

HOW TO BUILD **A FREIGHT CAR FLEET** p.31



**New Atlas HO
GP7 review** p.74

December 2019
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Heavy-duty railroading

Coal is king on this mountainous transition-era layout p.44

**PHOTO
CONTEST!**
Rules
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Roseville, Calif. club:
**Multiple scales,
main lines, and
switching**

p.36



Catching the color on
Jack Varadi's scenic
Greenville & Ohio RR.
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Constructing a rail-served dairy p.58

Step by step: Install a switch motor p.28

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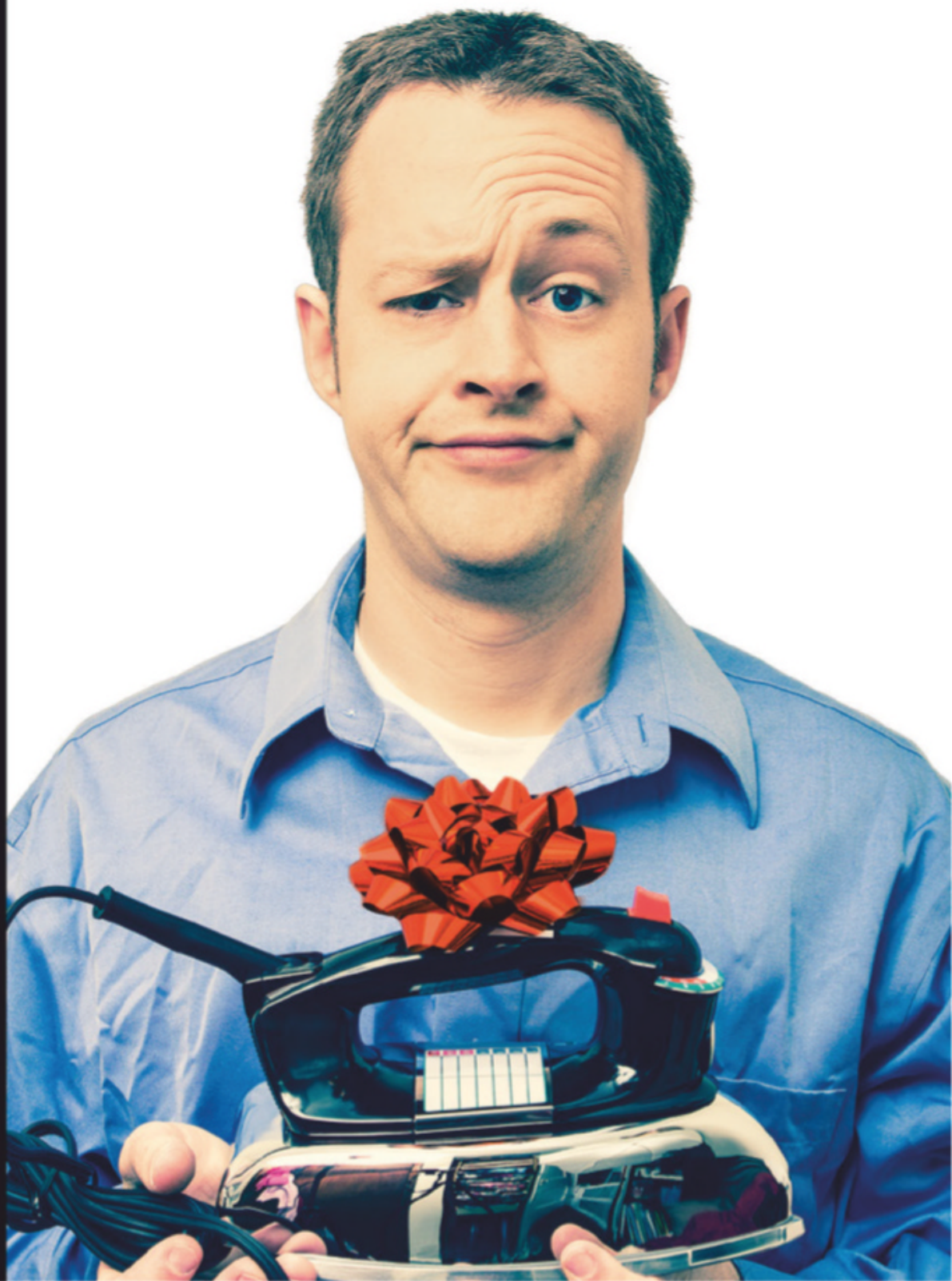
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On the cover: Trains cross at Clinchport on Jack Varadi's Greenville & Ohio, an HO scale Appalachian layout.
Bruce Gathman photo



Next issue

In January, you'll get a first look at our 2020 project layout, Wingate, Ind., in O scale! Plus an N scale shelf layout, scratch-building a big-city station, and more!



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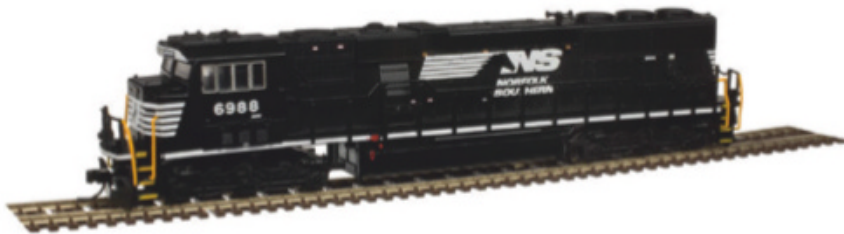
Model Railroader (USPS 529-810, ISSN 0026-7341) is published monthly by Kalmbach Media Co., 21027 Crossroads Circle, P.O. Box 1612, Waukesha, WI 53187-1612. Periodicals postage paid at Waukesha, Wis., and additional offices. POSTMASTER: Please send address changes to *Model Railroader*, P.O. Box 8520, Big Sandy, TX 75755. Printed in USA. Canada Publication Mail Agreement # 40010760.

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It's always fall of 1954 on contributing editor Tony Koester's HO scale Nickel Plate Road St. Louis Division. In this exclusive layout tour, Tony takes you along the main line from Frankfort, Ind., to Charleston, Ill. It's the transition era, so you'll see 2-8-4 Berkshire steam locomotives and first-generation diesels, such as Electro-Motive Division GP7s and Alco PAs.

You'll get insights into how Tony designed the layout to follow the prototype, learn the significance of various towns and other locations, and much more. You'll see both close-up and overall shots of this inspirational multilevel model railroad.

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► Follow along as contributing editor Tony Koester takes you on a tour of his HO scale Nickel Plate Road St. Louis Division.

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HOW-TO VIDEOS, REVIEWS, AND MORE ON MRVP!



Install a switch motor. Follow MRVP producer David Popp as he demonstrates step-by-step how to install a Tortoise by Circuitron switch motor.
MRVideoPlus.com/CC12



N scale steam. See the Broadway Limited Imports Paragon3 sound-equipped N scale USRA Mikado 2-8-2 in action in this locomotive demo.
MRVideoPlus.com/BLI282

DCC demo. Check out the new wireless Wi-Fi WLANMaus throttle from Fleischmann/Roco, including tips for programming and running trains with the Z21 DCC system.
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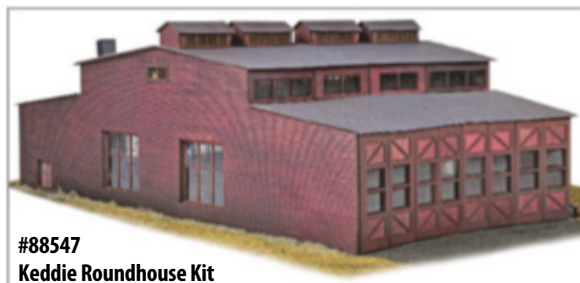
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If you're getting started, welcome

One of the great things

about the holiday season is we start to see new folks taking the magazine. Lots of gift subscriptions are being purchased, and we thank you for reading. We'd like to say "welcome" if you're just joining us, and we hope you'll stick with us for a while.

You might be new to the model railroading hobby, or just new to the magazine. Or, you may be coming back after some time away. Regardless of the circumstance, we hope you find information you can use, as well as a sense of community. We're all here for one reason, even if we all go about it slightly differently.

Let's face it, everyone has their own idea of what a model railroad ought to be. Some people think it's an exercise in minimalism, with grass, track, maybe a road, and the odd house with the

clothesline out back. Oh, and a grain elevator.

Oh wait, that's my ideal model railroad.

For your part, maybe you think a railroad should fill a room or a basement, with trains running through urban canyons, with people and autos everywhere mimicking the bustle of city life.

Or perhaps you just want to focus on a few industries served on an "as needed" basis by a lone locomotive and a handful of cars.

You might even have a combination of both on a sheet of plywood.

The desire might arise to run steam with modern diesels. Don't let anyone tell you that you can't. It actually happens in the real world, which you know if you've seen our sister magazine *Trains*' coverage of Union Pacific Big Boy no. 4014 this fall. It's been spectacular to watch.

And speaking of spectacular, that's exactly how you feel when you've been researching a location or town to model and you run across just the right photo or bit of information you need to complete the project. There are lots of rocks to kick over to find information in today's digital age.

One of the things I've found useful is Facebook. Frequently, you'll find there are groups that have formed to reminisce about the history of various places, including many towns – some of them very small.

If you can find a group dedicated to an area you're interested in, it's easy to search the group's content for keywords like "railroad" or "depot" or specific industries or commodities that might have been shipped.

Even better, you might be able to connect with people who have more detail about



the topic. If you jog their memory, they could have more photos or memorabilia about their community.

There's that word again. Ultimately it's just people helping each other, which is a nice thing to think about this time of year.

Model Railroader

Model railroading is fun!

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SUBSCRIPTION RATE: Single copy: \$6.99; U.S.: 1 year (12 issues) \$42.95; 2 years (24 issues) \$67.95; 3 years (36 issues) \$94.95. Canadian: Add \$13.00 postage per year. Canadian price includes GST, BN 12271 3209 RT, payable in U.S. funds. All other international subscriptions: Add \$20.00 postage per year, payable in U.S. funds, drawn on a U.S. bank. ©2019, Kalmbach Media Co. Title registered as trademark. All rights reserved.

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Alco PA and PB diesel locomotives. New York Central; Atchison, Topeka & Santa Fe; Delaware & Hudson (PA only); New York, New Haven & Hartford (PA only); and Southern Ry. (PA only) are the paint schemes offered on these Walther's Mainline models. The HO scale models have an injection-molded plastic shell, die-cast metal chassis, factory-

installed handrails, and drill starter points for grab irons (available in diesel detail kit no. 910-252, sold separately). Direct-current models are priced at **\$159.98** (PA) and **\$299.98** (PA-PB set). Versions with a dual-mode ESU sound decoder are **\$219.98** (PA) and **\$419.98** (PA-PB set). Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale locomotives

- **Electro-Motive Division GP7u diesel locomotive.** Atchison, Topeka & Santa Fe (blue-and-yellow warbonnet, five road numbers); Bangor & Aroostook (gray, red, and black scheme, four numbers); Cargill (green and white, one number); Integrated Grain & Milling (red, white, and yellow, one number); Morristown & Erie (Bangor & Aroostook patchout and red and black repaint, one number each); RJ Corman RR Co. (red and gray, three numbers); and Savage (orange and blue, one number). Prototype-specific details, factory-installed and painted wire grab irons, and light-emitting-diode headlights. Direct-current model with 21-pin NEM connector for Digital Command

Control decoder, \$209.98; with dual-mode SoundTraxx Tsunami2 sound decoder, \$299.98. August 2020. Genesis series. Athearn Trains, 800-338-4639, www.athearn.com

- **Electro-Motive Division SD70M diesel locomotive.** CSX (dark blue and yellow with boxcar herald in two road numbers), Norfolk Southern (Thoroughbred scheme with Positive Train Control antennas and primer gray, both with flared radiators in three numbers each), Progress Rail (CSX patchout, three numbers), Southern Pacific (as-delivered scheme, four numbers), and Union Pacific (no. 4014, ex-SP units in modified lightning-stripe scheme with PTC antennas in two numbers, and SP patchout in one number).

Road-number-specific details, factory-painted and installed wire grab irons, and detailed cab interior. Direct-current model with 21-pin NEM connector for Digital Command Control decoder, \$229.98; with dual-mode SoundTraxx Tsunami2 sound decoder, \$319.98. August 2020. Genesis series. Athearn Trains, 800-338-4639, www.athearn.com



- **General Electric Tier 4 GEVo diesel locomotive.** Canadian National (with Aboriginal Affairs logo in three road numbers, 100th anniversary scheme with Aboriginal Affairs logo in one number) and Kansas City Southern

HO scale



Single-window heavyweight coach. New paint schemes on this Atlas Master Line model include Pere Marquette (green and gold), Canadian Pacific (Tuscan Red and gold), Great Northern (dark green and gold), and Rutland (green and gold). New road numbers are offered on models decorated for Delaware & Hudson (two-tone gray) and Spokane, Portland & Seattle (green and yellow). The HO scale coach (**\$69.95**) is offered in three numbers per scheme; it's also available undecorated (**\$59.95**). The coach has a detailed interior, separately applied underbody detail, and Accumate couplers. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



(*Southern Belle* scheme in six numbers). Prototype-specific details, directional light-emitting-diode headlights, and metal semi-scale type E couplers. Direct-current model with 21-pin connector for Digital Command Control decoder, \$159.99; with ESU LokSound 5 decoder, dual cube-type speakers, and PowerPack super capacitors, \$249.99. Spring 2020. Rivet Counter line. ScaleTrains.com, 844-987-2467, www.scaletrains.com

HO scale freight cars



- **Assorted freight cars.** Black Hills Packing Co. 40-foot plug-door steel refrigerator car, \$19.98. Canadian National 50-foot boxcar with exterior posts (Illinois Central reporting marks), \$18.98. Canadian Pacific 40-foot insulated boxcar, \$18.98. Illinois Terminal Pullman-Standard 40-foot PS-1 boxcar, \$18.98. Quebec Central 36-foot Fowler boxcar, \$18.98. New York Central; Cleveland, Cincinnati, Chicago & St. Louis; and Toledo & Ohio Central 40-foot double-sheathed boxcars (single car, \$18.98; three-pack, \$55.98. Injection-molded plastic kits with plastic wheelsets and Accumate couplers. Accurail, 630-365-1173, www.accurail.com



- **New York Central lot 732 long and Pacemaker wood cupola cabooses.**

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Conducted by Cody Grivno

HO scale



General Electric Pullman-Standard 40-foot PS-1 boxcar. This MTH model, available exclusively from TrainWorld, has a plastic body, positionable doors, metal wheelsets, a detailed underbody, and Kadee no. 158 whisker couplers. The model sells for **\$24.99**. TrainWorld, 516-599-7080, www.trainworld.com

Laser-scribed side and end walls; tab-and-slot and peel-and-stick construction; laser-cut underframe, end platforms, end railing, and brake wheels; cast-resin platform steps and brake gear; white metal smokejack; and Tichy Train Group decals. Optional details include square or rounded body corner posts, side windows that can be modeled opened or closed, cupola end window variations, and set of screen doors and windows. Trucks, couplers, and draft-gear boxes not included. \$64.95 each. American Model Builders Inc., 314-646-8588, www.laserkit.com

- **40-foot double-sheathed refrigerator car.** New paint schemes: American Refrigerator Transit Co. ("Assigned to ice

service" lettering), Brinks & Sons Inc., Marshall Kirby & Co. Inc., Milwaukee Road (ice car), Missouri-Kansas-Texas (GARX reporting marks), Producers Produce Co., and Rath's Black Hawk Bacon. Two road numbers per scheme; also available undecorated. Separate, factory-applied door bars, grab irons, ladders, and uncoupling levers; Accumate couplers; and prototype-specific roof hatches. \$42.95 (undecorated, \$34.95). Second quarter 2020. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

- **34-foot two-bay composite hopper.** Illinois Terminal, Lehigh Valley, Pennsylvania RR, Reading Co., Southern Ry., and Union Pacific. Thirteen road numbers per scheme (single car and three four-packs). Injection-molded plastic body, RP-25 contour metal wheels, and body-mounted McHenry scale couplers. Single car, \$26.98; four-pack, \$99.98. August 2020. Roundhouse line. Athearn Trains, 800-338-4639, www.athearn.com

- **40-foot gondola.** Alaska RR (black), Chicago & Eastern Illinois (Oxide Red), Denver & Rio Grande Western (black with "Flying Grande" lettering), Great Northern (Vermillion Red), Maine Central (dark green and yellow), Monon (black), Norfolk Southern (pre-1982 company, Boxcar Red), and Penn Central (Deepwater Green). Three road numbers per scheme. Separately applied brake wheel, 33" RP-25 contour metal wheels, and body-mounted McHenry scale couplers. \$27.98. August 2020. Roundhouse line. Athearn Trains, 800-338-4639, www.athearn.com

In Memoriam

Roy Gelber

Roy Gelber, founder and chief executive officer of Model Rectifier Corp., died in August 2019. He was 95 years old.

Roy started Model Rectifier Corp. in 1947 following his discharge from the U.S. Army. The company originally made industrial power supplies for the government and businesses. It then branched into model railroad train control products and accessories; speed controllers for slot cars; remote-controlled cars, planes, and transmitters; model aircraft engines; and plastic model kits.

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Model Railroader December 2019

News & Products

• **Pacific Fruit Express class R-40-25 refrigerator cars.** New paint schemes: Pacific Fruit Express (modern gothic with Union Pacific and Southern Pacific heralds) and Northern Pacific ("Scenic Route of the Vista-Dome North Coast Limited" slogan). New road numbers: Pacific Fruit Express (original with black-and-white SP herald and red, white, and blue UP herald and orange with UP and SP heralds in black and white). Six numbers per scheme. Plastic model with metal wheelsets and knuckle couplers. \$34.95. InterMountain Railway Co., 303-772-1901, www.intermountain-railway.com



• **Denver & Rio Grande Western Pullman-Standard 50-foot double-door boxcar.** Flying Grande lettering (as-delivered 1957 stenciling). Injection-molded plastic body with separate ladders and grab irons, positionable doors, metal wheels, and Kadee couplers. \$38.95. Kadee Quality Products Co., 541-826-3883, www.kadee.com

HO scale passenger cars



• **1860s to 1880s-era baggage car.** Baltimore & Ohio (*Royal Blue*); Atchison, Topeka & Santa Fe; Northern Central RR; Pennsylvania RR; Ringling Bros. and Barnum & Bailey Circus (\$35); and Western & Atlantic RR. Blackened metal wheels and body-mounted couplers. \$36 unless noted. Bachmann Industries Inc., 215-533-1600, www.bachmanntrains.com

HO scale details and accessories

• **Ford F-850 box truck.** Bekins, Builders Emporium, Canadian Pacific (express service with script lettering), Chesapeake & Ohio ("Truck Service" lettering), Ford Motor Co., Peterson Tool

Specialties, Railway Express Agency, Southern Pacific ("Truck Service" lettering), and C.M. Tanner Grocery Co. Molded cab interior with separate steering wheel, vinyl tires, and clear window glazing. \$29.98. August 2020. Athearn Trains, 800-338-4639, www.athearn.com

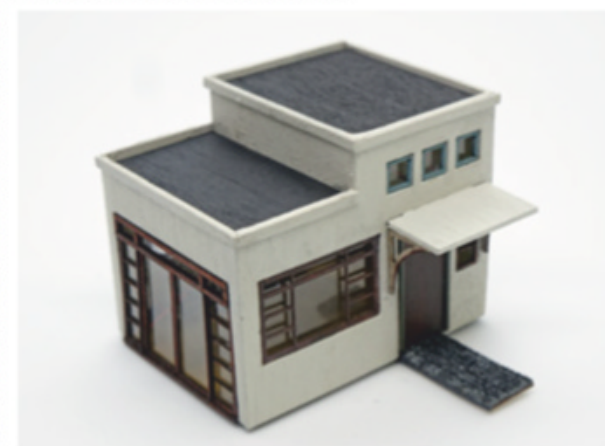
• **Hyundai 53-foot hi-cube intermodal container.** EMP (green, Stax patchout, and Stax stencil), Hub Group Inc. (green and Stax patchout), and Stax (white). Six container numbers per scheme (three two-packs). Also available assembled but undecorated. Injection-molded plastic model. Two-pack, \$26.95. A-Line and InterMountain Railway Co., 303-772-1901, www.intermountain-railway.com



• **Constant lighting kit for Walther's lightweight passenger cars.** Drop-in Digital Command Control lighting kit. Will also work on direct current, but lighting intensity will increase slightly. Two peel-and-stick printed-circuit boards, wiring, and connector spades. Light bar features five equally spaced surface mount cool white light-emitting diodes (LEDs). Up to eight more LEDs (or marker lights) can be added on the light bar. Solder-free installation. \$15.95. Limited Editions, www.spdaylight.com

• **Union Switch & Signal H-2 searchlight signals.** Single head (\$24.95) and two head (\$32.95). Based on Southern Pacific prototypes. Injection-molded plastic, photo-etched brass, and resin parts. Can be built into six configurations. Lighting kit sold separately, \$12.95. Class 5, www.spdaylight.com

HO scale structures



• **Small workshop.** Laser-cut micro-plywood kit with two pre-wired SMD

light-emitting diodes (12V, resistors included), laser-cut window glazing, and instruction sheet. Measures 2½" x 2⅝" x 1.7". \$18.65. Maple Leaf Trains, www.mapleleaftrains.com

N scale locomotives



- **Electro-Motive Division NW2 diesel locomotive.** Canadian National (black and orange); Atchison, Topeka & Santa Fe (zebra stripes); Great Northern (Omaha Orange and Pullman Green); Pennsylvania RR (Brunswick Green); Southern Pacific (black and orange); and Union Pacific (Armour Yellow and Harbor Mist Gray with "Road of the Streamliners" slogan). Two road numbers per scheme; also available undecorated. Die-cast metal body and chassis, golden-white light-emitting-diode headlight (and Mars light where applicable),

HO scale



Dairy transfer stand. This HO scale American Model Builders laser-cut wood kit (\$39.95) features tab-and-slot wall and roof assembly; peel-and-stick windows, doors, and trim; simulated metal roofing; cracked and intact office window glazing; platform side ladders; full-color signs and large cow-shaped rooftop billboard; and assorted cast-resin detail parts. The platform with office measures 2⅝" x 3½" x 2¾"; small platform measures 1⅜" x ½" x 2⅝". American Model Builders Inc., 314-646-8588, www.laserkit.com

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and dual-mode Paragon3 sound decoder with Rolling Thunder. \$229.99. Broadway Limited Imports, 386-673-8900, www.broadway-limited.com



- **General Electric AC4400CW diesel locomotive.** Chicago & North Western. Two road numbers. Factory-installed TCS Digital Command Control decoder, low number boxes, directional head-lights, illuminated ditch lights and number boxes, and all-wheel electrical pickup with blackened wheels. \$200. Kato USA Inc., 847-781-9500, www.katousa.com

N scale freight cars

- **Pullman-Standard 5,277-cubic-foot-capacity boxcar.** CSX (dark blue, three road numbers), Escanaba & Lake Superior (St. Lawrence RR patchout, four



Union Pacific water tenders. These Kato models feature an all-new design with prototype-specific weld mark details. The N scale tenders (*Jim Adams* and *Joe Jordan*) can be upgraded with optional light board, sold separately, to illuminate marker lights in either direction. Tender *Jim Adams* has a separately applied American flag plate. The N scale water tender two-pack retails for **\$79**. Kato USA Inc., 847-781-9500, www.katousa.com

numbers), Illinois Central Gulf (St. Lawrence RR patchout, two numbers), St. Lawrence RR (National Railcar Utilization Corp. scheme, three numbers), and Wisconsin Central (faded

maroon with fresh paint patches, two numbers). Screw-mounted trucks and McHenry couplers. \$23.98. August 2020. AthearnN. Athearn Trains, 800-338-4639, www.athearn.com



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News & Products

N scale passenger cars



- **Union Pacific excursion train.** Power car no. 207; Budd 10-roomette, 6-double-bedroom sleeper no. 202 (*Willie James*); museum car no. 5779 (*Promontory*); dome-coach no. 7001 (*Columbine*); coach no. 5473 (*Portland Rose*); dome diner no. 8008 (*City of Portland*); and business car no. 119 (*Kenefick*). Injection-molded plastic with interior detail. Compatible with 11-211 or 11-212 interior light-emitting-diode lighting kits. Packaged in collectors-style foam tray with removable inserts. \$265. Kato USA Inc., 847-781-9500, www.katousa.com

N scale details and accessories



- **40-foot high-cube intermodal container.** Ocean Network Express (light gray), Atlantic Container Line (Oxide Red), CMA CGM (dark blue with 2017 logo and "Eco Containers Bamboo Flooring" lettering), and Dong Fang (Jade Green). Container features inter-box connecting pins, magnetic connecting system (three magnets on bottom and metal top plate), and prototype-specific sides and doors. Two-pack, \$29.95. Jacksonville Terminal Co., 904-233-9526, www.jtcmmodeltrains.com

Large scale locomotives



- **General Electric 25-ton diesel locomotive.** Union Pacific; Atchison, Topeka & Santa Fe; and Pennsylvania RR.

Factory-equipped battery-powered locomotives with PIKO radio control system. Locomotive can be run separately or in consists using the included eight-channel R/C remote. Can be run at same time as track-powered locomotives. Requires six AAA batteries (not included). \$284.99. PIKO America, 619-280-2800, www.piko-america.com

Z scale locomotives



- **Electro-Motive Division F3A and F3B diesel locomotives for 1952 California Zephyr.** Chicago, Burlington & Quincy (A-B-A set); Denver & Rio Grande Western (two F3A-B sets); and Western Pacific (A-B-B set and single A unit). Can motor with flywheels, optional truck with coupler to replace front truck, and optional drawbar for close coupling. American Z Line, 614-764-1703, www.americanzline.com

Z scale freight cars



- **1937 Association of American Railroads 40-foot boxcar.** New paint scheme: Kansas City Southern. Seven road numbers (single car, two-pack, and four-pack). Murphy raised-panel roof, prototype-specific doors, metal wheels, AutoLatch couplers, and 4-5 Dreadnaught ends. American Z Line, 614-764-1703, www.americanzline.com

Z scale passenger cars



- **Lightweight passenger cars.** Northern Pacific (Loewy Light and Dark Green *North Coast Limited* scheme). 4-bedroom, 4-compartment, 2-drawing-room sleeper (nos. 340, 341, and 344). Dome car (no. 558 with Chicago, Burlington & Quincy sublettering;



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Large scale



White Pass & Yukon flatcar with LGB Volkswagen Bus load. This LGB flatcar has an injection-molded plastic body with molded grab irons and stirrup steps, plastic archbar trucks with metal wheels, and hook-and-loop couplers. The Volkswagen Bus has vinyl tires, separately applied details, and clear window glazing. The large scale flatcar with load sells for **\$229.99**. Märklin Inc., 573-365-9522, www.lgb.com

no. 559 with Spokane, Portland & Seattle sublettering; and nos. 550 and 556 without sublettering). Diner (nos. 459 and 463). Baggage car (nos. 216 and 219). Coach (nos. 502 and 515). Observation car (no. 483 with CB&Q sublettering and no. 392 without sublettering). Etched-metal stirrup steps, flush window glazing, AutoLatch couplers, and add-on

details. Dome cars include interior details. American Z Line, 614-764-1703, www.americanzline.com

Z scale details and accessories

• **M1126 Stryker Infantry Carrier Vehicle.** Olive Green. Two pack. Produced by Andrew Hart of Z-Panzer.

American Z Line, 614-764-1703, www.americanzline.com

Electronics/controls



• **Z21 Detector.** Feedback module for the Z21 DigitalSystem. Can be used for occupancy detection on up to eight track sections. Includes RailCom Local Detector. Connections via either R-Bus or CAN bus. Compatible with Z21 software and app. Input, 12-24V Digital Command Control; output per channel, 3A. \$123.74. Produced by Fleischmann/Roco, www.Z21.eu/en; distributed in North America by Heartland Hobby Wholesale, www.hhwonline.com **MR**

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An Astra Dome observation lounge car brings up the rear of the Union Pacific RR *City of Los Angeles* as it makes a stop at the East Los Angeles Station in 1955. *Model Railroader* collection

East L.A. Station

I really enjoyed "Plans for the East Los Angeles Station" by Bruce Briggs [October]. I was raised in East L.A., so the photos and article brought back many memories.

I'll probably never build a layout, since I belong to an HO club in Salinas, Calif., where I can run my locomotives on 1,200 feet of track, but I'll save the article just in case.

My grandfather was a Union Pacific engineer who retired at the same time steam locomotives were retired, so railroading has been in the family for three generations.

*Phyllis Cleveland
Carmel, Calif.*

The East Los Angeles Station marked an important milestone in my parents' lives. During World War II, my father was laid off his job at a factory that made air conditioners for submarines. Soon after, my mother's sister wrote to say there was work for him in Anaheim, Calif.

So the family rode the train to Chicago and then a Union Pacific to Los Angeles, arriving at the East L.A. Station on Nov. 3, 1945. His first job in Anaheim lasted eight months; his next job lasted until his retirement at age 71.

*Edward Langer
Upland, Calif.*

Civil War in O scale

Bernard Kempinski's article on Civil War railroading ["Highball to high tech," October] was truly outstanding! So much innovation in one article.

An observation: Civil War railroad modeling in O scale solves a flaw that's been with us since the hunter-gatherer stage of model railroading. O gauge – for reasons lost to history – has always been 1¼" or 5 feet in 1:48 scale. Many cures have been proposed, from 1⅞" scale (correct for the gauge) to 1⅜" (Q gauge), but none have ever caught on.

In the Civil War era, virtually all rail lines west of the Appalachians and south of the Ohio River were laid to the "Southern standard gauge" of 5 feet. The wider gauge was thought to be better for hauling cotton. At one time or another, the United States Military RR operated 5-foot gauge lines from Louisville, Ky., to Atlanta, Nashville to Decatur, Ala., Decatur to Chattanooga, Tenn., Nashville to Johnsonville, Tenn., and Chattanooga to Knoxville, Tenn.

Thus, modeling the Western theater in O scale allows the modeler to at long last make the ancient 1¼" gauge prototypical.

*John B. Allyn
Nashville*

Longtime MR fan

The ad on page 69 of the September issue brought back many memories.

I still have the featured issue [July 1949] – and all issues since then – when this 11-year-old train lover started receiving *Model Railroader*. That, along with visits to the O Scale railroad in the Pelham Manor railroad station in Westchester County, N.Y., inspired my desire to become a scale model railroader.

I'm still active in the hobby and, in fact, was fortunate to have an article on my Windsor RR ["Modeling a changing world"] published in the August 2006 issue. The railroad has progressed beyond what had been completed at the time of the article.



I still enjoy and look forward to the monthly arrival, often on the same day, of both MR and *Trains*. Keep up the good work.

*Herb Gishlick
Cranbury, N.J.*

Another way to do it

I read with interest Louis Millan's "Build a late-1960s E unit" [October], in which he described some modifications to mid-'90s Proto 2000 E units.

His method of removing the side panel portholes, while effective, struck me as somewhat labor intensive. Here's a method I employed when I modified a pair of these units some years back.

Instead of fabricating plugs to fill the portholes, I simply removed the entire panel by cutting close to the rivet strips using a Dremel tool with a thin abrasive blade (use the tool's lowest speed setting, and let the blade do its work without being forced). Then I used a small flat needle file to remove any remaining plastic out to the edges of the rivet strips, finishing it with a sanding wand and a fine grit. New panels were cut from .020" sheet styrene, fitted and sanded to fit tightly in the holes. Quick curing Tenax-7R styrene cement was carefully bled into the seams, from the inside of the shell, and allowed to dry.

Some automotive spot putty and a bit of fine-grit sanding covered any blemishes where the new panels met the rivet strips, leaving no sign that the panels weren't part of the original molding.

*Charles Kuehn
Fall Creek, Wis.*

Future of the hobby

In 2002, I started a small business converting old locomotives to Digital Command Control and sound. I've had hundreds of customers, and out of them you could count the young people on one hand. And one reason is the price of a locomotive today, \$300 to \$500.

Manufacturers of trains and train items take note: We old timers aren't going to be around forever, and then who will buy your products?

*Thomas Bouman
Lake Placid, Fla.*

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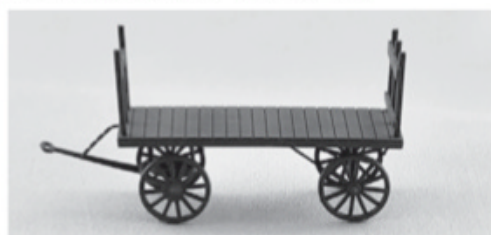
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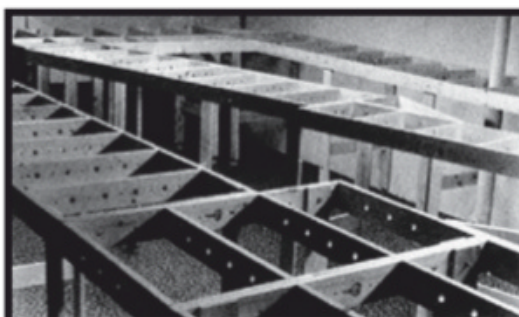
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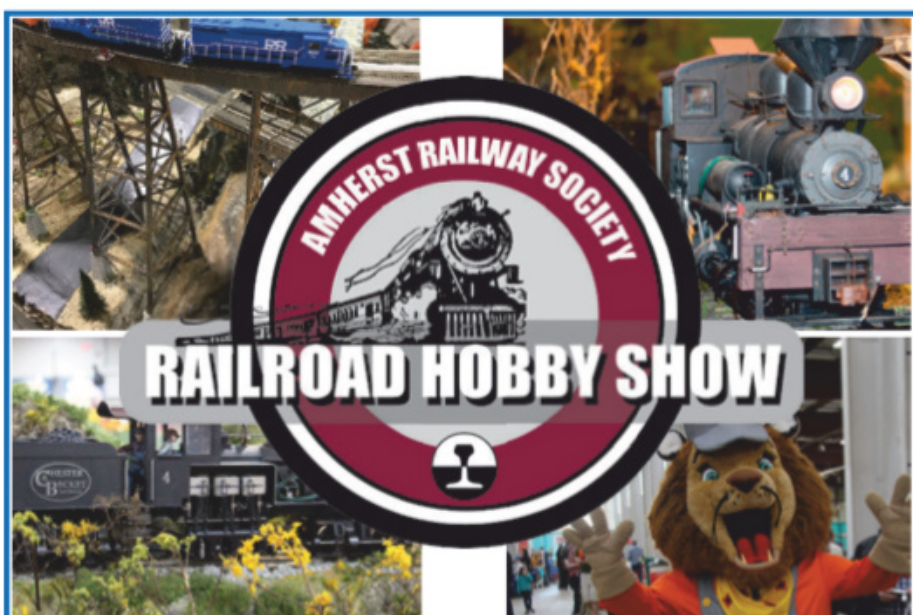
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After sealing, painting, and scenicking the riverbed at Turtle Canyon on our HO scale Milwaukee, Racine & Troy staff layout, David Popp poured the water, using a two-part resin tinted with solvent-based hobby paint. David Popp photo

How do I color a riverbed and tint water?

Q I'm interested in creating a water scene on my layout, for which I recently purchased Magic Water, a two-part resin from Unreal Details. I'd been in a quandary about what type of paint to use to color the riverbed and how to tint the water. Then I found one of your Expert Tips videos, titled "How to make waves on modeled water." I was intrigued by the color of the river bed and the water, but these techniques must have been described in a previous video I can't locate. Could you let me know the types of paint and colors that were used to create the riverbed and tint the water? Thank you in advance.

Bill Stafford, Elkton, Md.

A When we built Bay Junction to be our project railroad for 2011, we found that an unfinished section of our HO scale Milwaukee, Racine & Troy staff layout was spoiling the background of many of our photos. So we worked hard to finish that section of the layout, a turnback curve at the end of a peninsula, and published two articles about how we did it *before* the Bay Junction series began. The video you watched was shot as part of that project. The article on how *Model Railroader* managing editor (now MR Video Plus producer) David Popp built, scenicked, and poured that river was published in our November 2010 issue.

To answer your question, he painted the riverbed with Union Pacific Harbor Mist Gray paint, then topped it with an assortment of sand, gravel, ballast, talus, and twigs to represent deadfall. He tinted the Magic Water with about 7 drops of Floquil Railroad Tie Brown paint per pint of resin. Floquil paints have been discontinued by the manufacturer, but any enamel-based hobby paint like Model Master Enamels, Humbrol, or Scalecoat will work. Don't use a water-based acrylic paint, as it won't blend properly with the resin. Good luck on your water project.

Q The prototype I'm modeling didn't use a lot of ballast under the tracks, so rather than cork roadbed, I'm using a thin vinyl shelf liner under the tracks. The problem is that when it gets hot and humid, it gets sticky, and the turnout switch rods stick. Do you think the shelf liner is the way to go, or should I just lay the track directly on the wooden subroadbed?

Bob Hoberg, Bartlett, Tenn.

A Something that gets sticky when the temperature or humidity changes isn't a good choice for a turnout underlay. Painted wood, extruded-foam insulation board, Homasote, or a commercial roadbed product would be preferable. If your track is already fastened down, perhaps a sliver of thin black styrene sheet could be slipped between your turnout switch rods and the shelf-liner material to solve your sticky situation.

Q I have an N scale layout operated by Digital Command Control (DCC). I have some Con-Cor 85-foot passenger cars that I'd like to light using track current rather than a lighting board that uses batteries. I've looked high and low on the internet and haven't found anything that suits my fancy. I know that I'll probably need to change to metal wheels. Can you help me?

Jonathan Berman, Boca Raton, Fla.

A Since you have a DCC layout, the most straightforward approach would be to install a function-only decoder in your cars to control the interior lighting. This will allow you to turn the lighting on and off with a DCC throttle.

We've run a number of DCC Corner columns on this topic, the most recent of which is in our November 2013 issue. (That was about an HO scale installation, but the techniques are the same for N.)

An all-in-one solution you might consider is the NCE Light-It, which is a function decoder with a built-in light-emitting diode (LED). See our review of the Light-It in the May 2018 issue.

You'll need to upgrade to metal wheelsets and install wheel wipers to pick up electricity from the rails, but that's also a straightforward task. We've got an article about how to do it coming up in our January issue. When you do

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

your installation, consider shooting photos of the process and write up an article for us; I'm sure other N scalers would love to read about your techniques!

Q In Steve Brown's MRVP series "It's My Railroad," he uses a driver bit on his power drill that I'm not familiar with. It has a sleeve that slides forward to hold the screw so it won't fall off the driver. Then when that sleeve hits the wood, it slides back as the screw goes in. What do you call that item? I've tried two local big-box stores, but the people in their tool department have no idea what I'm talking about.

Larry Hempel, Elsberry, Mo.

A Your local hardware store clerk might know where to find it if you tell them it's called a "drive guide." They're usually magnetic and come with an assortment of drive tips (Phillips, flat, torx, etc.) that click into place for driving an assortment of screws. I have one that's made by DeWalt, and agree it's quite handy for benchwork construction.

Q I've recently got back into HO scale railroading. I have a lot of equipment that I collected in the '70s, as well as a few newer DCC-ready engines. I'd like your opinion on which DCC system I should consider as a first time buyer.

Mike Thomas, Auburn, Calif.

A You're in luck. Check out our July 2019 issue, in which we published a 10-page Buyer's Guide that compares 17 DCC starter systems. The information in that article should help you decide which system is right for you.

Q I'd like to know if Java Model Railroad Interface (JMRI) Decoder Pro and Panel Pro can be used on an iPad. I tried to find out by asking JMRI, with no success.

Paul Weis, Jackson, Wis.

A Model Railroader Video Plus's Ben Lake, our in-house tech guru, answers: "You can use WiThrottle [part of JMRI] on iOS devices, but this just acts as a

throttle on an existing JMRI system. I don't think there's a version of Decoder Pro or Panel Pro for iOS or Android, though that would be fantastic to see at some point."

Q I've just finished laying and wiring track and am getting ready to paint. In your videos, you recommend denatured alcohol to clean flux from the wiring connections, but I can't find it anywhere. Is there another product that could be used instead? I found methyl hydrate, but am not sure if it's similar or not. Thanks for your help.

Eric Sword, Ontario

A Denatured alcohol and methyl hydrate are different. Methyl hydrate is primarily methanol (wood alcohol). Denatured alcohol is ethanol (grain alcohol) with other ingredients, such as methanol or petroleum distillates, added to make it foul-tasting and unpalatable. The reason it's hard to find in Canada is

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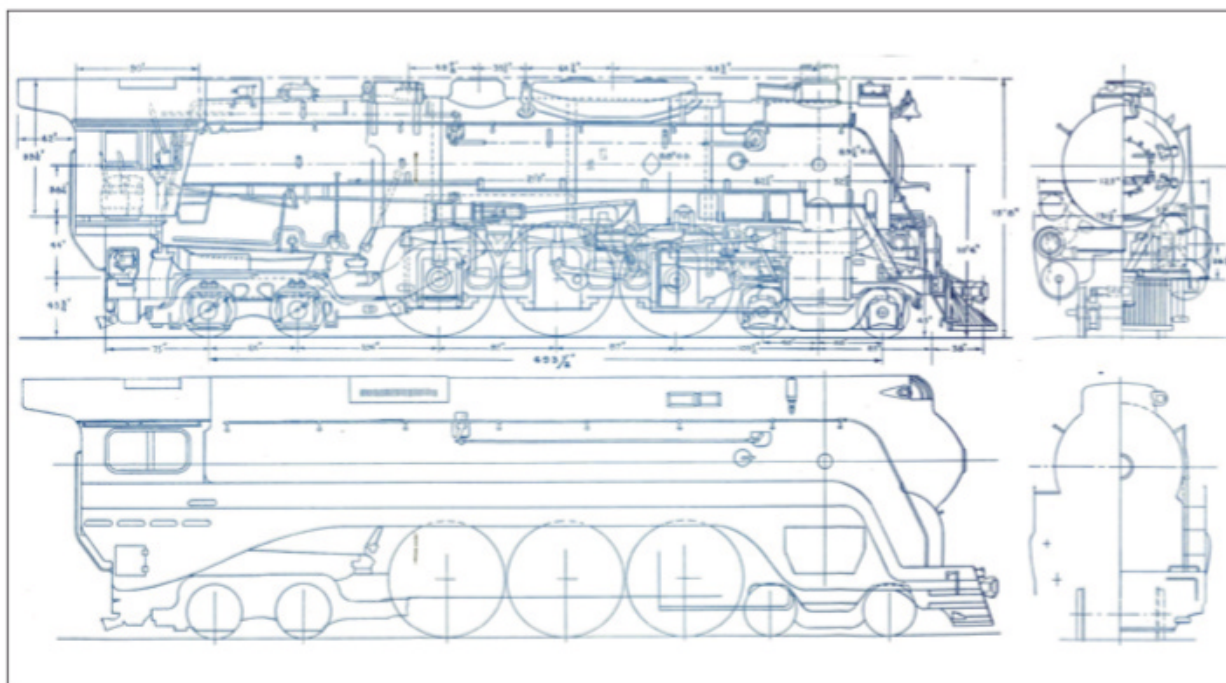
because it's American law that requires ethanol sold as fuel to be "denatured," or made undrinkable.

You can find it in Canada, though, labeled as "methylated spirits" or "bio ethanol," and sold as camp stove or chafing dish fuel. Check Canadian Tire or Home Hardware stores. If you can't find it, try 91 percent isopropyl alcohol, which is available in most drugstores.

Q I'm modeling an Atchison, Topeka & Santa Fe class 3461 4-6-4 steam locomotive. I heard from a friend of mine that one of your magazines published diagrams of the locomotive. Which magazine do I need to buy? I want to be sure I order the right one, because shipping those back issues to Europe can be expensive.

Dylan Nieborg, Netherlands

A We actually published drawings of that locomotive twice – first in May 1939, then again in May 1948. But since those magazines are more than 70 years old, we no longer have individual back issues



This detailed diagram of the Atchison, Topeka & Santa Fe's then-new class 3461 4-6-4 steam locomotive was published in the May 1939 *Model Railroader* magazine.

for sale. The good news is that those issues, along with the rest of our entire publishing history, are available in our online All-Time Archive. This is a web-based subscription service that's available anywhere you have internet access – no shipping costs or customs duties

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2. The photo must feature a model railroad scene and be taken by the contestant. Each contestant is limited to three entries.
3. Each entry must include a description of the photo. Describe the train in the picture, what it's doing, and the name, locale, era, and scale of the layout, module, or diorama shown. Include the name of the person who did the model work, the brand names of any equipment shown, and any special modeling techniques used.
4. Digital enhancement of photos is

acceptable. However, over-enhancement of images – such as excessive sharpening or color adjustment, an abundance of digital smoke or steam, or the digital insertion of real-life objects or backgrounds into the photo – will diminish your chances of winning.

5. All entries must be received in our office by close of business on Jan. 31, 2020. Non-winning entries will be returned only if accompanied by a stamped, self-addressed envelope.

6. Published photos become the property of *Model Railroader* magazine. *Model Railroader* may retain any entry for possible future publication in our Trackside Photos department or another part of the magazine, at regular payment rates.

7. Judging will be conducted by the *Model Railroader* staff, which reserves the right to not award all prizes. Winning entries will be published in the July 2020 issue. Kalmach Media Co. employees and their families are not eligible to enter.

Big Trains in 1989 vs. 1947

When I was young, “big” meant Lionel Standard or American Flyer Wide Gauge trains under a Christmas tree. My 1947 Walther's black-and-white O scale catalog was a revelation. Its models were so different from postwar Lionel-American Flyer. The locomotives, freight and passenger cars, and traction models all required careful assembly, painting, and decaling. This was no ready-to-run O gauge market.

Fast forward 42 years to 1989, and big trains had a different meaning; 1 $\frac{3}{4}$ " LGB Gauge 1 models, smaller-gauged than 2 $\frac{7}{8}$ " Standard and Wide gauges. Other companies joined LGB: Faller, Märklin, and Bachmann, to name some. Most modeled narrow-gauge prototypes. A few, like Aristo-Craft and Bachmann, made standard gauge (4'-8 $\frac{1}{2}$ " prototype) 1:29 and 1:22.5 or 1:24 scale (respectively) steam and diesel locomotives and rolling stock.

LGB produced an excellent White Pass & Yukon narrow gauge Alco C-C 1:22.5 scale diesel, while a 2-6-0 Mogul prototype and rolling stock were vintage late-19th-century narrow gauge. The Mogul had working smoke, constant-intensity lighting, and a cab interior with an engineer.



LGB's 1:22.5 scale White Pass & Yukon Alco narrow gauge locomotive graced one of Keith Wills' 1989 *Big Trains* catalogs. The model is currently retired.

Available Denver & Rio Grande Western closed vestibule coaches had complete interiors, opening doors, and authentic trucks.

Open-platform coaches with interiors permitted adding passengers and installing lighting. Stockcars, boxcars, hoppers, tank cars, refrigerator cars, and cabooses were Western prototypes, some with out-of-place liveries. The rest of the models were European prototype locomotives and rolling stock.

Aristo Craft made 1:29 scale steam and diesel locomotives, including an Alco FA-1 in 15 liveries with dual can motors, diesel sound with

bell, smoke unit, exhaust fan, cab interior, lights, and working front and rear knuckle couplers.

A range of freight and standard heavyweight passenger cars in 10 matching liveries accompanied its 4-6-2 Pacifics. There were also shorty fluted streamliners matching the Alco FA liveries.

Bachmann produced a turn-of-the-20th-century 4-6-0 Baltimore & Ohio *Royal Blue* set with two wood passenger cars behind Ten-Wheeler no. 1332. The prototype with that number was a 1901 Baldwin-built class B-17.

Without a prototype photo to gauge the model's accuracy – other than 1332 on its smokebox and dome – an important first-class train of this kind would have had fully enclosed vestibules as Pullman built for B&O that year, not dated open platforms as on the model. With lit interiors,

drumhead, and rose-tinted clerestory windows, they're more toy than scale.

While scale models are available, simply decorated holiday trains for children are very much a part of the market, a holdover from an earlier era when a train beneath a Christmas tree was as important as the gifts under it.

Expectations of “big” trains dramatically altered over the 70-plus years from when I was a boy. Standard and Wide Gauge tinplate was no longer popular to a newer generation. Gauge 1 battery and household line current trains enchant a younger generation now as I was enchanted many decades ago.

What would today's children think seeing enameled or lithographed Lionel Standard or American Flyer Wide Gauge trains compared to modern Gauge 1 counterparts? 



WHILE SCALE MODELS ARE AVAILABLE, SIMPLY DECORATED HOLIDAY TRAINS FOR CHILDREN ARE VERY MUCH A PART OF THE MARKET.
– KEITH



Aristo Craft's 1:29 scale Alco FA-1 was an accurate model, although the Santa Fe never owned any Alco FAs.

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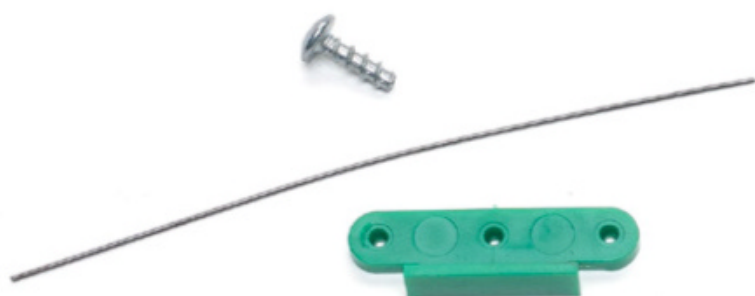
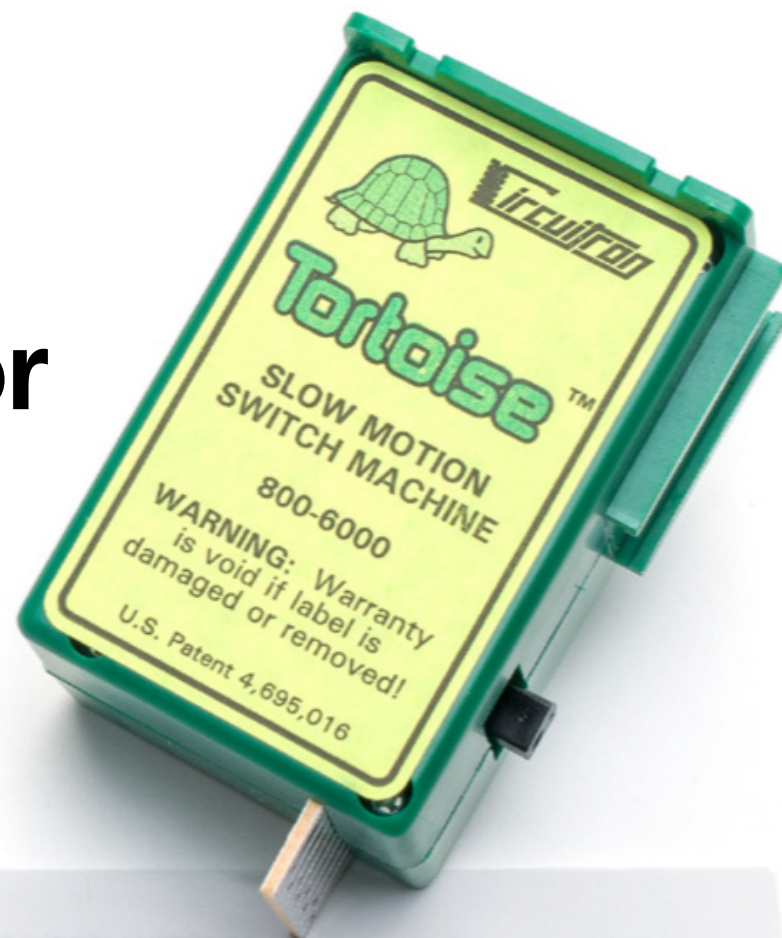
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How to install a stall-type switch motor

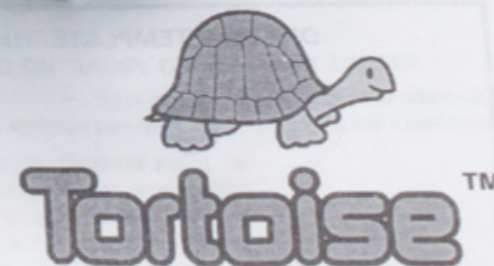


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- (1) TORTOISE
- (1) Molded Fulcrum
- (1) 3.5" Spring Wire
- (1) 3/8" x #4 Phillips Retaining Screw



LAYOUT PREPARATION

The TORTOISE is designed to mount under the layout with the spring wire transmitting the linear motion through the layout board and roadbed to the turnout throwbar. Turnouts should be checked for free movement of the points and a clear area under the layout for mounting the machine. Although the TORTOISE is extremely forgiving in mounting, a turnout that binds will still not switch smoothly. It will be

Circuitron produces the Tortoise, a popular stall-type switch motor used by many model railroaders. Thomas Fava explains how to install one in this month's Step by Step. Bill Zuback photo

Stall-type switch motors have been a staple of the hobby for many years. One of the best known examples is the Tortoise, produced by Circuitron. Stall-type switch motors consist of a low-power, low-voltage, low-speed direct-current (DC) motor that moves a point-throw mechanism between two stops. When the mechanism reaches a stop, the motor stops rotating but continues to be powered, thus maintaining pressure on the turnout points to keep them in the desired position. When the motor stops turning (i.e. stalls), its power increases slightly but not enough to cause damage to the motor.

So what's inside a Tortoise by Circuitron box? In addition to the switch motor, there's a two-page instruction sheet and a plastic bag containing a 3½"-long piece of .025" spring wire (this

connects the motor to the switch rod), a plastic fulcrum, and a no. 4 x ¾" Phillips-head retaining screw. If this is your first installation, take a few minutes and read through the instructions to get a feel for what's required.

I find it easier to install each switch motor as I lay track, as the hole through the roadbed for the spring wire must be drilled before the turnout is permanently installed. However, if your track is already in place but not glued down, you can slide the metal rail joiners off the point end of the turnout and move the track to the side to drill the hole.

If you're looking to add some automation to your model railroad, try using a stall-type switch motor. As you'll see in the following steps, they're easy to install and will add realistic motion when you line the points on your turnout.

Thomas F. Fava is a former computer design engineer. He and his wife, Joan, live in southern Arizona. In addition to trains, Tom and his wife enjoy church, golf, pickleball, cycling, and spending time with their grandkids. This is his first Model Railroader byline.



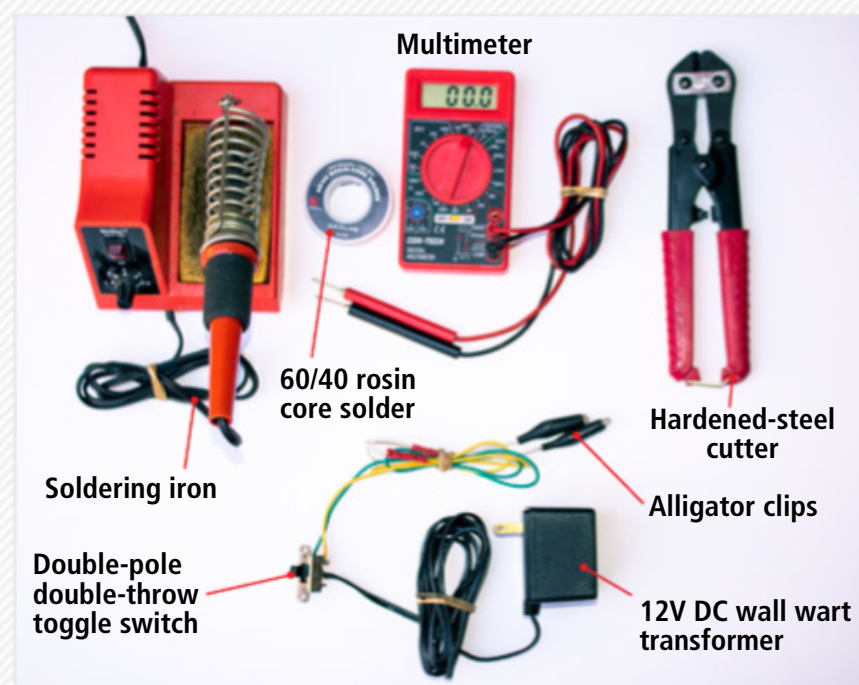
▶ Watch David Popp install switch motors on our N scale Canadian Canyons layout at MRVideoPlus.com.

STEP 1 GETTING STARTED



I use an assortment of tools for installing Tortoise switch motors, including $\frac{3}{32}$ ", $\frac{1}{4}$ ", and $\frac{3}{8}$ " drill bits; a power drill; needlenose pliers; a permanent marker; a spring-loaded center punch; a Phillips-head screwdriver; a worklight; and a homemade drill template. Each Tortoise comes with a paper template. Circuitron (no. 800-6190), Dallas Model Works (no. DMW-401), and Summit Customcuts (no. DT-001) offer plastic or acrylic templates, which are ideal for multiple installations.

The photo at right shows a few additional tools I use for installation, including a soldering iron, 60/40 rosin-core solder, a multimeter, and a hardened steel cutter for

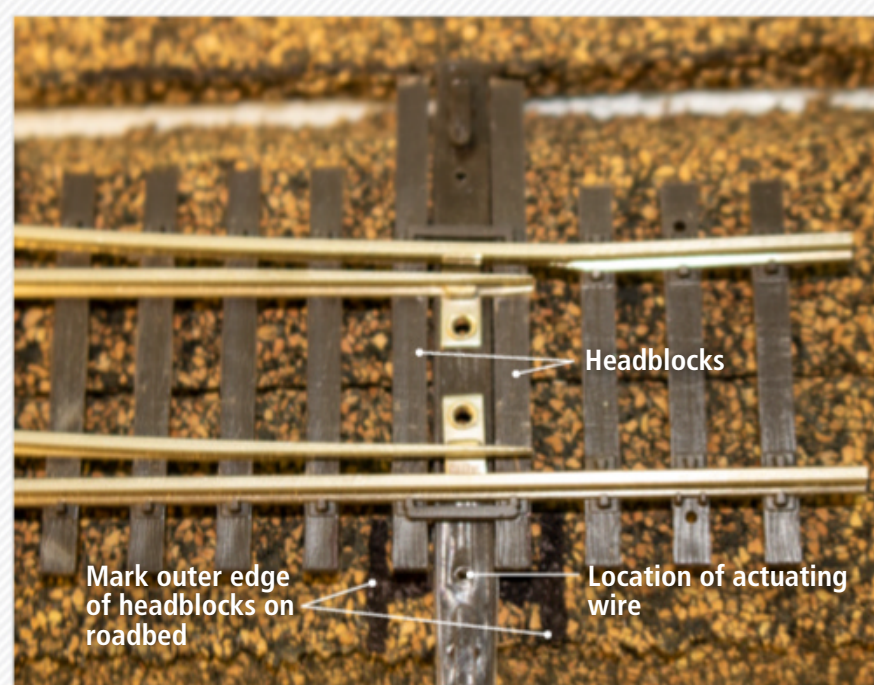


trimming the spring wire. Because the wire is spring steel, you must use a hardened cutter to trim it.

I test each switch motor after installation using a simple 12V DC power supply that includes a 12V DC wall-wart transformer, a double-pole double-throw (DPDT) toggle switch, and alligator clips. Alternatively, you could use the DC output of a direct-current power pack.

Additional supplies include a box of no. 4 x $\frac{1}{2}$ " Phillips head wood or sheet metal screws, 24AWG solid conductor telephone wire, small wire nuts, and .025" piano wire. The latter may be necessary if the distance between the motor and switch rod is longer than the supplied spring wire.

STEP 2 SITE PREPARATION



Start by marking the location of the outer edge of each headblock. Then, with the switch rod at mid throw, mark the location of the hole where the wire will be inserted.

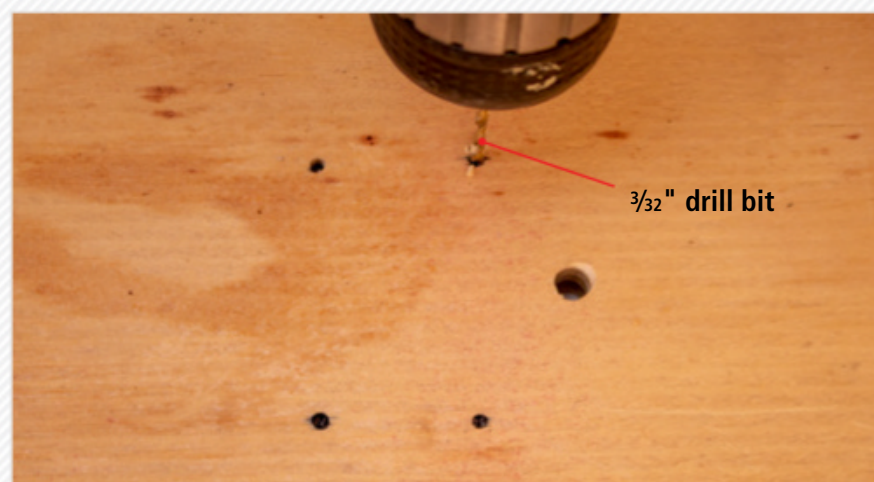
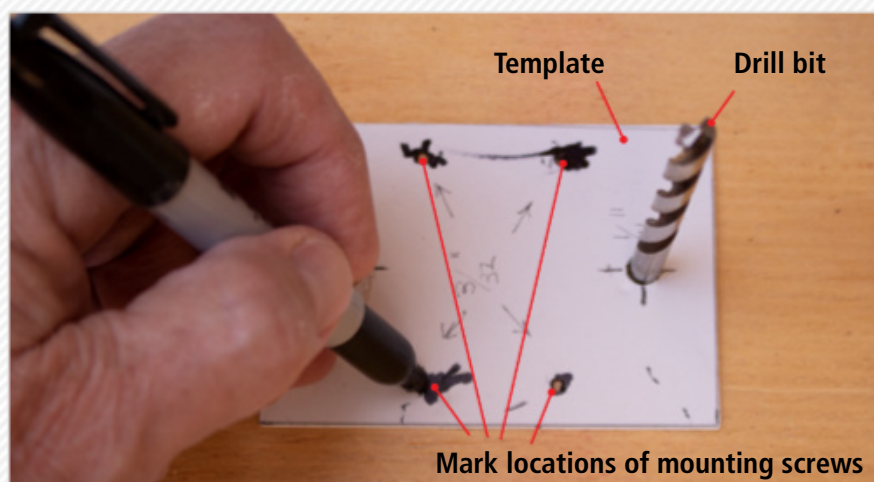
Also check under the layout to make sure the benchwork doesn't interfere with the location of the switch



motor. If it does, relocate the turnout or reposition the benchwork.

Next, select the proper-sized drill bit to make the hole for the spring wire. If your subroadbed is 1" or less thick, use the $\frac{1}{4}$ " bit. If your subroadbed is greater

STEP 2 SITE PREPARATION (CONT'D)



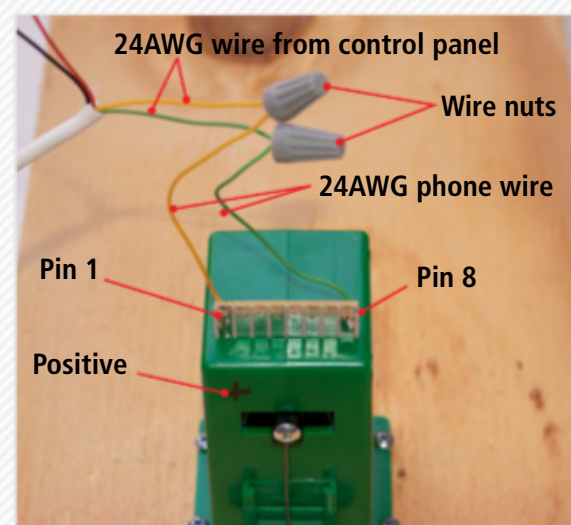
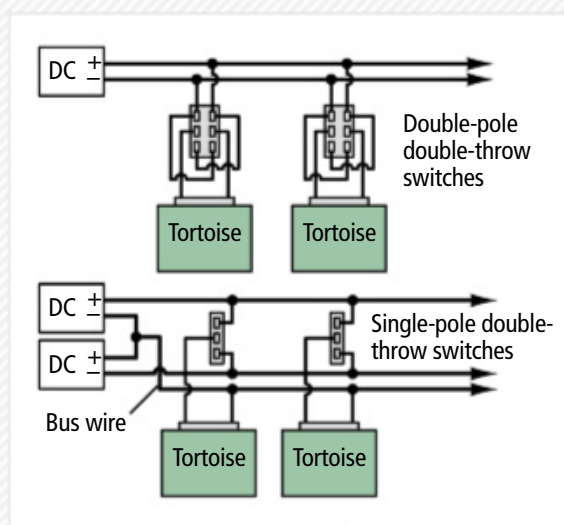
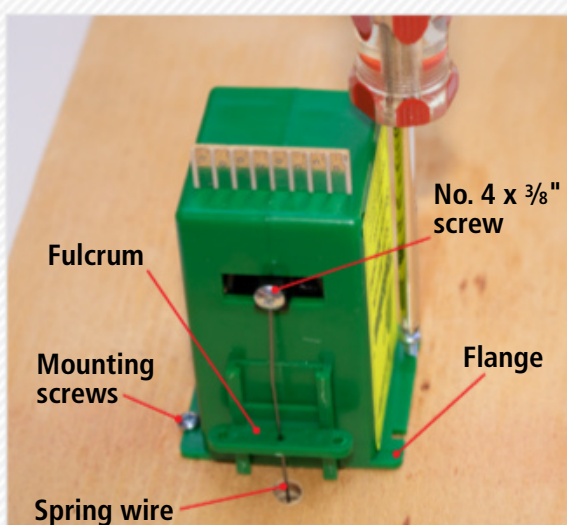
than 1" thick, use the $\frac{3}{32}$ " bit. Drill the hole as close to vertical as possible.

Insert the drill bit into the hole from beneath the benchwork, then slide the template over the bit. Align the long edge of the template parallel to the centerline of

the turnout. Use a permanent marker to place a dot at the location for each mounting screw.

Use a spring-loaded center punch to mark the four mounting screw holes. Then use a $\frac{3}{32}$ " bit to drill pilot holes for the mounting screws.

STEP 3 INSTALLATION AND WIRING



Before attaching the switch motor to the benchwork, insert the fulcrum into the two guides and position it about midway down. Then bend and install the spring wire per the instructions. The straight end of the wire goes into the center hole of the fulcrum.

Next, install two mounting screws on one side of the Tortoise (I'm demonstrating on a scrap piece of wood above). You'll want to leave room for fine adjustments, so don't tighten the screws all the way down.

Using the power supply for testing, center the spring wire so it's vertical. Pass the wire through the hole in the layout, slide the flange under the screw heads, and tighten the screws. Then install and tighten the other screws.

Attach the power supply to pins 1 and 8 on the Tortoise and verify the spring wire moves freely in both directions. Make any adjustments at this time. Then install the turnout, placing the hole in the switch rod over the spring wire, testing again to verify the points move freely in both directions.

The instructions show several options for wiring, but I'll focus on two. The first, shown in upper middle illustration,

is to use a 12V DC power supply and a double-pole double-throw (DPDT) toggle switch to reverse polarity to the switch motor.

The second option, in the lower middle illustration, is to use two 12V DC power supplies and a single-pole double-throw toggle switch to apply either +12V or -12V to one terminal of the switch motor. The second terminal is connected to the common output between the two supplies.

With the turnout installed, cut two 4" pieces of 24AWG phone wire and strip $\frac{3}{8}$ " off both ends. Insert one piece of wire through the hole in pin 1 and another in pin 8. Bend the wires up and solder them to the copper pads.

Determine which lead must be positive to align the turnout for the through route; indicate that with a plus sign on the switch motor.

Run two 24AWG wires from the control panel and attach it to the switch motor with wire nuts. The other six solder pads on the printed-circuit board make up the DPDT switch. These terminals can be used for powering the frog, turnout point indication signaling, or whatever other uses you may come up with. 



Planning a realistic freight car fleet

How to balance car types, road names, weathering, and detail

By Dominic Bourgeois • Photos by the author

The photo above shows an HO scale scene that I staged to represent Lehigh Valley's former Central RR of New Jersey Allentown Consolidated Yard in 1975. The scene seems fairly realistic. But is it?

The background image consists of a single prototype photograph that I cloned and combined using Adobe Photoshop software. The yard "tracks"

are pencil lines drawn on a white mat board sheet that represents snow. Many of the rolling stock models aren't particularly detailed. There isn't even any snow on any of the car roofs.

Two factors contribute most to the overall realism of the scene: the quality of the weathering and, more subtly but just as importantly, the mix of equipment. Like any other aspect of model

railroad design, it's worth spending the time to plan a freight car roster.

Whether one is a prototype or proto-freelance modeler, the first step is to establish the home railroad's location and time period. It's also imperative to determine connecting railroads and local industries. This information is the foundation for setting up a realistic layout, including building a car roster.

Lehigh Valley and Delaware & Hudson freight trains (above) move in and out of Allentown Consolidated Yard, circa 1975, in this HO scale scene created by Dominic Bourgeois. When it comes to realism, Dominic shows how carefully planning a freight car fleet is just as important as any other aspect of building a model railroad.



Overwhelmed by big data

Sometimes it's possible to find prototype paperwork or other information that shows exactly what cars were present on a modeled segment of a particular railroad during a specific time frame. Then it's a matter of simply matching the modeled freight car roster to the prototype information. However, this approach works best when modeling a branch or lightly trafficked line. On a busier stretch of main line, the information can be overwhelming.

I obtained a stack of train consist data for the Delaware & Hudson's Oneonta Yard from September 1974. This is the main yard near my modeled prototype location and a year before my modeled time frame. The data included car numbers, weights, load or empty status, origin, and destination and cargo for southbound trains through the yard that month.

I wanted to enter all the information into a database. However, the lined computer paper the vintage reports were printed on wouldn't scan. I attempted to enter the information manually, but even before working through the first 100-car train, the daunting nature of what I was attempting hit me, and I gave up. I've gleaned some rough estimates and general facts out of the car lists, but detailed analysis will have to wait until an army of D&H fans volunteers to help.

Thankfully there are other, less labor-intensive approaches for developing a prototype-based freight car fleet.

Practical research

The prototype data needed for fine-tuning a model railroad's rolling stock roster is presented in easily obtained print resources or is usually only a quick online search away. The trick is to refine search parameters.

A good starting point is the "Color Guides" series from Morning Sun Books. These books include color photos of most car types on a particular prototype railroad's roster. They also usually include car number series, which is helpful in determining the preponderance of



1 Too much of a good thing. This scene features distinctively decorated cars appropriate for Dominic's modeled locale and time period. Even though they're weathered, the cars' eye-catching liveries detract from the scene's realism. Such signature cars are best used sparingly, mixed with more mundane rolling stock.



2 Keep it bland. Here's the same scene as photo 1 with a different batch of signature cars. The cars are unique in their own right, but the muted colors make the overall scene appear more realistic.

each car type. I suggest at least getting a Color Guide for a layout's home road and any connecting railroads.

A proto-freelancer could also develop a roster based on the Color Guide of a parallel or neighboring prototype railroad. However, for proto-freelancers it's important to add a few distinct but plausible cars to differentiate it from any nearby prototype roads.

Another helpful printed resource is the *Official Railway Equipment Register* (ORER). These publications provide listings of all freight equipment operating in North America for a given time period. They also contain other helpful data, such as some general dimensions, mechanical designations, and empty car handling rules. Editions of the ORER

can often be found at train show swap meets or on eBay.

The internet hosts many railfan sites dedicated to railroad equipment photos and rosters. I also regularly search for photos on eBay.

Especially helpful for refining the overall mix of a model freight car fleet are prototype photos of freight yards. Many such photos are available online or in Morning Sun Books' "Facilities" series. In addition to providing a big picture of what cars can be found where, yard photos can inspire many new modeling projects. They also help establish realistic levels of weathering in a way the Color Guides don't. The Color Guides usually present photos of the cleanest equipment available.





③ Bright color isn't your friend. Bright-colored cars pose a challenge to realism. Even though lightly weathered, the combination of these two otherwise commonplace cars seems jarring.



④ Tone it down. Here's the same scene as photo ③ with two more cars in similarly bright paint schemes. However, more aggressive weathering has successfully toned down the color, making the scene look more realistic.

Car ownership and type

A useful rule of thumb for modelers is that about half of a common-carrier freight car roster should consist of home-road cars. Most of the remaining cars should represent connecting railroads, and to a lesser extent, other local area road names. There should also be a sampling of far-flung railroads, especially large systems.

Local industries on the layout should largely determine types of cars in the home road fleet, while the commodities those industries receive will largely determine "foreign" road car types on the line. For example, a coal-hauling railroad would operate a lot of hoppers, and a railroad serving a region with a lot

of paper mills would own a lot of plug-door, cushioned boxcars.

The traffic-generating potential of each local industry should determine the fraction of the car fleet attributed to each car type. However, through traffic can also affect this equation and provide some leeway for "modeler's license" in adding other car types.

Signature cars

Signature cars can be defined as those that are either commonplace or distinctive for a particular railroad. Both types of signature cars should be included on a freight car roster. Cars can be "common" either by their sheer numbers or by their likelihood of showing up on the modeled

location of the layout. Some samples of signature cars on my railroad are shown in ① and ②, opposite.

Try to select foreign road car types based on their commonness. For example, a lumberyard in the 1970s would likely have a Southern Pacific double-door boxcar spotted there. Likewise, a newspaper printing plant located in the East during the same time period would see newsprint cars from Bangor & Aroostock, Canadian National (CN), and Canadian Pacific (CP).

Distinctive signature cars can be trickier to realistically integrate into a model railroad fleet than commonplace ones. For example, the Delaware & Hudson (D&H) served a Cabot fumed silica plant at Waterford, N.Y., that owned a small fleet of specialized hoppers. They were similar to carbon black cars but painted light green with "Cab-O-Sil" on their sides. If I were modeling that area of the D&H, I would have to include some of those cars. However, they were rarely seen anywhere else.

Some signature cars are so intrinsic to a railroad, they can't be avoided for a plausible layout. An example includes the Milwaukee Road's distinctive ribbed-side boxcars.

Signature cars can also enhance realism in more subtle ways. Especially for knowledgeable railfans, signature cars can confer an identity to modeled freight trains. On the D&H in the 1970s, a trainload of mostly CN and CP boxcars is a sure sign that it's train RW-6, informally known as the "paper train." Likewise, a string of cement hoppers is a hallmark of SU-11, a local that served a major cement plant.

Color, repetition, and weathering

When it comes to realistic freight car models, bright colors aren't your friend. For the most part, prototype railroad rolling stock has been rather bland ②. Although there are exceptions, brown or oxide red boxcars, black tank cars and open hoppers, and gray covered hoppers are the norm.

One such exception occurred in the 1970s, when lease-fleet owners and





5 Out in front. A Norfolk & Western class HC-69 covered hopper has been spotted at Randall Feed Service in Cobleskill, N.Y., on Dominic's layout. Highly detailed, accurate models like this one are used to best advantage at foreground industries.

newly merged railroads began applying vivid colors to their cars. This was especially true during the incentive-per-diem (IPD) era, when hundreds of new cars were added to the national fleet as car owners took advantage of new government regulations. However, it's worth noting that many of the brightly colored IPD cars quickly ended up weathered and patched out.

Most freight cars are also part of a larger order, not just one-offs. It's more realistic to have many cars of the same paint scheme or type than one of each.

This also doesn't necessarily mean having only brown, black, or gray cars. For example, the Burlington Northern (BN) adopted Cascade Green liveries for most of its freight cars. So a yard full of bright green cars would be realistically mundane on a model of a BN yard.

Depending upon when they were built, freight cars can run in interchange service for 40 or 50 years before regulations state they must be retired or

confined to company service. Let's assume that a typical car gets very dirty by the 10-year mark and will likely get repainted after 20 years. Extrapolating from this assumption, this means that 5 percent of the car fleet is one year old or less and therefore quite clean. It also means that 50 percent of the cars haven't seen new paint in at least 10 years or more and should be significantly weathered. The remainder should be moderately grimy. Photos 3 and 4 on the previous page show the difference careful weathering can make.

The objective is to model the typical. Visitors to the layout should see mainly normal, workaday freight cars.

The detail threshold

Manufacturers have made giant leaps in the amount of detail included in their top-of-the-line, ready-to-run models. Details such as individual factory-applied grab irons or uncoupling levers

are commonly found on many off-the-shelf offerings. A modeler with a limited budget or a large "heritage" fleet of older models might feel left behind.

It's worth considering an appropriate detail threshold for a layout, especially one that's built for operation. Many details are fragile and can be broken off during an operating session. Decades ago, well-known model railroader Allen McClelland came up with the "good enough" concept, where almost everything on a model railroad is detailed up to the same level. That concept is still relevant today.

For my freight car fleet, I try to maintain a balance. Rolling stock that's to be included in photos is as detailed as possible, as are cars likely to be spotted at foreground industry tracks 5. However, trains that will be in the background 6 or run from a staging yard at one end of the railroad to another yard at the opposite end don't need to be filled with the most detailed cars. For instance, I have





6 Extras in the background. The viewer's eyes jump to the star of the show, the detailed Atlas Alco RS-3, ignoring the modestly detailed covered hoppers. Dominic repainted the cars gray, which makes their detail shortcomings less distracting.

enough covered hoppers to put together a unit grain train. Some cars are highly detailed, many aren't. I stage the train with the most detailed cars on the head end, as well as a couple more at the end in front of the caboose. If there's a mid-train helper, I'll add a couple more around that locomotive. The rest of the train consists of my less-detailed cars.

An analogy proposed by model railroading pioneer Frank Ellison states that the layout is the stage and the trains are the actors. Expanding on this idea: the locomotives are the stars and the cars to be switched are the supporting cast **6**. The cars that don't get handled or stay in the background are the extra players. Extras are important to provide context and overall realism, but they're not meant to attract close attention.

Accuracy: a moving target

While many models are accurate scale presentations of their prototypes,

many are "stand-in" or "close enough" cars. Other cars are "fantasy" models decorated for railroads that didn't actually own the modeled prototype. Manufacturers may or may not label stand-in or fantasy cars as such, so it's up to the modeler to know the difference.

We all end up with some percentage of inaccurate equipment on our model freight car rosters. It takes a long time to become a freight car expert, and most of us can never know about every type of car owned by every railroad out there. It's always possible to improve the overall accuracy of a fleet as knowledge of the prototype increases, but most of us must live with some compromises.

As with detail level, I suggest prioritizing the accuracy level. For prototype modelers, make sure that the home road cars are as accurate as possible. Next, focus on the connecting roads' cars. It's also a good idea to ensure that any cars from prototype roads in the area where you live are reasonably accurate. Even if

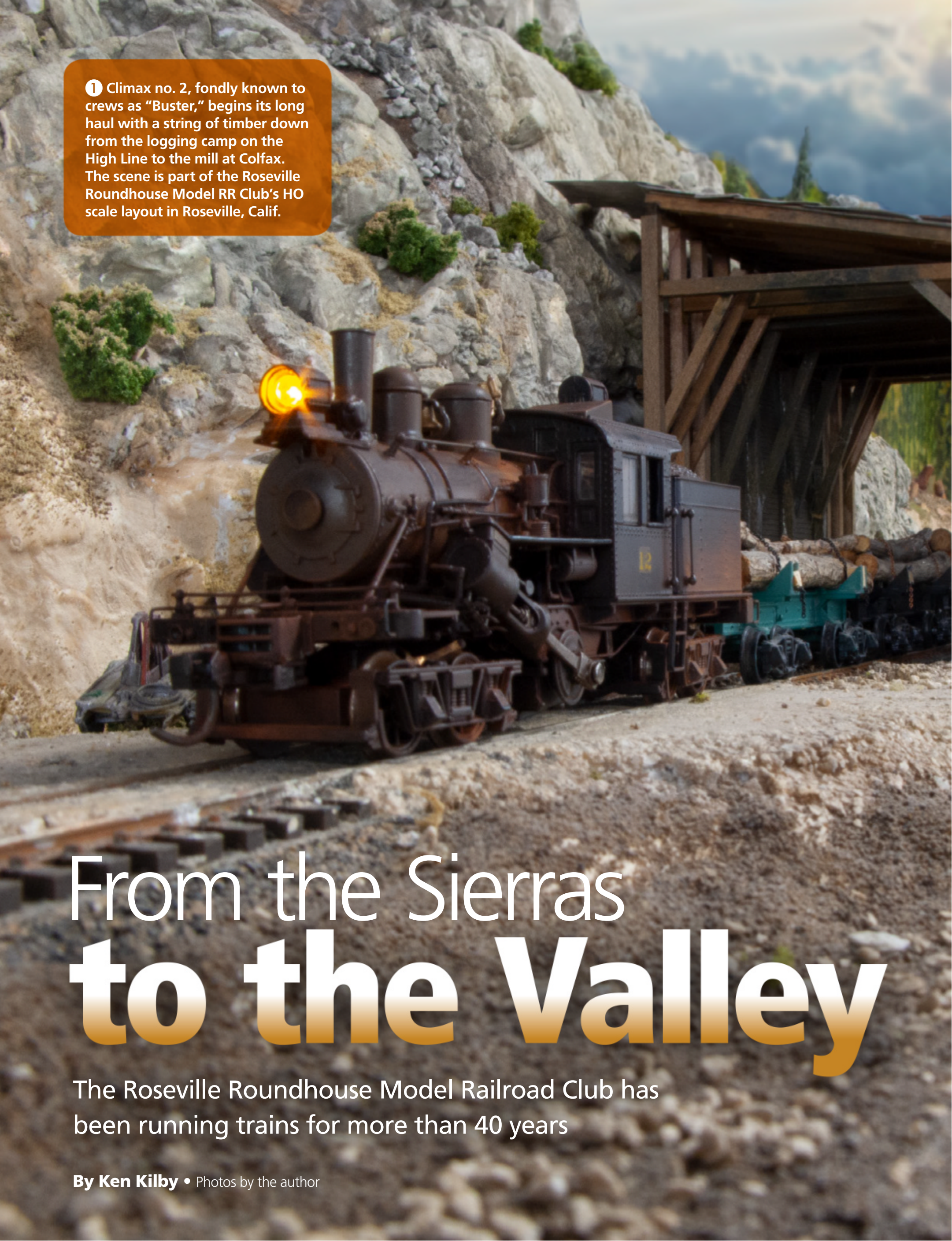
that particular road isn't your focus, local modelers who visit your layout are likely to know about them.

Give it time

The creation of a realistic freight car roster is an ongoing project. Like track planning, scenery work, or structure building, careful roster planning is an important part of building a model railroad. We all own incorrect equipment, but I constantly work toward a better roster. I've sold, given away, or repainted countless freight cars in the 40 years I've been in this hobby, and I'm not done yet. Just as one does after completing any other aspect of layout construction, I feel great satisfaction creating a realistic freight car fleet. **MR**

Dominic Bourgeois has written several articles that have appeared in the hobby press, including Model Railroader. He lives in Montreal.





① Climax no. 2, fondly known to crews as “Buster,” begins its long haul with a string of timber down from the logging camp on the High Line to the mill at Colfax. The scene is part of the Roseville Roundhouse Model RR Club’s HO scale layout in Roseville, Calif.

From the Sierras to the Valley

The Roseville Roundhouse Model Railroad Club has been running trains for more than 40 years

By **Ken Kilby** • Photos by the author



The year 1977 was notable for more than just the death of Elvis Presley, the first flight of the space shuttle *Enterprise*, and the theatrical release of *Star Wars*. In that historically notable year, one more significant event occurred: the founding of the Roseville Roundhouse Model RR Club in Roseville, Calif. The five founding members first met in the projection room of the Jones Exhibition Hall at the county fairgrounds in Roseville, and construction on the first layout began soon thereafter.

After several relocations within the city, the club returned to the fairgrounds in 2005. Two permanent N scale layouts and a modular HO scale layout were soon constructed. In July 2008, the HO modular layout was removed, and construction began on a permanent HO scale layout. By the end of that year, the benchwork, track, and wiring were all completed, and trains were running.

One of the N scale layouts was eventually removed to provide more room for meetings and workshops. New cabinets and workbenches were installed, as were closed-circuit cameras and TV screens so the hidden storage tracks can be visible at all times. Monitors were also installed and linked to the two locomotives equipped with cab cameras.

The Western Sierra Lines

The club's HO scale home road, the freelanced Western Sierra Lines, is an older Class 1 that's a "feeder" line to the Union Pacific, Southern Pacific, and Western Pacific (pre-merger). The towns and villages on the layout roughly follow the old Central Pacific/Southern Pacific route from Roseville up through the western slope of the Sierra Nevada to Truckee, which are represented by the two main yards.

The one geographical deviation is Lost Hills, which represents an oil and mining area in south-central California. The towns aren't designed to accurately model the real locations, but are merely used for orientation and operations.

The club room is approximately 40 x 40 feet, with the overall design being a 17 x 30-foot reversed Z shape. The benchwork is an open-grid framework resting on 2 x 3 legs. There are no duck-unders or lift gates.

The hidden tracks under the mountains can be accessed through pop-up holes in the benchwork and removable panels.

The roadbed is cork on medium density fiberboard (MDF) subroadbed. The track is code 83 flextrack with a minimum radius of 30" and a maximum grade of 2 percent on the mains. The turnouts are no. 6 and no. 8 on the mains and no. 4 in both yard ladders. The double-tracked main lines are approximately 200 feet long each.

The layout also features a mountainous short line designed to highlight geared steam and small, short wheel-base diesel equipment. The timber camps and oil drilling areas are accessed by the short line, which connects to the main at Colfax. The minimum curve radius of this section is 24" and the maximum grade is 4 percent.

The layout was originally designed for continuous running on the main lines, with some thought to allowing industry switching operations in the future. The plan has since been modified by adding more sidings and industries to accommodate more operation.

Scenery

The theme for the layout is a double-tracked main line winding its way through the foothills and mountains of northern California, with a southern connection to Lost Hills, 42 miles west of Bakersfield. We chose not to install huge mountains, but instead tried to represent the rugged, rocky nature of the Sierras (Truckee) and the rolling grassy foothills of Gold Country down to the Sacramento Valley (Roseville).

Just about every method of terrain building, from plaster cloth over cardboard lattice forms to extruded-foam insulation board sculpting, was used in creating the land forms and scenery. Commercial products and locally obtained items were used for landscaping. We even sifted dirt from right outside the clubhouse.

A general plan for the overall look was drawn up along with the track plan, though members were encouraged to use their imaginations when working on a particular scene. As work on the layout progressed and members became more confident with their skills, some of the earlier structures were replaced with superdetailed craftsman kits. Over time, much of the landscaping has also been upgraded.

Motive power and operations

The club runs both steam and diesel locomotives and isn't tied to any

The layout at a glance

Name: Western Sierra Lines

Scale: HO (1:87.1)

Size: 17 x 30 feet

Prototypes: Southern Pacific, Union Pacific

Locale: Central California

Era: mixed

Style: walk-in

Mainline run: 200 feet

Minimum radius: 30" (main), 24" (short line)

Minimum turnouts: no. 6 (main), no. 4 (yards and industries)

Maximum grade: 2 percent (main), 4 percent (short line)

Benchwork: open grid

Height: 35" to 53"

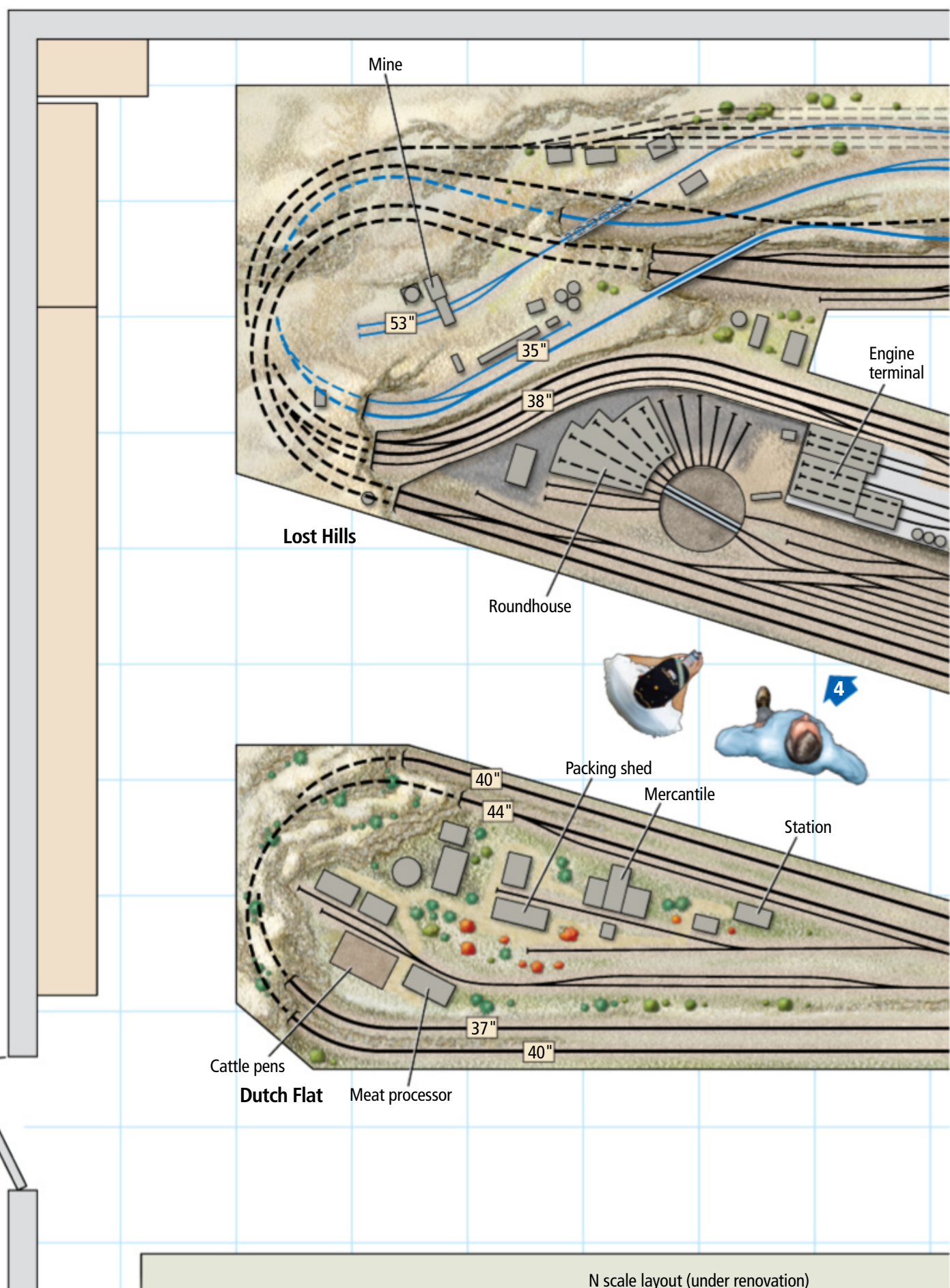
Roadbed: cork

Track: code 83 flextrack

Scenery: multiple techniques

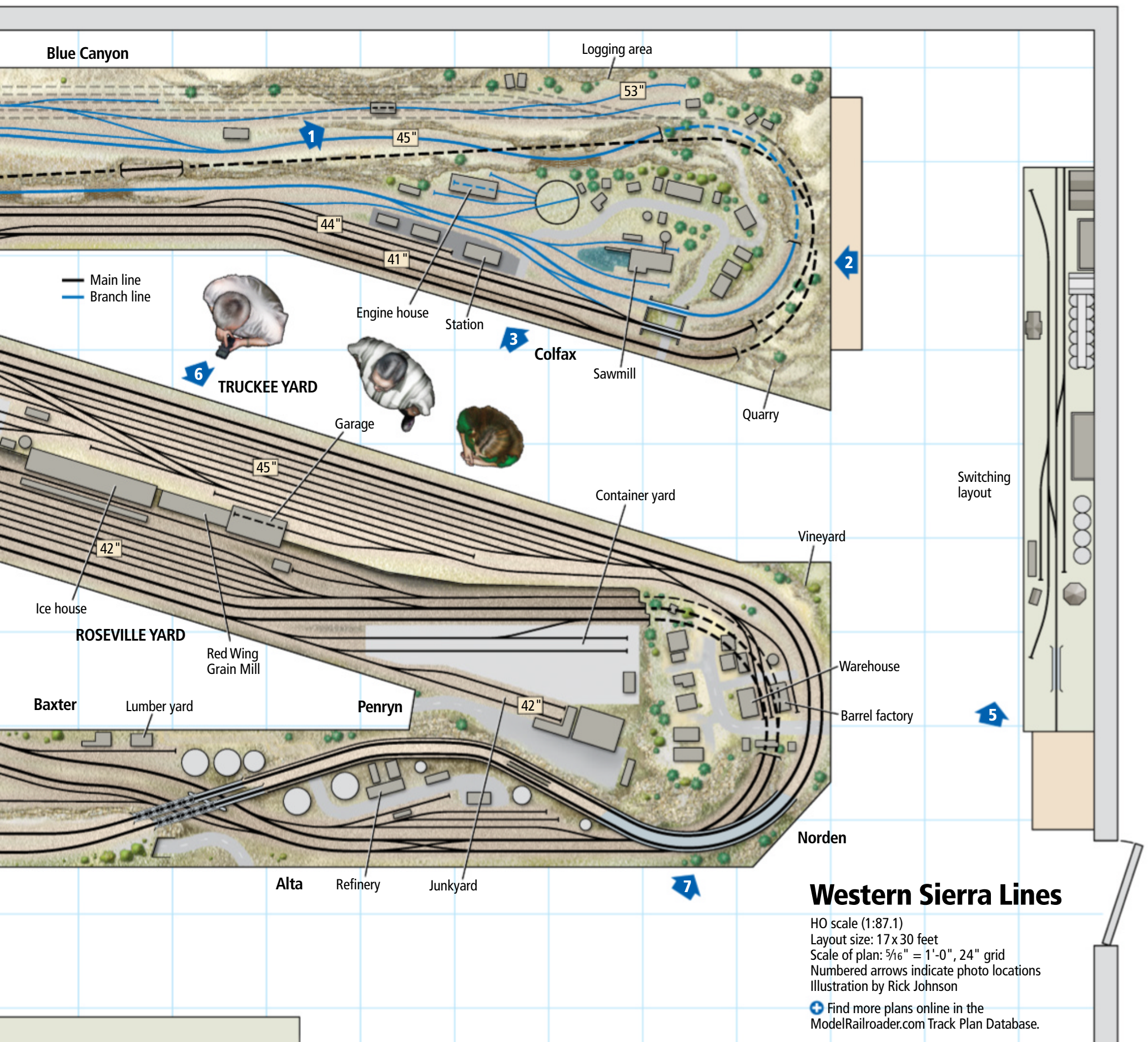
Backdrop: painted on the wall

Control: Model Rectifier Corp. Prodigy Wireless Digital Command Control on main layout, switchable DCC and direct current block control on short line





② Club president Dick Strahl (front) and member John Bowles work side by side to perform routine maintenance on the HO scale layout. All members are encouraged to participate in layout upkeep, from ballasting to track cleaning.





3 Eldorado & Gold River 4-4-0 no. 7 gets ready to pick up a mixed load from the Colfax depot. The local peddler is a small outfit that runs between the local communities on the western slope of the Sierras.



4 A bevy of Cab-Forwards call the Roseville roundhouse home. The club staged this scene with the locomotives facing outward in tribute to a vintage photo showing 13 Cab-Forwards in the prototype Roseville roundhouse, all facing out.

particular era. On any given day you might see an old-time Shay dragging timber down from the high line, a big Electro-Motive Division SD70 hauling double stacks, and a high-speed passenger liner running the main line, all at the same time.

Members are free to run equipment of their own, though they're encouraged to follow the National Model Railroad Association (NMRA) standards the club requires of its own equipment.

The club maintains a fleet of locomotives and rolling stock club members can use. It's gradually upgrading much of its older equipment. For instance, all the club's new locomotives must be equipped with Digital Command Control (DCC) sound decoders.

The layout is controlled by a Model Rectifier Corp. Prodigy Wireless DCC system with one command station and six boosters, for a total of seven power districts. In addition, the short line can

be operated on DC or DCC. This selectable control gives club members the ability to run older equipment that hasn't been converted while still providing switching opportunities during DCC operating sessions.

Operating sessions are conducted on a monthly basis, with the exception of the holiday season. Only the best club equipment that has been thoroughly inspected is used for operating sessions to ensure smooth running.



5 The club's HO scale switching layout is a popular attraction for visitors and members alike.

The switching layout

One of the newest additions to the club is the HO scale switching layout. This shelf layout, which occupies a countertop to the side of the main layout, consists of three modules and measures 18" x 12'-0".

The track plan is a modified version of Robert Pethoud's Fall Creek Branch. [See "How to operate a small switching layout" in the March 2016 MR. – Ed.] Some tracks have been shifted to enable standard track connection points at the end of each module, which allows us to rearrange the modules as well as add new ones for future expansion.

The modules are connected electrically with Anderson Power Pole connectors and 1/4" mono phone plug connectors on each end, providing separate power for the track and a 12-volt accessory bus for signals and lighting. Future

upgrades will change the mono plug to stereo to accommodate an additional 5-volt bus for Arduino automations.

The layout can be operated from three different sources: a direct-current power pack, a computer running Java Model Railroad Interface (JMRI), or DCC from the main HO layout's command station. Input power is selected via a push-button control panel using an Arduino Nano to control a bank of relays.

Lighting is provided by two dimmable light-emitting diode (LED) strips, white for daylight and a red-blue strip for dusk. The Peco no. 5 Electrofrog turnouts are controlled by push-pull knob Blue Point switch machines, which also provide frog power and signal light control.

This layout is a favorite with kids and adults alike.

– Bill Dillon



HO scale (1:87.1)
Layout size: 18" x 12'-0"
Scale of plan: 5/8" = 1'-0",
12" grid



A pair of Western Sierra GP15-1's haul a freight past a wind farm as a crew replaces one of the massive rotor assemblies on the club's N scale layout.

The N scale layout

The N scale layout is an elongated horseshoe design with a double-track mainline run of approximately 136 feet. The layout is highly detailed, with scenery ranging from rolling countryside to a busy city and seaport (we've even had an N scale U.S. Navy destroyer tied up at the docks at Port Reeves). The layout can be operated by either DC or DCC. – Ken Kilby

With two functioning yards and four hidden staging tracks, the sessions can be quite challenging. There are several “matching” industries on the layout that serve each other, such as the sawmill and the lumber yard, the barrel manufacturer and the rum factory, and the oil fields and the refinery.

With the addition of the switching layout, members can practice and hone their skills.

About the club

As of this writing, the club has 33 members and is actively recruiting new ones. The clubhouse is available to members 24/7 all year, so even though official meetings are on Tuesdays and Saturdays, you're likely to find members running trains any day of the week.

The clubhouse is less than a mile from the Union Pacific yard, and members often take their lunch break at a restaurant where we can watch the big diesels moving in and out of the yard.

The club is co-host/sponsor to one of the biggest regional train events of the



6 It's quitting time at Truckee Yard, so these workers have time to sit and catch up on the local high school sports.



7 A few “free spirits” enjoy each other’s company at an improvised campsite. The local officials are somewhat lenient towards the travelers. In a few days, the folks will move on and go their separate ways.

year, the International Railfair. The fair is held in November at the county fairgrounds and draws thousands from the area. This year (2019) marks the 43rd year of the event.

In 2011, the club was on the layout tour for the NMRA National Convention “Extra 2011 West,” held in Sacramento. This year, the club hosted an open house for the layout tour for the NMRA Pacific Coast Region 2019 convention, also held in Sacramento.

The future

Like many clubs today, our status at our present location is somewhat tenuous. Another local train club just disbanded because they lost the lease to their clubhouse. The county and local businesses are spending huge amounts

of money to upgrade and renovate the fairgrounds, and the building that housed the European Model Railroaders modular layout during the International Railfair has been torn down. We’ve only been able to obtain a one-year lease on our building, instead of the three-year one we requested.

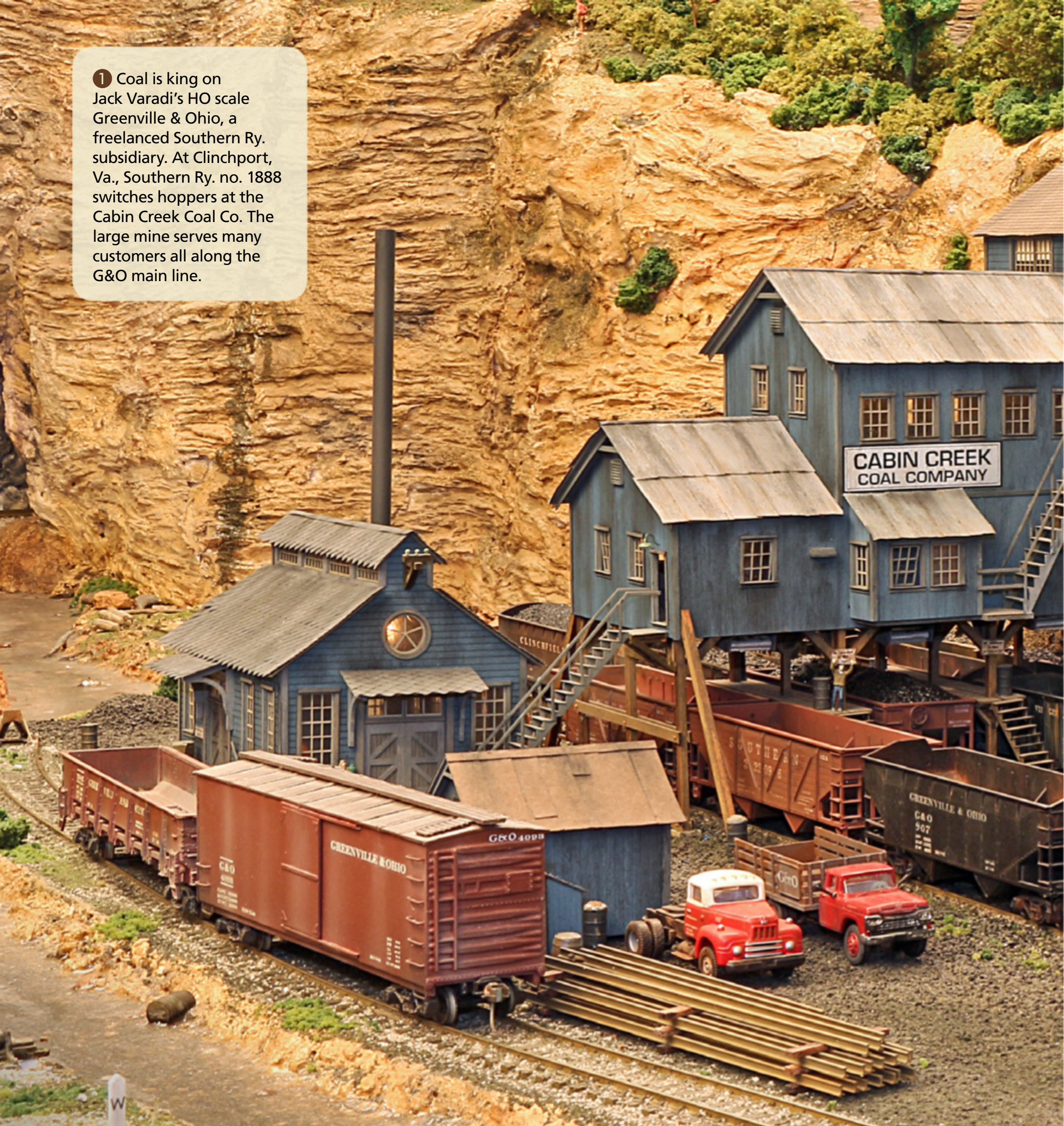
The club has assigned a committee to find a new location that would suit the club’s needs and be available for long-term occupancy. We may even buy a building. If we do have to move, we’re fortunate to have quite a few club members skilled in layout design and construction, so we hope it wouldn’t take long to get up and running again. Several members are already making a “wish list” of features for a new layout, including a narrow gauge line and a harbor location.

It’s safe to say that the club is looking forward to a bright future with the possibility of a new location and new members who share our love of model railroading. **MR**

Meet the club

The Roseville Roundhouse Model Railroad Club is open to the public on Tuesdays and Saturdays from 9 a.m. to noon year-round. If you’d like to visit on another day, please contact us and we’ll try to make arrangements for a member to show you our club. For more information, go to rmrc.railfan.net. We’d love to have you.

1 Coal is king on Jack Varadi's HO scale Greenville & Ohio, a freelanced Southern Ry. subsidiary. At Clinchport, Va., Southern Ry. no. 1888 switches hoppers at the Cabin Creek Coal Co. The large mine serves many customers all along the G&O main line.



Coal country scenes highlight the HO scale Greenville & Ohio RR

By Jack Varadi

Photos by Bruce Gathman

Since the mid-1960s, I've spent a lot of time exploring the mountains and foothills of the southeastern United States. I especially enjoy the region's Appalachian scenery and its coal-country railroad operations. This mountainous setting and the coal industry provide the theme for my 13½ x 23-foot

HO scale Greenville & Ohio RR (G&O), a freelanced short line that parallels the prototype Clinchfield RR.

The layout is set during the steam-to-diesel transition era, which allows me to run both diesel and steam locomotives. In the G&O's fictional history, the railroad was also purchased by the Southern Ry. at that time.



Freelancing an APPALACHIAN short line

Planning the G&O

Shown in the track plan on the next page, the layout is a walk-in design without any duckunders. I planned to operate the railroad point-to-point but also wanted the option of continuous running for breaking in equipment or displaying trains. To achieve these goals,

my track plan is a dogbone configuration with a two-level center peninsula.

The northern terminus of the G&O is Portsmouth, Ohio, and the southern terminus is Greenville, S.C. Both towns are represented by the lower center peninsula's hidden staging tracks. A run-through track in staging allows for continuous operation.

All the towns along the layout center around the coal industry and offer plenty of switching opportunities. None of the areas are modeled to match a specific prototype; rather, I've chosen scenery and structures that give the flavor of the general area. One exception that I closely modeled to match the prototype scene is Natural Tunnel, located near

Clinchport, Va. A camping trip to the Virginia Natural Tunnel State Park in the Appalachian Mountains left a lasting impression on me, and I wanted to make sure to include this scenic wonder on my model railroad.

From the outset, I planned to use Digital Command Control (DCC) so operators could easily follow their trains along the main line. [DCC provides independent control of trains, even when they're on the same track. – Ed.] Other operator-friendly considerations include a 50" median track height and a maximum scene depth of 30". The only exception to the latter is the Natural Tunnel area, but I designed that scene with a pop-up section for easy access.

A solid foundation

Construction of the G&O began in early 2000. Prior to building L-girder benchwork, I installed tempered hardboard on the train room walls for the

backdrop. Most of the subroadbed is $\frac{3}{4}$ " plywood attached to the L-girders with track risers.

I used Homabed, a Homasote-based product, for the track roadbed. The towns of Jonesborough, Greer, and Marshall are built on $\frac{3}{4}$ " plywood tabletops that are covered with a $\frac{1}{2}$ " sheet of Homasote.

Over the years I'd heard about Homasote from other model railroaders, but this layout marked my first time using this material. Homasote is a type of fiberboard made of compressed, recycled paper. The sound-deadening and spike-holding properties of Homasote and Homabed are impressive.

Once the benchwork was framed, I painted the backdrops. I used New London Industries cloud and mountain stencils. However, I modified the mountains to more closely resemble the rounded hills of Appalachia.

All the track is code 100. I used Atlas track in staging and other hidden areas and Shinohara and Peco products in

The layout at a glance

Name: Greenville & Ohio RR

Scale: HO (1:87.1)

Size: 13½ x 23 feet

Theme: freelanced short line

Locale: Ohio, Virginia, Tennessee, North Carolina, and South Carolina

Era: 1940s to 1950s

Style: walk-in

Mainline run: 160 feet

Minimum radius: 26"

Minimum turnout: no. 6

Maximum grade: 3 percent

Benchwork: L-girder

Height: 48" to 56"

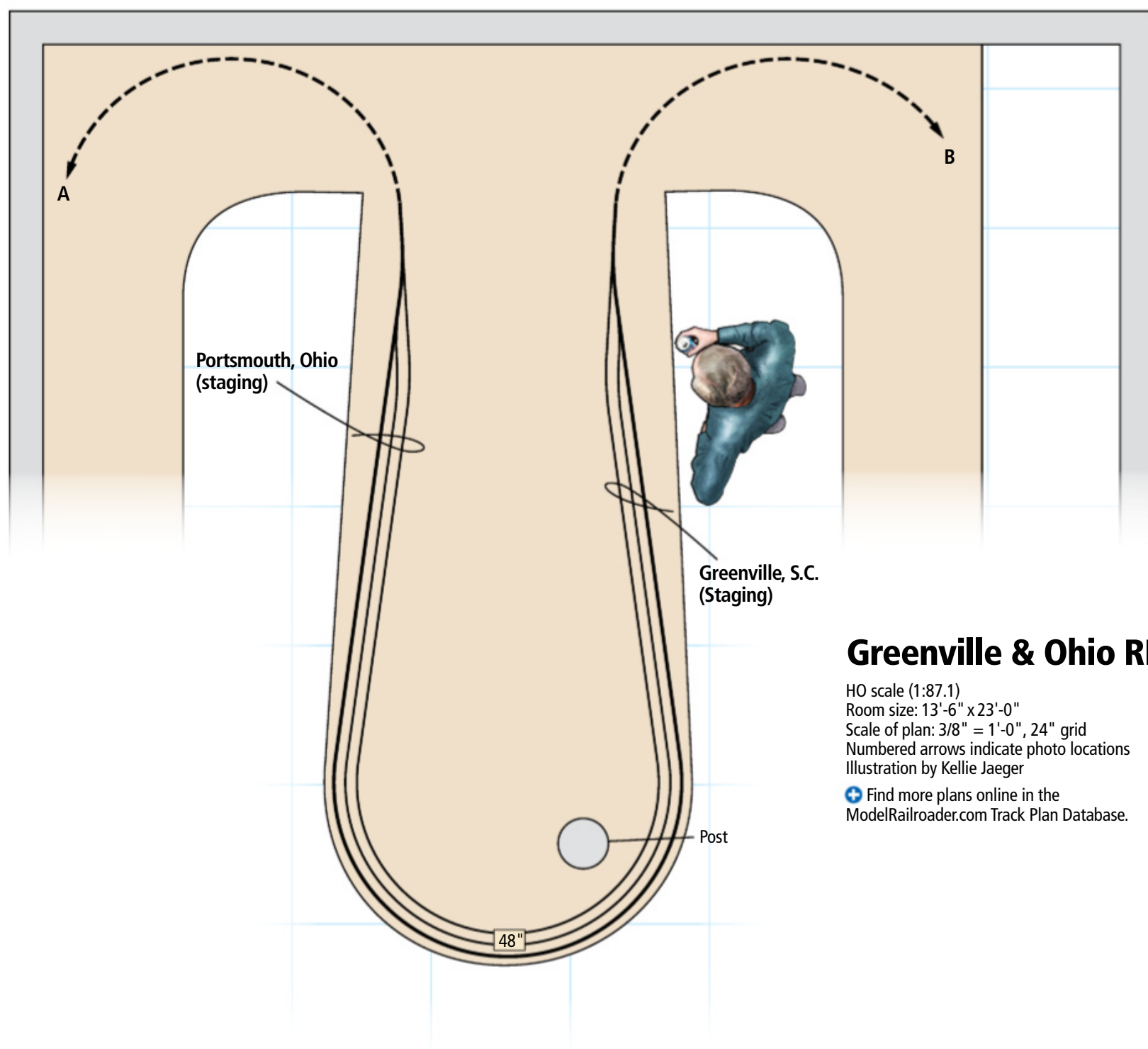
Roadbed: Homabed and Homasote

Track: Atlas, Shinohara, and Peco code 100 flextrack

Scenery: plaster hardshell

Backdrop: painted tempered hardboard

Control: Digitrax Digital Command Control and Raspberry Pi running JMRI



Greenville & Ohio RR

HO scale (1:87.1)

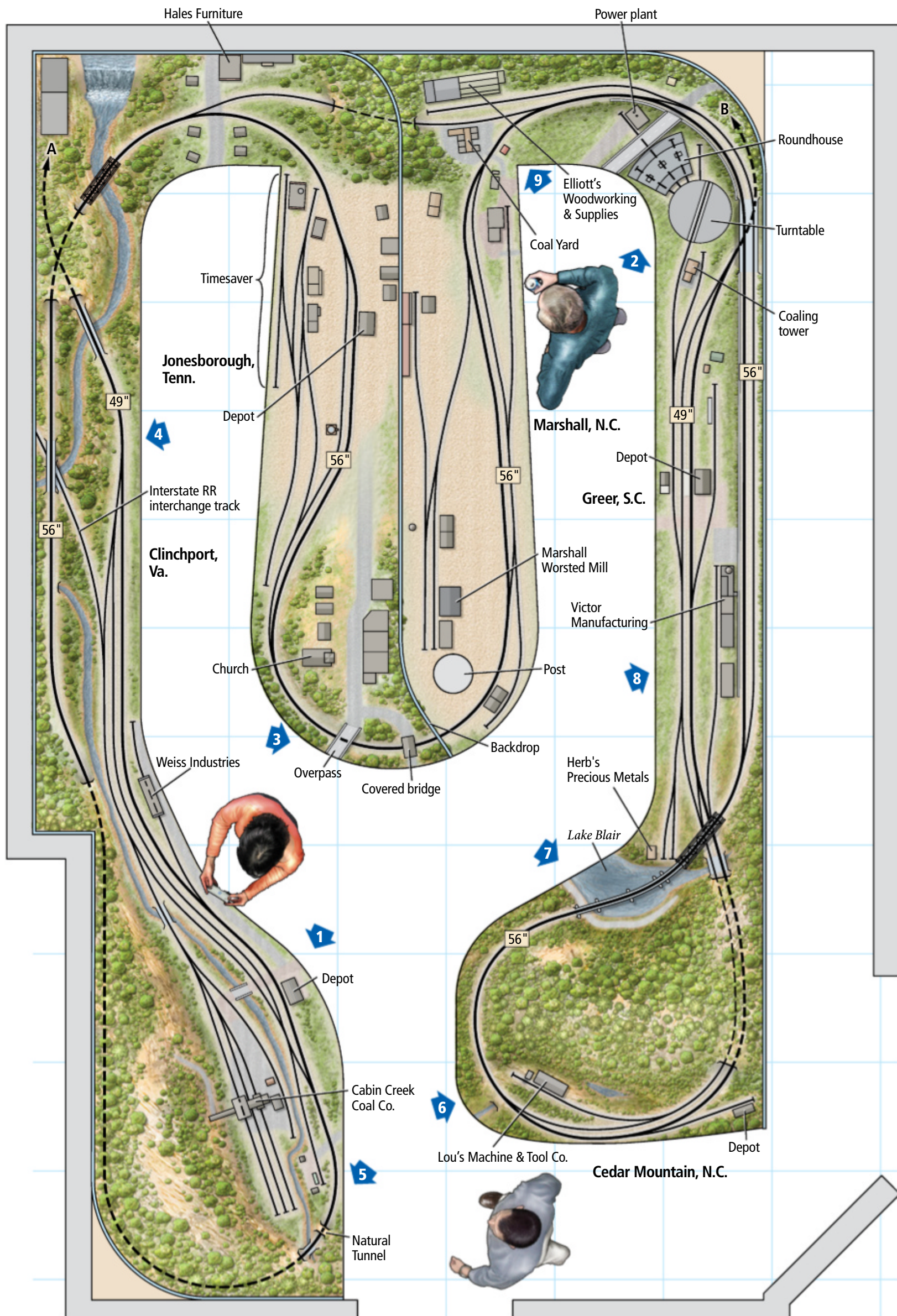
Room size: 13'-6" x 23'-0"

Scale of plan: 3/8" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Kellie Jaeger

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





② The engine terminal in Greer, S.C., serves both steam and diesel locomotives. The turntable is a motorized Custom Model Railroad kit. Jack repurposed a Digital Command Control decoder to control the turntable motor.

visible areas. Some of the bridge and trestle track is handlaid.

Most of the bridges are kitbuilt. The covered highway bridge and the wood trestles are scratchbuilt. The trestle across Lake Blair is made of Micro-Engineering components. The turntable at Greer is a Custom Model Railroad kit.

Electronics and control

The G&O is wired for DCC using a Digitrax Chief system. The layout is

divided into four power districts connected to DCC Specialties PSX circuit breakers. I wired light-emitting diodes (LEDs) from the outputs of the circuit breakers to a central panel. This provides a quick visual indication if there's a problem in any of the power districts. As much as I could, I kept all wiring on the operator side of the layout to minimize having to go under the benchwork for maintenance.

I use an older Digitrax DB100A booster to power DCC accessories,

including stationary decoders that control turnout motors. Tortoise by Circuitron switch motors power turnouts in visible areas, while Atlas switch machines control turnouts in the hidden staging yard.

This booster also powers older DCC decoders that provide layout lighting and sound effects, such as flashing warning lights or stationary engine sounds. I also use a DCC motor decoder to control the turntable motor at the Greer engine terminal.

For train control, I use tethered as well as simplex- and duplex-radio wireless throttles from Digitrax. I also have a Raspberry Pi microcomputer running Java Model Railroad Interface (JMRI) software, giving operators the option of running trains with their smartphones, using WiThrottle or Engine Driver apps. The Raspberry Pi/JMRI system was installed by two fellow National Model Railroad Association (NMRA) Palmetto Division members, Steve Todd and the late Mike Jensen. Steve is the creator of the Engine Driver app.

Installing a signal system is one of my long-term projects. I used stationary decoders for turnout control, and I've divided the layout into signaling blocks. I've also wired turnout push buttons to send LocoNet commands via Team Digital SRC 16 stationary route controllers. I look forward to one day seeing working signals on the G&O.

All of the locomotives on the G&O have sound decoders. I'm upgrading some of my older DCC-equipped models with the latest products, including ESU LokSound and SoundTraxx Econami and Tsunami2 decoders. I enjoy installing decoders in both plastic and brass models. The introduction of stay-alive capacitor circuits has transformed some of my brass "shelf queens" into working locomotives again.

Appalachian scenery

For most of the scenery base, I used cardboard strips hot-glued into a lattice that I then covered with red rosin paper. Depending upon the location, the lattice is attached to the benchwork, roadbed, or layout room walls. I covered the paper with plaster-impregnated gauze and molding plaster. Once the plaster dried, I applied earth-colored latex paint followed by soil, sand, rocks, crushed leaves, and commercially available foam ground cover.

Typical Appalachian rock scenery features both manmade cuts and natural



③ At Jonesborough, Tenn., G&O no. 24, an Electro-Motive Division SW1 switcher, pulls a cut of cars under a wooden highway overpass. Jack scratchbuilt the model of Campbell's Covered Bridge in the background.



outcroppings. I molded all exposed rock-faces using plaster castings made with rubber molds.

For trees I used both commercial products and natural materials, including armatures made from wild blueberry bushes. Modeler Joe Gamble from Birmingham, Ala., once gave an NMRA clinic about modeling trees using oak leaf hydrangea. I made the trees found on the ridge at Cedar Mountain using Joe's techniques.

Another friend, Ron Hale, taught me how to realistically model water. For

each body of water, I began by painting the base in the desired colors with darker colors representing deeper water. Then I covered the base with Enviro-Tex Lite two-part resin. Once that cured, I used Mod Podge gloss medium to add waves, ripples, and other surface effects.

My first water attempt didn't go quite so smoothly. To remove air bubbles from the Enviro-Tex resin's surface, it's recommended to either blow on the bubbles or warm the resin surface with a flame. I used a small propane torch that worked wonders removing the bubbles. However,

4 The Interstate RR shares an interchange track with the G&O in Clinchport. Although the Interstate's primary commodity is coal, the railroad also moves general freight along its main line.

I moved it a little too close to a grade-crossing sign. The drooping sign graced the layout for a couple years, and Ron has never let me forget it.

The layout room is currently lit with fluorescent fixtures in the suspended ceiling. In the near future, I plan to replace those lights with 3,000K to



5 Southern no. 4753, a class Ms-1 2-8-2 Mikado, exits Natural Tunnel near Clinchport. A camping trip to the prototype location inspired this scene on the G&O.



6 A G&O local picks up an empty coal hopper from the boiler house at Lou's Machine & Tool Co. The industry is named after Jack's father.



8 Bales of cotton wait on the dock to be taken into Victor Manufacturing, a large textile mill in Greer, S.C. After dropping off an empty boxcar for the mill's finished goods, G&O no. 15, a Fairbanks-Morse H-10-44, heads back to its waiting train.

4,000K light-emitting diode (LED) fixtures. This upgrade will provide more light for working on the layout and more realistic illumination for the scenery.

Industries along the line

I've tried to incorporate a coal-related industry in each town on the G&O.

In Greer, S.C., there was space for an industry behind the roundhouse, and I wanted to find a prototypical justification for delivering coal there. Then my friend, Chris Elliott, mentioned that a railroad would often run a track straight through a roundhouse if required to reach a customer. Inspired, I built a Magnuson Models power plant kit for the location. Loaded coal hoppers are now moved over the turntable and through the roundhouse to reach the coal-fired plant.

Another industry in Greer is Herb's Precious Metals, named after my friend and fellow modeler Herb Lindsay. This



7 A trio of Southern F units crosses the steel trestle over Lake Blair. Jack's friend Ron Hale taught him how to realistically model water using Enviro-Tex Lite resin and Mod Podge gloss medium.

awning and loading dock. I built a textile mill from Design Preservation Models modular components and other detail parts and plan to build a coal/petroleum dealer in the near future. This town also features a scratchbuilt covered bridge that's inspired by the prototype Campbell's Covered Bridge, located in Greenville County, S.C.

Clinchport, Va., is home to Cabin Creek Coal Co., built from a B.T.S. laser-cut wood kit. This major coal mine supplies the other industries on the layout as well as the off-layout terminals of Portsmouth and Greenville.

Another rail-served customer in Clinchport, Weiss Industries, is a car repair shop named after another well-known local modeler, Herb Weiss. This town also features an interchange with the Interstate RR.

I enjoy adding illumination to my structure models. Most of the exterior lights are incandescent bulbs, and interior lighting is typically LEDs. For my latest exterior lighting projects, I've starting using the warm-white surface mount LEDs that are now commonly available.

Locomotives and rolling stock

Like many modelers, I have a weakness for motive power. Small-wheelbase steam locomotives and first-generation diesels form the G&O roster. In addition to recent commercially available plastic models, my fleet includes brass models from various manufacturers and even old Athearn "blue box" F7s. Both the older brass and plastic locomotives have been remotored and regearred as necessary. I've also added more details and installed DCC sound decoders. I painted some of my diesel engines in a freelanced G&O scheme inspired by the Southern Ry.

Representing a mix of manufacturers, my rolling stock is mostly plastic models, except for a few brass cabooses. I enjoy painting and decaling cars for my home road. I also swap G&O cars for my friends' custom-painted freelanced cars.

I weather all locomotives and rolling stock to some degree. I use powdered chalks, PanPastel Products powders, and airbrushed paint in colors representing soot, grime, and dirt.

structure is a Rix Quonset hut kitbashed to resemble a local prototype structure in Greer. Originally intended as a scrap metal dealer on the layout, this industry evolved into an outlet for the precious metals stored in the chain link fence enclosure behind the hut.

Cedar Mountain, N.C., is one of my favorite locations on the layout and is home to Lou's Machine & Tool Co., named after my dad, who was a machinist. Lou's is a Laser Modeling 3 wood craftsman kit that I built to resemble a prototype shop in Winchendon, Mass. This trackside industry is inspired by an old-time machine shop where the engineering and business offices are on the top floor and the actual machine shop is on the main floor. The equipment is powered by a steam engine via an overhead line shaft. Loaded coal hoppers are delivered over the unloading pit next to the boiler house.

The depot in Cedar Mountain is built from a King Mill Enterprises craftsman

kit of the Green Cove Station, which still stands along the former Abingdon Branch of the Norfolk & Western Ry., now part of the Virginia Creeper Trail. The station is also featured in a photograph called "Old Maude" by famed rail photographer O. Winston Link.

Marshall, N.C., has a coal dealer (Otis Coal Co. from Woodland Scenics) and Elliott's Woodworking & Supply (a Campbell Scale Models kit that I named for my friend Chris Elliott). A textile mill with its own power plant and a petroleum dealer are two other industries in this town.

Jonesborough, Tenn., features a passenger depot, Hale's Furniture, and W.H. Grace. This last structure is a building flat kit from King Mill Enterprises that I enhanced with an

MORE ON THE WEB

See even more trackside photos of the G&O in an exclusive online gallery. Click on the link at ModelRailroader.com



9 At Marshall, N.C., a clamshell crane unloads a hopper at Otis Coal Co. while G&O no. 6 spots a boxcar at Elliott's Woodworking, named after Jack's friend Chris Elliott. The Big Sandy Timber Co. is Chris' freelanced railroad.

A railroad's purpose

I've found that operation makes a model railroad come to life and gives it a purpose. Operating sessions are also an enjoyable way to share a layout with other modelers.

When I started hosting operating sessions, I used written switch lists, but I soon found this method to be time-consuming. In 2012 I attended the NMRA National Convention in Grand Rapids, Mich., where Hank TenWolde presented a clinic on using car orders for operations. This is a minimum paperwork system, where cars are forwarded by type rather than specific car number.

A group of both novice and seasoned operators helped me refine the system for use on the G&O. After several operating sessions, we're all now comfortable with it.

For me, operation has become one of the most enjoyable aspects of the hobby. I encourage every model railroader to try it.

A great ride

Model railroading has been a lifetime hobby that's both relaxing and challenging. Like many, I got my start in model railroading with a Lionel Christmas train set and childhood layouts on the basement Ping-Pong table. As I got older, I learned many electrical and mechanical skills from the hobby. Eventually I went to school for electrical engineering and often marveled at how model railroading complemented my work. In many instances, the skills I learned in the hobby were more valuable than my college courses.

The week I graduated from college, I bought the September 1969 issue of *Model Railroader*, which sparked a switch to HO scale. I built a few layouts after that, including a shelf switching layout and two island-type layouts.

My early layouts were done primarily by myself. I was a lone-wolf modeler. That all changed in the 1980s, when I joined the NMRA. As time has gone by, I've made many friends through the hobby.

As for my G&O, the only thing I wish I'd done differently is to make the aisles wider. When I started the layout, I never envisioned more than one or two people



Meet Jack Varadi

Jack Varadi is an electrical engineer who has lived in upstate South Carolina since 1971. He and his wife, Kathy, have two children and four grandchildren. Their other hobbies include gardening, shooting sports, and travel.

being in the layout room at once. During one recent operating session I had eight people participating.

There's still more work to be done on the railroad, as well as some layout expansion that may take place outside the train room. While the G&O has been a long time in the making, it's been a great ride, and there's even more to come! **MR**

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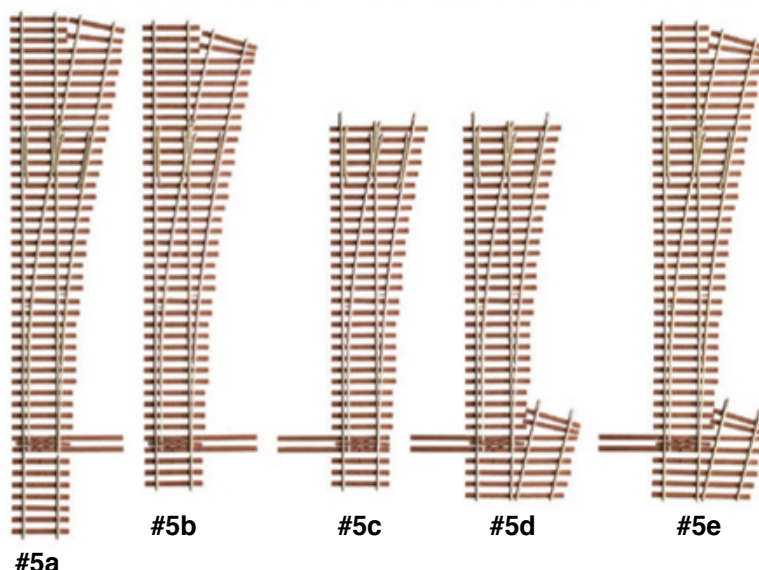
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A business for Main Street



A westbound way freight passes the Mankin-Cox Building on John Brown's HO scale Chesapeake & Ohio layout. Once John was able to find acceptable window castings, he got to work improving his version of Thurmond, W.Va.

Windows salvaged from a Walthers/Life-Like kit proved to be the key to completing the Mankin-Cox Building in Thurmond, W.Va.

By John Brown

Photos by the author

As an avid modeler of the Chesapeake & Ohio Ry., I fell in love with the town of Thurmond, W.Va., when I first laid eyes on it in 1992. Even though the town was a shell of its former self, it still was awe-inspiring.

I knew I wanted to model this town. I had a space over 20 feet long and 30 inches deep to try to re-create Thurmond on my layout. My friends and I built the



John shot this slide of Thurmond in 1992. The Mankin-Cox building is first in line.

railroad buildings at Thurmond, but I needed to add the commercial structures that still stand along the main line.

Modeling Thurmond

The National Park Service maintains the Historic American Engineering Records (HAER, www.nps.gov/hdp/coll.htm), which has drawings for many of the structures in Thurmond. I photocopied

plans of the commercial buildings back in the mid-1990s and enlarged them to HO scale. I used three colored markers to render the brickwork on the photocopies and glued them to styrene mock-ups to give the impression of Thurmond.

The scene was passable except I never covered the south end of the Mankin-Cox building with brick paper. Its blank styrene side made picture taking of the main street undesirable.

In 2013 KingMill Enterprises came out with Radical Flats of the three commercial buildings. [KingMill has since left the model railroading market. – Ed.] I bought a set and replaced my photocopied versions. These looked good, but they didn't have depth to the windows, doors, and other structural elements.

I'd put off building the three commercial structures, as I was unsure what material, doors, and windows I would use, or how to replicate the decorative masonry on the front of the buildings.

Finding windows

The windows of the Mankin-Cox building were a concern. As I looked through my Walthers catalog, I couldn't find anything close in size and appearance. The double-hung windows had a brick arch above them.

Going through my odds and ends one night, I came across a couple of wall sections from a Life-Like Belvedere Hotel, now offered by Walthers. The windows looked about right. Placing the windows against my scale drawings, I knew I had the beginnings of the Mankin-Cox building. The windows were a bit wider and not as high as the Mankin-Cox windows, but they looked good.

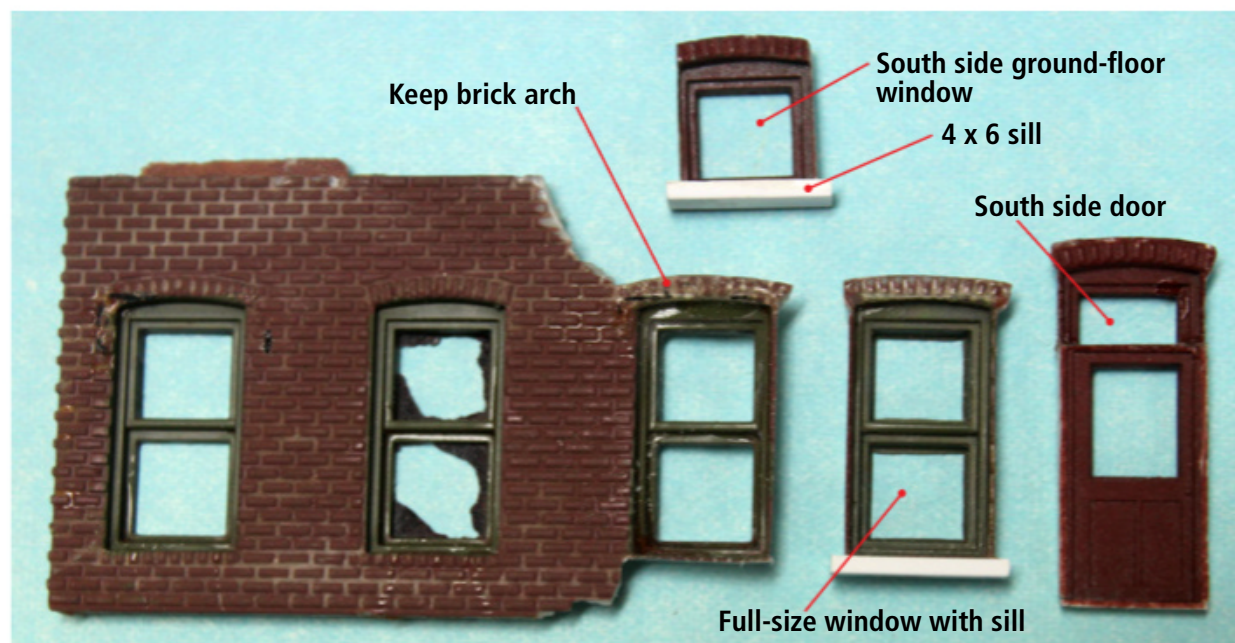
I filed away all the brick that surrounded the windows except for the arch of bricks over the window. I left about .015" around the window frames so I could set the windows into the brick wall material for the correct depth. I added strips of HO scale 4 x 8 styrene under the bottom sill to represent the concrete window ledge ①.

I cut and filed windows and a door from the Belvedere Hotel kit pieces and numbered the parts with a black marker.

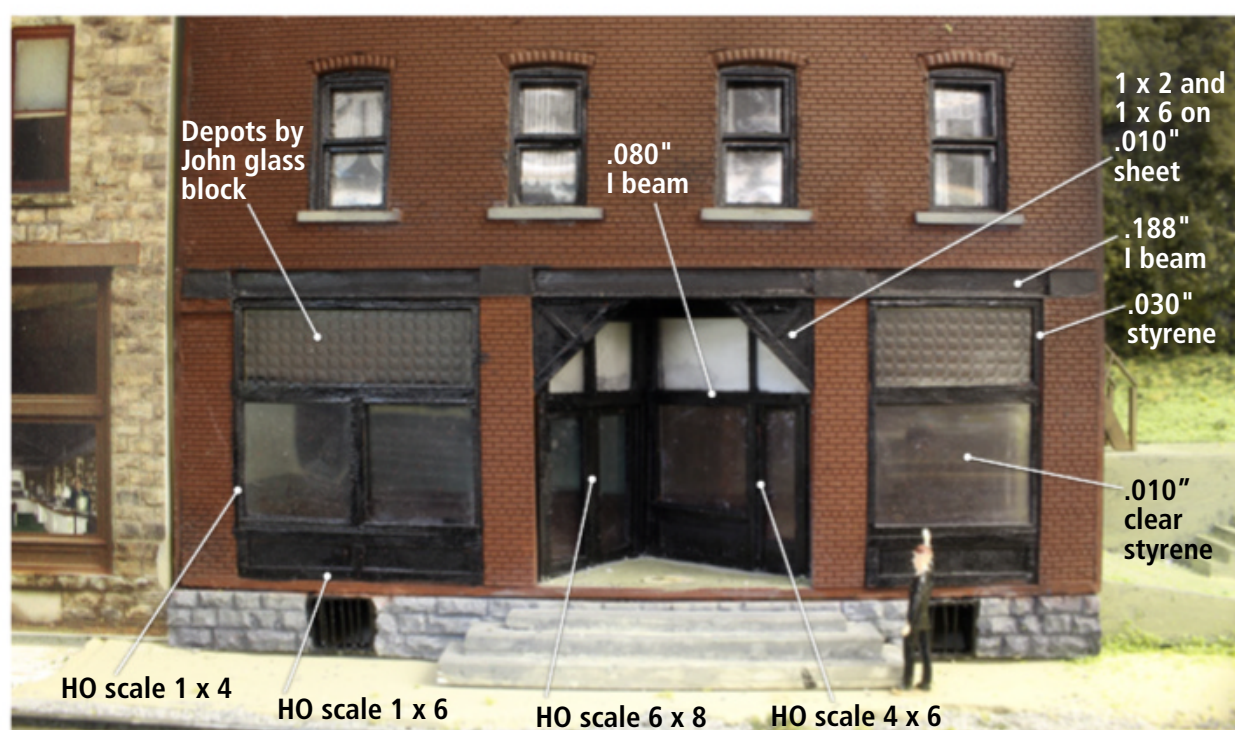
Entranceway

The distinguishing feature of the Mankin-Cox building, which housed a bank and a drug store, is the recessed entranceway ②. I made the two triangular decorative top corners at the entrance out of .010" styrene with 1 x 2 and 1 x 6 strip styrene glued on the face for trim.

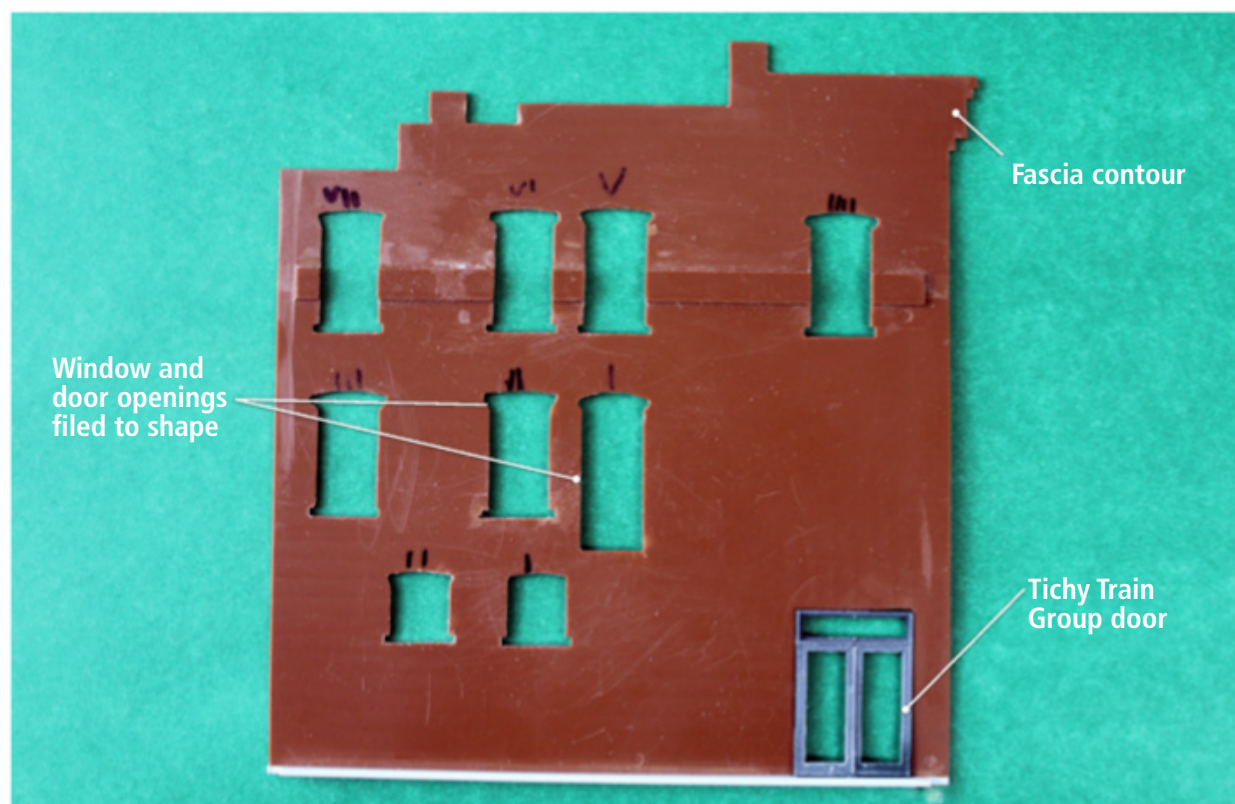
The doors to the bank on the left and the drug store on the right were different. The left entrance looked like it had a full-height window next to a glass door, or perhaps two doors. I used 4 x 6 styrene to create the frames in the entrance door and window. I made the frames for the transom windows above the doors from HO scale 6 x 8 strip styrene. I used .010" clear styrene for glazing.



① **Collecting windows and doors.** John harvested his windows and a door from the walls of the Life-Like Belvedere Hotel kit. This shows the progression of steps.



② **Entranceway.** The entranceway is one of the building's distinctive parts. John used Evergreen styrene strip and sheet to make the windows and doors. The foundation walls are Chooch cut stone material and the steps are .080" styrene.



③ **All the openings.** The back side of the south wall shows how John cut the openings for the windows and doors. The openings are numbered to match specific windows. Note the wall contour for the brick fascia.



4 Tricks with bricks. John made the brick fascia details from strips of brick cut from the Walthers sheet. The decorative pieces were cut from scraps.



5 Fascia coverage. John filed the top corners of the side walls to match the contour of the raised brick detail of the front of the building. He added male and female cardinals, the state bird of West Virginia.



6 South wall. The south wall of the Mankin-Cox building needed two stairways and two different doors. The KingMill Radical Flats buildings are in the background.

The drug store side had a large window next to a glass door. I used scale 1 x 6 for framing the window and 1 x 4 for the vertical boards on the panel under the window. The door frame was again 4 x 6 styrene.

Over each transom on the prototype was an 8" I beam. I used $\frac{3}{32}$ " (.080") styrene I beam to simulate it.

To create the ceiling of the entrance way, I glued scale 1 x 6 styrene strips to .020" sheet styrene to represent the boards that made up the prototype.

I used styrene $\frac{3}{16}$ " (.188") I beam on the front of the building to divide the upper floors from the main entrance, then cut pieces of .030" styrene and filed it until it fit the web of the I beam. The fillers were placed above the brick pillars.

I built the display windows on the first floor using HO scale styrene 1 x 4s for the window frames and HO scale 1 x 6 to frame the panels below the front windows. I glued scale 2 x 2 styrene inside the window frames to give the .010" clear styrene glazing material something to bond to.

I used HO-139 glass block windows from Depots By John (www.depotsbyjohn.com) for the upper sections of the front windows that bracketed the triangular entrance.

Building the walls

For the walls, I used Walthers no. 933-3522 brick sheets. I cut and filed window openings to accept the Hotel Belvedere windows. I numbered the openings to match the windows (3, previous page), and filled gaps between the walls and windows with Squadron Green body putty.

For the brick detail at the top of the building, I cut strips from the brick siding material in different heights and glued them one on top of the other. I cut the small brick decorations near the top from scrap brick material pieces (4). I couldn't fit the same number as on the prototype – I was three short on each side – but I got the look of the Mankin-Cox building.

I'd roughed out the south wall with all the window and door openings cut

before I realized all the layers of brick detail I'd handcrafted on the front wall would show. It wasn't a pretty sight, so I redid the north and south wall so they would cover the layers of brick on the fascia. I then carefully filed the walls to conform to the shape (5).

To make the two small windows at the back of the ground level on the south wall, I cut the bottoms off two Belvedere Hotel windows. I added a styrene sill to match the other windows.

Like many buildings over the years, the Mankin-Cox had alterations. The original south wall didn't have a ground-floor door or stairs to the door on the second floor. The door may have been so patrons could enter the store without having to go near the mainline tracks.

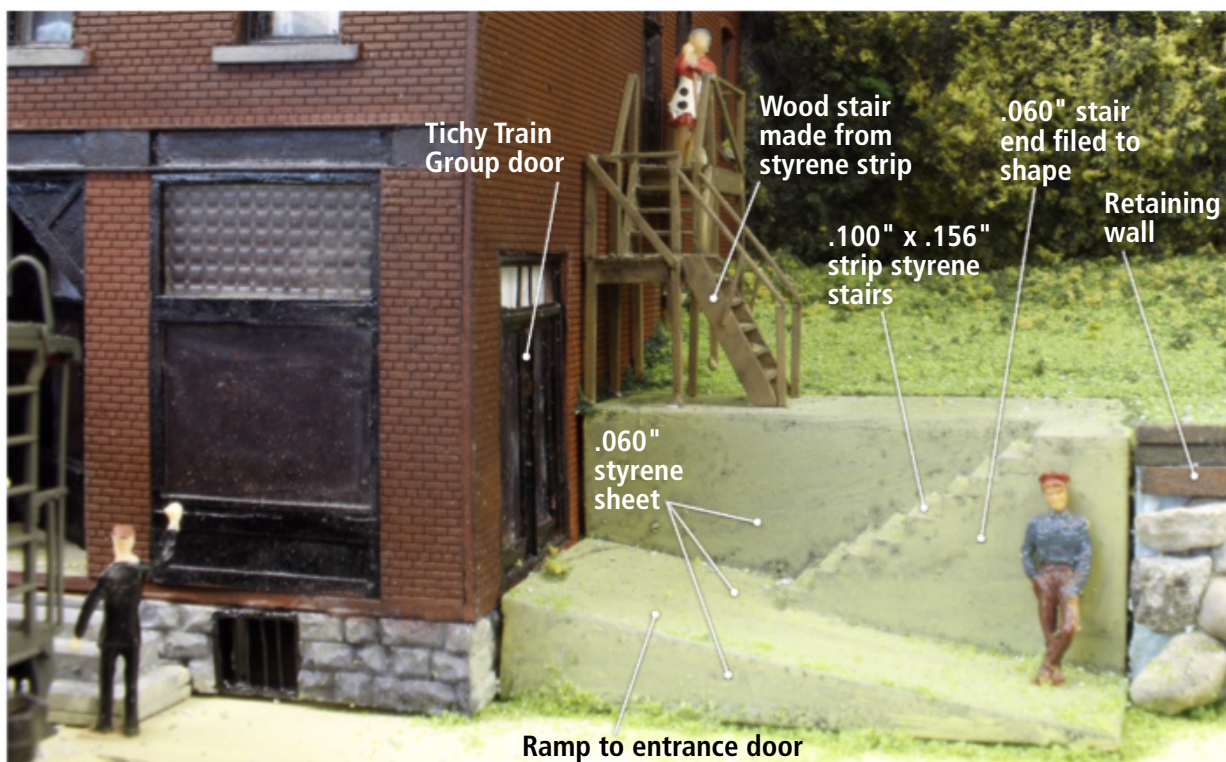
I used Tichy Train Group door no. 8190 for this entrance. The Tichy set has two doors and it's wider than the prototype, but it was the closest I could find.

The door knobs are on the right hand side of both doors, so I shaved the knob off the right side of one door and glued it to the left side so the knobs were next to each other in the entranceway. I added a 1 x 6 styrene strip to represent a door jamb between the doors.

I left north wall blank on my model, as no one would be able to see the windows in the 2-foot-wide alley that runs between the Mankin-Cox building and its neighbor. The rear wall is also a blank sheet of Walthers brick material.

With the main wall pieces cut out, I assembled them with $\frac{1}{8}$ " square styrene glued in all four corners for support.

I added brick material to the inside of the walls above the roof line to cover the plain plastic material at the parapet. The roof was .040" styrene covered with 120-grit black sandpaper to represent a tarred gravel roof. I used 4 x 8 styrene strip for the capstones on the parapet walls.



7 Hillside details. John made the concrete wall and stairs from styrene sheet and strip material. The retaining wall is made from pebbles and ties.

I made the four chimneys from four pieces of .080" x .188" styrene strip glued together vertically two wide by two deep each, covered with Walthers brick. Then I added 4 x 8 styrene to represent the concrete blocks on top of the brick to look like the prototype. To add to the West Virginia setting I placed a male and female cardinal, the state bird, on the parapet wall cap.

I used Chooch Enterprises no. 8310 cut stone interconnecting wall material to simulate the basement walls. The blocks looked about the right size. I cut the wall material three courses high like the prototype. I filed the corners at a 45 degree angle for a seamless joint.

I made basement window frames from HO scale 2 x 6 strip styrene, then I drilled a series of holes top and bottom to accept .015" brass wire I used for the security bars. The front steps were made from three layers of .080" styrene.

I spray-painted the walls a reddish color and hand-painted the windows and doors flat black. I painted the window ledges and chimney tops with a concrete color.

A hill on the side

The small hill to the south of the Mankin-Cox Building is an integral part of the scene. It includes concrete stairs, a concrete wall, and wood stairs to the door to the second story **6**, opposite.

I made the wood stairs from 2 x 6 strip styrene for the floors of the landings and 2 x 10 strip styrene for the frames. The legs are 4 x 4 strip styrene, which I also used for the vertical parts of the railings. I used 2 x 4 styrene for the

top railings. The stairs were from an old Evergreen Styrene stairway kit no. 207. Central Valley's no. 1602 steps and ladders kit would be a good substitute.

To make the concrete retaining wall and stairs, I started with a box made of .060" styrene. I added a sloped piece of styrene for the concrete ramp to the side door **7**.

For the concrete stairs I stacked pieces of .100" x .156" strip styrene. This gave me the right height for the steps and small amount of overlap at the back of the step to glue onto the next step above. I used a piece of wood 2 x 6 to gauge the depth of the step from front to back.

When I made the box for the steps, I left the front wall of the steps that faces the tracks as a square piece. Once the steps were glued in place, I cut and filed the wall to match the step profile.

I made the hill from 2"-thick extruded-foam insulation board. A piece of .040" styrene 1" high propped up the back to add a slope to the hill. The foam is covered with Woodland Scenics Plaster Cloth and Hydrocal, with Woodland Scenics ground foam used as ground cover. I glued railroad ties and small stones to the front and south side of the hill to simulate the prototype retaining wall.

Finishing touches

I weathered the front and south side of the building with Hunterline Creosote Black, as I figured 50 years of smoke would be on those walls. The west and back wall would not be seen on my layout.

The only thing missing from my building is the Lee Work Clothes and

Materials list

Central Valley

1602 steps and ladders

Chooch Enterprises

8310 cut stone interconnecting wall

Depots By John

HO-139 Glass Block Windows

Detail Associates

2505 .015" brass wire

Evergreen Styrene

168 .080" x .188" strip

177 .100" x .156" strip

186 .125" x .125" strip

272 ³/₃₂" (.080") I beam

276 ³/₁₆" (.188") I beam

8102 1 x 2 strip

8106 1 x 6 strip

8202 2 x 2 strip

8204 2 x 4 strip

8206 2 x 6 strip

8210 2 x 10 strip

8404 4 x 4 strip

8408 4 x 8 strip

8606 6 x 6 strip

8608 6 x 8 strip

9006 .010" clear sheet

9030 .030" sheet

9040 .040" sheet

9060 .060" sheet

Tichy Train Group

8190 double door and masonry frame

Walthers

433-1339 Life-Like Belvedere Hotel

933-3522 brick sheets

Miscellaneous

HO scale figures

120-grit sandpaper

Mercantile signs. If I find decals that are appropriate for my era, I'll add them to my building. 

John Brown is retired after working for 23 years in the tool room at Elcan Canada (Division of Raytheon) in Midland, Ont. John is a member of the National Model Railroad Association (NMRA) and has earned his Master Model Railroader certificate. He is active in the Niagara Frontier region. John is also a member of the Chesapeake & Ohio Historical Society, and has had several articles published in the hobby press. This is his first byline in Model Railroader.



Build a small rail-served dairy

This S scale structure was built with
old-school techniques

By Brooks Stover • Photos by the author



Buffalo Creek & Gauley 2-8-0 no. 14 rolls past the loading dock at the Cressmont, W.Va., dairy. Brooks Stover shares how he built the compact structure for his S scale model railroad using balsa, cardstock, and mat board.

The Buffalo Creek & Gauley RR (BC&G), an 18.6 mile coal-hauling short line, operated in Clay County, W.Va., from 1904 until 1965. For most of that time, the BC&G was owned by the Elk River Coal & Lumber Co. (ERC&L). In addition to a mine and sawmill, the ERC&L Co. owned and operated a small farm and dairy at Cressmont, located about halfway between the BC&G's interchange with the Baltimore & Ohio at Dundon and the mine at Widen.



1 Prototype inspiration. The full-size dairy was a T-shaped structure that sat on a tall poured concrete foundation. This 1958 image is one of few photos Brooks had to work from when modeling the rail-served industry. Photographer unknown, Brooks Stover collection; bottle cap courtesy Judy Hart collection



2 Scouting trip. Brooks rode the length of the BC&G on a speeder in 2007 and found the dairy's foundation was still intact. The bridge in the center of the image carries the track across namesake Buffalo Creek.

The Cressmont dairy building, with its interesting covered trackside loading dock, provided the inspiration for my S scale model. The simple structure that resulted could be modified, however, to represent any number of small industries.

Prototype history

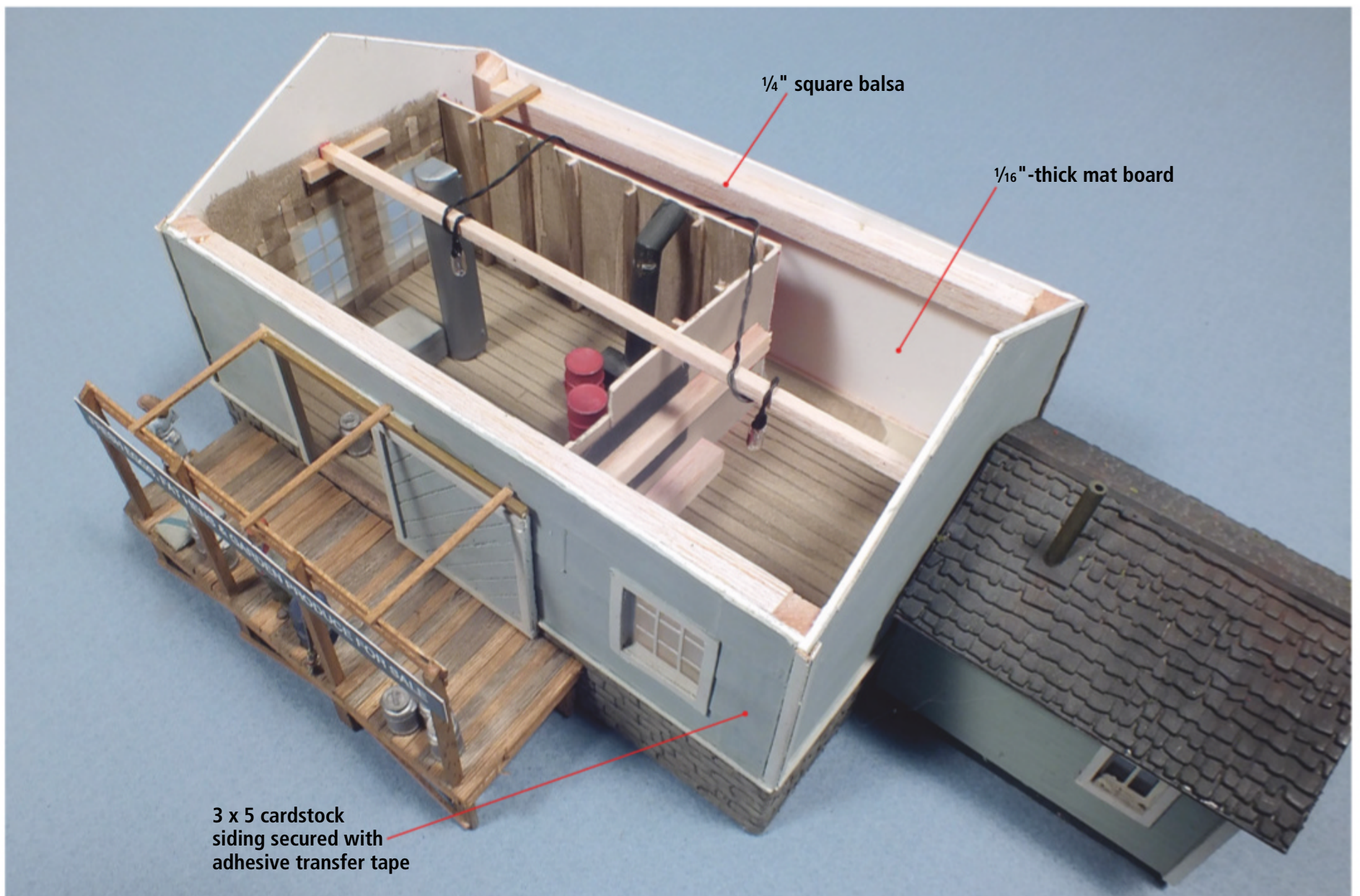
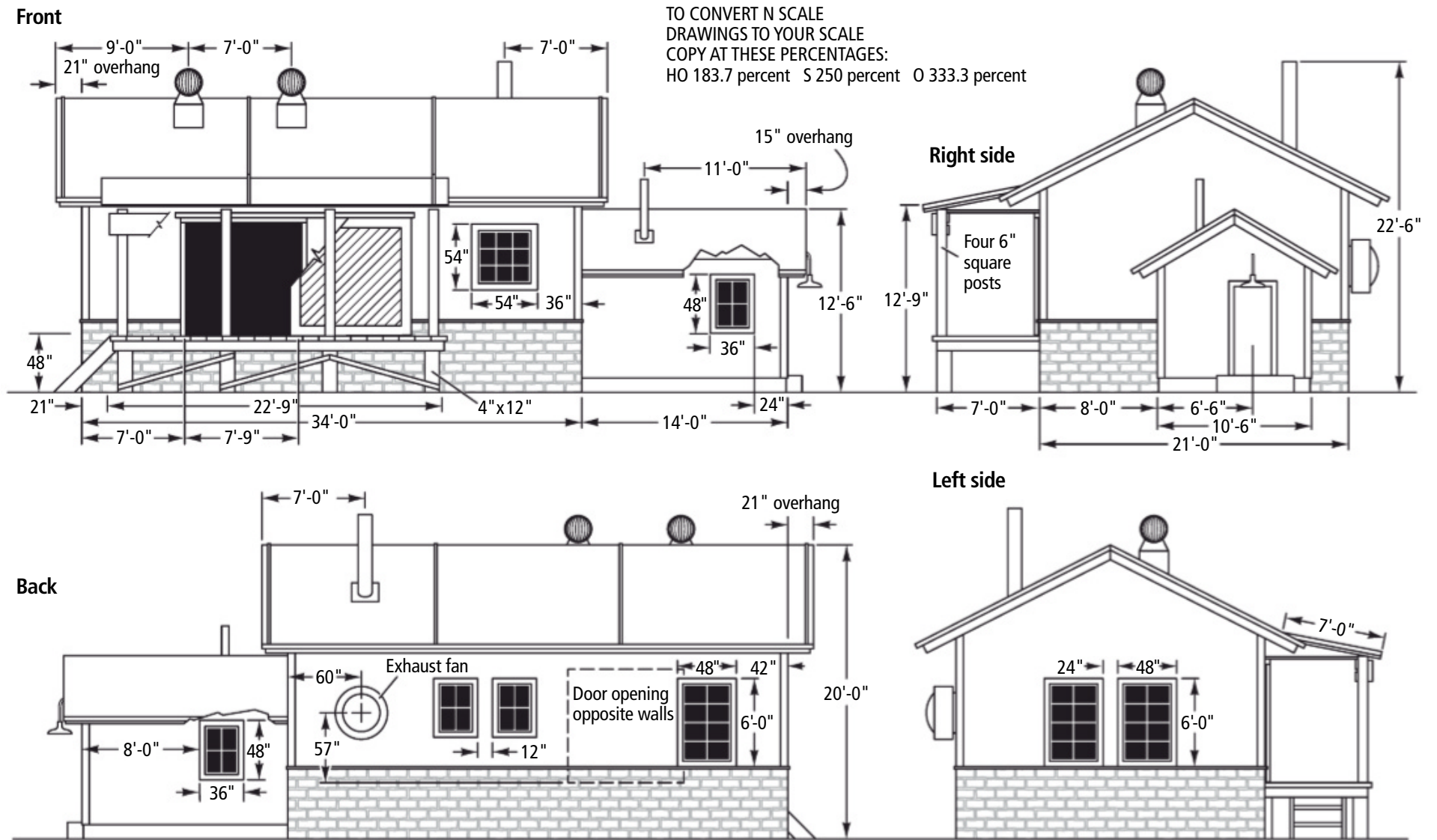
Based on conversations I had with local residents, it's clear the dairy's operations were pretty simple. Raw cow's milk was transferred into glass bottles (cardboard cartons in later years). No

pasteurizing or other processing took place here. The bottled milk was then distributed via rail to other communities in the ERC&L holdings, often in the BC&G's Mack Railbus Motor "A" **1**.

During the 1950s, a unique sign hung over the trackside loading dock that read "Fresh Eggs, Fat Hens & Garden Produce For Sale." I included that distinctive feature on my model (see opposite page) as I thought it a bit unusual that a sign advertising retail sales was hung facing the tracks. Did they think folks would drive up their speeders to buy produce?

Ratio 1:160, N scale

TO CONVERT N SCALE
DRAWINGS TO YOUR SCALE
COPY AT THESE PERCENTAGES:
HO 183.7 percent S 250 percent O 333.3 percent



3 Old school techniques. This view of the dairy with the roof removed shows Brooks' construction methods. The walls, reinforced with 1/4" square balsa, are made of 1/16"-thick mat board with 3 x 5 cardstock siding attached with transfer tape.

The dairy was closed in 1958 when the ERC&L sold all its holdings. An auction was held on Jan. 10, 1959, to dispose of all the equipment associated with the operation, along with 42 head of cattle and one bull.

Fitting the space

I built my model from the few prototype photos I had of the structure. To fit the space on the layout, I moved the back portion of the T-shaped structure to one end and reduced its size. To add more visual interest, I substituted a stone foundation for the large poured concrete foundation, the only part of the structure that still remains ② (page 59).

The dairy featured wood construction with light gray lap siding that appears heavily weathered in many later photos. I used wide siding on the main part of the building to provide contrast to the annex, which features conventional-width siding.

I was unable to find photos of the back of the building. Fortunately this part of the structure isn't visible on my layout, so I didn't bother detailing it.

I made the walls for both sections using $\frac{1}{16}$ " multi-ply mat board generously reinforced with $\frac{1}{4}$ " x $\frac{1}{4}$ " balsa ③, opposite. The exterior siding on the main structure and the lap siding on the annex were made using 3 x 5-inch cardstock cut into strips and attached to the walls with 3M adhesive transfer tape. [For a detailed description of Brooks' structure-building techniques, see "Scratchbuild a small factory" in the May 2013 *Model Railroader*. – Ed.]

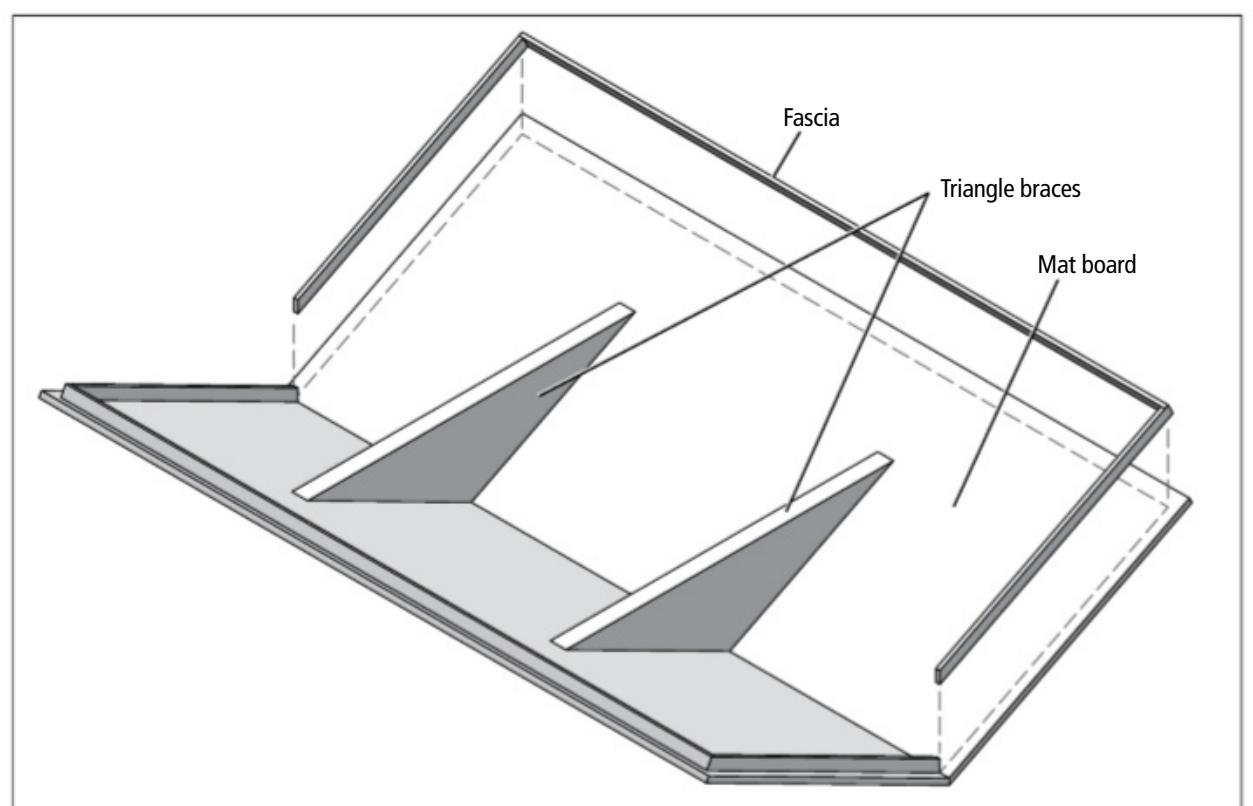
A simple representation of an interior was built in the part of the structure visible through the open sliding door, also visible in ③. I attached studs to interior walls. Then I hung two grain-of-wheat bulbs from the rafters, one lighting the open bay area so you can see the interior detail and one in the non-detailed part of the building. To prevent viewers from seeing the empty section, I used frosted window glazing. Neither the bulbs nor the wiring are visible through the open sliding door.

The rail-side dock ④ was made from balsa stripwood scribed with a razor saw to add woodgrain texture. I stained the boards in random hues and applied them to the supporting structure, also made of balsa.

The posts supporting the overhanging roof were stabilized with rafters reaching back to the front wall. The stone foundation is molded plastic sheet attached to the mat board walls with 3M adhesive



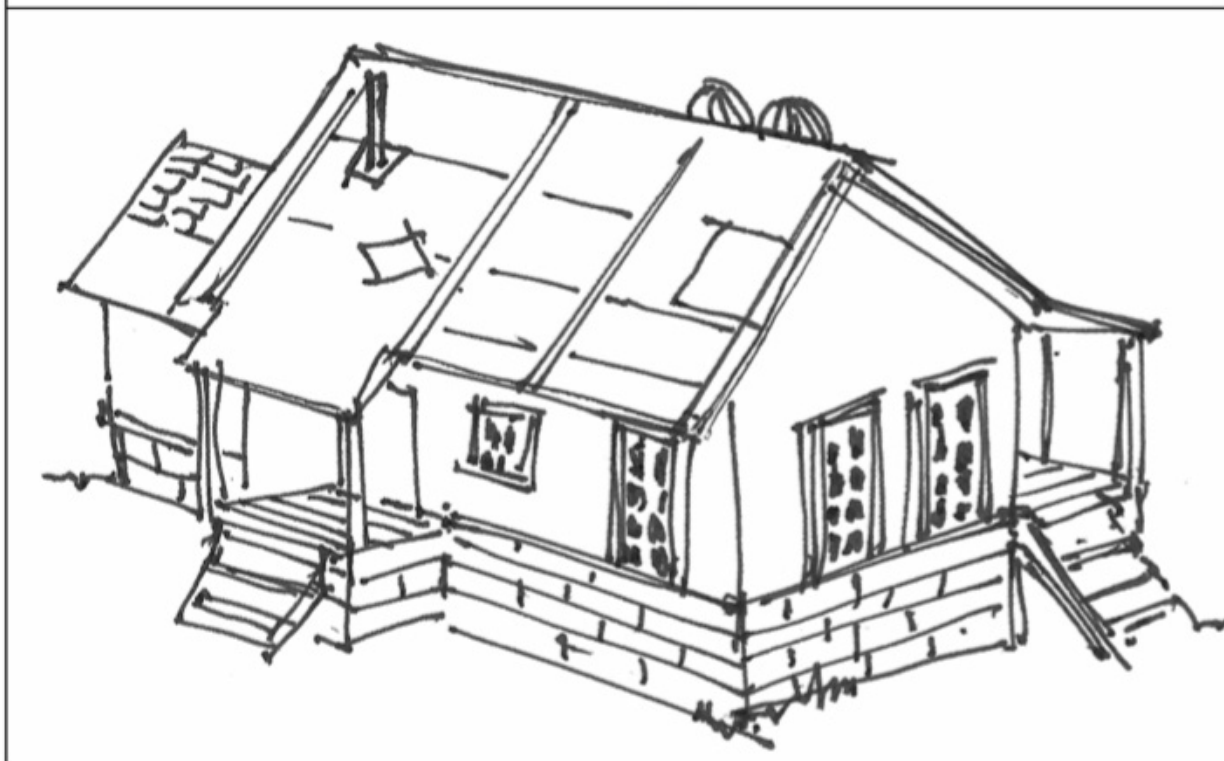
④ **Rail-served dock.** Balsa stripwood, scribed with a razor saw to add grain detail, was used on the dock. Brooks made the sign on a computer, attached it to cardstock with adhesive transfer tape, and trimmed it to size.



⑤ **Under the roof.** Brooks used mat board for the roof and the triangular braces. The fascia boards are balsa glued in place.



⑥ **Two takes on roofing.** The main roof is blue painter's tape covered with stripwood tack strips, all painted Grimy Black to suggest tar paper construction. The roof on the annex (opposite) is injection-molded plastic shingle material.



transfer tape. I scratchbuilt the windows using cardstock and $\frac{1}{32}$ " striping tape, but commercial window castings could be used instead. The sliding door is a piece of cardstock with scribed diagonal boards framed with balsa.

The roofs of both sections are mat board ⑤, previous page. The roof for the main structure is covered with masking tape painted black to represent tar paper; the annex roof is covered with molded plastic shingle sheet ⑥. The fascia boards are balsa. Roof vents and other details are from my scrap box. I left the roofs removable to facilitate dusting them from time to time.

More than milk

The straightforward configuration of this building and its small size makes it an ideal candidate to be adopted for any number of applications on a model railroad. The structure could be a railroad-owned maintenance-of-way shed, a small commercial manufacturing plant, or a machine repair facility. The backside of the building could be configured in any number of ways depending on the use and setting.

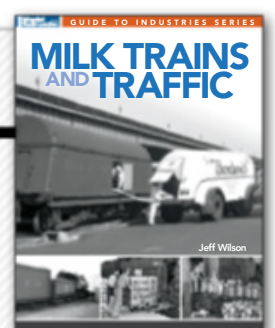
I've included sketches of three different ways the side of the building away from the track might look ⑦. The stone foundation could be replaced with concrete block, poured concrete like the original Cressmont dairy, or a more traditional low foundation with siding extending to near the ground would also be appropriate.

A few signs would help round out the transformation. The possibilities for this compact structure are limited only by your imagination. **MR**

Brooks Stover is a retired engineering executive from General Motors and a regular contributor to Model Railroader magazine. You can learn more about his new 12 x 25-foot S scale Buffalo Creek & Gauley layout in Model Railroad Planning 2019.

Learn more

Learn more about railroads and the dairy industry in Jeff Wilson's upcoming book *Milk Trains and Traffic*. The book, due out in February 2020, can be ordered at www.KalmbachHobbyStore.com



⑦ Endless options. Here are three takes on how the back of the building can be modeled. The top illustration shows how Brooks would have detailed the building had the back been visible. The middle drawing shows the structure with a rear pedestrian entrance for a repair shop or retail business. The bottom sketch depicts the building as a small manufacturing operation. Brooks Stover illustrations

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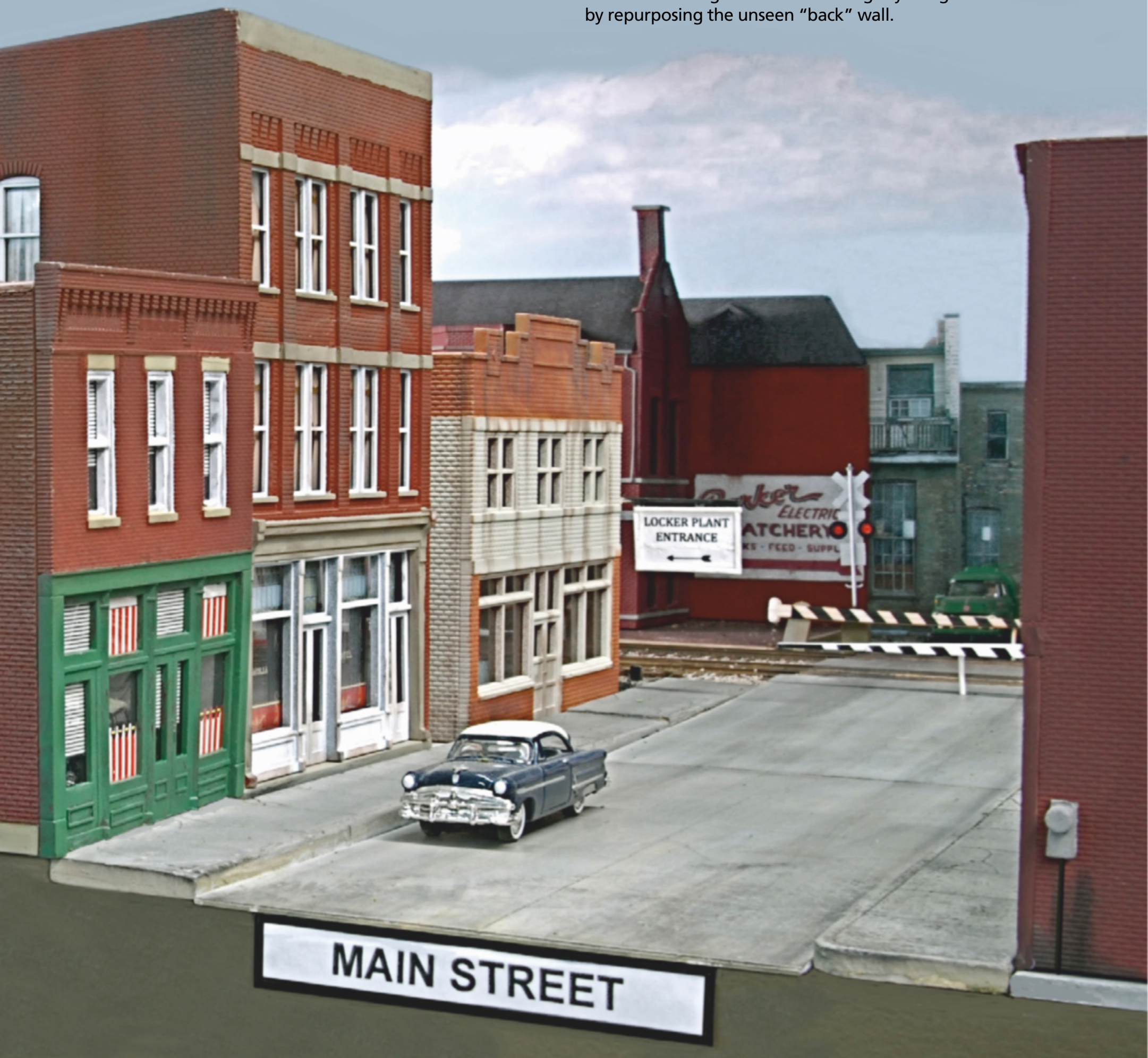
Eisenbahn Canada PO Box 88088 Richmond, BC V6X 2X0 Canada
www.eisenbahncanada.com | sales@eisenbahncanada.com

STRETCHING STRUCTURE PROPORTIONS



These brick stores in New Richmond, Ind., exhibit proportions typical of commercial structures, with lengths and sometimes widths double those of typical plastic kits.

Like most cities, downtown Frankfort, Ind., featured many long, narrow commercial buildings, designed to keep street frontage to a minimum. Contributing editor Tony Koester doubled the length of these buildings by using two kits or by repurposing the unseen “back” wall.



Doubling the length and/or width produces a more realistic footprint

By Tony Koester
Photos by the author

Scale modeling has always required some selective compression. This is especially true with structures. Accurately modeling a 16 x 40-foot depot is seldom a problem, but tackling a sprawling industry is often impractical.

From a manufacturer's point of view, there's another factor that sometimes

comes into play: packaging and displaying in a retail store. The size of more than a few structure kits has been based on what would fit into a standard-sized polybag or box. The result is usually a pleasing structure, but one that is truncated in length, width, or both.

Continued on page 68

Case study: The Maple Hotel

The late Art Curren was the king of structure kitbashing. His comment that “kits are parts” is the key to understanding how to approach getting the most out of the components that comprise a kit.

As an example, I’ll use Design Preservation Models kit 243-10300, Cutting’s Scissor Co. I needed to model the Maple Hotel that sat west of the Nickel Plate Road depot in Charleston, Ill. I had a good photo showing the east and south sides and a footprint from a Sanborn fire insurance plat, but north (front) and west wall info eluded me. (Fortunately, the front faces the backdrop on my layout.)

I didn’t have enough information to scratchbuild this structure. Instead, I looked for two-story brick building kits with similar one-over-one windows, and Cutting’s was the closest I found. By doubling the width and length, I could create a reasonable representation of the hotel as seen from the track (aisle) side.

I made a sketch of both sides of the prototype to become more familiar with it. I then sketched the kit walls (I sometimes make photocopies of them as well) so that I could see which of them would best represent which



The Maple Hotel in Charleston, Ill., once again resides alongside the Nickel Plate’s brick depot (itself kitbashed from Walthers’ Pella depot) on Tony’s HO scale tribute to the NKP’s St. Louis Division.

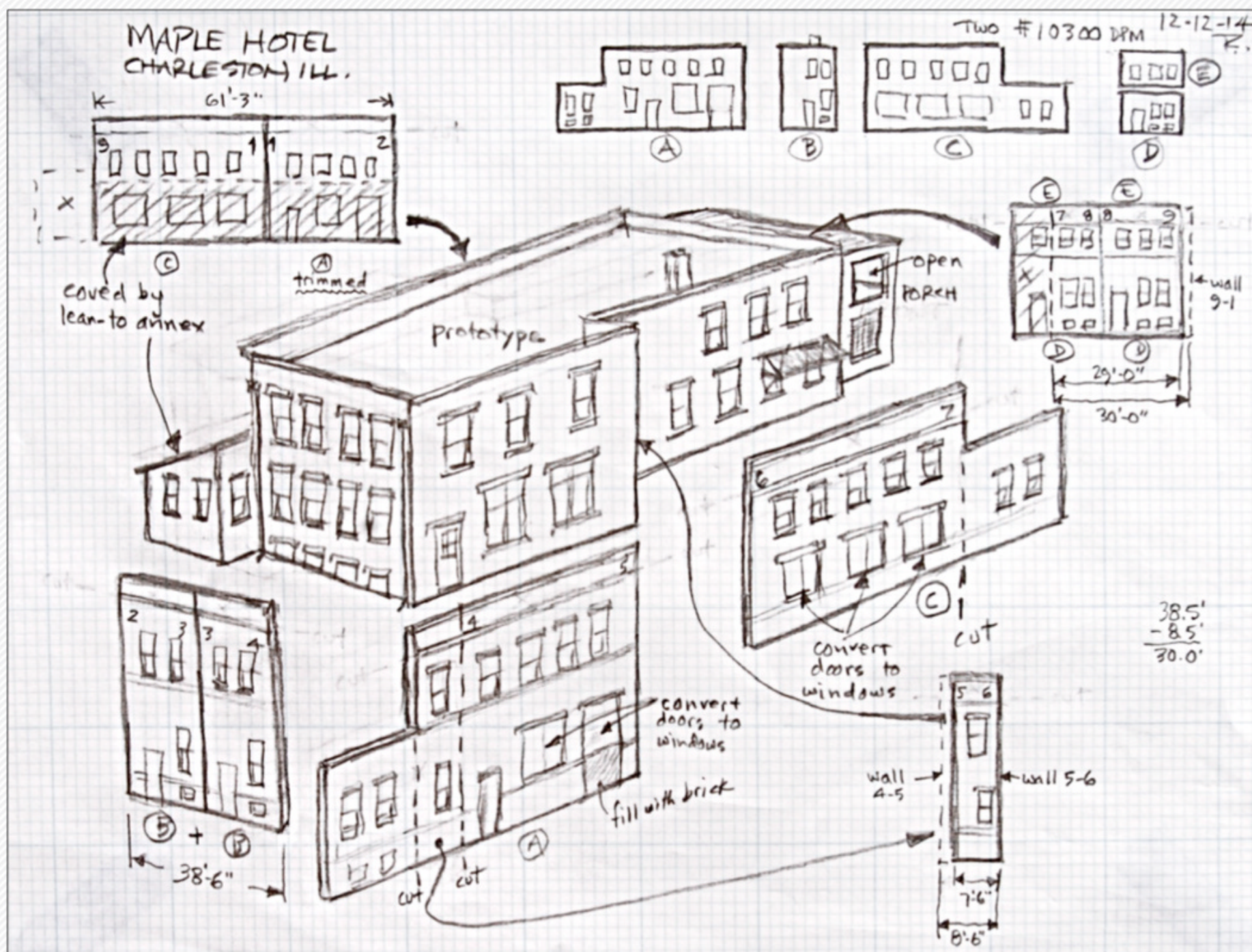
prototype walls, with or without modification. The east wall had a jog in it, but I could salvage a piece trimmed from another wall to make this 7'-6" offset.

DPM kit walls are thick (about a scale foot) plastic, and the wall edges have a slight bevel to them so they will pop out of the mold. I sanded this “draft” angle flat.

I carefully noted which wall moldings had brick detail that continued around the end and arranged the walls so as to take advantage of this detail. Where I couldn’t do this, I chamfered the abutting edges at a 45 degree angle to ensure the brick detail wasn’t interrupted around corners. I did so by scraping the ends of the walls with a sharp hobby knife



This photo from the 1940s shows an eastbound Nickel Plate freight approaching the Maple Hotel and, out of sight to the right, the depot in Charleston, Ill. George Blackerby photo, R.L. Gillum collection



This sketch guided Tony's selection of kit walls to represent specific prototype walls. Each wall edge was numbered on the sketch and on the actual walls to ensure against confusion as assembly progressed.

and then sanding the joints flush with coarse sandpaper.

The east wall had four freight doors that didn't fit my structure. I used a sheet-metal nibbling tool and file to remove the doors. I filled the two openings closest to the track with a pair of window moldings left over

from a Walthers roundhouse kit. I set them into the open spaces and shimmed them with Evergreen styrene strip. I also used styrene strip to make two new large double-hung windows for the inset portion of the east wall.

The kitchen annex with its lean-to roof is a good example of why we save

leftovers from other kitbashing projects. I trimmed brick walls from another DPM kit to build an addition to match what I could see in the photo and Sanborn map.

I fashioned a roof from .060" sheet styrene, sloping it toward the rear. I then sprayed the walls a brick color (primer red) and the roof flat black. The chimneys are from my odds-and-ends box. I hand-painted the concrete trim, added window glazing with shades or curtains, and weathered everything using various shades of PanPastel.

It's difficult to hide the vertical seam where walls are butted together, so those are good places to add a vertical sign, electrical conduit, or – as I did on the south wall – a scupper and downspout. – Tony Koester



The finished building is a reasonable facsimile of the prototype Maple Hotel. Large windows replacing freight doors on the east side was an important change.



Two Walthers Magnolia Hotel kits (item no. 933-3462) were butted end-to-end and the second kit's side walls were sloped to match the profile of the street-side kit. Tony made a new roof from .060" styrene and braced the side walls to keep them from bowing.

Continued from page 65

Retail buildings

A typical proportion for the footprint of a kit representing a small-town brick storefront is about 3 x 5. In HO scale, that usually translates directly into inches. But most retail buildings are much longer than they are wide, as real estate prices and taxes are often based on street frontage. The typical proportion is usually closer to 3 x 10 or even 3 x 15.

If a row of retail buildings is viewed primarily from the street side, that's not a major concern. But if the structures line a street that crosses the railroad at right angles, the sides of the structures are prominent. Using stock kits may result in a scene that looks oddly compressed when viewed from the aisle.

A second problem results from using a kit for a small store to represent a much larger business, like a department store. No one's going to be fooled by a 15 x 25-foot building with a sign proclaiming it to be a Woolworth's.

Moreover, I try hard to disguise a kit's heritage. I want viewers thinking about how well I modeled a prototypical scene, not how good a job I did assembling Whizkit's Drug Store.

Correcting the proportions

Fortunately, a typical brick structure kit's literal shortcomings are easily corrected. Purchasing a second kit can provide all of the ingredients needed to double the width and/or length.

Sometimes we can solve the problem simply by gluing two walls together to double their length. Occasionally, the side walls step down from front to rear in tune with the downward slope of the roof. There's usually enough wall above the upper row of windows to cut those walls to the desired step profile. Styrene strips or Pikestuff's cap tiles (part no. 541-1008) can then be applied to cap the top of the reshaped walls.

It's difficult to achieve an invisible joint between two brick walls butted side by side. I don't even try. Rather, I glue a

scupper casting (or one scratchbuilt from styrene) on the brick wall in line with the sloping roof and run a downspout along the vertical seam between the two wall halves. Exterior plumbing, an electrical conduit, a fire escape, or even a tree or power pole positioned close to the building would hide the joint.

On a spliced-together front wall, the seam between the halves is easily hidden with a vertically mounted sign. If there's a recessed area for a sign along the top, it's usually easy to "merge" the open areas of both front walls into one larger panel, or the tops of both kit walls can be cut off, one discarded, and the other centered atop the new merged wall.

I always reinforce the butt joints with heavy sheet styrene on the back. I also put cross bracing between the side walls to ensure against them bowing in or out over time. And I take care to ensure the structure corners are at right angles, as any error will be amplified as the width or length increases.

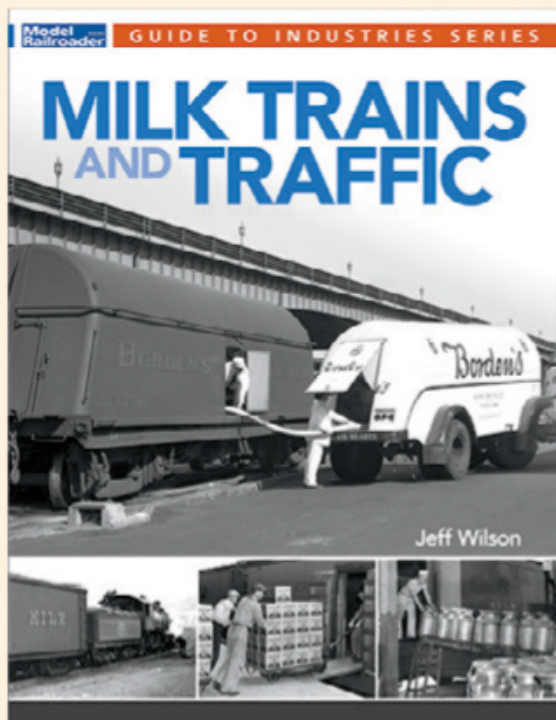
Other opportunities

These same concerns about brick store or factory proportions also apply to many residential and commercial structures. Simply doubling the length and/or width (see "Case study: The Maple Hotel" on the previous page) may add considerable visual impact and realism while making it difficult for the viewer to detect yet another example of a familiar structure kit. 



If the far wall won't be seen because it abuts another building or faces the backdrop, it can be used to double the length of the aisle-side wall.

The Milk and Butter Route



Available February 2020

Milk was once an important commodity for the railroads. Before refrigeration became mainstream, high-speed delivery was critical. Trains carried butter, milk and cheese from small town collecting stations and creameries to the production creameries in the big cities.

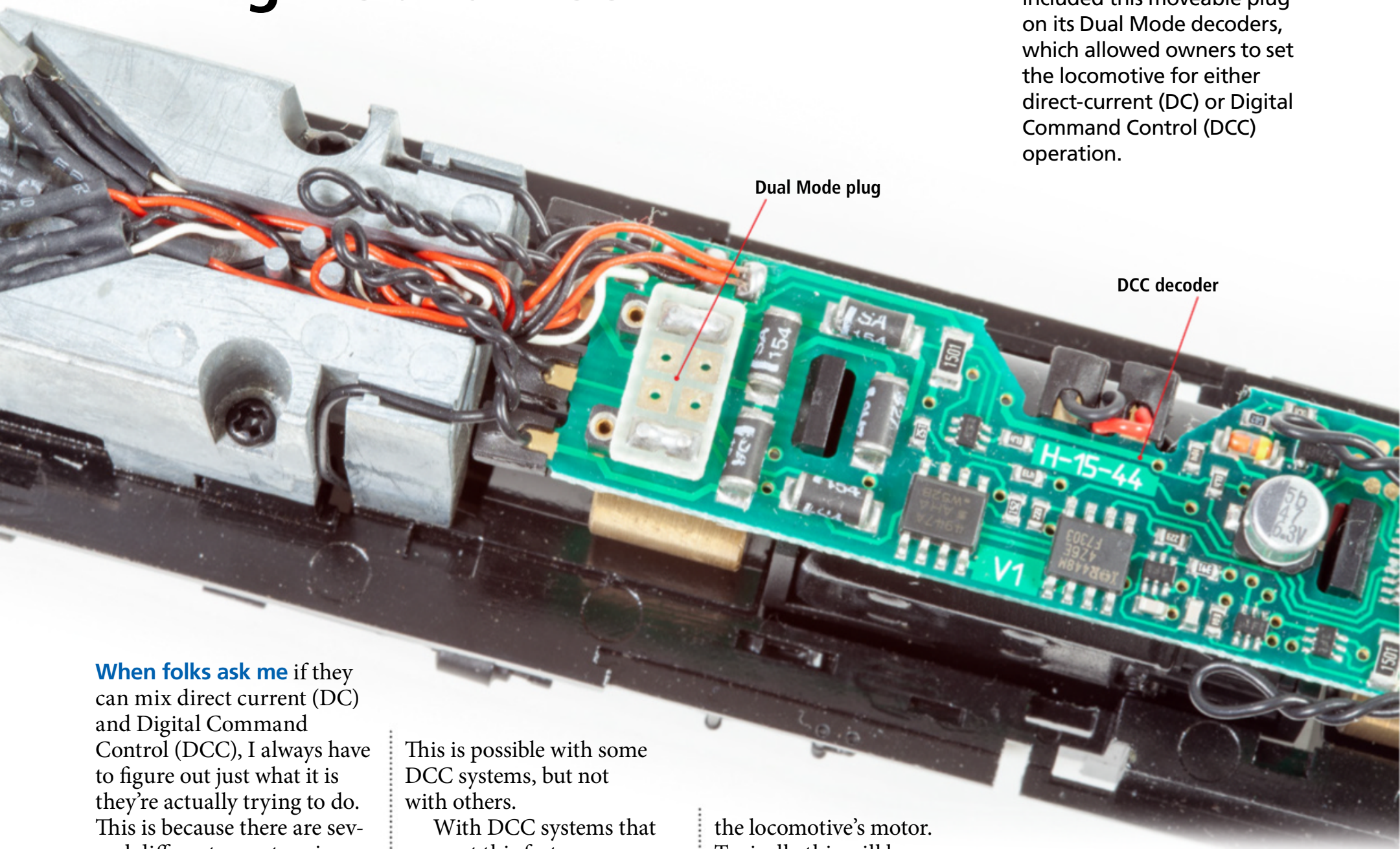
In **Milk Trains and Traffic**, explore how these creameries operated, how dairy products were processed, and how everything evolved over time. Understand all the aspects of milk and dairy traffic through the use of photography in the only book on the market dedicated to milk trains and operations.

This book is a key source for railfans and rail historians, as well as modelers who want to add creameries or milk platforms to their layouts.

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Mixing DC and DCC



1 Plug and play. Atlas included this moveable plug on its Dual Mode decoders, which allowed owners to set the locomotive for either direct-current (DC) or Digital Command Control (DCC) operation.

When folks ask me if they can mix direct current (DC) and Digital Command Control (DCC), I always have to figure out just what it is they're actually trying to do. This is because there are several different ways to mix DC and DCC. Let's take a look at what it means and discuss just how to go about each.

First, the questioner could be asking whether locomotive models without decoders, referred to as analog or DC locomotives, can be operated on DCC-powered tracks.

This is possible with some DCC systems, but not with others.

With DCC systems that support this feature, you enter the address "0" on your throttle and that will allow you to run one analog locomotive on the layout. These systems use a method called "0-bit stretching" to do this.

What this means is they stretch out the amount of time the 0-bit in the DCC power signal is on in order to provide enough power to turn

the locomotive's motor.

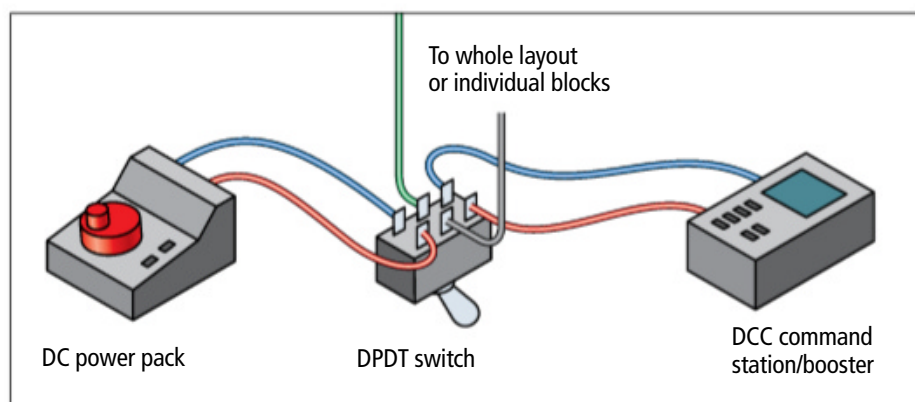
Typically this will be accompanied by an annoying whine from the motor due to the frequency of the DCC signal, but it will run.

There are some drawbacks with this method. First, heat buildup in the motor is an issue, so it shouldn't be done for extended periods. Because coreless motors lack the metal armature that also serves as a heat sink, you should never attempt this with a model equipped with a coreless motor, as you can easily damage it. However, it's perfectly safe to operate a coreless motor on DCC power once a decoder has been installed, since the decoder will provide compatible current.

Second, "0-bit stretching" tends to interfere with the DCC signal on the layout, causing response delays with decoder-equipped

locomotives. Therefore, it's best reserved for testing a new locomotive model and not as a regular practice.

Some people want to know if they can run decoder-equipped models on DC layouts. Atlas once made models with a built-in plug that allowed you to run entirely on DC power **1**. Atlas called this feature Dual Mode. If you regularly move a locomotive between DC- and DCC-powered layouts, this option seems like a good one. However, it can be cumbersome, since in most cases the shell has to be removed to access the plug. Atlas offered this option on its non-sound DCC-equipped locomotives for a number of years, but



2 The big switch. A simple double-pole double-throw switch can be used to provide either DC or DCC power to the entire layout. Be sure to use one with a center-off position or a make-break-make configuration.

I haven't seen it on more recent models.

As far as I know, all decoders made today offer a feature called analog conversion. Some manufacturers also refer to this as dual mode, but it shouldn't be confused with the Atlas device.

This feature allows the decoder to sense when it's on a DC-powered track and power the motor as if it were an analog locomotive. The microprocessor in the decoder waits a short time for the DCC signal to appear. If it doesn't, it converts to DC mode.

Sound decoders capable of analog conversion have become a popular option because they can operate with the sound active on either DC or DCC power. Manufacturers have put a lot of effort into improving the technology and providing more sound options when in DC mode.

However, the reality is that the decoder needs about 7 volts (V) on the track before it will respond. This also means you have a greatly reduced control range of only about 7 to 12V instead of the full 0 to 12V on your power pack.

Most decoders come from the factory set with analog conversion on. It can be controlled in the decoder by configuration variable (CV) 29 and can be turned on and off.

I've always recommended it be turned off under normal operating conditions. The main reason for this is that when shorts occur on the layout, they can send a DC

pulse through the rails, and if DC conversion is enabled, the locomotive is likely to take off at full speed.

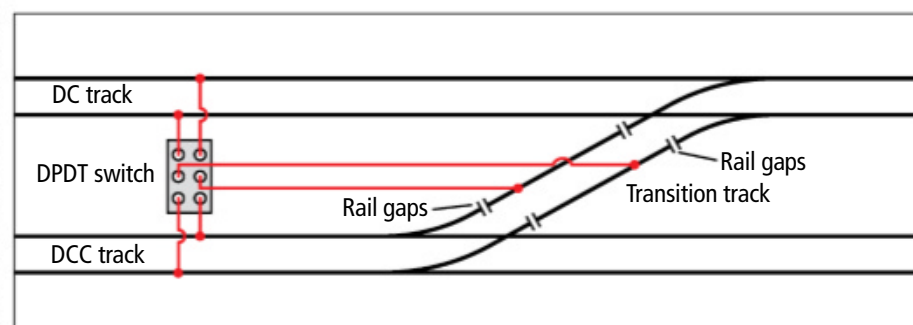
Another potential issue is that some decoders can be confused by DC power packs that put out pulsed wave power. If your decoder manual indicates that a filter or capacitor is required for analog conversion, this is why.

Usually, decoders will operate fine if a pure- or smoothed-DC power pack is used, but anymore it's difficult to know in advance what type of circuit is used. One general guide is that if it's a transistorized power pack, it probably offers pulsed power. At one time some power packs had switches that allowed users to turn pulsed power off, but I haven't seen that option in a number of years.

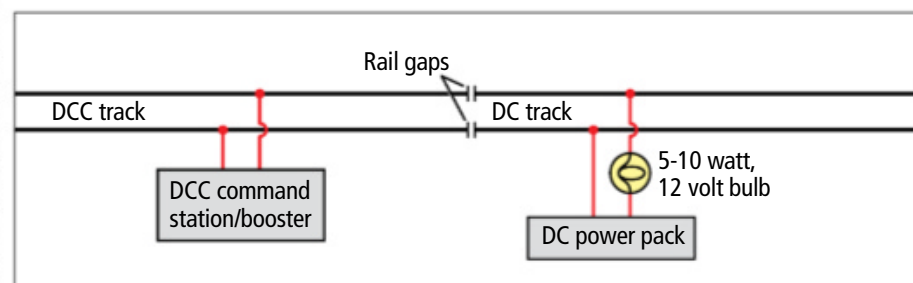
But what about having DC and DCC powered rails on the same layout? One option is to use a selector switch to provide either DC or DCC power to the entire layout **2**, opposite. This is an either-or approach, but it's the safest.

Carrying that a step further, you could connect the DCC power bus to each block selector switch on a layout and then use it instead of another power pack. That way whenever you wish, you can switch each block of your layout to either DC or DCC.

Some folks, who like to live dangerously, take this a step further and actually operate both systems simultaneously, switching between DC and



3 Transition time. Installing a transition track between the DC and DCC sections of the layout with a selector switch for DC or DCC power would allow you to move locomotives between the two sections safely.



4 A little safety. If you use the selector switch approach, make sure to wire a 5 to 10 watt, 12 volt automobile bulb into one of the DC power pack's leads to protect it and the DCC system should someone forget to throw the switch properly.

DCC as they run trains over the layout.

A safer way to do this is by totally isolating the DC and DCC powered tracks, using for example a loop-within-a-loop approach or parallel tracks with no physical connection between them. If you really want to avoid having to move locomotives from one set of tracks to another by hand, you could provide a transition track between the two with a selection switch to go between DC and DCC power on just that section of track **3**.

Simply run your locomotive onto the transition track, switch from one type of power to the other, then drive your train onto the other section of the layout. Make sure to mark the switch so that you and your operators know which way to throw the switch. Even with this safety measure, be prepared for someone to forget on a regular basis, so add some protection as described below.

If you really want to challenge fate, then you can run

locomotives across the block gaps between the DC and DCC powered sections. I don't recommend trying this. However, Digitrax provides guidance in its system manuals on how to install a 5 to 10 watt, 12V automobile light bulb on one of the DC power leads **4**. This, they say, protects the DC and DCC system and decoder, but in my opinion it's a less-than-satisfactory solution and I don't recommend trying it.

In all cases, please use a double-pole double-throw (DPDT) switch with a center-off position or one with a make-break-make configuration to guarantee that the two power systems are always completely isolated.

In the end, it's best to bite the bullet and install a few decoders or purchase models with decoders in them. I think you'll find that DCC-equipped locomotives provide such improved operations and features you won't want to go back to DC once you have given them a full tryout. **MR**



SOME FOLKS, WHO LIKE TO LIVE DANGEROUSLY, TAKE THIS A STEP FURTHER AND ACTUALLY OPERATE BOTH SYSTEMS SIMULTANEOUSLY SWITCHING BETWEEN DC AND DCC AS THEY RUN TRAINS OVER THE LAYOUT.
— LARRY



Broadway Limited Imports N scale Mikado

For those modeling steam railroading in North America during the first half of the 20th century, having an accurate and reliably running model of a United States Railroad Administration (USRA) Mikado-type 2-8-2 is a necessity. For N scalers, Broadway Limited Imports (BLI) has released an excellent 1:160 model of a USRA 2-8-2 in both light and heavy versions. The Paragon3 series model comes factory-equipped with a dual-mode sound decoder that operates on both Digital Command Control (DCC) and direct-current (DC) layouts and supports the BLI Rolling Thunder subwoofer system.

The prototype and model. The BLI model matches the dimensions of a prototype drawing of an as-built USRA

heavy Mikado in the *Model Railroader Cyclopedia: Vol. 1, Steam Locomotives* (Kalmbach Books). Our review sample is decorated as Chicago, Milwaukee, St. Paul & Pacific RR (Milwaukee Road) no. 300. Originally numbered 8605, the locomotive was one of 100 USRA heavy 2-8-2s built by Alco and delivered to the Milwaukee Road in 1918. The railroad classified the USRA Mikes as L3 (or as L3a or L3b depending on steam pressure and equipment installed). The road had received some 2-8-2s before World War I that made up its L1 and L2 classes. After the USRA disbanded in 1920, the Milwaukee Road purchased additional 2-8-2s built to L2 class specifications.

Many of the L3 class locomotives served until the end of steam on the Milwaukee Road in the mid-1950s.

The model's die-cast metal boiler and plastic tender feature well-defined molded detail, including boiler bands and rivet seams. Separately applied parts include the whistle, bell, and safety valves. Handrails and piping are also separately applied. Our review sample includes the original USRA-style trailing truck. Some of the Milwaukee Road USRA Mikados, including no. 300, eventually received Delta trailing trucks equipped with boosters.

All paint is smoothly applied, and all lettering is clearly printed, including the road number and L3a classification on the cab sides. The red and white heralds on the sides of the tender are properly placed. The model also features a light-emitting diode (LED) headlight correctly mounted on the smokebox door.



The N scale USRA heavy Mikado features many separately applied piping and detail parts and blackened metal running gear.



Pulling power. The locomotive by itself weighs 2.4 ounces, 3.4 ounces with the tender. It picks up track power from six drivers and all eight tender wheels. The rear two drivers have traction tires.

In addition to a die-cast metal body, the locomotive has a die-cast metal chassis that houses the Precision Drive Motor. During a drawbar test with our workshop force meter the model generated 1.3 ounces of tractive effort, which is equivalent to 31 free-rolling N scale freight cars on straight and level track.

Running on DCC. I ran the review sample on our DCC test track using an NCE PowerCab system. The Mikado accelerated smoothly from 2 scale mph in speed step 1 to 100 scale mph in speed step 28. This is a bit fast for a heavy 2-8-2, but the top speed is easily lowered by adjusting the top voltage with configuration variable (CV) 5. The exhaust chuffs are synchronized to match the motion of the



Subscribers can watch a video of the BLI N scale Mikado in action at ModelRailroader.com

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drivers at the correct four chuffs per wheel revolution.

The model's user-triggered sound effects include a melodious steam whistle and a hand-rung bell. When starting the locomotive, I could increase the intensity of the chuffs by pressing F5. When drifting downgrade or running light, I could decrease the intensity by pressing F6. There's also a button controlled brake/brake release, coupler crash, and grade-crossing signal. There are other various crew, radio, and background sounds that I found less useful. All the functions are outlined in the printed instruction sheet.

The Mikado includes the ability to record and play back what BLI refers to as macros. By pressing F27, I could record a sound and operating sequence, then play it back by pressing F26. This would allow you to have a train running on "auto pilot" while you're actively switching or running a separate train with another locomotive.

Like other BLI Paragon3 locomotives, the USRA heavy Mikado supports the BLI Rolling Thunder system, which uses a subwoofer to capture the deep bass tones of a powerful locomotive. BLI sells the system for \$199.99 or \$249.99, depending upon the size of the speaker. (Read my review of the Rolling Thunder system in the March 2016 issue.)

I also ran the model on our Canadian Canyons project layout using a Digitrax DCC system, and the model performed without any issues. With its 9³/₄" minimum radius, the Mikado easily maneuvered the layout's 13" radius curves and rolled smoothly through its Peco medium-radius turnouts.

DC performance. In DC, the locomotive required 9V to start moving at 3 scale mph. It accelerated smoothly to 40 scale mph at 12V and 50 scale mph at 14V, our DC power pack's maximum voltage. To access user-triggered sound effects and to program some CVs in DC mode, BLI sells the DC Master analog sound controller for \$49.99.

With or without the Rolling Thunder subwoofer system, this N scale steam locomotive features loud, distortion-free sound that's on par with its larger HO scale cousins. If you're in the market for an N scale Mike, be sure to take a look and a listen to the BLI Paragon3 USRA 2-8-2. – Dana Kawala, senior editor

Conducted by Dana Kawala

Facts & features

Price: \$329.99

Manufacturer

Broadway Limited Imports

9 E. Tower Circle

Ormond Beach, FL 32174

www.broadway-limited.com

Era: 1918 to 1950s

Road names (two road numbers each)

Heavy Mikado: Chicago, Milwaukee, St.

Paul & Pacific; Atchison, Topeka & Santa

Fe Ry.; Chicago, Burlington & Quincy; Erie;

Great Northern; and New York Central

(Pittsburgh & Lake Erie).

Light Mikado: Baltimore & Ohio, Canadian

National, New York Central (Indiana

Harbor Belt), Pennsylvania RR, Southern

Ry., and Union Pacific.

Painted black and graphite but unlettered versions available.

Features

- Blackened metal wheelsets, in gauge
- Brass whistle and valve details
- Die-cast metal body and chassis
- Electrical pickup on six drivers and all tender wheels
- Flywheel-equipped can motor geared to first and fourth axles; side rods transfer power to other drivers
- Golden-white light-emitting diode (LED) headlight
- Magne-Matic couplers front and rear, at correct height
- Operates on codes 55, 70, and 80 rail
- Paragon3 dual-mode sound decoder supports Rolling Thunder system
- Recommended minimum radius 9³/₄"
- Traction tires on two rear drivers
- Weight: 3.4 ounces (engine and tender), 2.4 ounces (engine alone)
- Wire grab irons and other detail parts

PERFORMANCE CHARTS

DRAWBAR PULL	1.3 ounces
	31 N scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
9 (start)	3
10	11
11	22
12	40
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	2
7	16
14	27
21	63
28	100



Atlas HO scale Electro-Motive Division GP7

A new lineup of Electro-Motive Division (EMD) GP7 diesel locomotives has been added to the Atlas Classic HO scale line. All models feature a newly tooled die-cast metal frame. Gold-series units have a dual-mode ESU LokSound sound decoder.

The prototype. Electro-Motive Division produced the 1,500 hp GP7 from October 1949 through May 1954. During the production run, 2,724 units were built. The bulk of the units were produced for American railroads; 112 went to Canada and two to Mexico.

The GP7s had 16-cylinder 567B diesel engines. The easiest way to distinguish a GP7 from a GP9 is to look at the louvers. A GP7 has three sets of louvers below the cab and two vertical rows under the radiator screens.

Our sample is decorated as Great Northern no. 642, part of the railroad's 600 through 655 series. The full-size 642 was built in June 1951 and wore its as-delivered *Empire Builder* scheme throughout its career (other GP7s were repainted in the simplified scheme [Omaha Orange and Pullman Green without yellow stripes] or Big Sky Blue).

Shortly after the Burlington Northern merger in March 1970, no. 642 was renumbered 1542; it was repainted Cascade Green and black in 1973. The road switcher was retired in June 1982 and traded in to General Electric for credit on BN's fleet of cabless B30-7As.

The model. The Atlas model has a multi-piece plastic body. The short and long hood (with or without dynamic brakes, as appropriate) are a single

casting that the combined cab and battery box compartment fits over. These two pieces fit neatly on the plastic sill.

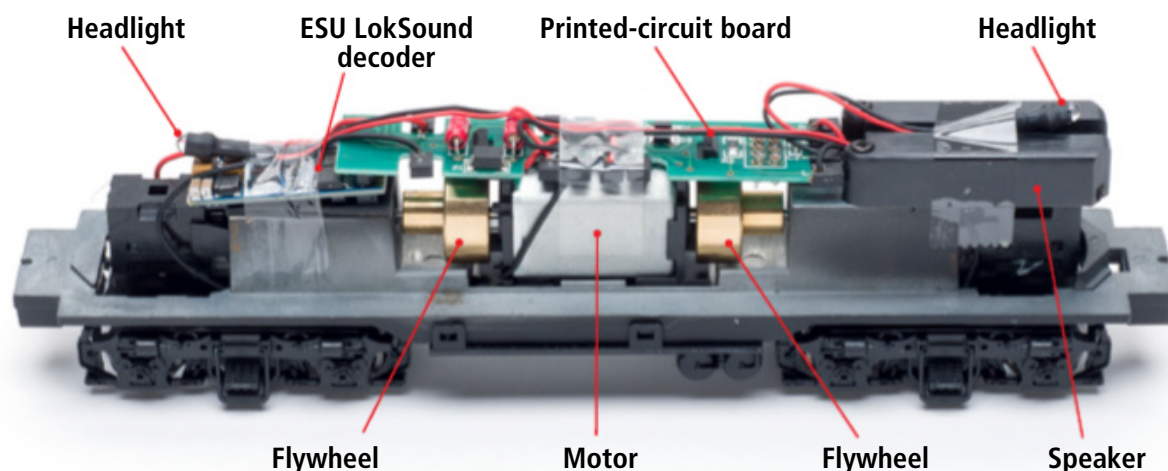
The details on the model are crisply molded. I was especially impressed with the air intake screens. They're molded so that the vertical shutters are visible behind the screen. The four rooftop fans are similarly molded, with the blades simulated under the screens.

The model features factory-installed and painted grab irons. Great Northern had parallel sets of grab irons on the long and short hood. There were five grabs leading to the corner grab iron and four on the opposite side. The eye bolts on the top of the long and short hood are simulated with molded nubs.

The Omaha Orange and Pullman Green paint is smooth and evenly applied, and the tri-color GN herald is well rendered on the cab. The yellow stripes and GREAT NORTHERN lettering are opaque. There were a few spots where the stripe didn't land precisely on the separation line, leaving a sliver of orange visible between the green and yellow.

Our sample has the F located on the short hood end of the sill. From all evidence I can find, GN ran its GP7s long-hood forward. In addition to relocating the F, you'd also need to rotate the crew figures and seats 180 degrees.

There were a few GN-specific details omitted from the model, including a bell between the exhaust stacks, a



The GP7 features a typical mechanism design, with the motor framed by flywheels. The dual-mode ESU LokSound decoder is above the front truck.

PERFORMANCE CHARTS	
DRAWBAR PULL	1.76 ounces 25 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
10.4	2.5
11	9
12	24
14	67
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
2	2.3
7	11
14	30
21	57
28	71

winterization hatch covering the third rooftop fan from the cab, and journal covers on the trucks. As built, GN GP7s had four-step step wells. A fifth step was added before the BN merger.

The mechanism. To remove the shell, first unscrew and remove the draft-gear boxes. Then disengage the four tabs on the shell that lock into the frame.

A five-pole skew-wound armature motor with two brass flywheels is located in the center of the chassis. The printed-circuit board is mounted on top of the motor. The Digital Command Control (DCC) decoder is above the front truck. The speaker is over the rear truck.

The one-piece plastic fuel tank and air reservoir assembly has four tabs that lock onto the chassis. Atlas offers the GP7 with 800- and 1,600-gallon tanks; the GN model has the former.

To the test track. The Atlas GP7 is dimensionally accurate, closely following drawings in the *Model Railroader Cyclopedica: Vol. 2, Diesel Locomotives* (Kalmbach Books, out of print).

I tested the dual-mode model in both environments. For DCC, I used an NCE PowerCab set to 28 speed steps. From the box, the model didn't move smoothly at step 1, so I advanced the throttle to step 2, where the model crawled at 2.3 scale mph. The engine achieved at top speed of 71 scale mph, within the prototype's speed range.

To smooth out the performance at speed step 1, I adjusted the value of configuration variable (CV) 2. From the factory, CV2 was set to 3. Changing the value to 10 improved the performance at step 1. A quick start guide is included with the locomotive. The *LokSound Select User Manual for Diesel and Steam*

Facts & features

Price: Direct-current, \$129.95; with dual-mode ESU LokSound Select sound decoder, \$239.95

Manufacturer

Atlas Model Railroad Co.
378 Florence Ave.
Hillside, NJ 07205
www.atlasrr.com

Era: June 1951 to 1970 (as decorated)

Road names (two to three road numbers per scheme). New paint schemes: Great Northern, Algoma Central, Amtrak, Central California Traction, and Missouri-Kansas-Texas. New numbers: Bangor & Aroostook; Belt Ry. of Chicago; and Toronto, Hamilton & Buffalo.

Features

- 8-pin decoder plug (direct-current version)
- Accumate couplers, mounted at correct height
- Blackened metal wheels, correctly gauged
- Golden-white light-emitting-diode headlights
- Minimum radius: 18"
- Weight: 10.8 ounces

Decoders can be downloaded for free at www.loksound.com.

I tested the model on direct current (DC) using a Bachmann power pack. The sounds came on at 9.2 volts (V). High starting voltages are typical with sound-equipped units in DC. The engine started moving at 2.5 scale mph at 10.4V and topped out at 67 scale mph at 14V.

The model has a drawbar pull of 1.8 ounces, which is equivalent to 25 cars on straight and level track. I was able to pull an 8-car train of 50-foot boxcars up the 3 percent grade on our Milwaukee, Racine & Troy staff layout.

User-controlled DCC sound functions include the horn, bell, and manual notching using the DRIVE/HOLD function. In DC sounds were limited to the diesel engine.

A classic. The GP7 has been a part of the Atlas Classic line for more than three decades, and each release improves upon the last. Kudos to Atlas for keeping this road switcher current with the times.
— Cody Grivno, group technical editor

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Fleischmann/Roco Z21 WLANmaus throttle

Following a similar design as its Multimaus tethered and wireless-radio throttles, Roco/Fleischmann has introduced a wireless Wi-Fi version, the WLANmaus, that works with the firm's Z21 Digital Control Center system. Reviewed in the May 2019 *Model Railroader*, that system includes a router to broadcast a Wi-Fi signal. A proprietary Z21 app running on a smartphone or tablet can then be used to wirelessly control trains. As much as I enjoyed using the app, I think that the Wi-Fi throttle is a welcome enhancement to the Z21 system.

Easy set up. After installing three AAA batteries in the back of the throttle, I pressed the OK button to turn it on. Then I followed the on-screen prompts to set it up. After choosing English as a language, I received an SSID? prompt and pressed OK. I then received a SEARCH? prompt and pressed OK again. The system located available Wi-Fi networks, and I scrolled through them using arrow keys until I found the SSID for the router connected to our Z21 command station. I then entered the router's password and setup was complete.

The throttle can also be used with the Digikeijs DR5000 multi-protocol command station that I reviewed in the December 2018 MR. In addition to entering the SSID and password for the DR5000, I had to enter the system's IP address under the throttle's Wi-Fi menu. The throttle worked perfectly with the Digikeijs system.

Once the throttle was set up, I didn't need to enter the Wi-Fi info again. The WLANmaus automatically connected to the Z21 or DR5000 network. However, if the need arises, the throttle can be reset to factory defaults.



Operation. The plastic throttle is $\frac{3}{4}$ " thick, measures $2\frac{1}{2}$ x 7 inches, weighs 6 ounces with three AAA batteries installed, and is comfortable to hold. All the buttons and the large $1\frac{1}{2}$ " diameter speed control knob are easy to access with one hand.

Instead of a direction switch, the speed control knob has a center-off feature, which I found especially useful during switching moves. The numeric (0-9) keypad includes a shift key allowing access to 28 DCC functions. In addition, the headlight function is activated by pressing the OK button (not 0). If you forget, there's a light icon on that button.

Another button toggles between locomotive and turnout modes. The latter allows the throttle to be used to control decoder-equipped turnouts and other accessories.

The throttle has a $1\frac{1}{2}$ " x $1\frac{1}{4}$ " backlit liquid crystal display (LCD) screen. The screen can be set up to show the locomotive name or DCC address. Icons show other information, including battery life, Wi-Fi signal strength, function button pressed, and more.

A locomotive name can have both letters and numbers and is assigned with a DCC address when a new entry in what Roco refers to as the locomotive library is created. Basically a roster, the library can have up to 64 separate entries/addresses. You can then scroll through the listed locomotives or search for a specific name or DCC address. Libraries can also be downloaded and uploaded between throttles.

Adding new locomotives, programming decoders, and changing the throttle configuration are all handled by on-screen menus. Screen prompts take

the user through the specific task at hand. The included printed instruction manual features a handy diagram showing the three basic throttle menus (LOCO, PROGRAM, and SETTINGS) and their associated submenus.

Using the programming menu, I set the programming mode to programming on the main (POM). To read back CV values the mode can be set to CV, but this mode only works when a programming track is connected to the appropriate screw terminals on the Z21 command station.

The programming menu also features a CV29 menu where the individual features controlled by CV29, such as changing the direction of travel or enabling speed tables, can easily be adjusted.

The throttle's range is impressive. Using the WLANmaus, I controlled a locomotive on our workshop test track while standing out of sight about 60 feet away in the far corner of our staff layout room. A fellow staffer was strategically stationed by the locomotive to make sure I didn't accidentally run it off the track.

Whether you're a novice or expert with DCC model railroading, the Z21 is an excellent plug-and-play system. The WLANmaus throttle makes it even better. – Dana Kawala

Facts & features

Price: \$118.11

Manufacturer

Fleischmann/Roco
Modelleisenbahn München GmbH
Kronstadter Straße 4
81677 München
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www.Z21.eu/en
Distributed in North America by
Heartland Hobby Wholesale
6929 Seward Ave.
Lincoln, NE 68507
www.hhwonline.com

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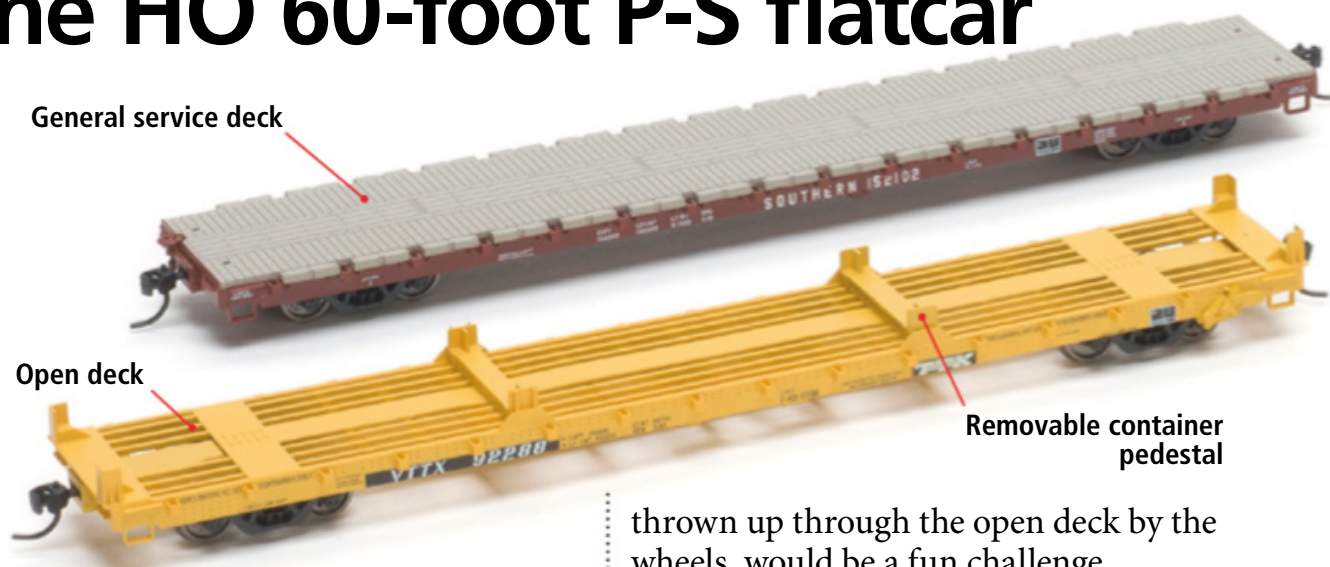
- 9,999 locomotive addresses, 2048 turnout addresses
- Control functions 0 to 28
- Programs and reads back configuration variables
- Turnout control and programming
- Supports 14, 28, or 128 speed steps

WalthersMainline HO 60-foot P-S flatcar

A flatcar appropriate for North American railroads set anywhere from the mid-1960s to today and suitable for a variety of loadings is being offered in HO scale by Wm. K. Walthers, Inc. The 60-foot Pullman-Standard flatcar is newly tooled, finely detailed, and offered with a choice of three deck configurations for different kinds of loads.

The WalthersMainline cars feature molded plastic decks, underframes, and details; cast-metal spines; separately applied brake gear; see-through stake pockets; and brake wheels or handles appropriate to the prototype. They're equipped with metal ProtoMax knuckle couplers and blackened metal wheelsets.

Pullman-Standard built more than 4,000 of these flatcars starting in the mid-1960s. Depending on their fittings, they could carry farm machinery or other heavy equipment; logs; pipe; poles; and steel plates, coils, girders, or ingots, to name just a few. Many are still in revenue service today.



Once over. Our four samples covered four paint schemes (Southern Ry., VTTX, and OTTX in red and yellow) and all three deck styles. The Southern Ry. car had a plain wooden deck for general service. The OTTX cars had a farm machinery deck, with slots for chain tie-downs in the middle of the deck. The VTTX car was visually the most interesting, with container pedestals and a see-through slat deck that left the trucks and brake gear visible from above. Weathering this car, with dirt and dust

thrown up through the open deck by the wheels, would be a fun challenge.

The VTTX car's four sets of pedestals are arranged to let the car carry three 20-foot containers. One of the sets of pedestals is removable, allowing loading of one 20-foot and one 40-foot container, just like the prototype. The car came with a replacement piece to represent the pedestal folded flat.

The paint on all four was smooth, even, and opaque. The printing was crisp, with even the smallest lettering in the COTS (Clean, Oil, Test & Stencil) panel legible under magnification.

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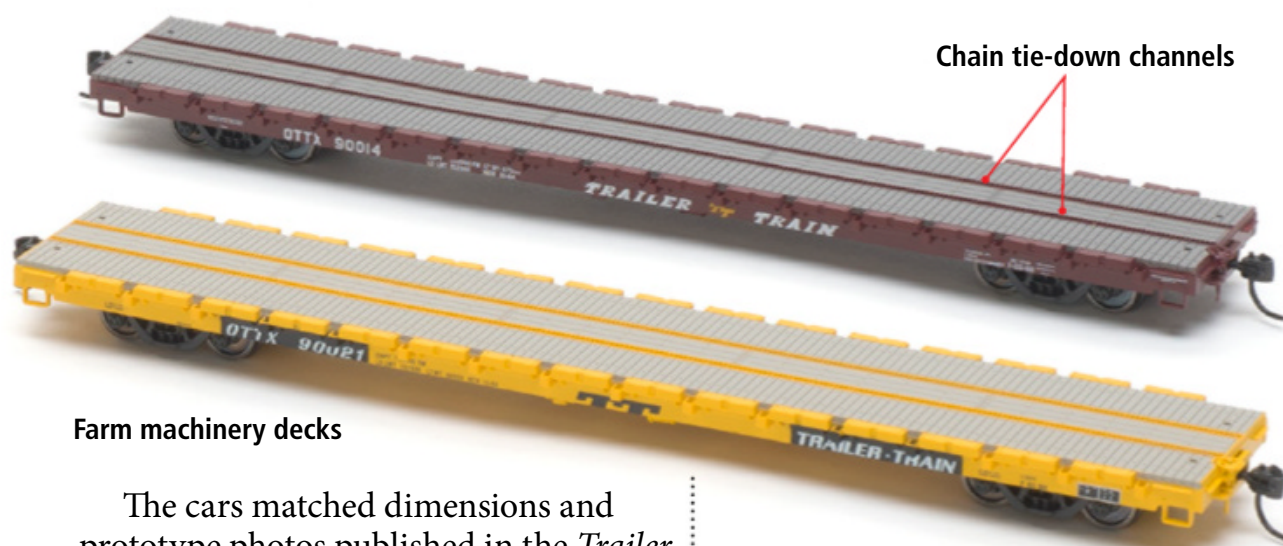
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P37110



Farm machinery decks

The cars matched dimensions and prototype photos published in the *Trailer Train Company Equipment Guide* and *Directory of General Merchandise Cars and Commodities*, both from TTX.

On the test bench. The couplers were mounted .02" low per National Model Railroad Association (NMRA) Standard S-2, close enough to be corrected with a pair of truck bolster washers. The NMRA Recommended Practice (RP)-25 contour wheels were all in gauge.

The cars were considerably under-weight based on NMRA RP 20.1, but that's to be expected for a flatcar, which has few places to conceal weight. A load

would be an easy way to bring the cars up to the NMRA-recommended weight.

As long as these cars are, they would look better on broad curves. But when I tested them on our 4 x 6-foot Eagle Mountain project layout, the cars had no difficulty traversing its 19" radius curves and no. 5 Peco turnouts.

Any HO scale layout set from the mid-1960s to today could use one or more of these cars. A detailed farm machinery load or some well-weathered containers would make one of them a standout. – *Steven Otte, associate editor*

Facts & features

Price: \$27.98

Manufacturer

Wm. K. Walther's Inc.
5701 W. Florist Ave.
Milwaukee, WI 53218
www.walthers.com

Road names: Southern Ry.; Trailer Train (OTTX or VTTX reporting marks); Atchison, Topeka & Santa Fe; Elgin, Joliet & Eastern; and undecorated.

Era: mid-1960s to present

Features

- Blackened metal wheelsets, in gauge
- ProtoMax metal knuckle couplers (.02" low per NMRA S-2)
- Prototype-appropriate brake gear
- Removable container pedestal (VTTX)
- Three prototype-specific deck variations
- Weight: open deck, 2.5 ounces (2.5 ounces too light according to NMRA RP-20.1); solid deck, 2.8 ounces (2.2 ounces light)

Your Planning Tool for 2020

Model Railroad Planning 2020 is one of those unique special issues that mixes track, layout, and scenery planning into one outstanding publication. Published by *Model Railroader* magazine, the popular annual covers a lot of information in 100 pages with all-new planning stories by expert contributors like Tony Koester and David Popp.

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Doubling the hill

A scanner tuned to local railroad frequencies rests on my workbench. It's fun to use it to monitor activity on Norfolk Southern's nearby Lehigh Line. Late one night back in 1990, when the Lehigh Line was Conrail's, I came to full alert when symbol freight ENSE radioed the dispatcher very apologetically, "Remember that tie we hit in Emmaus?" (It's speculated that vandals placed a tie on the tracks.)

The dispatcher (DS) was monitoring ENSE's moves closely. Its power had been sent to rescue a westbound that had stalled on the climb up Musconetcong Mountain earlier that evening, snarling traffic in both directions. The dispatcher he relieved had already used every trick in the book to get the westbound moving.

"No-o-o," DS replied, quizzically.

"Oh, you just came on duty, didn't you," says ENSE. "Pieces of the tie wedged in the draft gear, so we can't couple up." The beleaguered dispatcher's headache needed well past the red line.

Rare is the railroader who hasn't contended with motive power failure, wet rail, or too much tonnage. Putting all three in a trifecta bets into headaches all around.

Low friction is rail transport's friend. The contact area between a steel wheel tread and a steel rail head is less than the size of a dime, so rain, snow, even dew or frost can tip the balance to foe – no friction. Imagine an intent engineer struggling uphill at 10 mph, prime movers in full throat, muscling 10,000 tons over slimy rails coated with wet leaves. With no warning, a low lube oil alarm shuts down one unit. Game over.



A New York, Ontario & Western camelback Ten-Wheeler on Jerry's layout returns for the remainder of its train, completing a doubling of the hill. Dave Abeles photo

"Doubling the hill" is a challenge that generations of railroaders have experienced. This involves dividing a train and pulling up one part at a time. Doubling put all three trainmen to work during the full crew era. Assessing the gravity of the situation, a wizened conductor might assume flagging duty, because applying the necessary hand brakes was a demanding workout. He would instruct his flagman where in the train to uncouple and how to make the moves. The flagman would then begin the walk to the designated spot, tying down enough hand brakes as he went to hold the rear end of the train. The head brakeman walked back from the engine; where the two met, he'd receive the conductor's instructions. Finally, the engineer started forward, pulling the head end to a siding where the grade lessened.

At a double-ended siding, the crew would complete another round of hand brakes, leave the cars on the main track, and run around them to go for the rest of the train. This avoided extra stops to throw switches. When the

engine returned with the rear end, it would stop on the main before the switch, cut away, and run reverse back through the siding to couple to the head end. A short shove back to the rear end put the train back together.

Doubling at a stub siding left no alternative but to pull by the switch to shove in. Passing hand or lantern signals made long shoves like this difficult before handheld radios became common. Matters worsened if the train had to flag ahead, as well as to the rear. With the head brakeman so occupied, the fireman would get switches and assist with coupling and uncoupling.

Doubling isn't confined to the past, as it may seem. Searching YouTube with "Train Stalls" turns up many contemporary examples.

We modelers are less challenged by weather, but gravity still rules. I designed my

layout with 2 percent maximum grades. A daily milk train headed by a Ten-Wheeler climbs one of them. The engine can handle the train's normal consist, but only one extra car makes it stall. When I glimpse a fleshy, greasy hand grinding down on my beloved HO scale Ten-Wheeler to help it overcome the grade, I cringe.

Layouts don't need workouts to double a hill. I'd rather watch those fingers place flags, set a brake with a pushpin behind the rear coupler, and line switches, making prototypical moves like those I've described.

That night in 1990, the

Conrail dispatcher arranged power from a following westbound that was then stopped behind the stalled train to "poo-oosh" it over the top. (Indeed, the "push" is usually a long poo-oosh.) Were this not possible, there would be nothing left to do but double the hill. **MR**







A Forks Creek & Central freight led by Heisler no. 79 exits the tunnel and crosses Fall River Trestle as it makes its way south from Shavano, Colo., on a cold winter day in 1898. Ron Morse of Lenexa, Kan., built and photographed this HO scale diorama. He scratchbuilt the bridge, abutments, and tunnel portal. He used powdered marble for the snow. The locomotive is a Pacific Fast Mail brass model.

Enter MR's 2020 Photo Contest

Show off your modeling and photography skills, and you could win up to \$750 in *Model Railroader* magazine's photo contest! You don't have to be a professional to win, just have an eye for images that capture the action and creativity of model railroading. See page 25 for entry instructions and complete rules. The deadline is Jan. 31, 2020, so don't procrastinate!

MORE ON THE WEB

• Ron Morse's photo of his HO scale winter diorama is this month's wallpaper. Download it free at ModelRailroader.com



The Amtrak California Zephyr emerges from the east portal of the Moffat Tunnel on the former Denver & Rio Grande Western route. Svein-Martin Holt of Drammen, Norway, photographed the scene on Karl Sinn's Z scale layout. Hans Riddervold scratchbuilt the iconic tunnel portal. Svein-Martin used Helicon Focus software to increase the depth of field on the photo.

Send us your photos

Trackside Photos is a showcase for the work of *Model Railroader* readers. Send your photos (digital images 5 megapixels or larger) to: *Model Railroader*, Trackside Photos, P.O. Box 1612, Waukesha, WI 53187-1612; or upload them to <http://fileupload.kalmbach.com/contribute>. For our photo submission guidelines, contact associate editor Steven Otte at sotte@mrmag.com.



The serenity of kayaking down a gentle river is broken by the rumble of a Tenino Western log train passing by on the plate girder bridge overhead. Tyler Whitcomb of Tacoma, Wash., photographed the scene on his freelanced N scale layout.



A Sockeye, Pine Mountain & Chumstick Ry. manifest freight heads out onto the drawbridge. Stephen Sulkin of Bellingham, Wash., cites the influence of noted modeler George Sellios on this HO scale scene. Stephen scratchbuilt the bridge, trestle, and lift tower based on photos of George's HO scale Franklin & South Manchester. The train shed in the background is based on Dearborn Station in Chicago. Stephen also took the photo.





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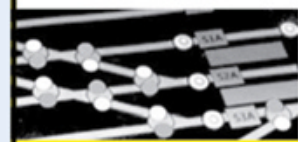
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Schedule of Events Rate: \$45 per issue (55 word maximum). Ads will contain the following information about the event: state, city, sponsoring organization and name of event, meet, auction or show, dates, location, times, admission fee, name and/or 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). **Word Ad Rates:** per issue: 1 insertion — \$2.03 per word, 6 insertions — \$1.89 per word, 12 insertions — \$1.77 per word. \$40.00 MINIMUM per ad. To receive the discount you must order and prepay for all ads at one time. Count all initials, single numbers, groups of numbers (i.e. 4-6-0 or K-27), names, address number, street number, street name, city, state, zip, phone numbers each as one word. Example: John A. Jones, 2102 South Post St., Waukesha, WI 53187 would count as 10 words. 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: Jan 2020 closes Oct. 21, Feb closes Nov. 21, Mar closes Dec. 17, Apr closes Jan. 20, May closes Feb. 24, June closes Mar. 23, July closes Apr. 20, Aug closes May 22, Sept closes June 19, Oct closes July 20, Nov closes Aug. 20, Dec closes Sept. 21.

Schedule of Events

AZ, GLENDALE: ARHS Model Train Swap Meet. Glendale Christian Church, 9661 North 59th Ave. Saturday, November 16, 2019, 9:00am-1:00pm. Admission \$5.00. Tables \$25.00 to sign up send stamped envelope, check or money order to ARHS, PO Box 5816, Glendale, AZ 85312-5816. Contact: Craig Faris 623-340-3529.

CA, TURLOCK: Toy Train Operators, Inc. Train Show. Stanislaus County Fairgrounds, 900 North Broadway. December 7-8, 2019. Saturday 10:00am-5:00pm and Sunday 10:00am-3:00pm; Admission \$8.00, children under 12 free. Food court. Free parking. Operating layouts and dealer/vendor tables. Information: Ed Cathcart, 209-479-4432, email: doloresherrera36@yahoo.com

CO, LOVELAND: Rocky Mountain Train Show November 30 & December 1, 2019. The Ranch Complex, 5280 Arena Circle, Loveland, 80538. Saturday, 10:00am-5:00pm, Sunday 9:00am-3:00pm. 200+ sales tables, 50+ vendors, operating layouts, model trains, all scales. Admission \$8.00 under 12 Free, Free parking. 303-364-0274 www.RockyMountainTrainShow.com Information@RockyMountainTrainShow.com

FL, JACKSONVILLE (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; Security Check Required; youtube.com search "FCMRS"

FL, JACKSONVILLE: TCA-Southern Division Toy Train Show. Morocco Shrine Auditorium, 3800 Saint Johns Bluff Road S., Saturday November 23, 2019, 10:00am-3:00pm. Admission, \$5.00 (children 12 & under FREE). All Scales Trains, Operating Layouts, Free parking. Refreshments on-site for purchase. Contact information: Chuck Bryner, 904-272-7060 (before 9pm) or Bryner@comcast.net

FL, LARGO: Suncoast Model Railroad Club Train Show/ Open House. Saturday, December 7, 2019. 9:00am-3:00pm. SHOW- Minnreg Hall, 6340 126th Ave. N., Largo. Admission: \$7.00, Children \$2.00 and under 11-free. Free parking. Food/snacks. OPEN HOUSE- Clubhouse, 12355 62nd Street N, Unit A. Visit www.suncoastmrrc.com Contact: irvbatten@yahoo.com

FL, PINELLAS PARK: Regal Railways Presents a Toy Train, Collectible and Hobby Christmas Show/Sale. Lopez Hall, 7177 58th St. North, Saturday, December 7, 2019. 9:00am-2:00pm. Adults \$5.00. Vendors, videos & operating layout. Serving lunch items. Contact Joe: 727-244-1341 or visit www.regalrailways.com for more information.

FL, TAMPA: 22nd TAMPA MODEL TRAIN SHOW. Florida State Fairgrounds (Special Events Center). Saturday, December 21, 9am-5pm and Sunday, December 22, 10am-4pm. Adults: \$9, good for both days (under 12 free). Large award-winning operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. Email: rrshows@aol.com or www.gserr.com

GA, SAVANNAH: Coastal Rail Buffs 31st Annual Model RR Train-Show. National Guard Armory, 1248 Eisenhower Drive, Zip: 31406. January 25-26, 2020, Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults 2 day \$7.00; Students/Seniors \$5.00, Active Duty Military/under 12 FREE. Dealer tables, operating layouts in O, HO, N. See www.coastalrailbuffs.org

IA, MONTICELLO: M.R.R.C. Annual Train Show and Swap Meet. Berndes Center, Jones County Fairgrounds, 766 N. Maple St. Sunday, January 26, 2020, 9:00am-3:30pm. Admission \$5.00, children under 12 free. Tables \$20.00. Vendor set-up on Saturday available. Contact: Ron Ackermann, 319-480-5671 or rack611@gmail.com

IL, JOLIET: Will County Model Railroad Club Swap Meet. Stone City VFW. 124 Stone City Drive. Saturday, December 7, 2019, 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

IN, DANVILLE: Central Indiana Division-NMRA Annual Train Show at Hendricks County 4H Fair Grounds, Saturday November 16, 2019. 10:00am-3:00pm. Admission \$3.00 adults, \$5.00 family. Operating Layouts, Vendors, Clinics, Food. Dealer Tables 8' at \$16.00. Info: gtwfan@bluemarble.net or 812-876-6799. CID website <http://cidnmra.org>

IN, INDIANAPOLIS: The Indianapolis Model Railroad Show and Open House. Manual High School Gymnasium, Saturday, December 7, 2019, 10:00am-3:00pm. Admission \$5.00, children 12 & under free. Free parking. Naptown & White River Model Railroad Club. Contact: Steven Handly, 317-786-8627, E-mail: naptownmrr@gmail.com

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, November 24, 2019, 9:30am-2:00pm (Chicago time). Adults \$4.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at trains86@frontier.com or 219-778-1186.

IN, WARSAW: Warsaw Model Train & Toy Show, Kosciusko County Fairgrounds, 1400 E. Smith St. December 14, 2019, 11:00am-3:00pm. Admission \$3.00, 12 and under free. All gauges. Tables \$15.00, free parking, lunch available. Contact: Gabe Fitzsimmons, 574-527-8554 or fitzgl01@gmail.com

MA, MARLBOROUGH: Hub Division NER/NMRA. Royal Plaza Trade Center, 181 Boston Post Road (Rte. 20 West). Saturday December 7, 2019, 10:00am-5:00pm and Sunday December 8, 2019, 10:00am-4:00pm. Admission \$12.00; Children under 12 and Scouts in Uniform FREE. Admission good both days. Information: Mark 508-528-8587; E-mail TE.info@hubdiv.org; www.hubdiv.org

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MI, ANN ARBOR: Rails On Wheels' Southeast Michigan Model Railroad Show & Sale, Washtenaw Farm Council Grounds, 5055 Ann Arbor Saline Rd., 48103. Sunday, December 1, 2019, 10:00am-3:00pm. Admission: \$4.00; under 12 free w/adult. Early bird- \$10.00 (8:00am-10:00am). Tables available. railsonwheels.com Contact: Walt Trancygier 734-552-4581 Email: trancywj@gmail.com

MI, EAST LANSING: Lansing Model Railroad Club Show and Sale. Michigan State University Pavilion. Sunday, November 10, 2019, 10:00am-4:00pm. Admission \$6.00, under 12 free. Michigan's largest train show: layouts, demonstrations and 500+ tables. Free parking. Flyer, table forms and map, www.lmrc.org or call Ron St. Laurent 517-256-3588

MI, GRAND RAPIDS: Grand Rapids Model Railroad Historical Society Train Show at Showplace, 1025 4 Mile Rd NW, Saturday, January 4, 2020 10:00am-3:00pm, Operating layouts HO, On30, N, plus Lionel for kids to operate. Vendors, door prizes, food. Adults \$5, under 12 free w/adult, free parking. Info: Skip 616-363-3453

MO, JOPLIN: Museum Complex Train Show and Swap Meet - Saturday, November 30, 2019. Schifferdecker Park, 7th Street & Schifferdecker between the golf course and pool. 9:00am-3:00pm. \$3.00 adult, under 12 free. Rick Gardner, 11486 County Lane 214, Oronogo, MO 64855; 417-673-4888 or e-mail rickgardner4449@gmail.com

NY, ALBANY: Albany Train Show, Polish Community Center, 225 Washington Avenue Extension, Albany NY. Saturday November 23, 2019, 9:00am-3:00pm. Admission \$5.00 adults, Kids 12 and under FREE. O, HO and N gauge working layouts. Over 100 vendor tables of Trains, and Trains-related items. www.albanytrainshow.com or Jeff Stedje 518-852-7725.

NY, ALBANY: December 1, 2019, 50th "Great Train Extravaganza"™. Empire State Convention Center. 10am-4pm. \$7 adults, children free. Operating layouts, all scales plus Legos. 300+ tables: model trains, train sets, buildings, accessories, scenery, books, DVDs, prints, railroad memorabilia. Educational displays. Door prizes. www.gtealbany.com, 518-668-9892, trains@gtealbany.com

OH, COLUMBUS: 66th BUCKEYE MODEL TRAINS & RAILROAD ARTIFACTS SHOW. Ohio Expo Center (Lausche Bldg.) 717 E. 17th Ave. Saturday, December 7, 2019. 9am-4pm. Adults: \$7.00 (under 12 free). Operating layouts, 300+ tables. Miller: 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. Email: rrshows@aol.com or www.gserr.com

OH, KIRTLAND: Christmas Train and Toy Show. Lakeland Community College (AFC) Main Gym, 7700 Clocktower Dr. 1-90 and Rt. 306. Sunday, December 15, 2019. 10:00am-3:30pm. Adults \$6.00, Children 6-12 years \$3.00, Family \$12.00. 216-470-5780, www.christmastrainshow.com

OH, MASSILLON: CJ Trains Winter Massillon Train and Toy Show. Knights of Columbus Hall, 988 Cherry Road NW, 44647. Sunday, December 8, 2019, 10:00am-3:00pm. \$5.00 admission, 12 and under free. \$25.00/dealer table, 152 - 8' dealer tables. Jon Ulbright, PO Box 446, Wooster, OH 44691, 330-262-7488, cathijon@sssn.net or www.cjtrains.com

OH, PARMA: Cuyahoga Valley 'S' Gauge Association, UAW Hall, 5615 Chevrolet Blvd., Parma, Ohio 44130. January 4, 2020, 10:00am-3:00pm. Admission is \$6.00 each, children under 12 free with adult. This is an ALL GAUGE SHOW. 440-833-4366, www.cvsga.com

OH, SPRINGFIELD: Springfield Area Model Railroaders Model Train Show and Flea Market. Clark County Fairgrounds, I-70, Exit 59. Sunday, December 1, 2019, 11:00am-4:00pm. \$5.00, under 12 free. Robert D. Chaffin, Jr., PO Box 51, Springfield, OH 45501, 937-346-6734.

PA, HORSHAM: 14th Annual Main Street Hatboro Train Show. Keith Valley Middle School, 227 Meetinghouse Rd. Saturday, December 7, 2019, 9:00am-3:00pm. \$5.00 adults, under 12 free. 145+ vendor tables in cafeteria and gym. Contact Al Zollers, azollers06@verizon.net or Joe Lutz J040440@verizon.net or www.hatborotrainshow.org

PA, KITTANNING: Train Show, Kittanning Township Volunteer Firehall, Rt. 422 East of Kittanning. Sunday, November 24, 2019, 10:00am-4:00pm. Adults \$4.00, children 12 & under FREE. David Campbell, 734 Freeport Rd., Butler, PA 16002 724-352-1113

PA, LANCASTER: Brass Expo & Customer Craftsman Models 2019. Wyndham Lancaster Resort & Convention Center (Lancaster Host), 2300 Lincoln Hwy. E (Route 30), Lancaster, PA. November 23-24, 2019. www.brassexpo.com/ 724-285-3090

PA, MONACA: Beaver County Model RR Fall Train Show & Sale. Monaca Turners, 1700 Old Brodhead Road. Sunday, November 24, 2019, 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 beavercitymrr@gmail.com

SC, CHARLESTON: Charleston Area Model Railroad Club Train Show. Danny Jones Armory Park, 5000 Lackawanna Blvd., North Charleston, SC. November 16-17, 2019. Saturday 9:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$7.00, under 12 & Active Military Families FREE. Additional information or table rentals, contact: trainshow@chamrc.com or www.chamrc.com

TX, HOUSTON: Greater Houston Train Show, Stafford Centre, Cash/Murphy Rd., Stafford, TX. Saturday, February 15, 2020, 10:00am-4:30pm. Clinics, vendors, layouts, contest. \$6 adults, \$1 children, \$12 family. Free parking. Steve.sandifier@sbcglobal.net

VA, GALAX: 28th Annual Train Fair. Twin County RR Club. Fairview Ruritan Building, 2265 Fairview Road. Saturday, November 30, 2019, 10:00am-4:00pm. Adults \$5.00, under 12 free. Swap Meet, operating displays. \$20/8' table. Stu Shenk, 176 Silver Mine Trail, Galax VA 24333. 276-236-3876. sshenk@embarqmail.com

WA, KENT: Boeing Employees Model Railroad Club Annual Swap Meet, 525 4th Avenue North, Kent Commons. November 9, 2019, 9:30am-4:00pm. \$8.00 admission, under 16 free, Ed Sherry, 550 SW Colewood Lane, Normandy Park, WA 98166; 206-244-3884; swapmeet@bemrrc.com

WI, GREEN BAY: 10th Annual First Freeze Fall Train Show & Swap Meet. Stadium View Bar and Grill, 1963 Holmgren Way. Sunday, November 24, 2019. 9:00am-2:00pm. Adults \$3.00, 12 and under free. Over 100 tables, operating layouts, train races, door prizes, food/beverages. Information: Bob 920-465-7913 or www.newogaugers.org

WI, LA CROSSE: The 29th Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. January 25, 2020, 9:00am-3:00pm. Admission \$5.00, under 12 free. 300 Tables; All-Scales; Model, Toy & Antique Trains & Memorabilia. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383.

WV, CHARLESTON: KVRa Model Railroad Show. Arena Events Center, St. Albans, WV. February 22-23, 2020. Saturday, 10am-5pm, Sunday, 10am-3pm. Admission \$5.00, under 12 free. Free parking. Refreshments available. Vendor tables \$25.00. Clinics, operating layouts, new and used equipment for sale. www.kvrailroad.org Contact Joe: 304-539-6721 or kvrailroad@gmail.com

CANADA, ON, WHITBY: Pine Ridge Railroaders Show, 1020 Dryden Blvd. Father Leo J. Austin School near Anderson Street. November 16-17, 2019, 10am-4pm. Admission: Adults \$7.00, under 14 \$3.00, under 5 FREE. Multi-scale layouts, displays, vendors and videos. Information: pineridgerailroaders.ca or visit us on Facebook!

CANADA: ON, TORONTO: Model Railroad Club of Toronto, Annual Christmas Show. December 7 & 8, 11am-4pm. Basement, 11 Curity Avenue, Toronto. Adults \$8.00, Children and Seniors \$5.00. Family of 4, maximum 2 adults, \$20.00. Children under 3 free. Contact: Larry Barwick, larryleebarwick@gmail.com

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Setting a 'best if used by' date

If you've ever had the privilege of taking a layout tour in New England, you'll agree that you encountered a series of outstanding model railroads. Ten of us did that over a four-day period several years ago, and we barely scratched the surface.

One we didn't get to visit was the Old Colony & South Shore, a remarkable HO railroad built by the late Cliff Coutinho. Judging by the photos, it ranked up there with the likes of George Sellios' Franklin & South Manchester for scenery and structure quality and detailing. Unfortunately, we won't get to visit it in the future, as Cliff passed away in April 2017. I was delighted to discover that it was covered in the October 2004 *Model Railroader* and *Great Model Railroads 2009*, and some YouTube coverage survives.

Paring down that home hobby shop we all have was the subject of the editorial in the July 2017 issue ["Keeping your hobby hoard manageable"]. On a related tack, I've previously written about not sticking our spouses or friends with the unenviable task of dismantling our home layouts if we predecease them.

Cliff was fortunate in that he was part of an active group of local modelers, and with his widow's encouragement, they had a Last Run on July 8, 2017, to celebrate his life and accomplishments. My friend Ray Schofield was there and took some photos, one of which I'm sharing with you here.

Let's face it: All of our model rail-



The late Cliff Coutinho's HO Old Colony & South Shore ranked up there with the best-detailed HO model railroads. But it wasn't designed for easy dismantling. Ray Schofield photo

roads have a "use by" date. So, in fact, do we. There's nothing morbid or off-putting about discussing such matters. It's a fact of life that all good things eventually come to an end. Our job is to manage as many of those end points as we can to ensure that someone else isn't left holding the bag.

I've heard of several extensive model railroads being moved to new homes with considerable success. We've shared some of those stories

with you in *Model Railroad Planning*, including Mark Dance's report in MRP 2019 about the considerable efforts to relocate Brian Pate's HOn3 railroad to a museum in Dawson City, Yukon ["Moving a masterwork"].

Some of you may remember the large-scale

railroad based on New Hampshire's Claremont & Concord RR that I documented in a four-part series in MR [August to November 2005]. I built it on slabs of 2" foam board that fit snugly on top of four 30 x 96-inch folding-leg tables like those commonly found in hotel conference rooms and convention halls. When Jim Kerner, one of my operating crew, expressed interest, it was loaded into his minivan for the trip to its new home.

For whatever reason, however, most of our past-tense railroads end up in a Dumpster. When it came time to dismantle the Allegheny Midland at the close of the last century, I'd planned to save some portions of it as, well, what – large keepsakes? Fortunately, when segments of the railroad were seen out of context and thus standing on their own merits, nothing warranted preservation. I did save the base area around the

Sunrise Yard coal dock and the coal dock itself. Not sure why, however.

Many of the structures and even the puffball forest canopy from the AM have migrated to other railroads, thus extending their "use by" dates. One large brick depot bounced from one to another layout as a stand-in until to-scale copies of the prototype were built and installed. Others are still serving as stand-ins, doing nothing more than making the host railroads look a bit more finished until the scratch-building crews come to town. A few stores are on my current railroad.

So maybe we're doing more to find new homes for our layouts, or at least details from them, than it first appears. Or maybe not. The main concern remains: that we don't delay indefinitely plans for our railroad's dismantling that are as well thought out as our plans to erect them in the first place. **MR**



LET'S FACE IT:
ALL OF OUR
MODEL RAIL-
ROADS HAVE
A "USE BY"
DATE. SO, IN
FACT, DO WE.
— TONY

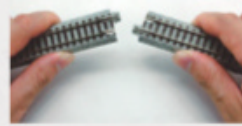


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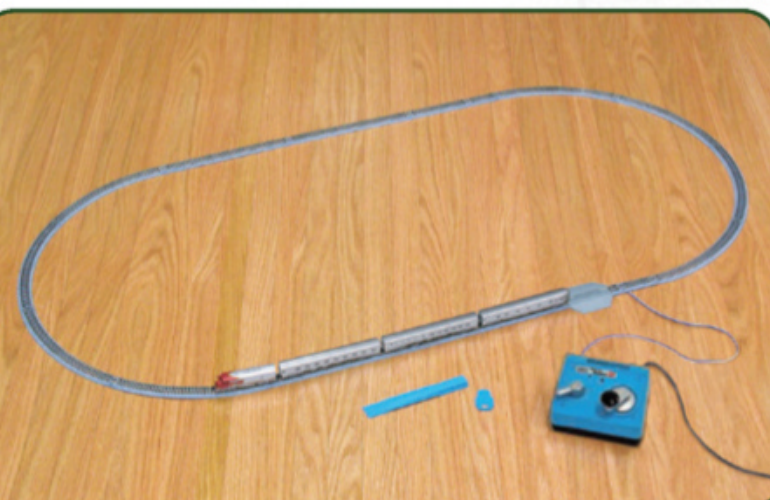
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