sprinkle the word around freely. Its meaning varies based on context. **MR**

*Gamst, F.C. (1975, May). “Rethinking Leach’s structural analysis of color and instructional categories in traffic control signals.” *American Ethnologist*, Vol. 2, Issue 2.



JUST FOR STARTERS: SIGNALS INDICATE CLEAR BLOCKS, OPERATORS CLEAR TRAINS, AND TRAINS CLEAR MAINS.
— JERRY



Conducted by Steven Otte

As evening approaches, Los Angeles Junction Ry. no. 2619, a Santa Fe-rebuilt CF7, crosses District Boulevard in Los Angeles. Lance Mindheim of Silver Spring, Md., photographed the action on his HO scale shelf layout, which was featured in *Great Model Railroads 2019*. The locomotive is an Athearn model.

MORE ON THE WEB

• Lance Mindheim's photo of his HO scale Los Angeles Junction is this month's wallpaper. Get it from ModelRailroader.com



As a subway car rumbles by on the nearby elevated track, firefighters have been called out to investigate a possible gas leak in Northeast Philadelphia. David Gale of Matthews, N.C., photographed the scene on his O scale traction layout, set in July 1962. The subway car is a Lionel model converted to run on 2-rail trucks.



The Montana Western Railway's Corvallis Local, led by ex-BN F7A no. 738, pulls into Targhee to perform setouts and pick-ups. The MW, a bridge line linking Elko, B.C., with Idaho Falls, Idaho, relies heavily on ex-BN motive power. Dave Gayer of Salt Lake City photographed the scene on his HO scale Montana Western layout. The locomotives are by Walther'sProto.



Canadian National no. 4401, an Electro-Motive Division GP9, backs up to deliver a cut of loaded covered hoppers. Paul Marshall-Potter of Tuxford, U.K., photographed the HO scale equipment on his OO scale shelf layout, which uses the same gauge of track as HO to represent 4'-1½" gauge in 1:76 proportion. Paul built the trees in the background using Woodland Scenics tree armatures, poly fiber foliage, and ground foam. The locomotive is an Athearn Genesis model.

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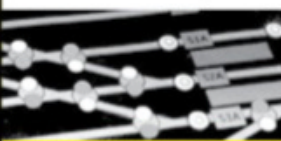
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Classified Advertising

Schedule of Events Rate: \$45 per issue (55 word maximum). Ads will contain the following information about the event: state, city, sponsoring organization and name of event, meet, auction or show, dates, location, times, admission fee, name and/or telephone number and/or email of person to contact for information. Name, daytime telephone number and street address of the person providing the information is also required but need not be included in the ad.

Unless otherwise requested, ads will be published in the issue month that the event occurs in. Additional months are available at the \$45 per issue fee. Please specify issue date(s).

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For MR's private records, please furnish: a telephone number and, when using a P.O. Box in your ad, a street address. *Model Railroader* reserves the right to refuse listing.

All Copy: Set in standard 6 point type. First several words only set in bold face. If possible, ads should be sent typewritten and categorized to ensure accuracy.

Send your submissions to: *Model Railroader* — Classifieds 21027 Crossroads Circle, P.O. Box 1612 Waukesha, WI 53187-1612 Toll-free (888) 558-1544 Ext. 551 Fax: 1-262-796-0126 E-mail: classads@kalmbach.com

All ads must be prepaid and pertain to the subject of model railroading.

CLOSING DATES: May 2020 closes Feb. 24, June closes Mar. 23, July closes Apr. 20, Aug closes May 22, Sept closes June 19, Oct closes July 16, Nov closes Aug. 20, Dec closes Sept. 21.

Schedule of Events

CO, COLORADO SPRINGS: Train Expo Colorado (TECO) hosts its next model train show in Colorado Springs, CO, at Chapel Hills Mall Saturday, April 18, 10 AM-5 PM and Sunday, April 19, 10 AM-4 PM. Entry: \$7 per person, senior and military discounts apply, children under 12 are free. Contact Elizabeth 915-491-4819 or visit <https://www.tecoshow.org>

CO, DENVER: Rocky Mountain Train Show March 7-8, 2020. Denver Merchandise Mart, 451 East 58th Avenue, 80216. Saturday, 10:00am-5:00pm, Sunday 10:00am-4:00pm. 2-1/2 acres of model trains of all scales, 30 layouts, 700 sales tables, clinics and more. Admission \$10.00 under 12 Free, Free-Parking. 303-364-0274 www.RockyMountainTrainShow.com information@RockyMountainTrainShow.com

CT, BRANFORD: Shoreline Train Show. April 4, 2020, Saturday 9:00am-3:00pm. United Methodist Church, 811 East Main St. (RT#1), Branford, CT 06405. Vendors, Layouts, Kids Stuff, Admission: \$6.00 Families, \$4.00 Seniors, Children under 12 FREE. Larry Appleton 203-457-1571 or UMC 203-488-0549 for table rates, and information. lappleton795@comcast.net

CT, GREENWICH: Southern Connecticut Model Train Show. Greenwich Civic Center. Sunday, March 8, 2020, 9:00am-3:00pm. Adults \$7.00, under 12 free. Valley HO Trak Layout & more. Clinics, more than 150 tables including trains, books, artwork, DVDs, gifts and collectibles! Door prizes, free parking, refreshments. Ron's Books, PO Box 714, Harrison, NY 10528, 914-967-7541. ronsbooks@aol.com, www.southerncttrainshow.com

FL, CRYSTAL RIVER: Regal Railways, Toy Train Collectible & Hobby Show, US Army National Guard Armory, 8551 West Venable Street, Crystal River, FL 34429. Saturday, April 18, 2020, 9:00am-2:00pm. Admission: \$5.00 adults. Vendors, operating layout lunch items for sale. Contact Joe: 727-244-1341 or visit: www.regalrailways.com

FL, DEERFIELD BEACH: South Florida Railway Museum Model Train Swap Meet and Flea Market. St. Paul Lutheran Church, 701 W. Palmetto Park Road, Boca Raton, FL. Saturday, March 21, 2020, 9:00am-2:00pm. Admission \$5.00. Bill Steffen, 561-441-6952, www.sfrm.org

FL, JACKSONVILLE (REGENCY-BEACHES): The First Coast Model Railroad Society Meet-and-Greet, 3rd Sunday of every month. 750 sqft double level freelance HO layout 50% complete. On30 modular layout. Gated location, contact Stu Shef stushef@yahoo.com 571-215-5475 24-48 hours in advance. Check out www.FCMRS.club; youtube.com/search/FCMRS

FL, PINELLAS PARK/LARGO: Suncoast Model Railroad Club Train Show/Open House. April 4, 2020. NEW SHOW VENUE: Pinellas Park Performing Arts Center, 4951 78th Avenue N., Pinellas Park, FL. Saturday 9:00am-3:00pm. Admission: \$7.00, Children \$2.00 and under 11 free. Free parking. Food/snacks. OPEN HOUSE: Clubhouse, 12355 62nd Street N, Unit A., Largo, FL. Visit www.suncoastmrrc.com Contact: irvbatten@yahoo.com

IA, DAVENPORT: 9th Annual Davenport Model Railroad & Memorabilia Swap Meet. Mississippi Valley Fairgrounds, 2815 W. Locust St. Saturday, April 18, 2020. 9:30am-4:00pm. Admission: \$5.00. Tables \$20.00. All scales, operating layouts, food available, free parking. DON'T MISS IOWA'S LARGEST AND BEST TRAIN SHOW! Info: 563-391-6431, 8:00pm-10:00pm CST

IL, DECATUR: Decatur Train Fair 2020. Decatur Civic Center, 1 Gary K Anderson Plaza, Corner of Eldorado Street and Franklin Street. April 18-19, 2020. Saturday 10:00am-4:00pm, Sunday 11:00am-4:00pm. Adults \$5.00, under 12 free with adult. Steven Bricker, 217-864-4397, sabricker@comcast.net

IL, JOLIET: Will County Model Railroad Club Swap Meet & Open House. Stone City VFW, 124 Stone City Drive. Saturday, April 4, 2020, 9:00am-2:00pm. Admission \$4.00 per person, children under 12 free. Dealers Welcome. Contact: Len at 815-485-8977 or visit: www.wcmrra.org

Schedule of Events Cont.

IL, LENA: Depot Stove Gang 32nd Annual Model Railroad Show and Swap Meet. March 14 & 15, 2020. 10am-4pm both days. Lena-Winslow Elementary, Junior & Senior High Schools. 401 Fremont Street. Zip: 61048. Over 29,000 sq.ft. of operating layouts, exhibits, vendors and food. Free parking. Info: Roger Schamberger 815-238-7888 or Claire Smunt 815-990-5533 depotstovegang@gmail.com Lodging: 815-233-1357

IL, LOMBARD: Chicago O Scale Meet (2-Rail), Westin Lombard Yorktown Center, 70 Yorktown Center. March 14-15, 2020. Friday dealer set-up, show open to public Saturday 9:00am-5:00pm, Sunday 9:00am-2:00pm. Buy, sell, trade, clinics, discussion groups, layout tours, model contest. Largest dedicated O Scale show (2-Rail) out there. \$20.00 for entire weekend. Info: Melissa 630-745-7600 or www.marchmeet.net

IL, PEORIA: Midwest Region NMRA Convention-Peoria Rocket 2020. May 14-17, 2020. Holiday Inn Hotel & Suites, 101 Holiday Street, East Peoria, IL 61611. 309-698-3333. Activities: Model Contests with NMRA judging, clinics, layout tours, operating sessions, Linus project, and banquet. Additional information at www.peoriarocket2020.org

IL, ROCKFORD/BELVIDERE: Rock River Valley Division NMRA 29th Annual Show & Sale. March 28th 10am-5pm, March 29th 10am-4pm. Belvidere North High School, 9393 Beloit Rd., Belvidere, IL. Admission \$5, under 12 free. 35,000 sq.ft. of vendors and operating layouts, kids activities, food court, free parking. Website: rrvd-nmra.org or Doug 815-765-3135. Vendors contact donbrindle@aol.com or Don 815-329-6112.

IL, URBANA: Urbana Train Show sponsored by Illinois Terminal Division NMRA. March 28-29, 2020. Sat 10am-5pm, Sun 11am-4pm. Lincoln Square, 100 West High Street, Urbana, IL. FREE admission. Youth "Make and Take" activity, operating layouts, youth operated layout, vendors, displays, Historical Societies, kiddie train ride. Additional info contact: itd.illinoisterminaldivision.org/show

IN, INDIANAPOLIS: Central Indiana Division/NMRA announces the Franklin Spring Train Show. New permanent location at the Johnson County Fairgrounds, 250 Fairground St., Franklin, IN 46131. Saturday, April 4, 2020. 10am-3pm. Admission \$3, Family \$5. Clinic and CID Annual Meeting, Door Prizes, Displays, Operating Layouts, Free Parking, Food available. Info/table rental: Michael Roderick 317-833-3556, mdrghost@hotmail.com or www.cidnmra.org

KS, HERINGTON: 2nd Annual Herington Railroad Days and Kansas Central Division NMRA Meet. May 2 & 3, 2020. 9am-4pm both days. Herington Community Building, 800 S. Broadway, Zip: 67449. Admission by donation. Clinics, contests, learn about the hobby, special A&SVRR excursions onsite! Food available. Visit the Historical Museum and Railroad Annex to see Herington's Rail History. heringtonrailroaddays.com

ME, WESTBROOK: Southern Maine Model Railroad Club's Second Annual Train Show. Westbrook Community Center, 426 Bridge St., Westbrook 04092. Saturday, April 18, 2020. 10AM-3PM. \$5 entry fee, children 12 and under FREE. Come join us for a day of live train displays, vendor sales, raffles and more! Something for everyone to enjoy! Concessions available.

MI, WYOMING (GRAND RAPIDS): Greater Grand Rapids Spring Train Show. Saturday, April 18, 2020, 10:00am-3:00pm. HSB Inc., 5625 Burlingame Avenue SW. Adults \$5, under 12 FREE, 203 vendor-display tables, RR Books & Photos, Trains in all scales, Food, Lionel "Thomas-the-Train" drawing, door-prizes and free parking. Vendor tables \$18 each. Contact Ken Skopp, 616-667-9680, kws kopp@gmail.com or www.grvrrc.org

MN, WOODBURY: Newport Model RR Club Flea Market & Train Show. Woodbury High School, 2665 Woodlane Drive, Zip: 55125. April 25, 2020, 9:00am-2:00pm. Admission \$5.00. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Ed, 651-233-3310 or Mark, 651-207-7747

NE, OMAHA: NE-IA Railroaders 49th Annual Train and Toy Show. Ralston Arena 7300 "Q" Street, Zip: 68127. April 4-5, 2020. Saturday 9:00am-4:00pm, Sunday 9:00am-4:00pm. Admission: \$8.00, 12 and under free. Information: Bob Schaffer 402-990-0085 rgsmmercman@gmail.com; Mark Nelson 402-731-1349. VENDORS WANTED! www.nebraskaiowarailroaders.com

NH, DOVER: The Great Northern New England Spring Train Show. Dover Lodge of Elks #184, 282 Durham Road, Zip: 03820. Saturday, April 4, 2020, 10:00am-3:00pm. Admission: \$5.00 per family. Exhibitor tables \$25.00 (includes entrance fee). All scales, operating layout, food. Contact Ed Martin, efmenter@aol.com or 603-362-4300

OH, BUCYRUS: 34th Annual Bucyrus Model Railroad Assoc. Train Show & Swap Meet. Crawford County Fairgrounds, 610 Whetstone St. Saturday, April 11, 2020, 10:00am-4:00pm. Adults \$5.00, children 12 and under FREE. Club layout open, videos, memorabilia, model train parts. Food by Katering Kountry Style. Contact: Dave Moore 419-462-5035.

OK, BIXBY: Greater Tulsa Train Show, Bixby Community Center, 211 N. Cabaniss Avenue, Zip 74008. Saturday, April 4, 2020, 9:00am-3:00pm. Admission: \$5.00 adults, under 12 Free. For info: TTOS-Sooner.org

PA, HAWLEY: Model Train Show & Sale. Hawley Fire Department, 17 Columbus Ave. Sunday, April 26, 2020, 9:00am-3:00pm. Admission \$3.00, under 12 free with adult. Bill Delling, 618 Fern St., Hawley, PA 18428, 570-226-3206.

PA, MONACA: Beaver County Model RR Spring Train Show & Sale. Monaca Turners, 1700 Old Brodhead Road. Sunday, April 5, 2020, 10:00am-3:00pm. Adults \$5.00, under 12 free. Sponsored by Beaver County Model RR & Historical Society. Contact: Walt Steiner 724-843-3783 or www.bcmrr.railfan.net or beaverctymrr@gmail.com

TN, JOHNSON CITY: George Carter Railroad Museum Train Show. East Tennessee State University MINIDOME, 1081 John Robert Bell Drive. June 5 & 6, 2020. Friday Noon-6:00pm and Saturday 10:00am-4:00pm. Admission \$6.00, under 12 free. Free garage parking. Vendors, working layouts, live steam. Contact Roger Tienart 423-791-4937 or Gary Emmert 903-452-5012.

TX, NEW BRAUNFELS: Annual Model Railroad Jamboree. New Braunfels Civic Center, 390 S. Seguin Ave. April 18-19, 2020. Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults (over 14) \$8.00, children (5-13) \$2.00. 300 vendor tables, layouts including Legos, silent auction, refreshments, museum open house. Info: www.nbrrm.org Jim Edmondson 830-629-2071

WA, CHEHALIS: Lewis County Model Railroad Club, Annual Spring Train Show and Swap Meet. Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 N. National Ave., Zip: 98532. April 4-5, 2020, 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

WI, LA CROSSE/ONALASKA: La Crosse & Three Rivers Railroad Club's 39th Annual Model Railroad Show. Omni Center, 255 Riders Club Road, Onalaska, WI. March 21-22, 2020. Saturday 9:00am-5:00pm, Sunday 10:00am-4:00pm. Adults \$7.00, \$6.50 with a non-perishable food item, children 11 and under free w/ adult. Info: Belva Thompson 608-780-7364

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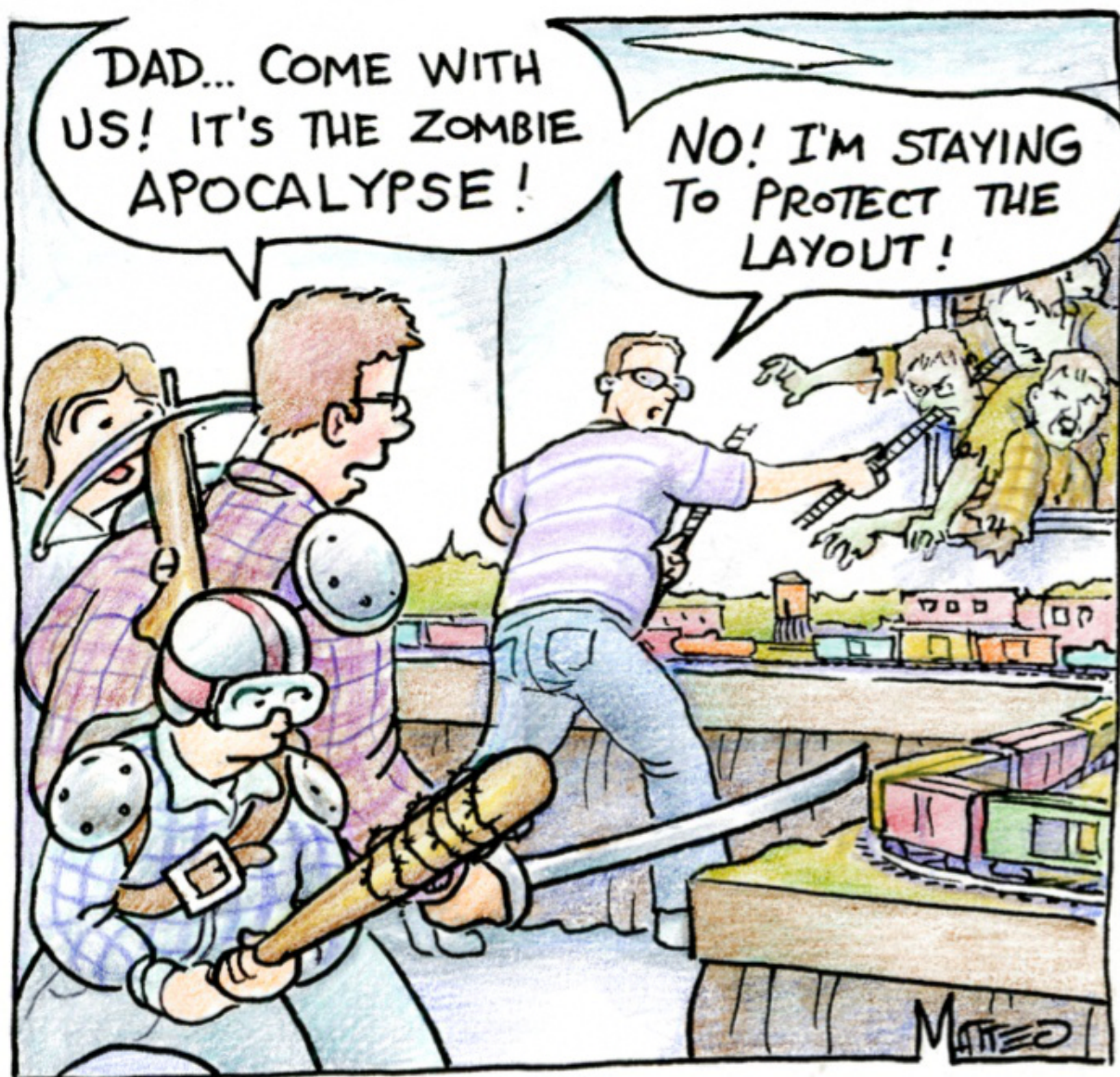
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A cross-country trek to California

No, I'm not moving. But three pieces of Allegheny Midland rolling stock have made their way west: I-3 2-6-6-2 Mallet no. 928, two-bay offset hopper 37750, and wood caboose 149. When last seen east of the Mississippi, the trio was climbing up Cayuga Hill toward the Illinois state line.

This journey actually began quite some time ago. After the Allegheny Midland, which I usually refer to as the Midland Road, was dismantled around the turn of the century, I donated the handsome Union Switch & Signal Centralized Traffic Control machine to the National Model Railroad Association's planned museum in Chattanooga, Tenn. It got from New Jersey to Chattanooga thanks to Scott Chatfield, who made a heroic effort to cram the L-shaped steel cabinet into the back of his van. And there it languished for years.

It occurred to Charlie Getz, then an assistant attorney general for the state of California and a past president of the National Model Railroad Association; Bob Brown, editor of the *Narrow Gauge & Short Line Gazette*; and others that the mezzanine of the spectacular California State Railroad Museum in Sacramento would be an excellent place for a display sponsored by the NMRA dedicated to scale model railroading. It should be opening about the time you read this. Check nmra.org and california.railroad.museum for updates.

To my surprise and delight, Bob and Charlie notified me that the AM's Centralized Traffic Control machine was going to be a prominent part



Allegheny Midland 2-6-6-2 Mallet 928, twin hopper 37750, and wood caboose 149 head up Cayuga Hill on the Nickel Plate's St. Louis Division as they make their way west to the California State Railroad Museum in Sacramento for display. Tony Koester photo

of the CSRM exhibit. Bob asked for some related paperwork, such as a dispatcher's train sheet, which I'd saved and quickly supplied. I also offered to send them a Pacific Fast Mail Chesapeake & Ohio 2-6-6-2 (heavily reworked by Cheat River Engineering, and painted and weathered by Dennis Regan), an Athearn hopper, and a Nickel Plate Products Nickel Plate Road-style wood caboose. The latter was based on drawings I'd made from measurements obtained from conductor and friend Bill Love's NKP wood caboose, 1149.

The Mallet had been slumbering in a storage box for a couple of decades, but the hopper and caboose were in service on my current NKP railroad until they were unceremoniously yanked off the track for shipment to California. But as I started to pack them for their journey across the country, it occurred to me that they deserved to have their picture

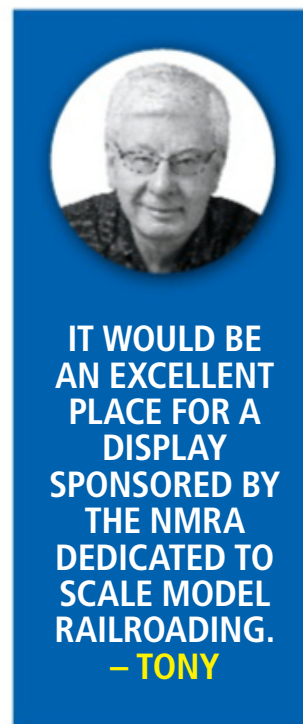
taken in a setting reminiscent of their original home.

The flatlands aren't as flat as those who live elsewhere assume. After several periods of glaciation bulldozed them down, the glaciers' enormous weight also dug channels, some of which we now call the Great Lakes. And all that ice had to melt and run off somewhere; the Ohio River marks one boundary of the ice sheet. Streams and rivers that fed the Ohio, such as the Wabash River, carved out their own valleys, which had to be bridged as the railroads pushed west.

Near Humrick, Ill., hard by the Indiana-Illinois state line, the Little Vermilion River carved out a channel that those who built the narrow gauge predecessor

to the Nickel Plate's St. Louis Division had to span. The resulting deck-girder bridge looked enough like those I modeled for the Appalachian-based Allegheny Midland to provide a reasonable setting for the Westward Ho! trio.

The plan is for the three models to sit in a case atop the CTC machine. I can't imagine a more fitting place for these veterans to spend their retirement years.



IT WOULD BE AN EXCELLENT PLACE FOR A DISPLAY SPONSORED BY THE NMRA DEDICATED TO SCALE MODEL RAILROADING. — TONY

A footnote: Prototype C&O H-6 no. 1309 – the last of the breed, the last domestic steam locomotive Baldwin built, and the last Mallet built in the U.S. – should now be back in service on the Western Maryland Scenic RR out of Cumberland, Md.

N
Scale

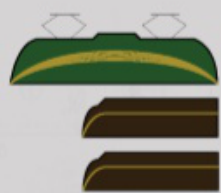


First put into service in 1912, the PRR “Broadway Limited” was one of the longest lived US passenger trains in the history of railroading, outlasting even its own railroad thanks to continued service under the Amtrak banner until 1995. Running between New York and Chicago in a sixteen hour run via Pittsburgh and Philadelphia, the “Broadway Limited” was the pinnacle of luxury and speed, a first class train that was once described as “the Concorde of its day.”

THE PRR BROADWAY LIMITED



Kato USA is producing a brand new release of the classic eastern Named Train, arriving in early 2020! With all-new car names and numbers, this gorgeous set will release alongside new runs of EMD E8A and GG1 locomotives, all available with factory-installed DCC! Available as a 10 car base set containing the core cars, the set can be expanded with a 4-car add-on set with additional sleepers, and an optional “Transcontinental” sleeper!



BM70M 4-4-2 ATSF Sleeper 21 Roomette 21 Roomette 12 Duplex 4-D8 4-4-2 Sleeper 5-D8 Bar/Lounge Diner Kitchen-Dormitory 4-4-2 Sleeper 10-6 Sleeper 10-6 Sleeper 10-6 Sleeper 10-6 Sleeper Observation

Between Harrisburg, PA, and New York, the Broadway Limited would be pulled by the electric GG1 locomotive. On the non-electric portion of the journey between Harrisburg and Chicago, the journey would be finished up by a pair of EMD E8 diesel locomotives. The above consist matches the Broadway Limited as it ran in the 1950's.

Item #	Description	MSRP
#106-069	N Pennsylvania Rail Road Broadway Limited 10-Car Set	\$290
#106-069-1	N Pennsylvania Rail Road Broadway Limited 10-Car Set w/ Interior Lighting	\$440
#106-7112	N Pennsylvania Rail Road Broadway Limited 4-Car Add-on Set	\$120
#106-7112-1	N Pennsylvania Rail Road Broadway Limited 4-Car Set w/ Interior Lighting	\$180
#156-0907	N AT&SF Transcontinental Sleeper Add-on Car “Regal Inn”	\$30
#156-0907-1	N AT&SF Transcontinental Sleeper Add-on Car “Regal Inn” w/ Interior Lighting	\$45
#137-2005	N GG1 PRR Brunswick Green 5-Stripe #4859	\$150
#137-2005-DCC	N GG1 PRR Brunswick Green 5-Stripe #4859 w/ DCC Installed	\$230
#137-2006	N GG1 PRR Tuscan Red 5-Stripe #4909	\$150
#137-2006-DCC	N GG1 PRR Tuscan Red 5-Stripe #4909 w/ DCC Installed	\$230
#176-5313	N EMD E8A PRR #5887	\$110
#176-5313-DCC	N EMD E8A PRR #5887 w/ DCC Installed	\$190
#176-5313-LS	N EMD E8A PRR #5887 w/ ESU LokSound DCC Installed	\$310
#176-5314	N EMD E8A PRR #5898	\$110
#176-5314-DCC	N EMD E8A PRR #5898 w/ DCC Installed	\$190
#176-5314-LS	N EMD E8A PRR #5898 w/ ESU LokSound DCC Installed	\$310

ESU LokSound items are built-to-order and must be specially reserved through your hobby store

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