

**SPECIAL
HOW-TO ISSUE**

MAKE MOUNTAINS AND RIVERS p.46

**TEST: Broadway's
F7 in N scale** p.54

March 2019
www.ModelRailroader.com



Model Railroader®

A mighty good road

Learn how hybrid
train orders work
on this layout p.38

**121
TIPS AND
TRICKS**

**A compact 4 x 12
with bonus fence info** p.30

PLUS

Route trains automatically with DCC p.52

Blend your layout into your living space p.34

Detail and paint a maintenance car p.26

Visit Mike Armstrong's
vast Mid-Continent Route
layout. See page 38.

**BONUS
ONLINE
CONTENT
CODE PG. 4**

Micro-Mark® Model Challenge

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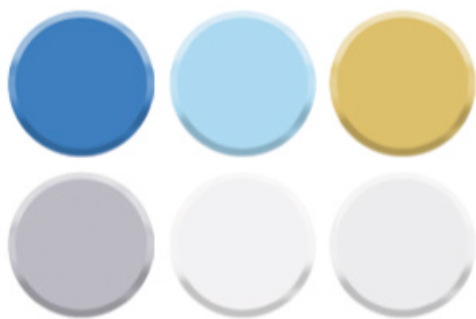
Digital rendering on HO model



Micro-Mark and Scientific Models, Inc. is sponsoring a contest to replicate the George H. W. Bush 4141 Locomotive. The winner will receive a **\$2,000.00 Gift Certificate** redeemable at Micro-Mark and a recognition plaque – **2019 Micro-Mark Modeler of the Year**. Also, the contest-winning model will be professionally photographed and featured on a Micro-Mark catalog cover with credit given to the builder. This contest should display modeling skills and attention to detail. Submissions can be in any scale.

Let us help you get started...

We've assembled a special kit with vital components you'll need to create a contest-winning model. Starting with a beautifully detailed Walthers HO EMD SD70ACe locomotive, the Micro-Mark team has created a custom set of ready-to-use, full-color, water-slide decals replicating the 4141's distinctive lettering and flag graphics, plus custom-made dry transfers for the cab and number board numerals. We've also compiled a set of high-quality acrylic paints from Acrylicos Vallejo to accurately capture the unique color scheme of the 4141 and Air Force One. You do not have to purchase our kit to win...we just want to help you get started!



Our choice of paint scheme; must be painted over



#88611 Bush Contest Kit by Micro-Mark includes Walthers HO EMD SD70ACe Locomotive (our choice of paint scheme; must be painted over by modeler), 1 set of water-slide decals, 1 set of dry transfers, set of 6 Acrylicos Vallejo paints (approx. 1 half-ounce bottle each dark blue, light blue and gold; 2 half-ounce bottles each white and silver; 2 ounces white primer), and 1 blank sheet of clear inkjet decal paper for additional detailing. **\$219.95**

Submit your entry online at

www.micromark.com/bush4141contest

Contest Information

Dates: Submissions can begin January 1, 2019 and must be received by March 15, 2019 by 11:59 PM EST.

Who Can Enter: Individuals or groups can enter the contest. Only one entry per individual or group.

How to Enter: All contestants must submit an entry form available at www.micromark.com/bush4141contest along with photographic images and a video of the model. Entries must include 5 images of the model showing both sides, front and back, and a top down image. Entries must also include a 15 second video of the model showing all sides.

Announcement of Winner: The name of the contest winner and the winning model will be announced on Micro-Mark's website on April 1, 2019.

Judging: Scientific Models expert modelers will be the judges of the contest. Judging criteria includes, but is not limited to, application of paint and decals and overall attention to detail. Images submitted must be well-lit, sharply focused and placed on a neutral background to qualify.

No Purchase Necessary to Enter this Contest

Purchase does not enhance chance of winning. This contest is void where prohibited. Individuals and groups are eligible to enter the contest. No employee or relative of an employee of Scientific Models, Inc. or Micro-Mark is eligible to win. By entering, the contestant agrees to allow Scientific Models and Micro-Mark to use the name of the winner and the images of the winning model.

The winner might be subject to US taxes and will receive a 1099 tax form. The odds of winning depend on the number and quality of submissions received.

The winner must send the actual model to Micro-Mark for photography for the cover image. The model will be returned to the winner.

A physical address is required for a submission to be valid. No PO boxes, please.

Additional rules and conditions may apply. See website for details.

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Features



30 An industrial area in 4 x 12 feet

Weathered cars and structures populate this urban HO scale switching layout set in 1960s Canada

by Chris Denning

34 Up against a wall **MRVP**

Blending form and function can be the answer to a sudden stop

by Gerry Leone



38 Rock Island in the 1960s

Memories of the Mid-Continent Route fill two decks on this 30 x 40-foot HO scale railroad

by Mike Armstrong

• Online bonus ModelRailroader.com



46 Build the N scale Canadian Canyons **MRVP**

Part three: Rocky canyon scenery, trees, ground cover, and a muddy river for our project layout

by Steven Otte

• Online bonus ModelRailroader.com

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On the cover: *The Plainsman* arrives at the Des Moines Rock Island station on Mike Armstrong's HO scale layout. Mike Armstrong photo



Next issue

In April, a Brit models New York in 18 x 96 inches, we dive into the wiring of the Canadian Canyons layout, Cheryl Sassi builds hardwood trees, and more!

MREXTRA

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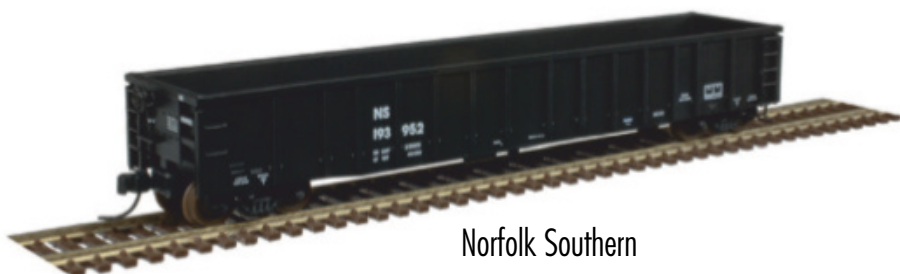
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Norfolk Southern



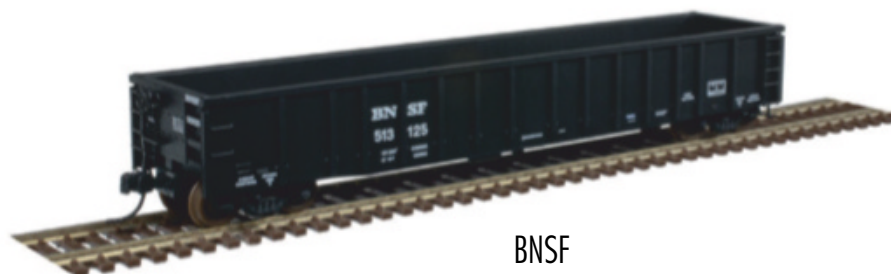
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Learn the secrets of realistic scenery!

With its focus on railfanning, the Canadian Canyons project layout demanded an emphasis on realistic scenery. Turn to page 46 of this issue to get an overview of how the Model Railroader Video Plus and *Model Railroader* magazine staffs built the scenery for the N scale railroad. For a step-by-step look at the techniques used throughout the project, be sure to visit www.MRVideoPlus.com. The dozens of videos in the Canadian Canyons series include valuable information on modeling mountains, rivers, and more!

Don't miss the other exclusive content available to MR Video Plus subscribers. You'll find valuable information covering all aspects of the hobby. **Some recent highlights include:**



► **Canadian Canyons:** Learn how David used Woodland Scenics Deep Pour Water to realistically model the Thompson River on the N scale project layout. MRVideoPlus.com/CCRiver



Spaces to places: Gerry Leone describes planning and modeling a scene on his new HO scale Bona Vista model railroad. MRVideoPlus.com/Spaces



Layout tour: Follow a train on Gregg Condon's HO_n3 Rio Grande Southern, featured in *Great Model Railroads 2019*. MRVideoPlus.com/RGS



Ask MRVP: The Model Railroader Video Plus staff answers viewer questions on all aspects of the hobby. MRVideoPlus.com/ASK

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Kathy Millatt
Let's Make a Scene



CUTTING-EDGE TECHNIQUES

At MR Video Plus, expert modelers share their favorite tried-and-true and cutting-edge techniques. You'll learn proven methods that are sure to help you achieve your model railroading goals.

One of the most exciting new technologies to impact the model railroading hobby is 3-D printing. In this special series, frequent MR Video

Plus contributor Kathy Millatt demonstrates the process from designing the part on a computer to printing out the final result in resin on a 3-D printer. Whether you're looking for information on scenery, electronics, or any other model-railroading-related subject, you're sure to find it on Model Railroader Video Plus!

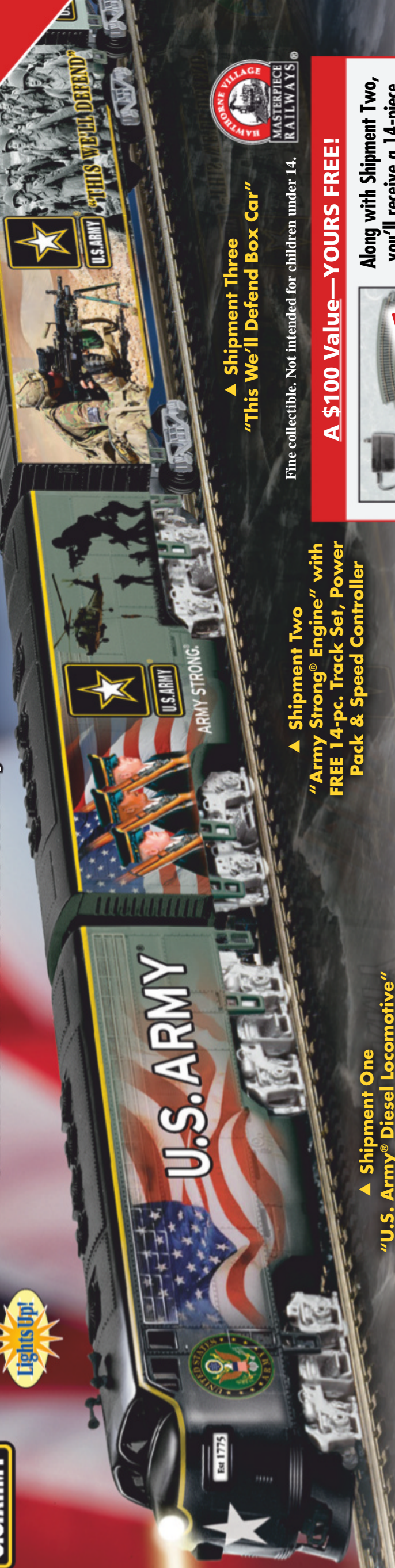


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Layout video: The Rock Island Lines

Mike Armstrong's HO scale Rock Island Lines does an impeccable job re-creating the Mid-Continent Route in the 1960s. His 30 x 40-foot layout fills two decks and features a variety of freight and passenger traffic. In this video, available at www.ModelRailroader.com, viewers can follow trains along the main line.

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Get links to the latest videos, hobby news, articles, and online extras at ModelRailroader.com. When you join our online community, you'll get a free weekly newsletter, access to our popular user forums, photo galleries, and more! Signing up is quick, easy, and free! Click on the Log in link on the *Model Railroader* magazine home page for more information.



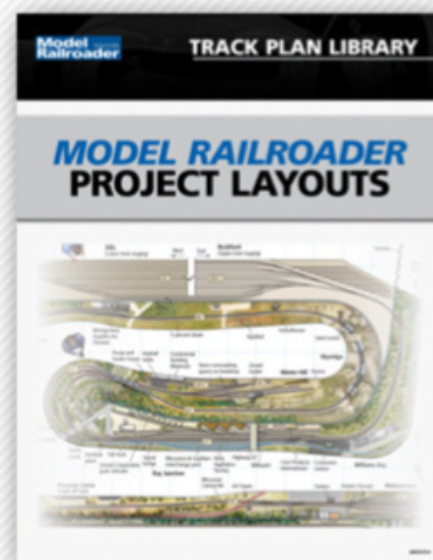
Inside Cody's Office

Don't miss the popular *Modeler's* Spotlight Video – Inside Cody's Office series. In each monthly episode, Group Technical Editor Cody Grivno shows subscribers a selection of the latest hobby products to arrive at the *Model Railroader* offices. In addition, Cody shares some of his favorite workshop tips and techniques. He also answers viewer questions and comments at the end of each show.

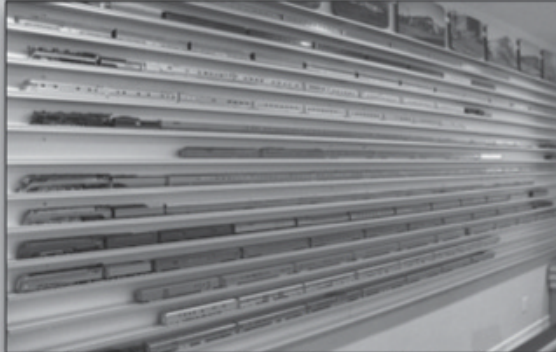
TRACK PLAN LIBRARY

Memorable layouts

Over the years *Model Railroader* magazine has featured a wide variety of project layouts built by staff and former staff members. This digital download features 10 project layout track plans in a variety of scales, styles, and subject matter. Get this track plan collection at the Kalmbach Hobby Shop.



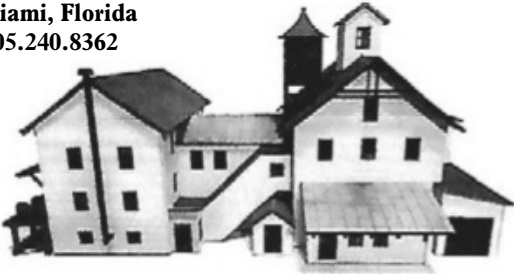
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The first instinct was the correct one

Most of us have heard the saying, “Your first instinct or answer is usually the right one.” I think that applies to model railroading, too.

Recall your first railroad, more than likely built on a 4 x 8 sheet of plywood. You might have started with a train set – an engine, a caboose, and a few cars.

Then to the plywood you added a roll of sawdust grass, a depot, a few fairly simple businesses on some sidings, and maybe a house here and

there to give your layout that “lived-in” look.

A few roads connected the dwellings and businesses and trees sprouted to break up the rather bare horizon.

The trains ran; they had a place to go, and reasons to stop. “People” had places to work and live. Structures didn’t cover the entire area.

What you had was simple; mundane, even.

And ultimately, that was the right look, at least for me.

That was made clear while working on my layout. Actually, the point was driven home while taking some pictures on it.

I’d built a few flats to go against what once was just a blue sky backdrop in order to add a little more industry to my fictional prairie burg. You know, for more realism.

I was interested to see how they improved the scene, so I put my camera on a level spot on the layout, and shot a few frames just to see how things would appear to the O scale version of me.

When I looked at the pictures, my first reaction was “ugh.” One, because of the cobwebs on my depot, but also because the scene was too crowded.

The flats became clutter where there should be open sky. The depot needed to be set back farther from the



track. The whole thing just became claustrophobic, exactly the opposite of what I wanted. So, my first inclination was right.

Sometimes, the most realistic thing you can add to your layout is space. Even better, it’s easy, fast, and inexpensive to build.



Ignore the clutter, see the scene. The flat at right has to go.

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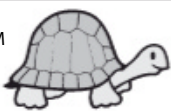
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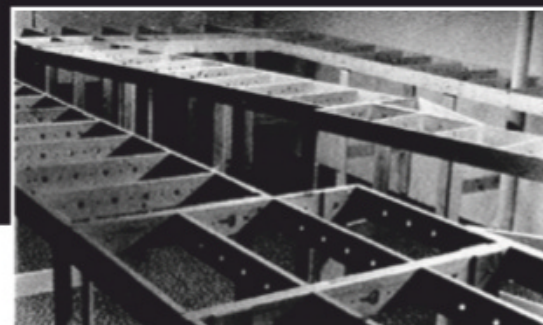
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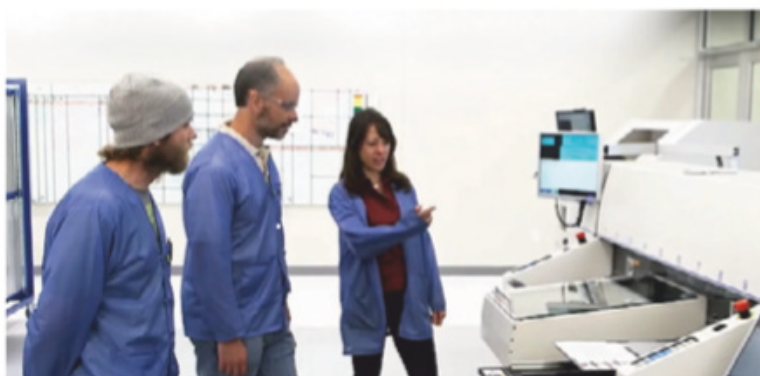
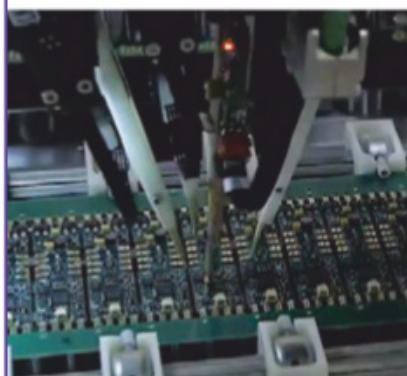


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HO scale



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HO scale locomotives



- **General Electric C44-9W diesel locomotive.** Southern Pacific and Union Pacific. Two road numbers each. Late hi-adhesion trucks, deck-mounted ditch lights, and illuminated number boxes. With motor and headlight control only Digital Command Control decoder, \$260; with dual-mode ESU LokSound sound decoder (special order only), \$295. Kato USA Inc., 847-781-9500, www.katousa.com

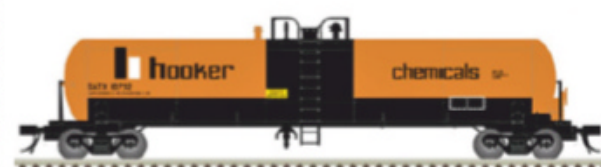
HO scale freight cars



- **Assorted freight cars.** Dakota, Minnesota & Eastern American Car & Foundry 4,600-cubic-foot-capacity

three-bay Center Flow covered hopper, \$19.98. Central RR of New Jersey 40-foot double-sheathed refrigerator car, \$19.98. Lake Shore & Michigan Southern 36-foot double-sheathed boxcar with wood ends and fish-belly underframe, \$18.98. Nashville, Chattanooga & St. Louis 40-foot single-sheathed boxcar, \$18.98. Toledo, Peoria & Western Pullman-Standard 4,750-cubic-foot-capacity three-bay covered hopper, \$20.98. Wabash 36-foot Fowler boxcar, \$18.98. Injection-molded plastic kits with plastic wheelsets and Accumate couplers. Accurail, 630-365-1173, www accurail.com

- **Thrall high-side gondola.** Burlington Northern, Denver & Rio Grande Western, Kansas City Power & Light Co., Public Service Co. of Colorado, San Antonio Public Service Board, and Union Pacific. Ten car numbers per name (single car and 3 three-packs). Injection-molded plastic body, separately applied brake gear, 100-ton trucks with 36" metal wheels, and McHenry scale couplers. Single car, \$30.98; three-pack, \$86.98. October 2019. Ready-to-Roll. Athearn Trains, 800-338-4639, www.athearn.com



- **20,700-gallon tank car.** New paint schemes: Hooker Chemicals, Linseed Oil, and Pemex. New road numbers: Canadian National (water service), Dow Chemical, General American, and Monfort Packing Co. Three numbers per scheme; also available undecorated (Type 10 and Type 20 saddles). Five-section non-insulated body, detailed brake gear and pipes, and safety rails. \$47.95 (undecorated, \$37.95). Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



- **40-foot single-dome tank car.** J.M. Huber, British American Oil, and American Maize Products Co. Metal wheels and E-Z Mate Mark II couplers.

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\$29. Bachmann Trains, 215-533-1600, www.bachmanntrains.com



- **Pullman-Standard PS-2 two-bay covered hopper.** Southern Pacific. Two road numbers. Injection-molded plastic model with notched roof hatch covers, scale couplers, and two-piece self-centering trucks. \$43.95. Kadee Quality Products Co., 541-826-3883, www.kadee.com



- **General American 4,180-cubic-foot-capacity Airslide covered hopper.** Dawson (Minn.) Soy Products (1978), CPC International (1978 repaint), and General American (1992 blue repaint). Two road numbers per scheme. See-through etched-metal running boards, CNC-machined 36" metal wheelsets, and Kadee scale couplers. \$44.95. Tangent Scale Models, 828-279-6106, www.tangentscalemodels.com



- **40-foot American Association of Railroads 1948 40-foot boxcar.** Penn Central, Great Northern, Bangor & Aroostook (red, white, and blue), Baltimore & Ohio, Southern Pacific, and Wabash. Three road numbers per scheme. Improved Dreadnaught 4-4 end rectangular top rib, see-through Apex running board, and Bettendorf trucks with 33" turned-metal wheels. \$27.98 (Bangor & Aroostook, \$31.98). Walther's Mainline. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com



- **Fruit Growers Express 50-foot insulated boxcar.** Union Pacific

Conducted by Cody Grivno



Quentin Hanyzewski (top) and Joseph Martin were winners of Kato's T-Trak module contest held at Trainfest in November 2018. They're shown receiving their awards from company president Hiroshi Kato.

Photos courtesy Kato USA Inc.

Kato T-Trak contest winners

Kato hosted a T-Trak module contest at Trainfest 2018, held at State Fair Park in the Milwaukee suburb of West Allis, Wis., the second weekend in November.

Best of Scenery winner was 13-year-old Quentin Hanyzewski for his street and station module. He received a Kato Schaumburg, Ill., station kit and a one-year *Model Railroader* subscription.

Joseph Martin took home awards for the Most Creative module and Best of Show for his tornado module. Joseph won a Kato N scale Milwaukee Road FP7 diesel locomotive, a Milwaukee Road *Hiawatha* passenger train set, and a one-year subscription to MR.

("Automated railway" lettering), British Columbia Ry. (green), Chesapeake & Ohio ("Solid Gold" lettering), Conrail (yellow), Denver & Rio Grande Western (orange), and Seaboard Coast Line ("For Greater Efficiency" lettering). Two road numbers per scheme. Separate brake



1 Evans 4,780-cubic-foot capacity three-bay covered hopper. This Walther's Proto HO scale model is lettered for Farmer's Co-op, Mead, Neb.; Comet Rice; Archer-Daniels-Midland (yellow and gray paint schemes); Farmer's Co-op, Hemingford, Neb.; and Missouri-Kansas-Texas. The HO scale model is available in two or more numbers per scheme and priced at **\$37.98**. Wm. K. Walther's Inc., www.walthers.com

2 Electro-Motive Division SD40T-2 diesel locomotive. Southern Pacific is one of four road names on this HO

scale unit. Direct-current models are **\$139.98**. Versions with a SoundTraxx dual-mode Econami sound decoder are **\$199.98**. Athearn, www.athearn.com

3 Assorted acrylic paint. Coach Green, Red Oxide, Pullman Green, Aged Mineral Red, and Dirt are new Modelers Decals and Paint colors available at the Kalmbach Hobby Store. A 1-fluid-ounce bottle sells for **\$3.95**. Kalmbach Hobby Store, KalmbachHobbyStore.com

4 Pennsylvania RR class T1 4-4-4-4 Duplex steam

locomotive. This Broadway Limited Imports N scale model (**\$399.99**) is offered in six road numbers. The steam engine has a dual-mode Paragon3 sound decoder with Rolling Thunder. Broadway Limited Imports, www.broadway-limited.com

5 New Haven 8600-series coach. Rapido Trains offers this car decorated for Massachusetts Bay Transportation Authority, New York, New Haven & Hartford, and Penn Central. The N scale model is priced at **\$59.99**. Rapido Trains, www.rapido-trains.com

6 Ballast applicator. This HO scale model, produced by Protes, features a clear hopper for ballast, a manual height adjustment, and flow-control lever. It sells for **\$39.95** and is available from the Kalmbach Hobby Store, KalmbachHobbyStore.com

7 General Steel Industries 53'-6" bulkhead flatcar. ExactRail offers this Platinum line car (**\$54.99**) decorated for Chicago Great Western; Burlington Northern; Chicago, Burlington & Quincy; and Rock Island. ExactRail, 866-945-1701, www.exactrail.com

gear, 70-ton roller-bearing trucks with 33" metal wheelsets, and Proto-Max couplers. \$24.98. Walther's Mainline. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale structures

- Lee King Radiator and Muffler Repair Shop.** Laser-cut kit with tab-and-slot construction, peel-and-stick backed windows, and cast-pewter details. Measures 5" x 6". \$54.95. Route 66 Series. Showcase Miniatures, 334-750-3276, www.showcaseminatures.net



- Modern office building.** Milled styrene and laser-cut acrylic kit. Includes signs and copper mirror glass windows. Measures 14 1/4" x 4 3/4" x 4 1/8". \$120. Summit USA, 337-436-8481, www.summit-customcuts.com

HO scale details and accessories

- Assorted details.** Acetylene tanks (10-pack, \$4.95), fire hydrants (eight-pack, \$9.50), cinder blocks (10-pack, \$7.50), oxygen tanks (10-pack, \$4.95), pallets (eight-pack, \$7.95), and propane tanks (eight-pack, \$6.95). All parts are 3-D printed. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com
- Picture Windows.** For 3"- to 3 1/2"-wide buildings: Appliance store, clothing store, jewelry store, and shoe store (four-pack includes one of each). For 4"-wide buildings: Appliance store and shoe store (four-pack includes one of each plus bookstore and restaurant). Interior scenes printed on white plastic film. Can be used as-is or backlit (lighting not included). Kit also includes cardstock strips for building a shadowbox. \$5.98 each; four-pack \$19.98. City Classics, www.cityclassics.biz
- Trailer hitch accessory pack.** Injection-molded plastic parts molded in orange for American Car & Foundry (ACF) and Pullman-Standard (PS) trailer hitches. Based on trailer hitches

used from 1955 to present. Builds six hitches (two each raised and one each collapsed). \$9.98. Walther's Proto. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

N scale locomotives



- Electro-Motive Division GP20 diesel locomotive.** Atchison, Topeka & Santa Fe (pinstripe scheme); Southern Pacific (scarlet and gray); Burlington Northern (Cascade Green); Conrail (blue, two road numbers); Electro-Motive Division demonstrator (blue, silver, and white scheme, two numbers); and Union Pacific (Armour Yellow and Harbor Mist Gray with road name on long hood and herald on cab). Three numbers per scheme unless noted; also available undecorated. Directional golden-white light-emitting-diode headlights, dual brass flywheels, and low-friction

HO scale



Taco Bell. This factory-assembled structure is available from Menards. Taco Bell has a backlit facade, four figures, opaque windows with advertisements, a table with chairs, three planters, and Jack the German shepherd. The lighting requires a 4.5V power source, sold separately. The HO scale structure, which measures 5 $\frac{3}{4}$ " x 6 $\frac{3}{16}$ " x 3 $\frac{3}{8}$ ", sells for **\$59.99** plus shipping (or free shipping to your local Menards store). Menards, www.menards.com/trains

mechanism. Direct-current model with speaker, \$129.95; with ESU Digital Command Control sound decoder and Full Throttle, \$239.95. Second quarter 2019. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

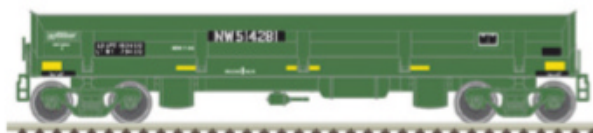
• **General Electric Tier 4 GEVo locomotives.** New road numbers: BNSF Ry. (ET44C4), Canadian National (ET44AC), CSX (ET44AH, five road numbers), General Electric (ET44AC field test demonstrator, one number), Navajo Mining (ET44AC, two numbers), Norfolk Southern (ET44AC), and Union Pacific (C45AH). Four numbers per scheme unless noted. Prototype-specific details, all-wheel drive and electrical pickup, and body-mounted couplers. Direct-current model, \$129.99; with ESU Next 18 motor-only decoder, \$164.99; and with dual-mode ESU LokSound sound decoder, \$224.99. Rivet Counter line. ScaleTrains.com, 844-987-2467, www.scaletrains.com



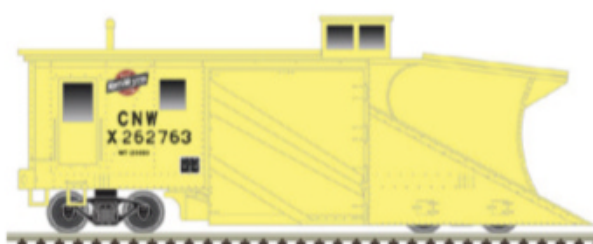
• **Union Pacific class FEF-3 4-8-4 steam locomotive no. 838.** Hand-weathered and detailed model. \$350.

Kobo Custom line. Kato USA Inc., 847-781-9500, www.katousa.com

N scale freight cars



• **Difco side-dump car.** Norfolk & Western (green), Alaska RR (yellow), BC Rail (black), Denver & Rio Grande Western (gray), Helm Leasing (faded black), Montana Rail Link (blue), Southern California Regional Rail Authority (white), and Union Pacific (maintenance-of-way green with Missouri Pacific reporting marks). Three road numbers per scheme. Truck-mounted couplers and 100-ton roller-bearing trucks. \$34.95. Second quarter 2019. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



• **Russell snow plow.** Chicago & North Western (yellow), Boston & Maine (blue-and-black scheme), Chessie System

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N scale



Osgood-Bradley 10-window coach. New paint schemes on this Rapido Trains model include Canadian National, Delaware & Hudson, Lehigh Valley, Seaboard Air Line, and St. Louis Southwestern. New road numbers are offered on cars lettered for Boston & Maine; Long Island Rail Road; and New

York, New Haven & Hartford. The N scale Panorama Line model (**\$64.95**) is offered in four numbers per scheme and has full underbody detail, 41-E trucks with metal wheelsets, and "Easy-Peasy" battery-operated interior lighting. Rapido Trains, 905-474-3314, www.rapidotrains.com

(yellow with Chesapeake & Ohio reporting marks), Conrail (yellow-and-black scheme), Canadian National (red), Denver & Rio Grande Western (orange-and-black scheme), Great Northern (Big Sky Blue), and New York Central (brown-and-black scheme). One road number per scheme. Molded body details and window glazing. \$32.95. Second quarter 2019. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

• **Thrall high-side gondola.** Burlington Northern, Denver & Rio Grande Western, Kansas City Power & Light Co., Public Service Co. of Colorado, San Antonio Public Service Board, and Union Pacific. Ten car numbers per name (single car and 3 three-packs). Injection-molded plastic body, separately applied brake wheel, and screw-mounted 100-ton roller-bearing trucks with machined metal wheels. Single car, \$24.98; three-pack, \$69.98. October 2019. AthearnN. Athearn Trains, 800-338-4639, www.athearn.com



• **3,560-cubic-foot-capacity three-bay covered hopper.** New paint schemes: Potash Corp., Agrium, Canpotex, and

David J. Joseph. New road numbers: Corn Products. Two numbers per scheme. Body-mounted brake gear and Accumate couplers. \$22.95.

Trainman line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

• **Assorted freight cars.** Chicago & North Western 40-foot stockcar (yellow-and-green scheme, two road numbers), \$27.60. Grand Trunk Western 50-foot double-door boxcar, \$24.85. New York Central 34-foot double-sheathed caboose ("Safety Wherever" slogan), \$32.90. Norfolk Southern 50-foot gondola with coil steel load, \$26.90. Ozone Waters 56-foot general service tank car, \$33.80. Injection-molded plastic models with plastic wheelsets and Magne-Matic couplers. Micro-Trains Line Co., 541-535-1755, www.micro-trains.com

• **Greenbrier (Gunderson) 5,188-cubic-foot-capacity three-bay covered hopper.** Arkansas-Oklahoma Ry. (six road numbers), BNSF Ry. (21 numbers, including select heritage schemes), Kansas City Southern (*Southern Belle* scheme in 12 numbers), and Union Pacific (tan CSX patchout with CMO reporting marks and "Building America" slogan in six numbers, and gray as-delivered scheme with UP marks and "Building America" slogan in 12 numbers). Photo-etched stainless steel running boards and crossover platforms, metal grab irons, and American Steel Foundries Ride Control trucks. \$31.99. Rivet Counter line. ScaleTrains.com Inc., 844-987-2467, www.scaletrains.com

N scale passenger equipment



• **Atchison, Topeka & Santa Fe 1956-1958 El Capitan.** Ten-car set (\$280) includes baggage-dormitory no. 3479; coaches 705, 707, 718, and 721; diner no. 650; step-down coaches no. 530 and 536; lounge no. 575; and baggage car no. 3505. Two-car set (\$55) has storage mail no. 3530 and coach no. 703. Shock-absorber construction and low-flange wheels. Tail-end coach has illuminated marker lights and light-up *El Capitan* drumhead. April 2019. Kato USA Inc., 847-781-9500, www.katousa.com

N scale details and accessories

• **Assorted detail parts.** Angled cab sunshades (four pair), \$5.75. Freight and passenger car uncoupling levers, \$9.75. Grab iron drill templates (four sizes), \$5.25. Locomotive m.u. hoses, \$6.25. Modern Electro-Motive Division (EMD) cab sunshades (four), \$3.50. Modern EMD uncoupling lever (one pair), \$3.50. Modern General Electric (GE) uncoupling levers (two pair), \$5. Modern rear-view mirrors for all roads (eight), \$3.50. Prime air conditioner, \$3.50. Removed air conditioner cover plates (two), \$4.



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HO scale



Trinity 3,281-cubic-foot-capacity two-bay covered hopper. This WaltherMainline model is lettered for General American, Norfolk Southern, CSX Transportation, First Union Rail (WSOX reporting marks), Trinity Industries Leasing, and Union Pacific (CMO marks). The HO scale covered hopper (\$27.98) has new tooling with separately applied brake gear, discharge gates, inlet hatches, and end ladder cages; plastic running boards; and 36" turned-metal wheelsets. Wm. K. Walther Inc., 414-527-0770, www.walthers.com

Removed headlight covers (five), \$4.75. Vapor air conditioner, \$3.50. Windshield wipers (three styles), \$4.75. Former BLMA parts. Second quarter 2019. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



• **Ford F-100 pickup trucks.** Canadian National; Central RR of New Jersey; Chessie System; Delaware & Hudson; Milwaukee Road; Penn Central; Richmond, Fredericksburg & Potomac; and Southern Pacific. Side-view mirrors, interior and undercarriage detail, and positionable tailgate. Two-pack, \$32.95. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



• **40-foot high-cube intermodal container.** New paint scheme: SM Line. Prototype-specific door variations, Inter-Box connecting pins, and magnetic connecting system (three magnets on bottom and metal top plate). Two-pack, \$29.95. Jacksonville Terminal Co., www.jtcmodeltrains.com

O scale freight cars



• **American Car & Foundry 50'-6" boxcar.** Railbox ("On Track for a Cure" scheme). One road number. Diagonal-panel roof; separately applied end ladders, brake wheel, and end platforms; and die-cast metal roller-bearing trucks with rotating bearing caps. \$64.95. A portion of the proceeds from sales of this model will be donated to Susan G. Komen for the Cure. Trainman series. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

O scale passenger cars



• **60-foot heavyweight baggage car.** New road numbers: Lackawanna (gray, maroon, and black scheme) and Norfolk & Western (maroon-and-gold scheme). New paint schemes: Central RR of New Jersey (green-and-black scheme), Chicago Great Western (maroon, red, and yellow scheme), and Monon (gray, red, and white scheme). Two numbers

per scheme; also available painted green and black but unlettered. Sprung, die-cast metal trucks; interior light-emitting-diode lighting; and separately applied diaphragms. \$114.95. Second quarter 2019. Trainman line. Atlas O, 908-687-0880, www.atlasrr.com



• **60-foot heavyweight coach.** New paint schemes: Central RR of New Jersey (green-and-black scheme), Chicago Great Western (maroon, red, and yellow scheme), Monon (gray, red, and white scheme), and Reading & Northern (maroon, gold, and black scheme). New road numbers: Lackawanna (gray, maroon, and yellow scheme) and Norfolk & Western (maroon-and-gold scheme). Four numbers per scheme; also available painted green and black but unlettered. Sprung, die-cast metal trucks; interior light-emitting-diode lighting; and separately applied diaphragms. \$114.95. Second quarter 2019. Trainman line. Atlas O, 908-687-0880, www.atlasrr.com

Z scale locomotives



• **Electro-Motive Division SD75I diesel locomotive.** Canadian National. Three road numbers. New chassis and trucks, directional light-emitting-diode headlights, and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

Z scale freight cars



• **1937 Association of American Railroads 40-foot boxcar.** New road name: Union Pacific. Seven road numbers (single car, two-pack, and four-pack). Murphy raised-panel roof, AutoLatch couplers, and 4-5

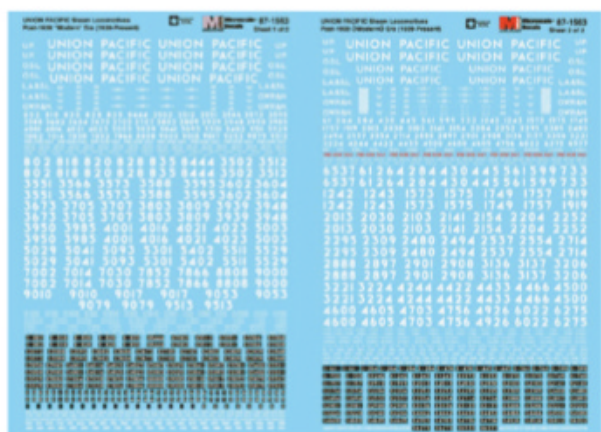
Dreadnaught ends. American Z Line, 614-764-1703, www.americanzline.com

Layouts



• **Horned Owl model layout building kit.** HO and N scales. Pre-cut foam board layout with internal ribs and profiles to create the benchwork. Assemble with white glue. Layout design allows for two-train operation. Track, trains, buildings, and scenery not included. Modules A and B (3'-4" x 5'-4"), \$349 plus \$35 shipping; module C (2'-8" x 3'-4" expansion), \$179 plus \$35 shipping. QuickieLine Kits. RR in a Box by Alley Friends Architects, 215-922-3554, www.rinabox.com

Decals



• **Union Pacific steam locomotives (1939 to present).** Two-sheet set includes road names, road numbers, subsidiary lettering, tender capacity, test stencils, and more. HO scale, \$12.75; N

scale, 9.50. Microscale Industries, 714-593-1422, www.microscale.com

Lubricants



• **Lubrication kit for HO, S, O, and large scales.** Includes no. 102 thin grease for gear boxes and sealed workings, no. 106 thick grease for exposed gear boxes and open worm gears, no. 107 medium oil for use on motors, and 1½" and 6" needle extensions for hard-to-reach applications. \$24.99. Produced by Labelle, available from Kalmbach Hobby Store, www.KalmbachHobbyStore.com

DVDs

• **The Art of Model Railroading Video Series: Volume I, Howard Zane's Piermont Division.** Features Howard Zane's HO scale layout with six newly redesigned sections. Special features include an overview of Digital Command Control and sound-equipped brass locomotives and a complete panoramic view of the layout. Two hours. Blu-ray and DVD two-pack, \$39.95. Nace's Videography LLC, 800-285-8685, www.nacesvideography.com 

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ATL80000004 NJ Transit Set (No Track/Pack)	\$229.99
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MTH8023701 R17 4 Car Set DCC/Sound Red	\$284.99
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MTH8023713 R17 2 Car Dummy MOW	\$94.99
MTH8023721 R21 4 Car DCC/Sound Green/Silver	\$284.99
MTH8023723 R21 2 Car Dummy Green/Silver	\$94.99
MTH8023750 R21 4 Car DCC Ready Red/Silver	\$209.99
MTH8023751 R21 4 Car DCC/Sound Red/Silver	\$284.99
MTH8023781 R22 4 Car DCC/Sound Green	\$284.99
MTH8023783 R22 2 Car Dummy	\$94.99
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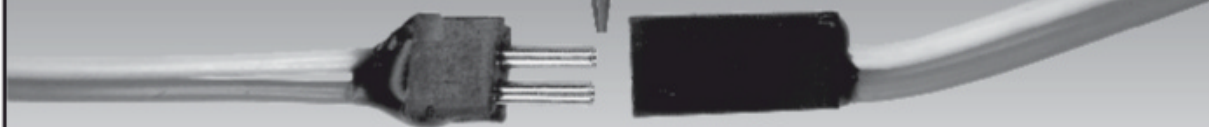
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Though a stone arch bridge like this one on the HO scale Milwaukee, Racine & Troy can be built on a curve, other curved railroad bridges are actually made up of a series of straight segments. Steven Otte photo

How do I build a bridge on a curve?

Q My new HO layout will require several curved bridges. How does the prototype accomplish this? Is there an easy way to modify bridges to work on curved track?

Paul Buckley, South Windsor, Conn.

A When building a curved bridge, it's important to avoid placing uneven stresses on the supporting structure. Except for a stone viaduct, which could be built with a continuous curve, what looks like a curved bridge is really a series of short straight segments. This means that as the track curves, the weight of the train shifts from the inside to the outside of the straight segments. Therefore, those segments need to be as short as is practical.

They, and the trestle bents or piers they rest on, also need to be wider than a straight bridge segment would be. The weight of the train on the rails must always fall inside the pair of imaginary lines connecting the ends of those bents or piers, not cantilevered outside of them.

A stone viaduct, the earliest railroad bridge to be developed, could easily be built on a curve. Wooden trestles, with their closely spaced bents, are also well suited for curved applications, so much so that their use on model railroads has become a cliché. Deck steel girder bridges are also suitable, as it's not too expensive to build them wide enough to handle the curve. Through girder bridges work as long as the curve isn't too sharp. Least practical are through truss bridges, which would have to be built extra wide to accommodate the curve.

mechanism used, and other particulars of the installation, a good ballpark range is 1 to 2 revolutions per minute.

Q I have a 4 x 5-foot layout that has a sawmill, a small town, a stockyard, and a small freight station. Do I need a timetable for my layout, since it only goes around in three ovals, and I only have three locomotives and 34 cars? Please let me know where I can find how to make one for my layout.

Russell Brenchley, Cottage Grove, Ore.

A You're under no obligation to use any particular kind of operating system to run your model railroad. If you do feel the need to follow prototype practice, the full-sized railroads have used many different systems to dispatch their trains over the years, depending on the size of the line, its traffic requirements, and the technology available.

Which fits your model railroad best depends not only on the actual size of your layout, but on how you envision it fitting into the larger rail network. Is it an isolated short line that runs only one or two trains at a time? Then you're probably fine running your freights as extras, issuing train orders to arrange meets if necessary. Or is your railroad imagined as only a segment of a much larger empire, with staging yard(s) serving up regular interchange, bridge, and passenger traffic? Then a timetable might be for you.

Check out the "Ask MR" column in the September 2018 issue for the basics of creating a timetable for your model railroad. For an example of how to arrange meets with train orders, see Jerry Dziedzic's "On Operation" column in the September 2016 issue.

Q Is it possible to get direct current from Digital Command Control-powered tracks? We can use light-emitting diodes (LEDs), so how about getting 5 volts of DC to run a micro inside a boxcar?

Alan Conover, Denver

A I'm not sure what you mean by "a micro," but I believe the answer is yes. What you need is a bridge rectifier, an arrangement of four diodes that converts alternating current (such as DCC) to

Q Sometimes when I buy an HO scale vehicle, the wheels aren't straight. I try to align them, but am usually unsuccessful. Any ideas?

Bob Devine, Rumson, N.J.

A Scale vehicle axles are usually made of a fairly stiff wire to resist bending. Unfortunately, this means that if they do get bent, they're difficult to straighten, especially because the axle can easily turn in the vehicle frame when you exert pressure on it. If your vehicle has a wire axle, try to cut the axle with a hardened steel wire nipper and remove it. Then

replace the axle with a new one of brass wire, glued in place with cyanoacrylate adhesive (CA). Being softer than the original axle, the brass wire will be more prone to bend, but since you're just placing the vehicle on the layout, not playing with it, that shouldn't be a problem.

Q What is the typical rotational speed of a railroad turntable?

James White, Green Bay, Wis.

A Though the rotational speed of a turntable varies depending on the diameter of the turntable, the drive

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

DC. It's commonly used in model railroading to drive lighting circuits, as you mention. If by "a micro" you mean a micro-bulb, a bridge rectifier will let you power it from DCC power, assuming the voltage and amperage are compatible.

If you are talking about car lighting, look into a lighting decoder, which will not only convert the current for you, but also let you control the light with a DCC throttle. We reviewed the NCE Light-It decoder, which is made for use with LEDs, in our May 2018 issue.

Q How does one go about figuring out the grade of a track? Why is it expressed in percent? I ask because I'm using a Life-Like layout kit that consists of four formed Styrofoam panels that when placed together create a 48" square layout with an over-under, twice-around loop, and I'd like to know how to figure out its grade.

Scott Baker, Wichita, Kan.

A Grade is expressed as a percentage because it's a ratio of two measurements,

often called "rise over run." In other words, it's the amount the track rises vertically over a distance measured horizontally. Since those two numbers are measured in the same units of measurement, the units cancel out, and you're left with a ratio.

Grade is measured by figuring out how much the track rises (or declines) over a certain distance. Although I don't have your Life-Like panels in front of me to measure, I can make some educated guesses. In HO scale, the tracks must be at least 3½" apart where they cross over each other, so we'll call the lower track at the crossing our zero point, and the upper elevation 3½".

Since the outer loop is longer, its grade will be less steep, so we'll use the inner loop. It's not an exact circle, but it's close enough for our purposes. You say the layout is 48" across, which tells me that the inner curve is probably an 18" radius. Multiplying that radius by 2π, we get a length of track on the inner loop of approximately 113". The height of 3.5" divided by the length of 113" gives us a

grade of .03, or 3 percent. That may be steep by prototype standards, but reasonable for model trains short enough to fit on this layout.

Q I have an HO diesel with plastic handrails that need replacing. What's the best method of removing the old handrails without damaging or scratching the locomotive shell? And what's the best cement to secure the new handrails with? Thanks.

Nathan Penn, Monmouth, Ill.

A It's usually easy to remove handrails by gently inserting a chisel-bladed hobby knife from above between the stanchion and the sill, then rocking it back and forth gently to break the adhesive (if there is any; many are friction-fit). Don't press downward, or you may simply shear off the pin in the mounting hole.

For gluing the new handrails in place, we advise gluing only the end mounting pins and maybe one or two intermediate ones, since they will often stay in place with friction. Use an all-plastic glue like



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the Loctite Plastics Bonding System, which comes with an etchant to help it stick. Neither styrene cement nor regular cyanoacrylate adhesive will stick very well to the slippery engineering plastic of the handrail.

You may also want to look up the Step By Step article in our May 2017 issue, in which Cody Grivno shows how to replace plastic handrails and stanchions with brass parts.

Q When Cody Grivno writes a “Step by Step” feature, he often uses Rust-Oleum brand spray paint, especially as a primer. But isn’t this brand of paint designed for metal, harmful to styrene and other plastics?

Ron Salters, Weymouth, Mass.

A Cody uses Rust-Oleum Painter’s Touch 2X, which is designed to be plastic-compatible, not the regular Rust-Oleum. Regardless of the brand you use, check the label of the can before spraying plastic; it should say whether it’s plastic-compatible. **MR**

READER TIP



An inexpensive light switch shield like this one can protect your layout’s master power switch from being accidentally turned off. Robert Manna photos

Shield your master switch

When working on the main control panel for my new layout, where my power supplies and boosters would be, I wanted to incorporate a master power switch so I could turn everything on and off easily. But with two little ones running around, this switch had to be protected so it couldn’t be accidentally tripped. My relatively cheap solution was a light switch protector cover. You can pick one up at your local home improvement store and install it over a standard wall switch plate. Now I’ve got a fully rated, protected switch for not much money. – *Robert Manna, Abington, Mass.*

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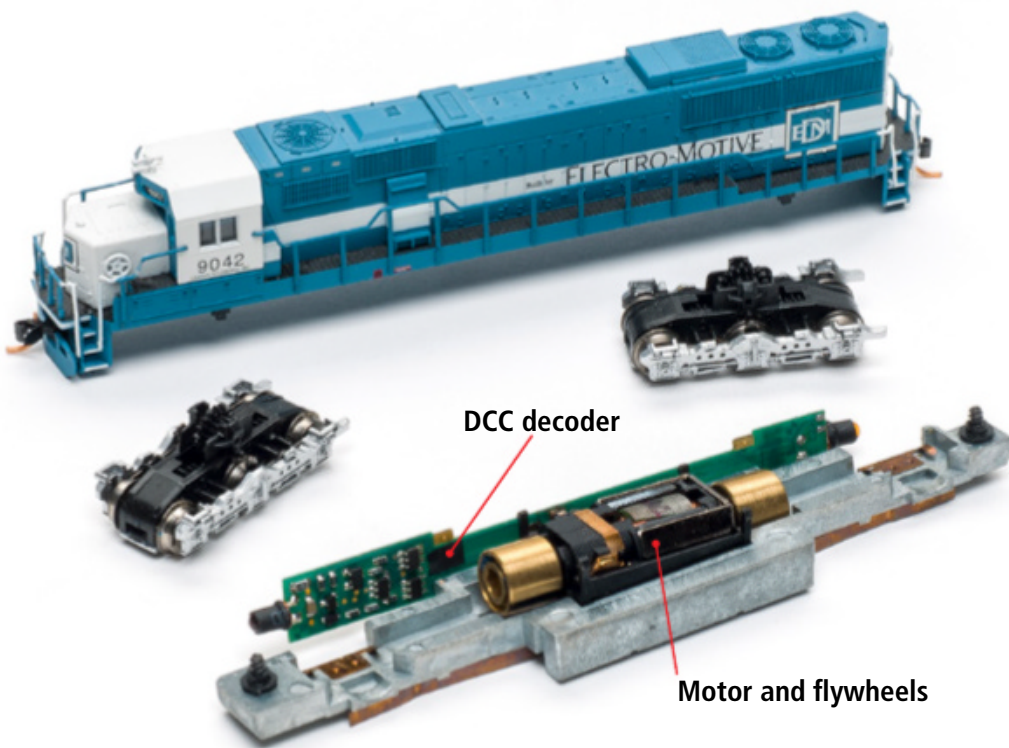
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Putting the go in a beautiful N scale engine



A tricky performance problem led Jim Kelly to this – disassembling his Atlas N scale Electro-Motive Division SD60s.

Bill Zuback photos

One of the most puzzling

N scale locomotive performance problems I've encountered came with the two Atlas Electro-Motive Division (EMD) SD60s I purchased in 2014. The prototype locomotives were lease units from Oakway (an EMD subsidiary), and they were painted in the gorgeous blue-and-white scheme EMD had used for years on its demonstrator locomotives.

Other companies were in the business of leasing locomotives, but their paint schemes, to the extent they had them, were spartan. Often they'd buy used locomotives, overhaul them, slap on a coat of dark paint and some initials, and start leasing them out.

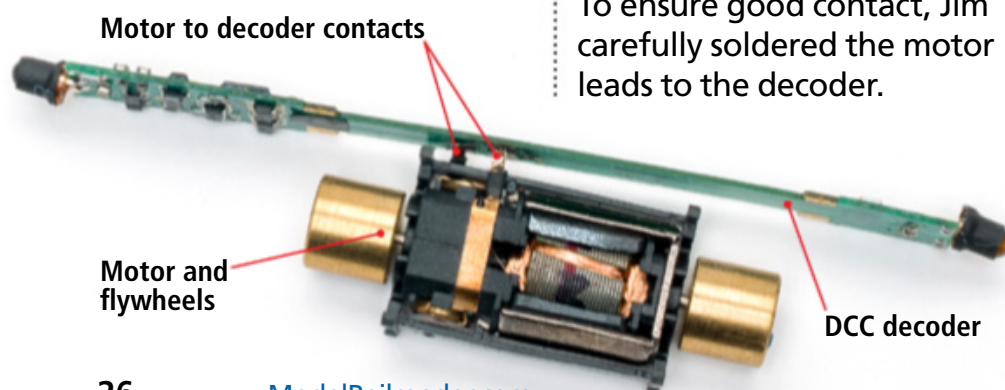
These blue-and-white EMD jobs, on the other hand,

were bound to look great on my Tehachapi Pass layout, and I assigned them to the Southern Pacific, which could always use some help in the color department.

Both the Southern Pacific, which owned the line, and the Santa Fe, which had running rights, were short on motive power in the mid-'80s, and on the pass you'd often see leased power as well as locomotives borrowed from other lines. This was a great boon to the modeler who wants to follow a prototype but still have some variety.

Go, no-go performance. I'd bought these two engines

Motor contact with the Digital Command Control decoder was the problem. To ensure good contact, Jim carefully soldered the motor leads to the decoder.



with factory-installed decoders, and when I first put them on the tracks, they were a delight to watch. They ran silky smooth and so quiet you could barely hear them at all. Unfortunately, that super performance didn't last.

Those Oakways would be going along great, but then one or the other would just quit. I'd take off the body shell, fool with the mechanism, jiggle the Digital Command Control (DCC) board around in its notches as best I could, and eventually get it going. Then after putting the shell back on, it might run or it might not, and for how long was anyone's guess.

The headlights stayed on, so contact between the decoder and the locomotive frame was good. That meant the culprit had to be poor contact between the motor and the decoder.

Now, over the years I've learned that if you've installed a plug-and-play decoder and the engine won't run, the problem is almost always the contact between the decoder and the motor. Usually the fix is to take the decoder back out and clean its contact pads. I do this with the eraser on a common, ordinary lead pencil, and most times that solves the problem.

I've tried to make this step part of my installation procedure, but forget to do so more than I remember. You may also have to bend the motor leads a bit to get sufficient pressure for good contact, but as a general rule, once you

get an engine going it'll keep on. This intermittent on-off behavior was a mystery to me.

A solution. Finally, I concluded the leads from the motor brushes were too flimsy and didn't exert enough pressure on the decoder to maintain reliable contact. I'd never encountered this problem, so I turned to the internet, which had come to my rescue many times before. I searched two discussion groups, TrainBoard and The Railwire, and found that I wasn't alone.

The solution I used, which I found in one of the discussion threads, was to solder the motor leads to the board. This may not be the only solution or the best one, but it is sure-fire.

First, I took the motor out of the locomotive and lashed it to my worktable with masking tape. Then I carefully and quickly tinned the tips of the motor leads and the contact pads on the decoder, held my breath, and made the connections.

I made sure my small iron was good and hot, used rosin core flux, and got that soldering iron in and out in about a second. The flux helps distribute the heat very quickly, and

I only used a tiny droplet of solder. This was scary, but not as hard as it sounds.

Many of you will recognize that last paragraph covers some tricky ground. I'd cross it only as a last resort. But the result was well worth it. Those beautiful locomotives now run just as good as they look. 



FIRST, I TOOK THE MOTOR OUT OF THE LOCOMOTIVE AND LASHED IT TO MY WORKTABLE WITH MASKING TAPE.
— JIM



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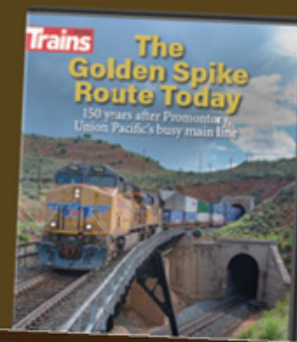
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Modeling a maintenance-of-way car

One of my earliest train memories is of Great Northern heavyweight combine no. 03435 that sat on a siding north of the depot in Crookston, Minn. The roof was originally coated with Alumanation 301, and later some darker sealant, some of which had dribbled down the car sides. The Oxide Red paint applied in June 1964 was starting to show its age by the early 1980s. Some of the windows were covered with wood.

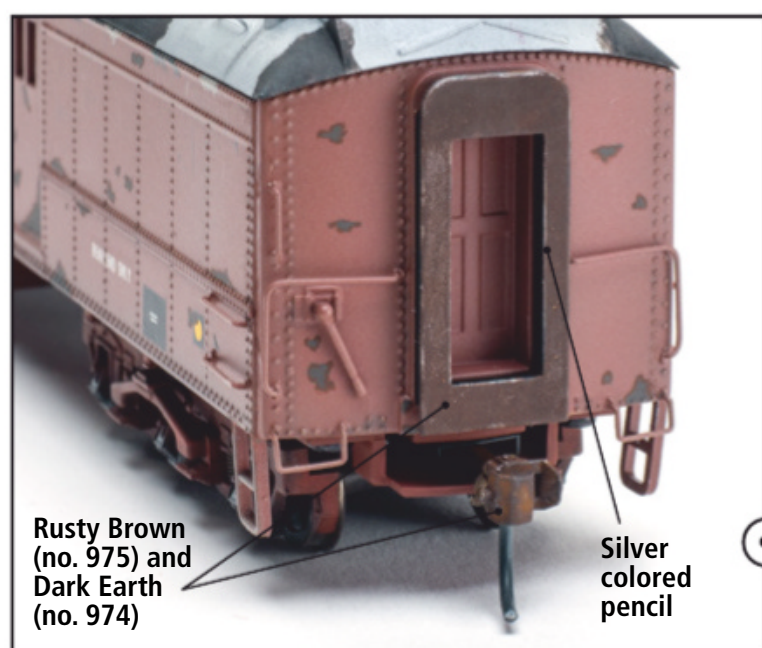
I hadn't really given that old car much thought until I came across a Rivarossi HO scale 60-foot heavyweight

baggage car. I'd stripped the paint off the model as part of a project several years ago. Not wanting the car to sit unfinished, I made it into a maintenance-of-way supply car for our Milwaukee, Racine & Troy. The Rivarossi car is based on a Chicago & North Western prototype, so to my mind it seemed logical the MR&T could have acquired the car second-hand.

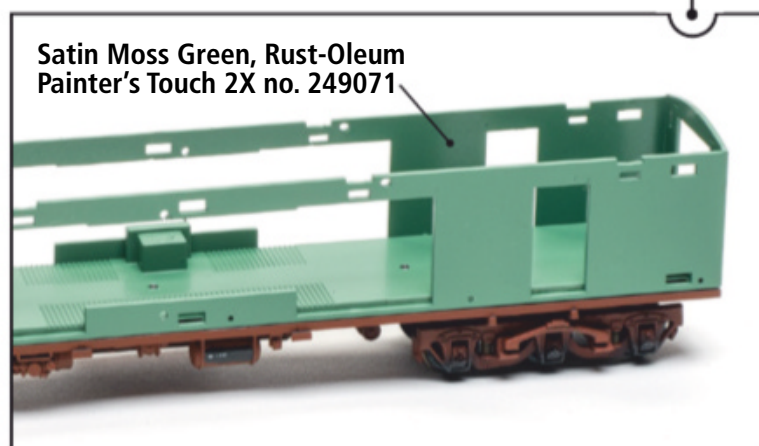
Converting passenger equipment to MOW service is a great excuse for adding an old heavyweight or fluted-side car to your model railroad. **MR**



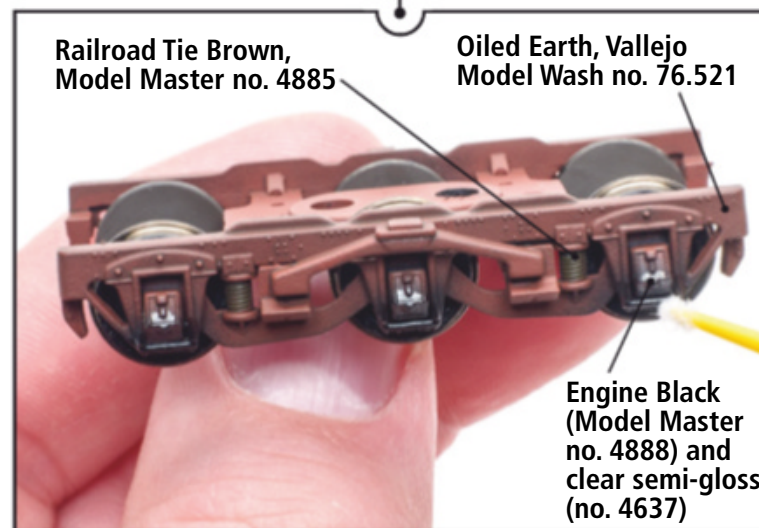
Great Northern heavyweight combine no. 03435, shown at Crookston, Minn., in the early 1980s, inspired this month's project. Steve Grivno photo, Cody Grivno collection



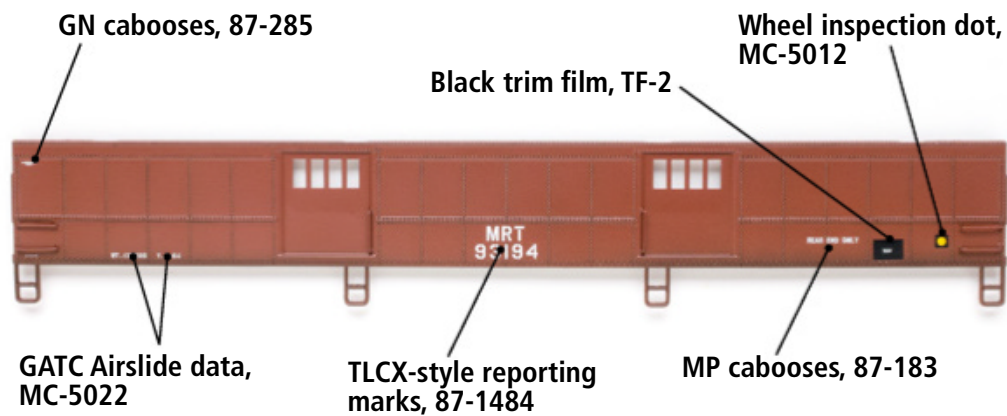
I sprayed the diaphragms and couplers with Testor's Dullcote, then applied Monroe Models Weathering Washes. I simulated worn metal on the edges with a silver colored pencil.



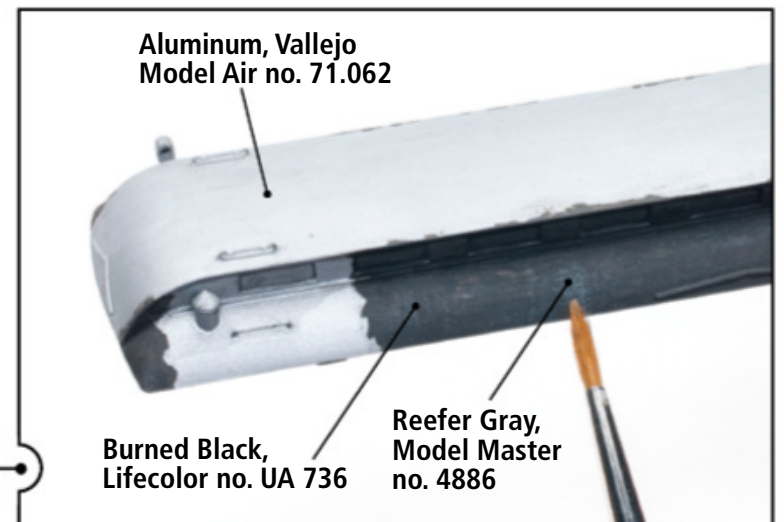
I spray-painted the interior Rust-Oleum Painter's Touch 2X Satin Moss Green (no. 249071). This simulates the "institutional green" used on car and locomotive interiors during the 1960s.



After airbrushing the trucks Model Master Oxide Red, I applied Vallejo Oiled Earth Model Wash. I simulated the "wet" look under the journal box covers with semi-gloss clear.



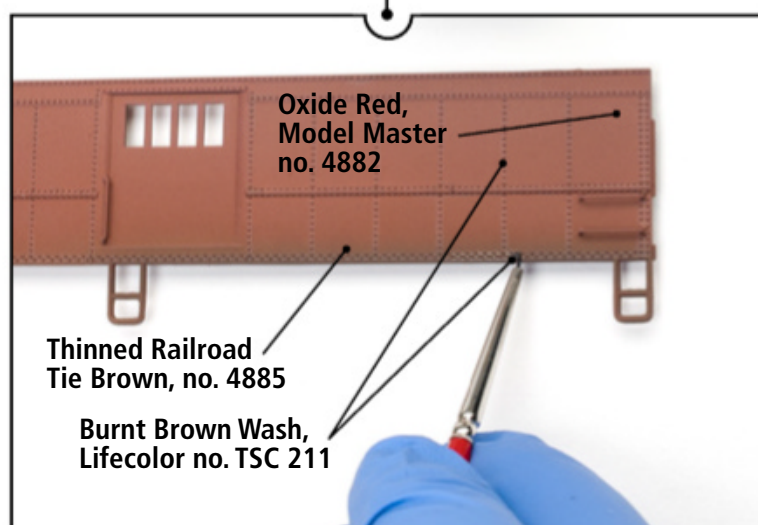
There's no decal set for this car, so I cobbled together the lettering from assorted Microscale sets, using the full-size Great Northern car as a guide. The GN caboose set even had a decal for the Alumanation 301 stencil in the upper left.



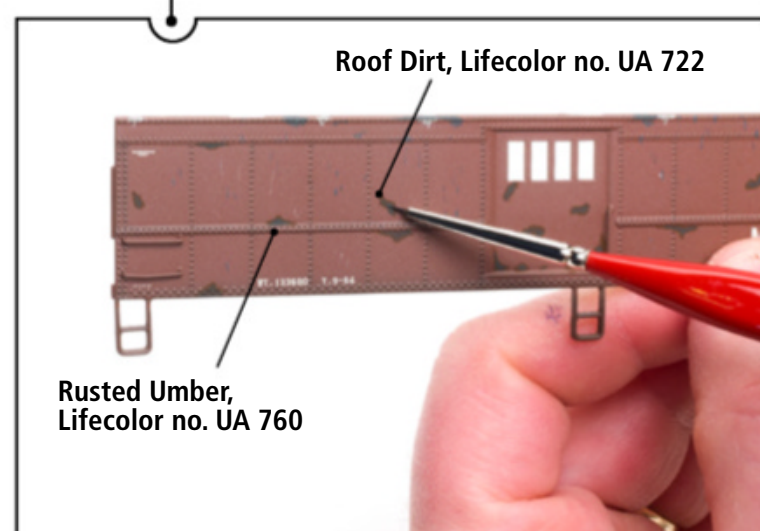
Vallejo Aluminum captures the look of Alumanation 301. Then I brush-painted Lifecolor Burned Black on the sides, followed with streaks of Model Master Reefer Gray and Testor's Dullcote.



Learn more passenger car modeling techniques in *Model Railroading: The Ultimate Guide 2019*.



I sprayed the lower third of the car with thinned (9 parts 70 percent isopropyl alcohol, 1 part paint) Railroad Tie Brown. Then I used Lifecolor Burnt Brown Wash to make the rivets stand out.



To simulate rust patches, I first applied Lifecolor Rusted Umber (no. UA 760) with a 10/0 paintbrush. Then I filled in the middle of each patch with the same company's Roof Dirt (no. UA 722).



1 A Canadian Pacific GP30 leads a short train on Chris Denning's 4 x 12-foot Agawa Yard switching layout. The model railroad is set in a fictional suburb of Vancouver, B.C.

An industrial area in 4 x 12 feet

Weathered cars and structures populate this urban HO scale switching layout set in 1960s Canada

By Chris Denning • Photos by Steve Flint

My HO scale Agawa Yard layout is set in a fictional suburb of Vancouver, B.C., in the spring of 1969. It's part of a single-track main line that zig-zags through the suburbs and provides rail access to the area's dwindling towns and industries.

My layout is based on 1960s photos of the Canadian Pacific (CP), and it's fair to say that the railroad was in pretty rough shape at the time. I've tried to convey this in the rolling stock,

locomotives, and buildings by weathering them heavily.

Adjusting to HO scale

I've built nearly a dozen layouts, but Agawa Yard was my first in HO. All of my previous had been in N scale. I live in England and started out modeling British prototypes, but was disappointed with the poor performance of the models I was using. I switched to American

prototypes and then to Canadian ones after a trip to Canada in my teens.

I built the sectional benchwork for my 4 x 12-foot layout in 2001, then put the Agawa Yard project on hold for nearly two years while I moved into a new house. The scenicked portion of the layout is 2'-0" x 8'-6½" wide. The unscenticked areas are return loops and a two-track hidden staging yard.

I finally laid track and got the railroad running in 2003. I added the scenery in about six months, and I took the Agawa Yard to its first exhibition in 2005. The benchwork is L-girder and the legs fold up, so it's easy to transport.

Realistic weathering

While I enjoy all aspects of model railroading, my strengths are weathering and scenery. One of my biggest pet peeves is rolling stock that isn't weathered. Every piece of rolling stock on my layout looks like it's been through several years of hard service. All of the wheelsets are



② Chris made the roads on his layout using modeling clay. Some of his buildings, such as the diner, feature interior details.

Chris painted various shades of rust, and the trucks are drybrushed to look dirty. Whenever possible, I worked from prototype photos so I could weather freight cars (and locomotives) prototypically.

I also wanted the track to look run-down. So, before laying the flextrack, I bent and notched it at 39-scale-foot intervals, the length of full-sized jointed rail. Once installed, the track has slight, but noticeable, dips. This dipping causes freight cars to rock back and forth realistically while running.

Scenicking a small layout

Because the Agawa Yard is so small, it's a scene in itself. Visitors can see most of the layout from any vantage point. I'm most pleased with the bridge over the river, shown at right.

To make the water, I applied black paint to PVC foam sheets from the European manufacturer Foamex. (In North America, you can find PVC foam sheets at art supply stores and plastics suppliers.)

I then poured a layer of Woodland Scenics Realistic Water on top. Once that material dried, I completed the river scene by adding a layer of Woodland Scenics Water Effects, stippling the

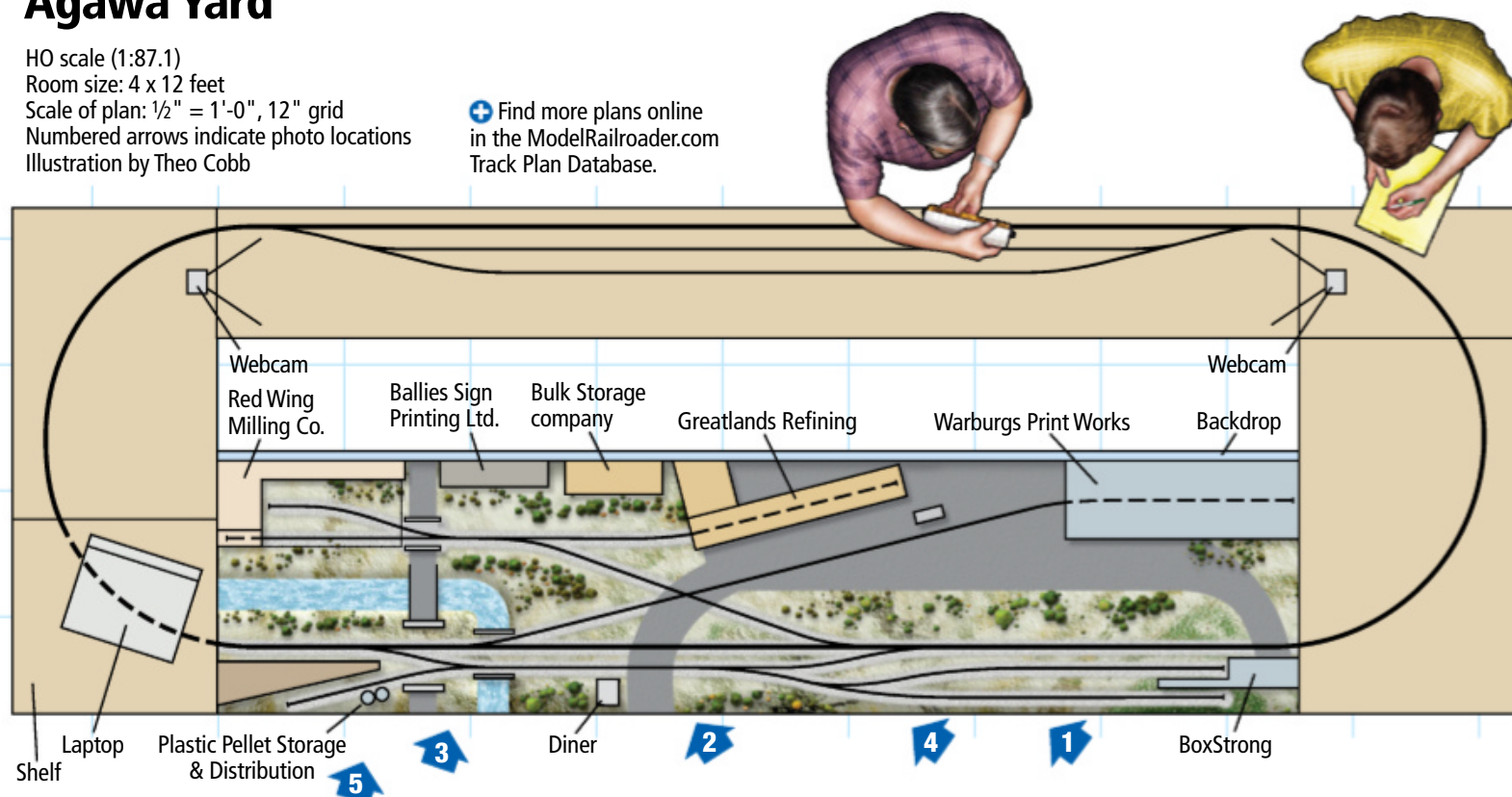
③ As Canadian Pacific GP30 no. 8200 pulls a boxcar from Red Wing Milling Co. (background), Soo Line GP9 no. 552 and a CP double-sheathed van wait in the siding for the action to clear.



Agawa Yard

HO scale (1:87.1)
Room size: 4 x 12 feet
Scale of plan: 1/2" = 1'-0", 12" grid
Numbered arrows indicate photo locations
Illustration by Theo Cobb

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



The layout at a glance

Name: Agawa Yard
Scale: HO (1:87.1)
Size: 4 x 12 feet
Prototype: Canadian Pacific
Locale: Vancouver, B.C.
Era: 1969
Style: Portable sectional layout
Mainline run: 30 feet
Minimum radius: 20"
Minimum turnout: no. 4
Benchwork: L-girder
Height: 48"
Roadbed: cork
Track: Peco codes 75 and 100
Scenery: Foam insulation board
Backdrop: 1/4" plywood
Control: Lenz Digital Command Control

surface to make it look like wind is blowing over the water.

To make foliage, I again turned to Woodland Scenics products, including a lot of Fine-Leaf foliage for trees and large shrubs and assorted colors of ground foam. I started by applying latex house paint to the layout base. Then I added dirt from a road near my house.

I find that if I spend too much time scenicking a particular area, it can start to look too perfect. To avoid a manicured look, I throw down a bunch of different types of ground foam and foliage, soak them in diluted adhesive, then let the whole thing dry. Later, I go back and add trees, shrubs, and bushes.

I've learned a lot about weathering and making realistic scenery on this



4 The chain link fence in front of the BoxStrong factory adds to the gritty, industrial look of the Agawa Yard layout.

Making chain link fencing

Some features on a layout are very noticeable to viewers and need to be well detailed. One such item on the Agawa Yard is the chain link fence in front of BoxStrong, which I modified from a Ratio kit. The kit included a large number of concrete fence posts and a roll of mesh material. It takes a lot of patience to cut the material straight and to the correct width. I cut off the tops of the posts that held the barbed wire because I decided the industry wouldn't require that level of security. – Chris Dening

layout. I'd love to have the space to expand the railroad or start a new one. For now, I plan to slowly add more detail to the scene so there's something new for people to see at shows.

Structures and industry

About half of the structures on the layout are scratchbuilt, and the other half are kitbashed. I used Foamex to

scratchbuild buildings and bridges. Foamex is strong, easy to cut and glue, and available in several thicknesses. I also use stained balsa to make loading docks or building facades.

The backdrop is integral to the benchwork and supports part of the layout. It's made from 1/4" plywood painted black on one side and sky blue on the other. I covered the backdrop with photos of buildings.



Lighting and controls

I try to light the layout to look like either dawn or dusk. Lights positioned in and around the structures add to the atmosphere, highlight the buildings' detailed interiors, and produce dramatic shadows across the tracks.

The lights are powered from the main track bus. They're all grain-of-wheat bulbs except for the truck and car headlights, which are grain-of-rice bulbs wired in series with a resistor from the main power bus.

When I started this layout in the early 2000s, Digital Command Control (DCC) was relatively new in England. Not many layouts at train shows had DCC, so mine was a novelty. I connected a Lenz LH 100 set to my laptop, which sits above one return loop on the left side of the layout.

During an exhibition, I can operate the layout from the front because I have two webcams that look down the fiddle yard from both ends. This allows me to see what's going on around the back. Using a PC also means that I can easily select a route to or from a particular track in the yard by simply pressing a button.

All of the turnouts are connected to Peco switch motors, and I control them

from the laptop. I used Peco code 75 for the visible track and code 100 for the hidden staging yard.

My sound-equipped locomotives add another dimension of realism to the layout. The locomotive roster includes two Life-Like Proto 2000 (now Walthers) Electro-Motive Division (EMD) GP9 diesels – one with factory-equipped QSI Quantum sound and the other with an ESU LokSound decoder; an EMD GP30 equipped with a SoundTraxx decoder; and an EMD SW1200 equipped with a LokSound decoder.

I modified one GP9 to look like a locomotive in a photo I'd found. It had barrel headlights and a nose-mounted bell. I made the lights with brass tubing and Perspex lenses. For the bell, I used a Detail Associates casting that I found at a hobby shop during one of my trips to the U.S.

I usually have four locomotives running at a time. Two operators can work on the layout, but it's a tight fit.

Beyond Agawa Yard

The Agawa Yard has done just what I wanted it to do. The railroad helped me transition from N to HO, and it taught me a lot about detailing freight cars,

5 The scenicked portion of Chris' model railroad is just 24" deep. To convey the look of a big-city industrial area, he used a mix of low-relief and full-size buildings.

scenery, and buildings. The layout has gotten me into DCC to such an extent that I can now teach and explain it to others who don't yet have a grasp on the technology. Finally, it's gotten me out to see a little bit more of England when I attend shows.

I've decided that my next effort will be an N scale around-the-walls layout set in the Canadian Rockies. I'm looking forward to modeling mountains, curves, and more rivers. [MR](#)

Chris Denning's story and Steve Flint's photos are used with the permission of Peco Publications.

Meet Chris Denning

Chris Denning first got into trains at age 7 when his father built a fine-scale layout in a loft. Both he and his dad still attend shows and exhibit layouts. Chris lives in Harrogate, England.



Up against a wall

Blending form and function can be the answer to a sudden stop

By Gerry Leone • Photos by the author

Some model railroaders are lucky enough to design their layout, then build their train room around it. Most have the opposite problem: we design our layouts to fit into existing bedrooms, basements, dens, attics, and outbuildings.

That's the sort of problem I encountered when we moved to a new home several years ago – a home that had a two-room finished den officially designated as the model railroad area. While designing a track plan around existing obstacles was a frustratingly fun exercise in itself, it did

Why stop the scenery at the wall? Gerry Leone blended the scenery on a section of his HO scale Bona Vista layout with a bookshelf to create an attractive transition zone without limiting the usefulness of the bookshelf.

present several challenges, the largest of which was trying to gracefully blend the layout into two existing living spaces while doing the least amount of damage to either. One of the main obstacles was a bookshelf built into the wall that separates the two rooms.

I considered simply ending the scenery at the bookshelf and calling it a day, but that seemed so inelegant. Why not use the bookshelf as a buffer zone – a transition

between layout and living space – and let the two not only coexist, but complement each other? A tall industry residing on the layout but spilling over onto the bookshelf seemed to be an interesting – and doable – solution.

I kitbashed the building from Walthers' Cornerstone Machine Shop, then painted it with a peeling paint effect (See the "Peel Appeal" sidebar on page 36). I designated the building as a mythical



Here's the scene before any work is done. The train enters the room from under the bookshelf. By creating a scene that blends the bookshelf with the scenery, the layout gains much more visual interest. The black fascia was later shortened.

distribution point for a former Chicago-area burger and ice cream chain where I'd worked as a teen.

The last step was to add scenery to the layout, and add a hint of it up on the bookshelf – another trick that would help blend the two together. I used diluted white glue so it'd be easy to remove the scenery should we – heaven forbid – move again.

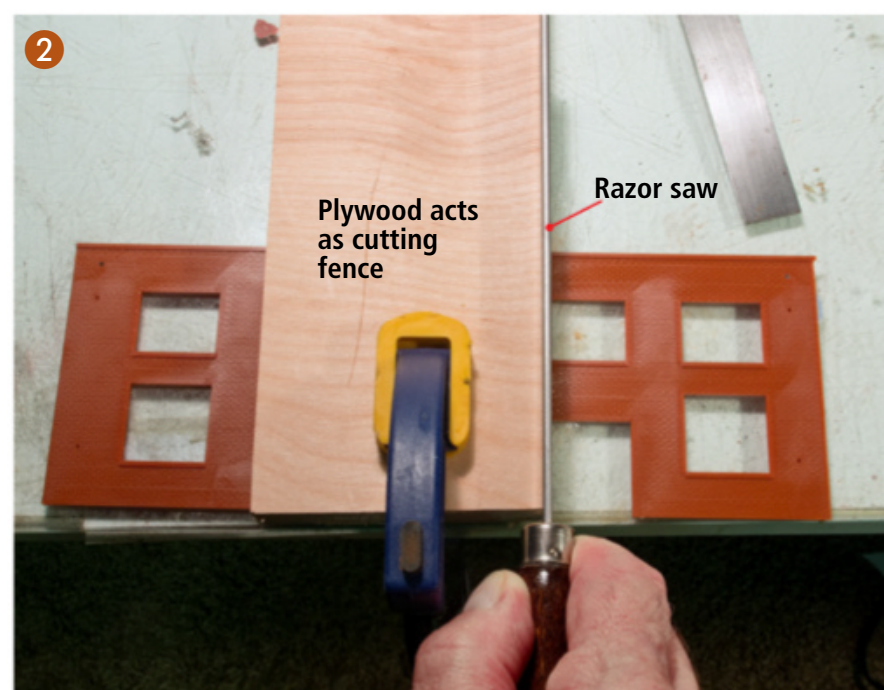
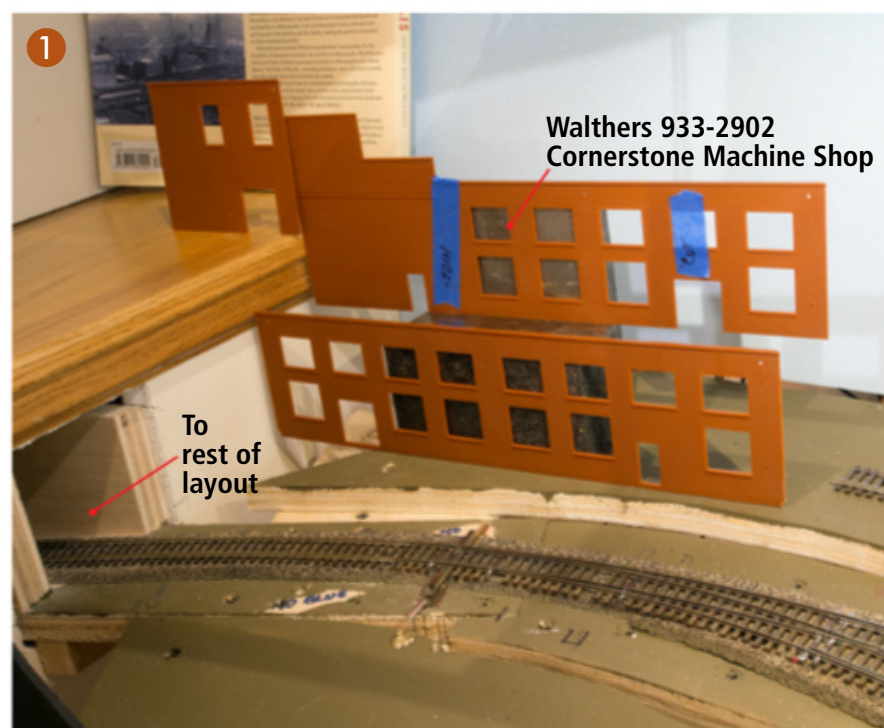
And just like that, the layout and bookshelf were

transformed into a visually interesting layout area that remains fully functional.

If you have a similar problem, consider combining form and function. Chances are you can create a scene that works for both your living space and your layout.

Gerry Leone is a contributing editor for Model Railroader Video Plus and a frequent contributor to Model Railroader.

A bookshelf-blending building



To blend the bookshelf into the layout with a building, I would obviously have to kitbash, and for that I chose a Walthers 933-2902 Cornerstone Machine Shop. Since the back of my kitbashed industry would rest up against the curved backdrop and never be seen, that kit gave me a ton of wall options to work with.

Instead of photocopying each of the wall sections and “building” the industry with scissors and tape, I found it was easier to visualize the final structure by working with the actual wall sections, using several yards of painters’ tape to hold things together while I experimented and gazed ①. The final plan I came up with was a three-story building that would logically bridge the layout and bookshelves, blurring the line between the two.

I began by cutting the wall sections, using a straight piece of plywood as a fence for my razor saw ②. I sandwiched each wall between the board and workbench and clamped it down. The plywood keeps the cut straight, perpendicular, and plumb.

Peel appeal

If you've been in the hobby any length of time, you know there are probably 10,000 different ways to weather wood-sided buildings. But try to find an article that talks about weathering bricks, and you'll be looking for a long time.

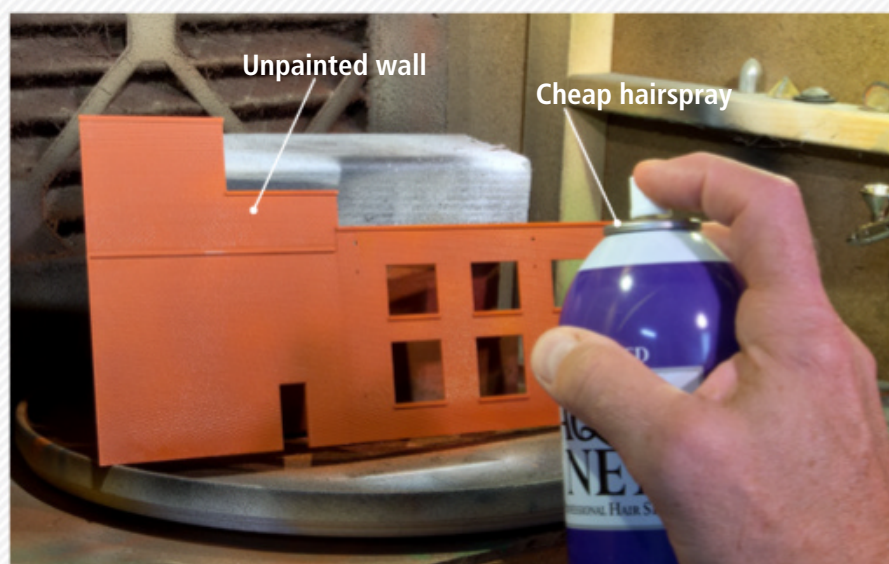
Maybe that's why almost all of the brick buildings on the Bona Vista RR

model unpainted brick. Frankly, I didn't know what else to do.

But out in the real world, you'll find quite a few brick buildings that have been painted. And on the older or poorly maintained buildings, that paint is peeling. I love that look, and tried to simulate it by first painting the brick a different color, then

drybrushing natural brick color over that. It looked, well, just OK.

Then I found a super-easy, super-quick way to get the effect I wanted. Follow along and you'll have poorly maintained, painted brick buildings in no time. But be sure to practice this technique on scrap brick first, just to get the hang of it.

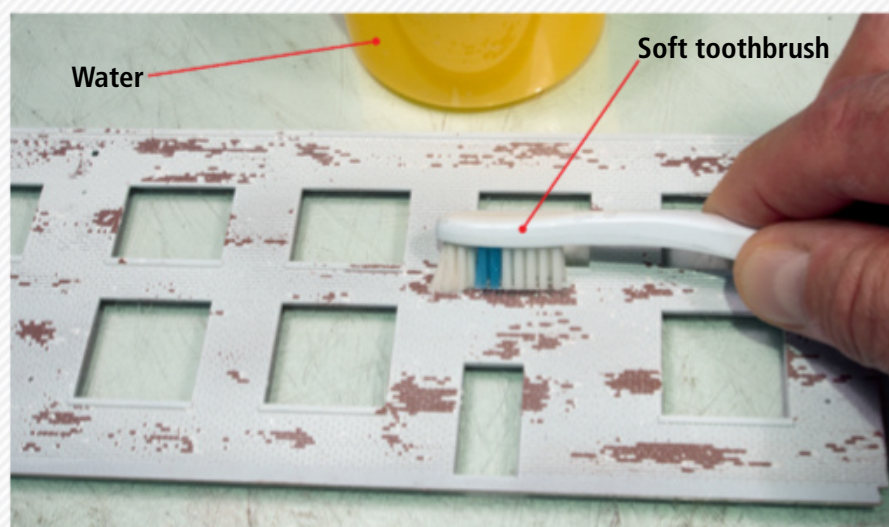


STEP 1 Hairspray

First, spray every unpainted brick surface with cheap hairspray. Saturate the brick, but don't let the hairspray run. Once the hairspray has dried, give it another good coat – two or three coats aren't overkill. Let the building sides dry thoroughly. I set them out on my workbench for a full day before moving on.

STEP 2 Color

Using an airbrush, I over-coated all the walls with acrylic paint. I used Vallejo White so the effect would be fairly obvious. Let the paint set for about 30 minutes. Although the technique will still work if you let the paint dry longer than that, you'll have to work a lot harder in the next step to get the right effect.



STEP 3 Scrub

Put some warm water in a small cup and grab an old toothbrush – the softer the bristles the better. Dip the toothbrush in the water and lightly scrub the building's walls. Like magic, the paint under the brush floats away. The more water you use or the harder you rub, the more paint will come off, so it's best to start small and light.

What's happening: The dry hairspray forms a barrier over the bricks, preventing any paint from reaching them. When you start brushing with the warm water, you soften

both the still-curing paint and the water-soluble hairspray beneath it.

To get the best results and to avoid making your walls look polka-dotted, vary the size and location of the peeling paint. If you stop when your head says, "Just a little more," you'll avoid overdoing it. Let everything dry thoroughly.

I gave the walls a light overcoat of Testor's Spray Lacquer Clear Coat (formerly Testor's Dullcote).

And there you have it – painted brick that really shows its age. You'll find that peeling brick really gives your buildings – and your layout – a lot of character! – *Gerry Leone*



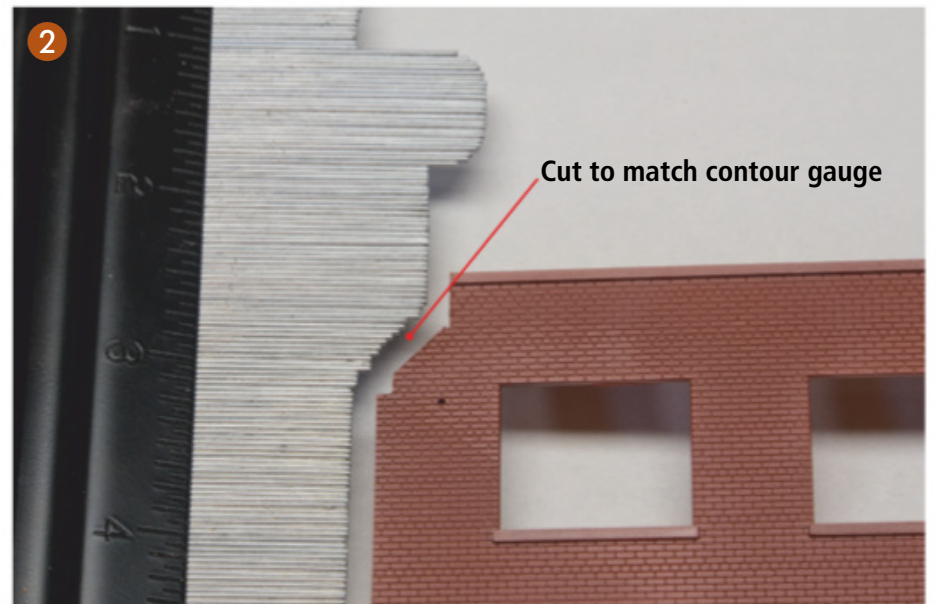
Gerry Leone shares more great modeling tips in "Off the Rails." Check out his monthly show at MRVideoPlus.com

A flush fit



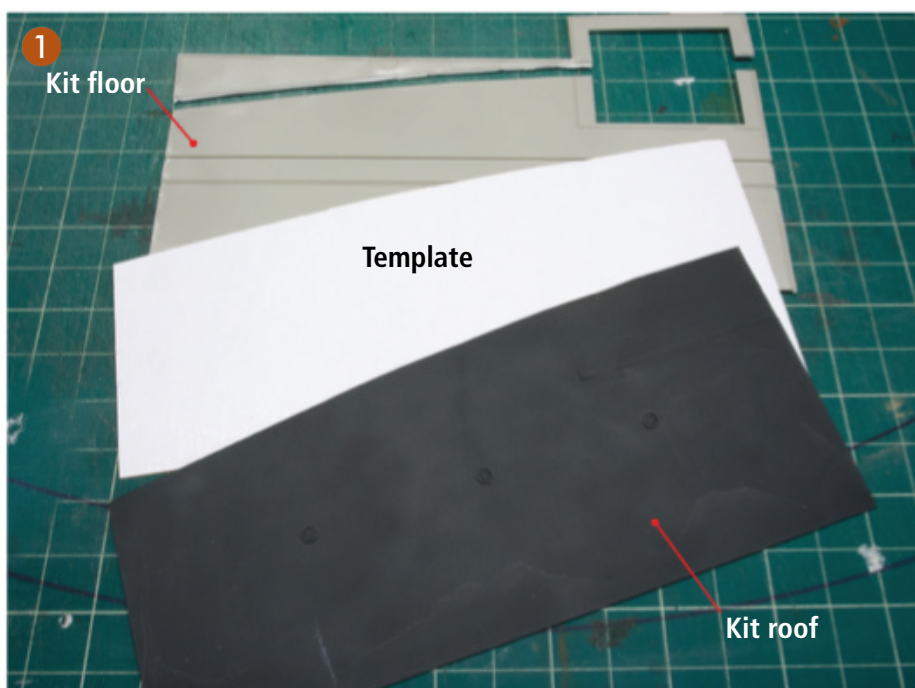
As I proceeded, I discovered one feature of the bookshelf I hadn't taken into account: the lip of the shelf and the trim piece beneath it. Both stand proud of the wall and would prevent me from positioning the structure flush against the wall.

Contour gauge to the rescue ①. A contour gauge is a tool with several hundred thin, magnetic pins in it. You simply



push the gauge up against any odd-shaped form and the pins create an accurate replica of the cross section in both the "positive" and "negative." In this case, the contour gauge gave me the exact cross section of the shelf and trim. I then transferred that contour to the corners of the model that would rest against the wall and used a modeling knife to carefully shape the piece ②.

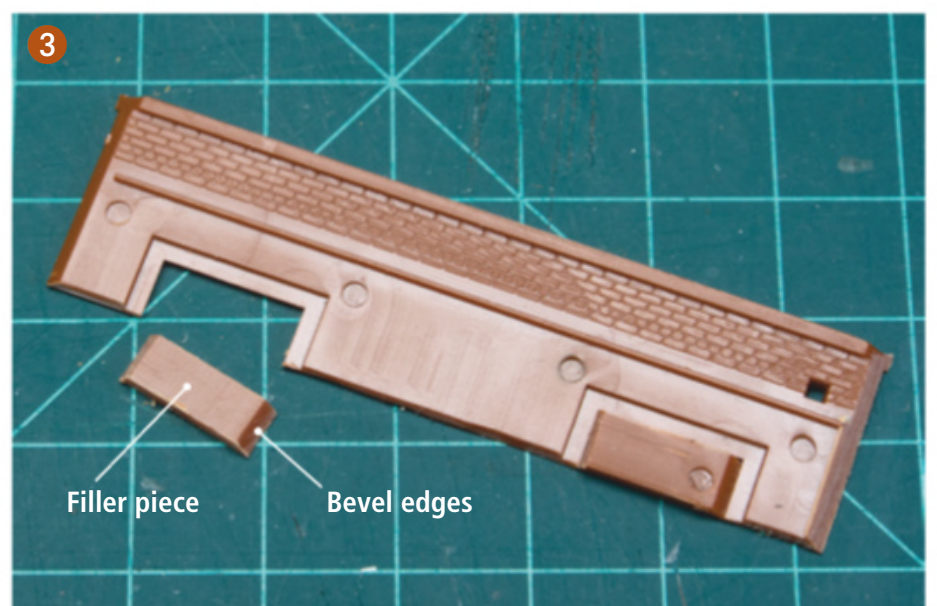
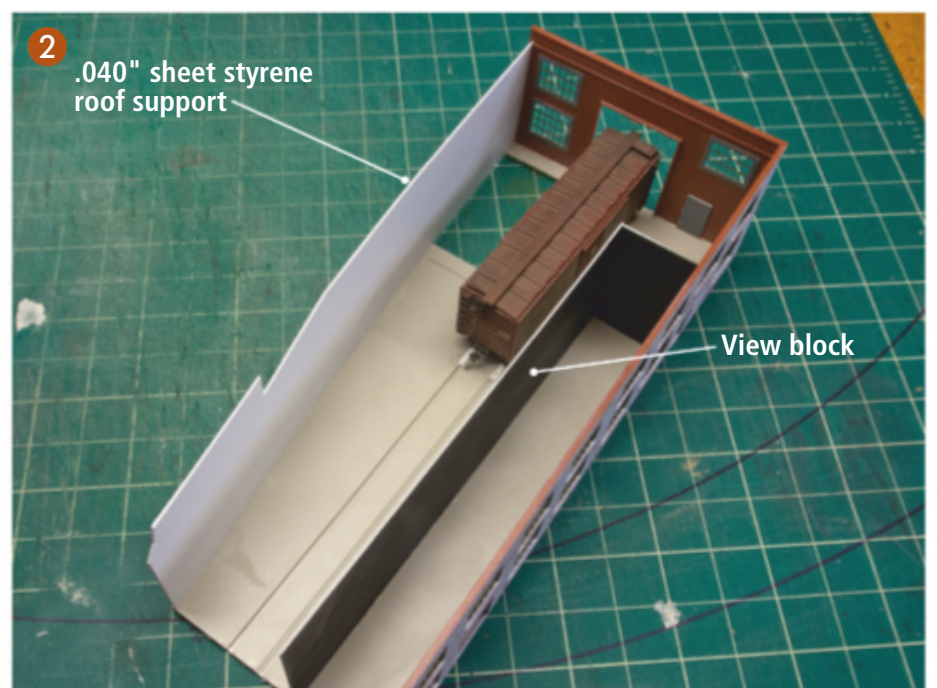
Curves, viewblocks, and fillers



The backdrop is curved in this area, so I laid a piece of tissue paper flat on the layout and traced the curve of the backdrop. I transferred that curve to the model's base and roof ①, then added a support wall for the roof of .040" styrene.

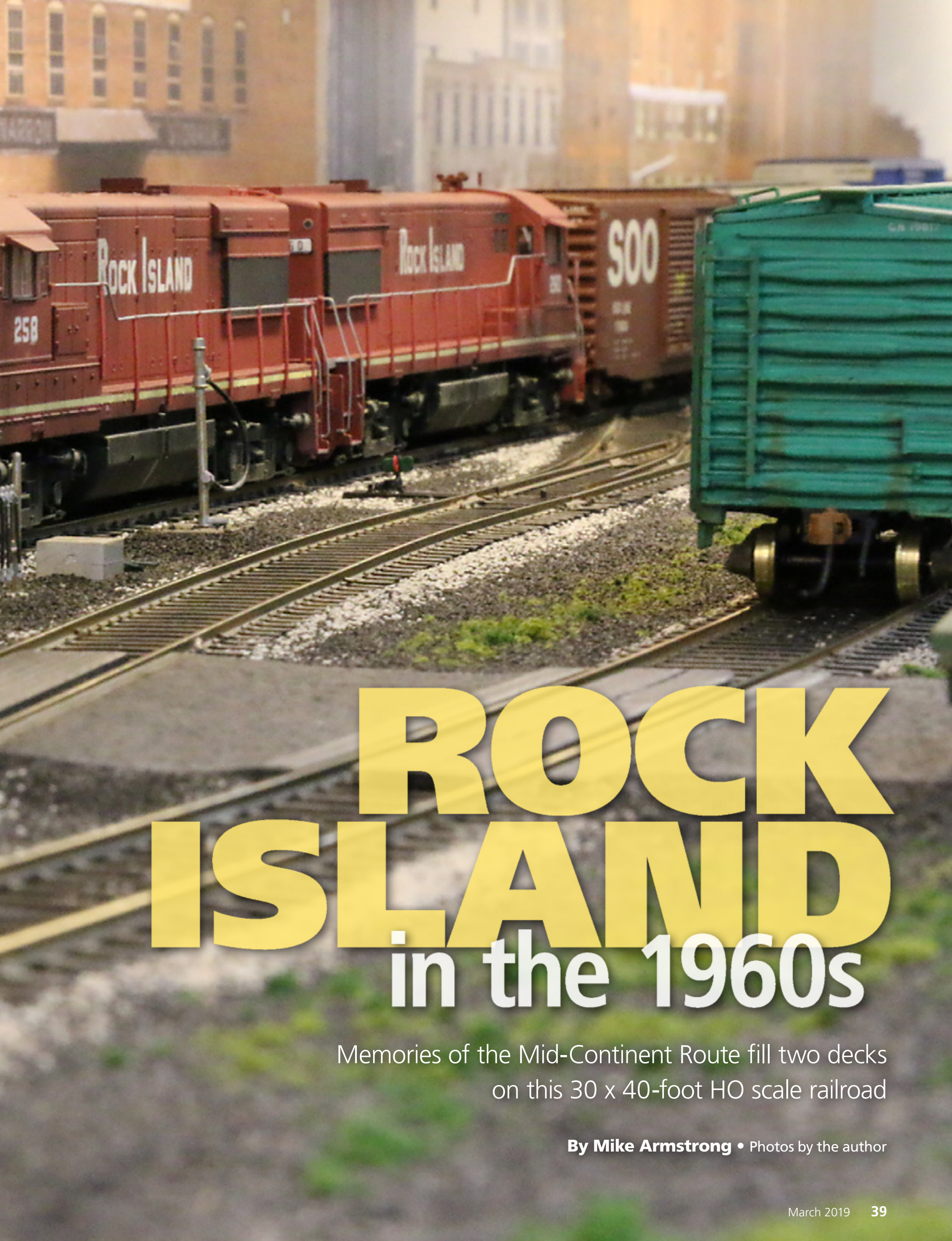
I also added a black view block, ②, to conceal the fact that the building has no interior, and also to hide any cars spotted inside the building.

One of the kitbashed walls I needed contained the tops of former window openings. To remedy that, I used pieces of discarded brick to create inserts ③. Beveling the edges of the inserts let me position them precisely into the openings, and solvent cement then softened those beveled edges enough that I could press-fit them into the openings and make them completely flush with the wall. Once the structure was finished and painted, the inserts were virtually invisible. MR





① A pair of General Electric U28B diesels haul a freight train through Des Moines, Iowa, on Mike Armstrong's HO scale Rock Island Lines. The 30 x 40-foot layout models the Rock's "Mid-Continent Route" between St. Paul, Minn., and Kansas City, Kan., in the 1960s.



ROCK ISLAND in the 1960s

Memories of the Mid-Continent Route fill two decks
on this 30 x 40-foot HO scale railroad

By Mike Armstrong • Photos by the author



② Train No. 18, *The Plainsman*, arrives at the Rock Island station in Des Moines. Mike's friend Olaf "Ole" Melhouse scratchbuilt both the Des Moines and Nevada, Iowa, station structures.

Growing up in the 1960s, I got hooked on the Rock Island Line. At that time I lived in central Iowa in the small town of Nevada on the Rock Island's Mid-Continent Route that ran between St. Paul, Minn., and Kansas City, Kan. This line is also called the Spine Line, and is still operated today by the Union Pacific RR.

In the 1960s the proposed merger of the Rock Island with the Union Pacific RR was under prolonged review by the Interstate Commerce Commission. The merger never happened, contributing to the Rock's bankruptcy in 1980. Even though its physical plant was in decline when I started watching trains, to me the Rock Island of the 1960s was always "a mighty fine line."

The scheduled and local freight trains and four passenger trains that passed through town daily provided me with endless hours of enjoyment. I watched the station agent hoop up orders to a passenger train racing along the main line at 60 mph. The sights and sounds of General Motors Electro-Motive Division Geeps and EMD-repowered Alco FAs switching the local grain elevator and fertilizer distributor made a big



③ Rock Island GP9s take sand and fuel at Inver Grove Yard. While he used code 83 track on the main, Mike laid lower profile code 70 track for his freight yards.

impression on me. All these great memories made my decision to model the Rock Island in the 1960s an easy one, culminating in my current 30 x 40-foot HO scale model railroad.

A lifelong model railroader

Since age 7, I've been a model railroader and remained so throughout my working career on the 1:1 railroad. Since I've been transferred 10 times during my career, the layouts I've built tended to be sectional in construction. I wanted to be able to recycle as much as possible from the previous layout before moving on to the next one.

Prior to moving into our current home, I had a 10 x 20-foot layout in one stall of a garage. That layout really helped me hone my modeling skills, especially scenery construction and wiring.

By the time we moved into our current home in 2007, I was ready for my next model railroad. The house's design included a 30 x 40-foot train room on the second floor, my retirement project. Following my track plan, I built extra interior walls in the room to allow for an around-the-walls layout configuration.

I'm a great admirer of model railroader David Barrow and his Cat Mountain & Santa Fe HO scale railroad. In fact, his track plan shown on page 61

of the September 1999 *Model Railroader* influenced my layout's design.

It took me about eight years to complete my HO scale Rock Island Lines. In its current state, all that's left to do on the layout is to continue adding more scenic detail.

Layout configuration

My Rock Island Lines is a single-track railroad that's built on two levels, providing a reasonably long mainline run. Two helixes each contain a main and a passing siding so trains can meet in those locations when necessary. Trains can be run continuously along the main or point-to-point between Inver Grove Yard and Armourdale Yard.

Trains exit the scenicked portion of the layout through view blocks and pass through staging yards on both levels. Each staging yard has five through tracks and four stub-ended tracks for holding trains.

After exiting the upper or lower level staging yard, trains arrive at the north or south terminal. North of Inver Grove Yard is the Minneapolis/St. Paul terminal that includes the Minnesota Transfer Ry. Yard. South of Armourdale Yard is the Kansas City terminal that includes the Chicago Great Western Ry.'s Ohio Avenue Yard, a grain elevator, and the Union Pacific Armstrong Yard.

Favorite towns

Between the two main yards of Inver Grove on the north end of the layout and Kansas City on the south end are eight towns and stations named for prototype locations along the Mid-Continent Route. The layout prominently features Nevada, Iowa, the center of so many of my early railfanning experiences. Des Moines, Iowa, and its Rock Island station are also a focal point on the layout. Although the station's prototype was actually on the Rock's east-west main line between Chicago and Council Bluffs, Iowa, I used modeler's license to locate it on the north-south main.

My friend Olaf "Ole" Melhouse scratchbuilt both the Nevada and Des Moines station structures. [Ole's N scale Dakota Northern layout was featured in the April 2000 MR. – Ed.]

Another special location modeled on the layout is Shipley, Iowa. This small township is named for my great-grandfather, who helped establish town plats along the route of the Des Moines, Iowa Falls & Northern Ry. in the early



4 Across the aisle from Albert Lea, Minn. (left) on the upper level is St. Paul's Inver Grove Yard, with Kansas City's Armourdale Yard directly below it. During point-to-point operating sessions, trains run between these two sprawling freight yards.

1900s. The DMIF&N eventually became part of the Rock Island system through a series of acquisitions, a long-term lease, then ultimately consolidation in 1948. I also attended elementary school in Shipley, which was part of the Nevada Public School District.

Signals, track, and scenery

Using Tomar Industries three-light target signals and Logic Rail Technologies circuits and photo cells, I set up an automatic block signal (ABS) system at nine locations along the line. The signal aspects change from green to red when a block is occupied. The ABS system helps keep following trains properly spaced at a safe distance.

I used code 83 Micro Engineering flextrack for the main line and code 70 for yards, sidings, and industries. The track roadbed is cork attached to 3/4" plywood subroadbed.

On the main I used Walthers no. 6 turnouts controlled by Tortoise by Circuitron switch motors. For all other locations I used Micro Engineering no. 6 turnouts that are lined by hand.

I spray-painted all the track flat black, then brush-painted the rails with rust-colored acrylic paint. The track ballast consists of various Woodland Scenics and Arizona Rock & Mineral products.

The layout features eight railroad bridges, five steel and three timber, built from Micro Engineering, Rix Products, and Walthers kit components. Five of the bridges pass over rivers or creeks that I modeled using Enviro-Tex Lite epoxy

resin. I modeled the 10 culverts on the layout from Rix Products kits, copper tubing, and balsa.

I made the scenery base by covering cardboard strips with plaster cloth. Then I applied a layer of joint compound over the plaster cloth. Once the plaster dried, I added a variety of Woodland Scenics products, including grasses, blended turf, coarse turf, and Clump-Foliage.

The layout at a glance

Name: Rock Island Lines

Scale: HO (1:87.1)

Size: 30 x 40 feet

Prototype: Rock Island

Locale: Minneapolis/St. Paul, Minn., to Kansas City, Kan.

Era: 1964 to 1970

Style: multi-deck walk-in

Mainline run: 750 feet

Minimum radius: 30"

Minimum turnout: no. 6

Maximum grade: 1.96 percent

Benchwork: open grid

Height: 40" to 60"

Roadbed: cork on 3/4" plywood

Track: Micro Engineering code 83 flextrack (main) and code 70 (industries, sidings, and yards); ME and Walthers turnouts

Scenery: Plaster cloth and joint compound over cardboard strips

Backdrop: commercially available and hand-painted

Control: Digitrax Digital Command Control

Rock Island Lines

HO scale (1:87.1)

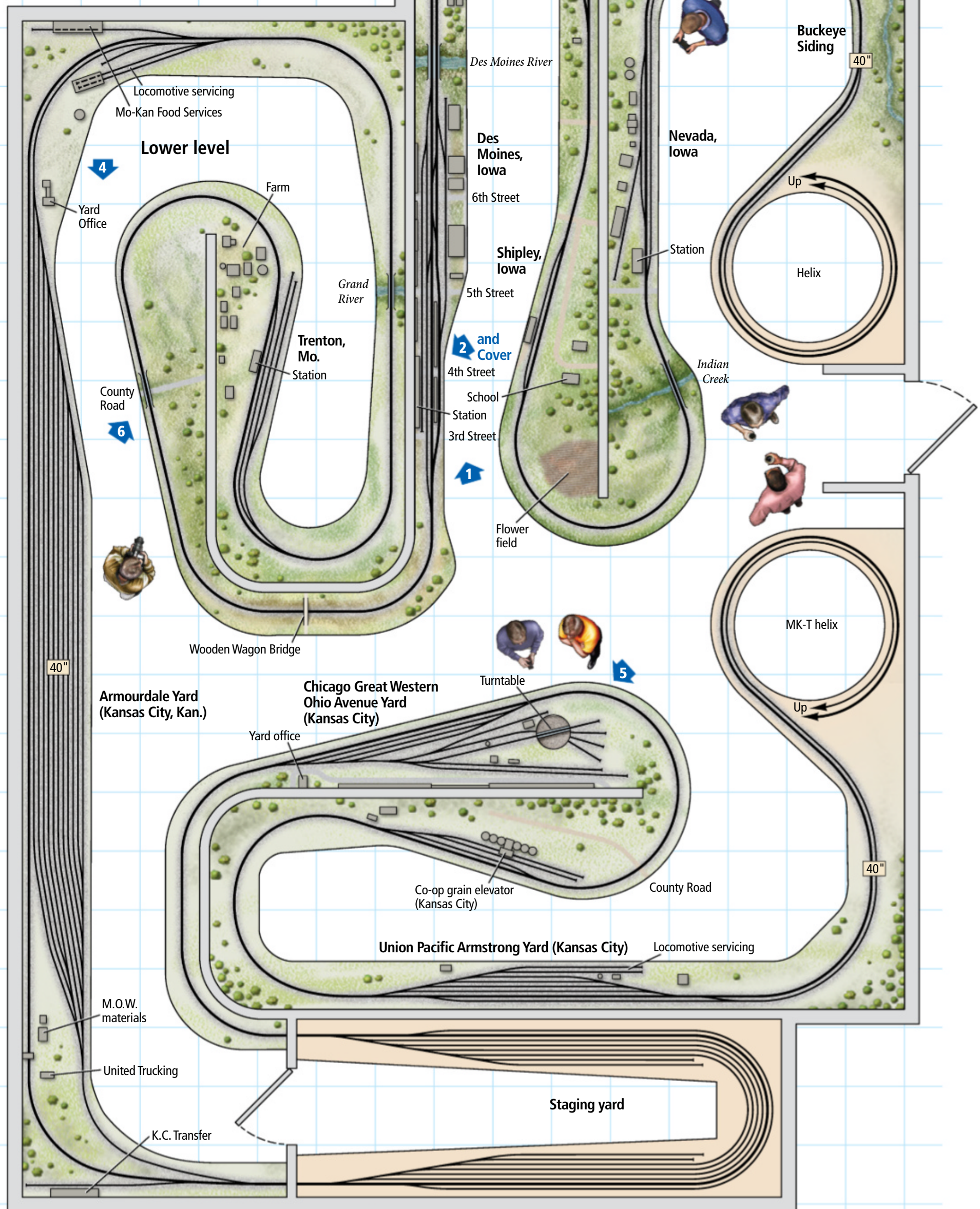
Room size: 30 x 40 feet

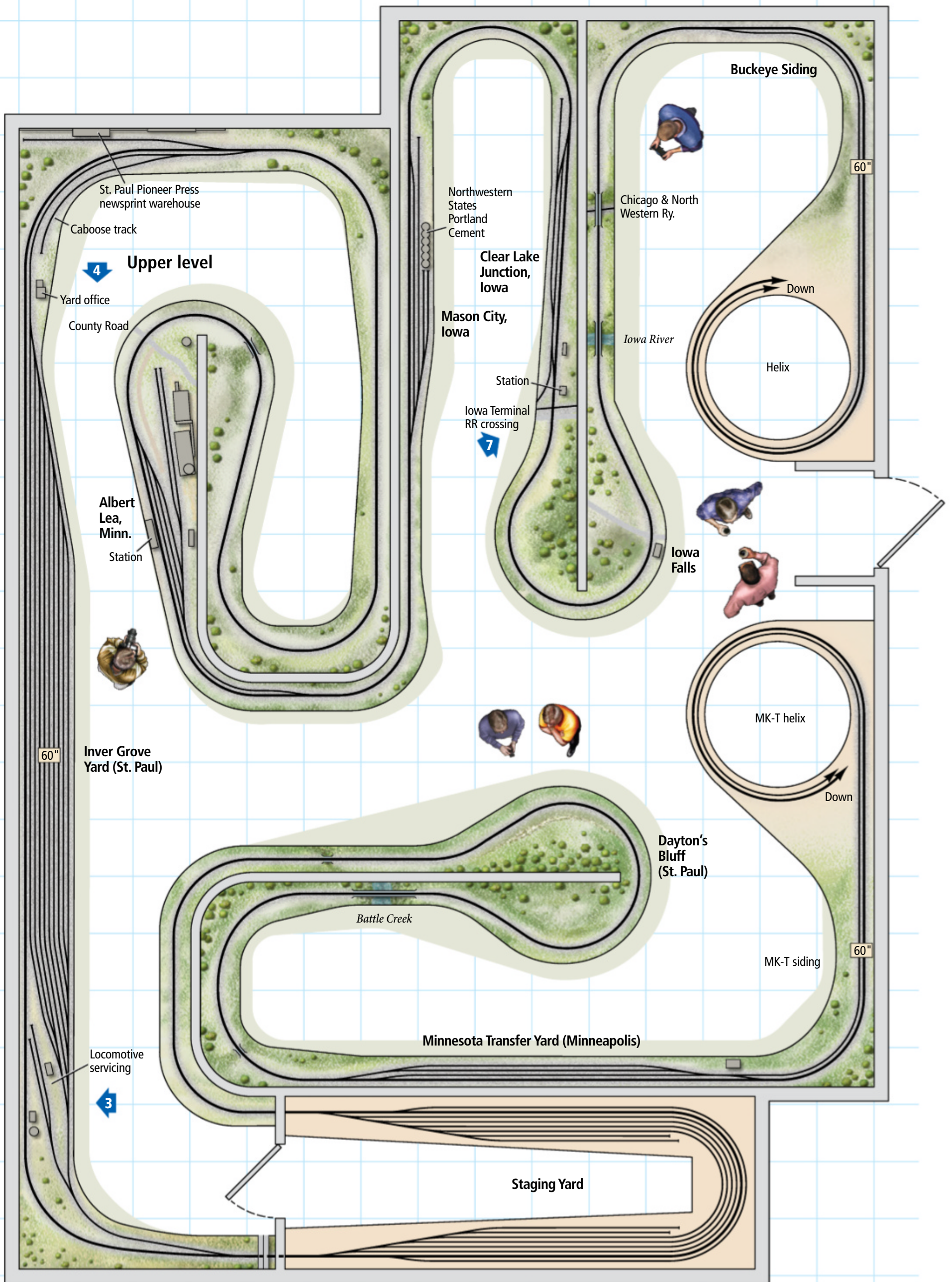
Scale of plan: 7/32" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Rick Johnson

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







• See more of Mike's layout by following *The Plainsman* as it races along the main. Click on the link at ModelRailroader.com



6 Train No. 66 crosses a country road south of Des Moines. The three-color searchlight signals are from Tomar Industries and controlled by Logic Rails Technology circuits.

that not having to search for reporting marks makes operations go smoother and helps eliminate mistakes.

Operating sessions often conclude with running a few trains continuously around the main in a “free-for-all” fashion without authority. However, these trains are all run in the same direction and follow the signals to avoid any corn-field meets.

Continuous running requires the use of the MK-T helix. The “M” stands for Minneapolis/St. Paul Terminal, the “K” stands for Kansas City Terminal, and the “T” stands for transition. Trains running through this helix are transitioning between the two terminals on the layout.

Northbound trains that leave the Minneapolis/St. Paul Terminal and head down the MK-T helix remain northbound when they arrive at the Kansas City Terminal on the lower level. Similarly, southbound trains leave the Kansas City Terminal, travel up the MK-T helix, and remain southbound when they arrive at the Minneapolis/St. Paul Terminal.

Thanks to my friends

There are many different facets to model railroading. Few of us are proficient at everything, and we all need help now and then. I would like to recognize and thank my friends and family who



7 A Chicago Great Western freight hammers across the diamond and under the catenary of the electrified Iowa Terminal RR at Clear Lake Junction. The Rock Island also has trackage rights over this section of the CGW.

helped me accomplish my goal of building the Rock Island Lines.

First, my wife, Sharon, supported my efforts. Ron Brooks helped me debug my trackwork by spending many hours operating trains and pinpointing problem spots. Ole Melhouse is a master of scratchbuilding structures, and several of his works of art are on my layout. Tom Pearson continues to assist me with electronics issues. Finally, I’d like to thank those who have attended operating sessions on the layout and provided helpful feedback and suggestions.

For me, the camaraderie between model railroaders is one of the best things about our great hobby. **MR**



Meet Mike Armstrong

After a 33-year railroad career, Mike Armstrong retired from the BNSF Ry. Mike and his wife, Sharon, live in Keller, Texas. They have three grown children and three grandchildren. Besides model railroading, Mike enjoys railroad history, spending time at his Minnesota lake home, and volunteering.

Build the N scale CANADIAN CANYONS



As a railfanning layout, the N scale Canadian Canyons project railroad had to have spectacular scenery. Bill Zuback photo

Part three: Rocky canyon scenery, trees, ground cover, and a muddy river for our project layout

By Steven Otte

Photos by the MRVP staff unless noted

As Model Railroader Video Plus producer David Popp explained in the first installment of this project layout series in January, the *raison d'être* of the N scale Canadian Canyons is railfanning. The model railroad is designed to reproduce scenes seen by Drew Halverson, Kent Johnson, and

Charlie Conway on a train-watching trip they documented in a series of videos for MRVP. [See “Drew’s Trackside Adventures,” episodes 29 through 31. – *Ed.*] So as important as scenery usually is to a model railroad, it’s even more important on this one.

The Fraser and Thompson river canyons that are the focus of this project feature rugged mountain terrain that can only be described as spectacular. Starting with a skeleton of extruded-foam insulation board, Kent, David, and Drew used three methods to model the different kinds of rock strata visible in the canyons of British Columbia.

Modeling Canada also requires a lot of trees. Model Railroader Video Plus assistant editor Jenny Freeland stepped up, building and flocking hundreds of conifers to dress up our mountaintops. For variety, the crew also modeled the

aftermath of a forest fire, planting scorched trees and ground cover.

From the top of the canyons, David shifted his attention to the bottom, pouring water in the Fraser and Thompson rivers, as well as Kamloops Lake.

You may not be modeling British Columbia, but you probably need some rocks, trees, and water on your layout. I’m sure you’ll find some useful scenery techniques on the following pages.

The Canadian Canyons

January: Introduction to the layout and the track plan

February: Multilevel benchwork

March: Mountain scenery

April: Digital Command Control and wiring

May: Structures along the line

Shaping foam terrain

The sheer slopes of the Fraser and Thompson river canyons called for some unusual terrain construction techniques. The scenes of the layout would be separated by tall, narrow mountains, pierced by tunnels. The Model Railroader Video Plus staff wanted to keep the layout as light as possible, so extruded-foam insulation board was the way to go. But rather than stack and carve the foam wedding-cake style, they turned the foam board on edge to build the mountains' skeleton.

A single piece of foam board, 16" wide, formed the spine of the terrain. Kent and Drew affixed it to the layout

with foam-safe adhesive caulk. They next shaped the rough structure of the rest of the mountain range with a series of narrow, vertical ribs, also cut from foam. These not only determined the shape of the canyon walls, but also stabilized the spine. Wood skewers held the major joints in place while the adhesive cured overnight.

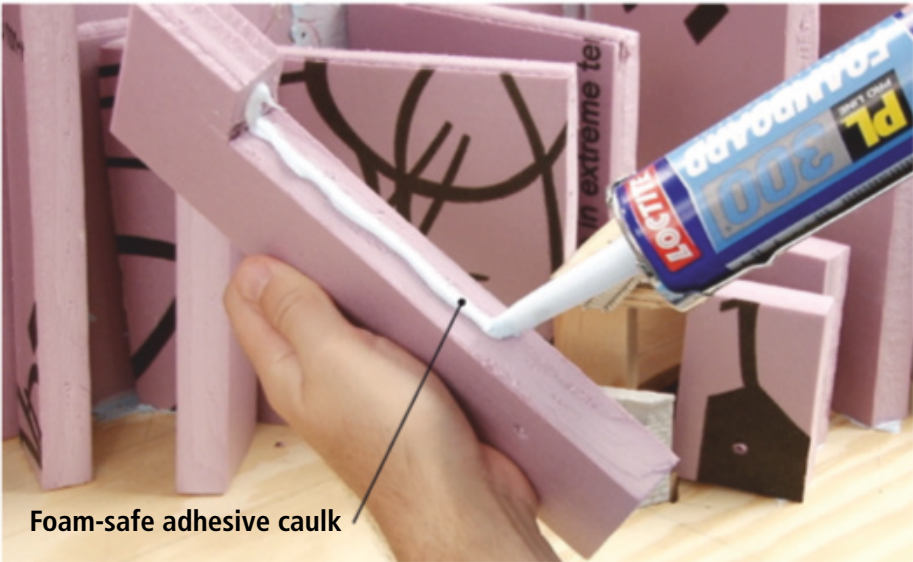
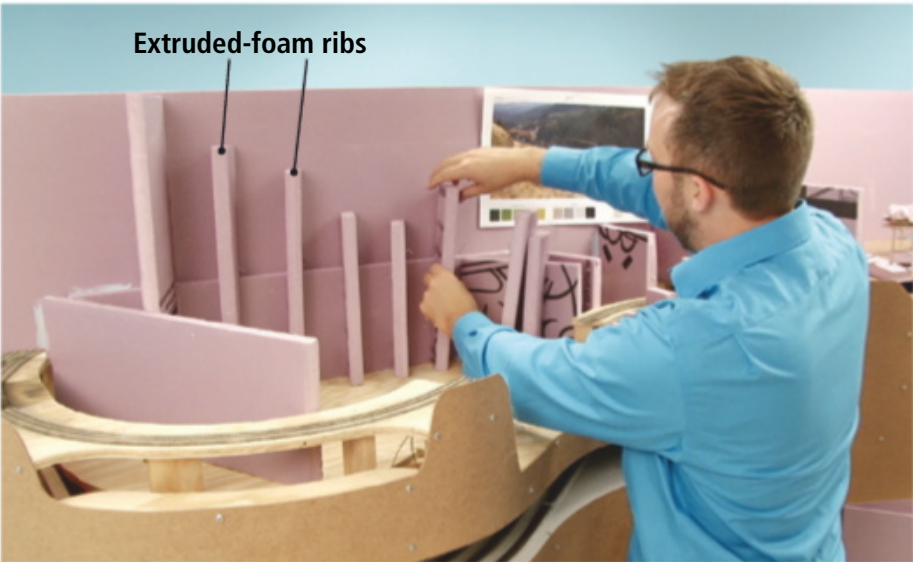
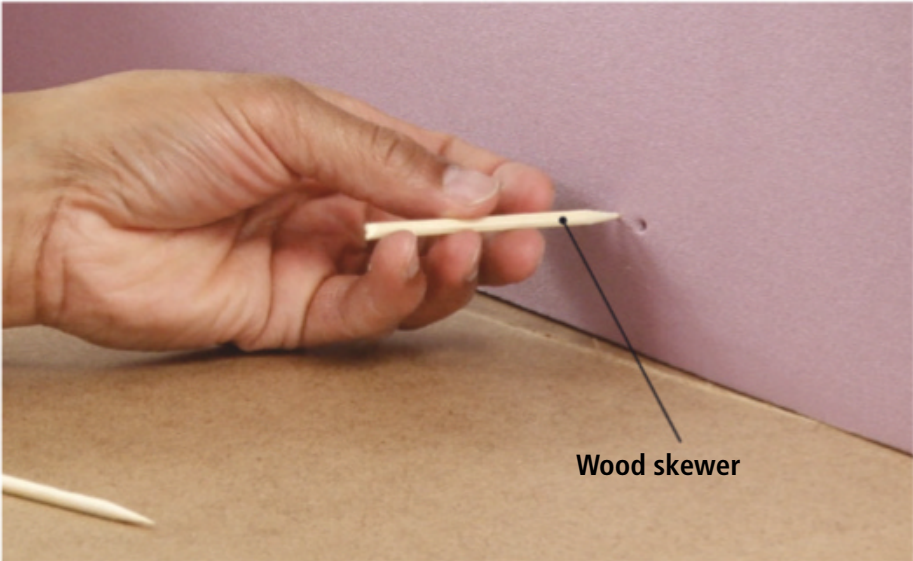
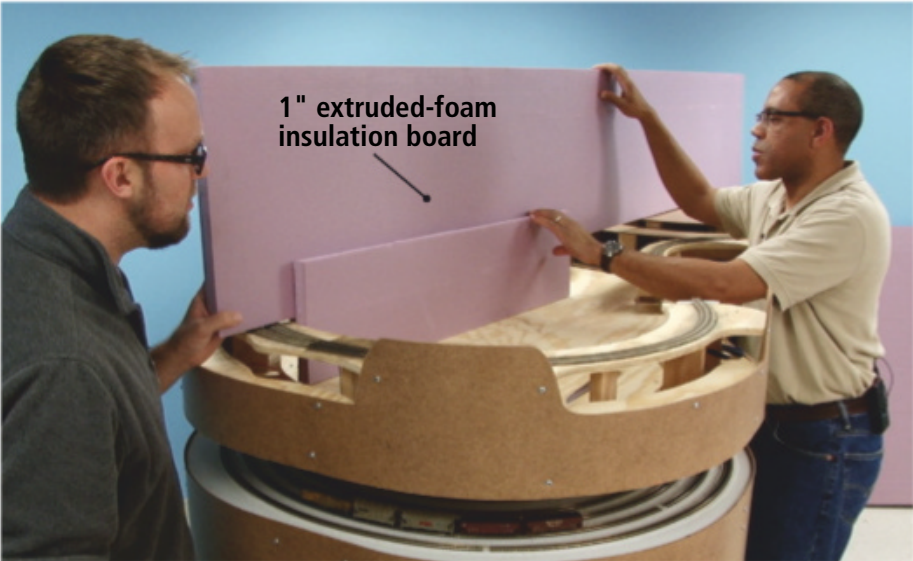
The next step was to glue on Woodland Scenics Profile Boards, Styrofoam panels with ridges to make them lock together. But Kent and Drew turned the ridges outward to simulate the eroded ridges of the canyon walls. They layered the profile boards up the

slope, breaking off the top edges by hand to form a natural profile.

The last step was to cover more vertical areas with Shaper Sheet, another Woodland Scenics product consisting of a heavy foil covered on one side with fabric batting. The foil cuts easily and holds its shape, while the batting side sticks well to scenery materials like Sculptamold, plaster, or spackling.

MORE ON THE WEB

• We've listed the products you'll need to reproduce these scenery projects on our website, ModelRailroader.com



Three kinds of rocks

Kent and David used several methods to model the different kinds of rock strata seen in the area. The first method involved applying Sculptamold, a modeling material falling somewhere between plaster and papier-mache, directly to the foam underlayment.

On the Thompson River side, where layers of broken white-foam profile board were used to model sheer cliffs, Kent troweled on Sculptamold tinted with acrylic craft paint. Silicone rubber brushes from Woodland Scenics added vertical texture.

On parts of the mountains formed from extruded-foam insulation board,

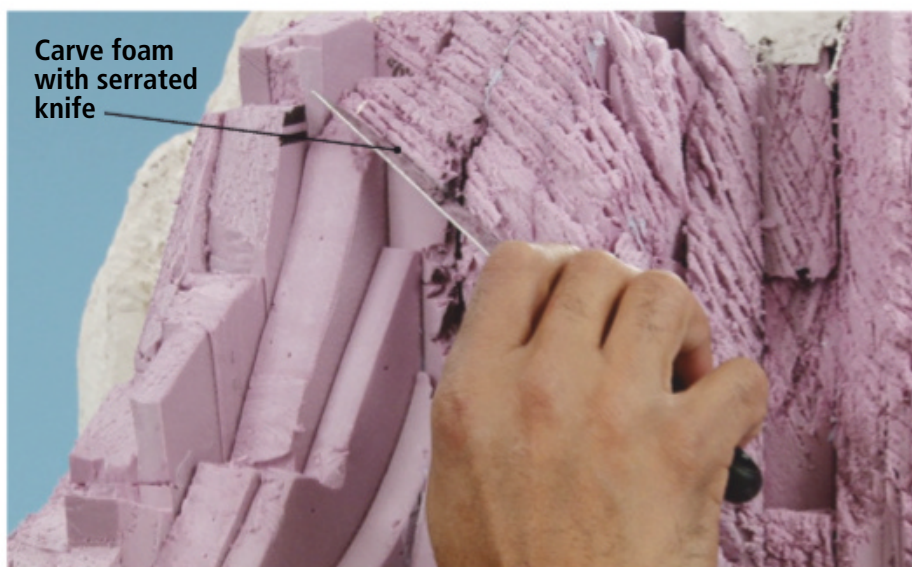
Kent created the rock texture first by carving away at the foam with a serrated steak knife and a rasp. After achieving the look he wanted, he again covered the foam with tinted Sculptamold, working the material into the foam strata with silicone brushes.

On the Fraser side, David filled rock molds with Sculptamold, then applied them to the terrain while still wet. Once the Sculptamold set up, he used picks, knives, and carving tools to blend the edges of the rocks together.

Above Kamloops Lake, Kent turned to two flexible rubber rock products to cover the canyon walls. He covered the

rock walls with pieces of Mountains in Minutes foam rocks and Cripplebush Valley rubber rocks. Once more, tinted Sculptamold was added to blend the edges of the rocks together.

David and Kent used photos and videos shot during the MRVP crew's railfan trip to the area as reference when painting the rocks, using stains made from diluted acrylic paint.



Ground cover and trees

Once the mountains and canyons were painted, it was time to dress up that rocky terrain with ground cover. The first step was to turn the barren mountains into more hospitable land by adding some texture.

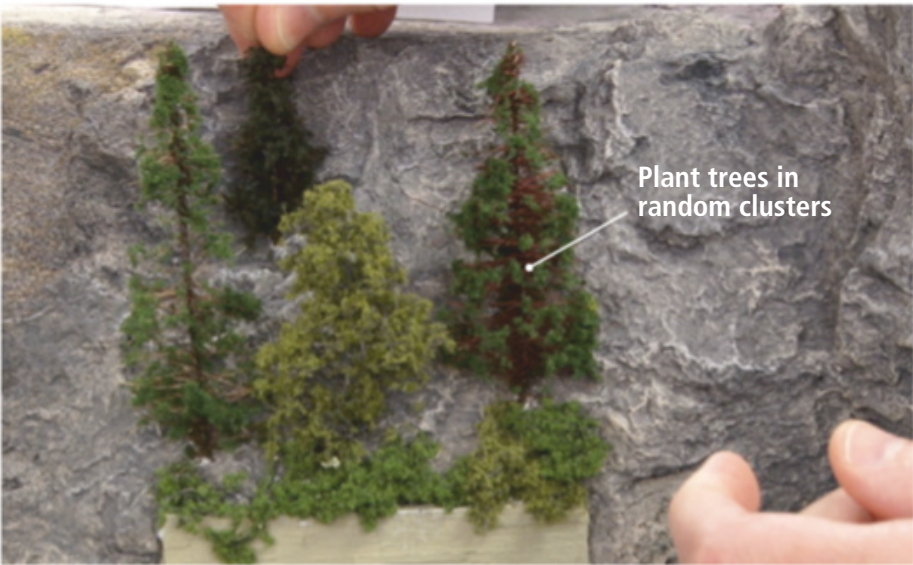
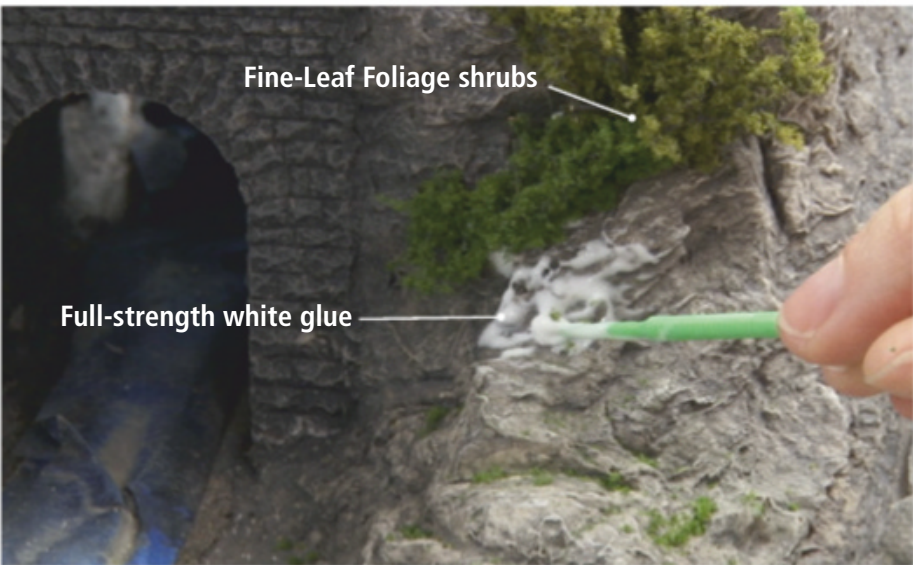
Kent and Drew started by selecting some gentler slopes to represent areas where smaller rocks and earth had slid down the canyon sides. They painted these areas with full-strength white glue, then sprinkled on Woodland Scenics gray ballast and Scenic Express limestone ballast. On areas too steep to sprinkle the ballast, they used a sheet of paper and a drinking straw

to blow the ballast onto the glue. See the video “Canadian Canyons Series: Scenery All-Stars, Part 2” on Model Railroader Video Plus for a demonstration of this technique.

After the ballast glue had dried, Drew sprayed the area with wet water, water with a few drops of dish detergent in it to break the surface tension. He then sprinkled on two colors of Woodland Scenics ground foam, affixing it with Scenic Cement.

The hills were taking shape, but they didn’t look much like the wooded slopes of the northern Rockies yet. David and Jenny remedied this by

adding foliage. Clumps of Woodland Scenics Fine-Leaf Foliage in various colors were used both as trees and as shrubs. They also added conifers Jenny built from Timberline Scenery armatures flocked with Scenic Express ground foam.



Pouring the Fraser River

David used a new product to pour the water in the murky Fraser River, Woodland Scenics Deep Pour Water. Unlike Woodland Scenics' Realistic Water, which is a premixed product, Deep Pour Water is a two-part resin. The package comes with a bottle of water base, another bottle of activator, plastic mixing cups, stirring sticks, disposable plastic gloves, and a plastic bag in which to protect the bottles while immersing them in hot water. Heating the resin components before mixing helps them mix and react better.

David chose the Murky variety of the Deep Pour Water product, which comes

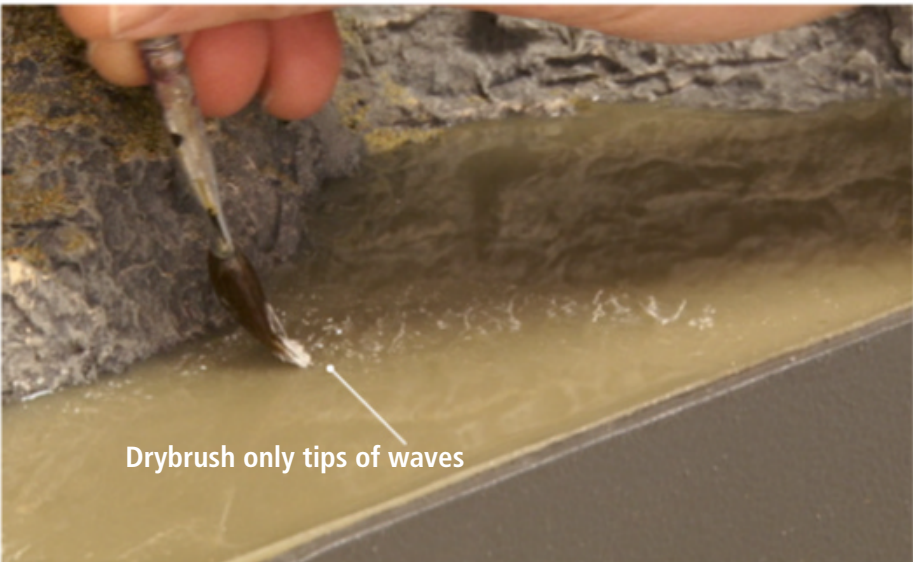
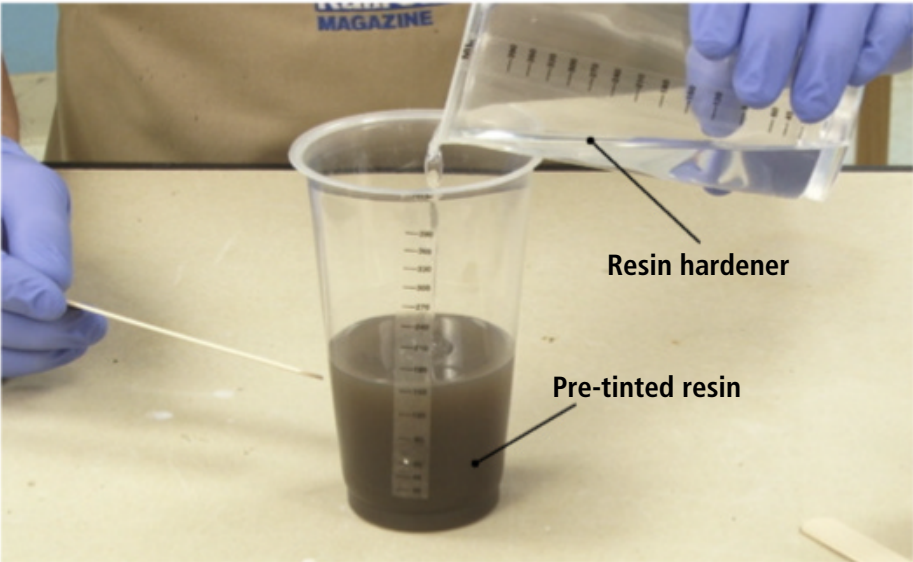
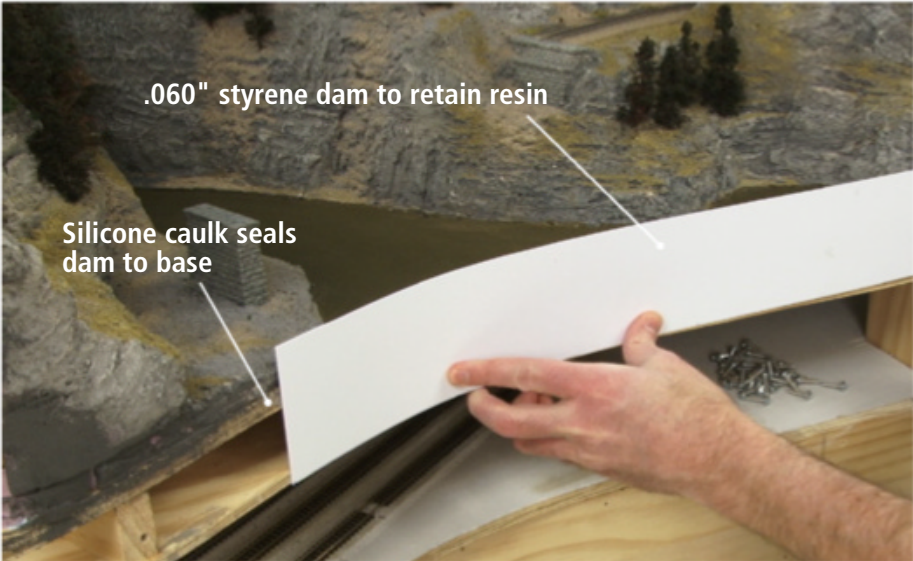
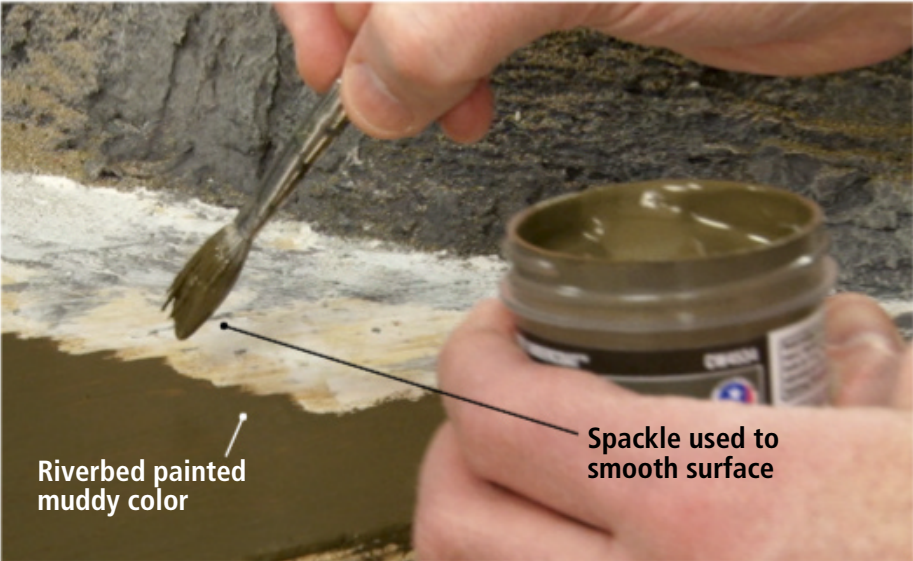
tinted in a translucent brownish shade. To better model the yellowish tint seen in reference photos of the Fraser River, David added a few drops of another Woodland Scenics product, Water Tint – Yellow Silt. This concentrated pigment goes a long way when mixed with the resin. The result was opaque, but then, so is the Fraser River.

David used a stick to guide the resin into the river basin. After it cured overnight, David used a paintbrush to dab on ripples and rapids of Woodland Scenics Surface Water Waves. Once they dried, he highlighted the peaks with drybrushing to model foam. **MR**



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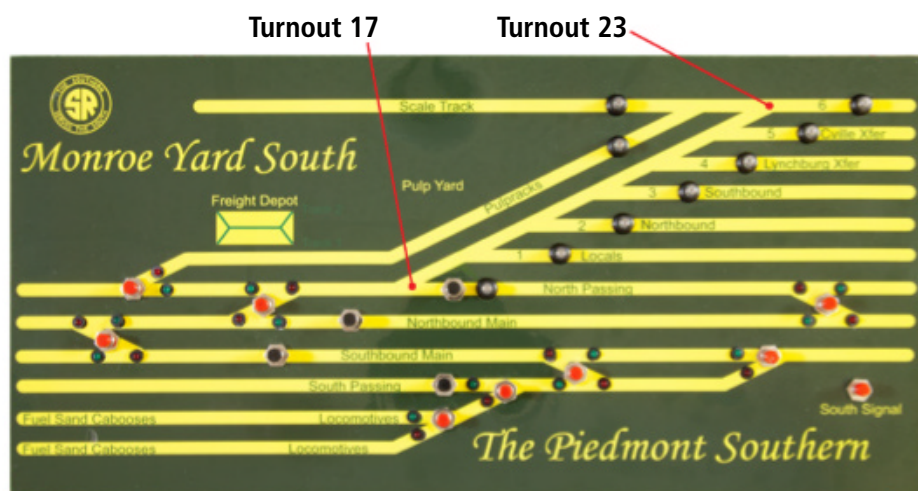
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Automating routes and ladders with DCC



1 Yard control. Larry Puckett uses control panels with push buttons to control most of the turnouts on his HO scale Piedmont Southern. He set up routes to access each of the six yard tracks and control them using push buttons and Digitrax DS64 accessory decoders. A simple push of the button on any of these tracks aligns all the required turnouts for a locomotive to move up the ladder to that track.

Prior to the introduction of stall motor switch machines in the 1970s, solenoid switch machines dominated. Diode matrix circuits were used to create push-button-activated routes through complicated tracks and yard ladders.

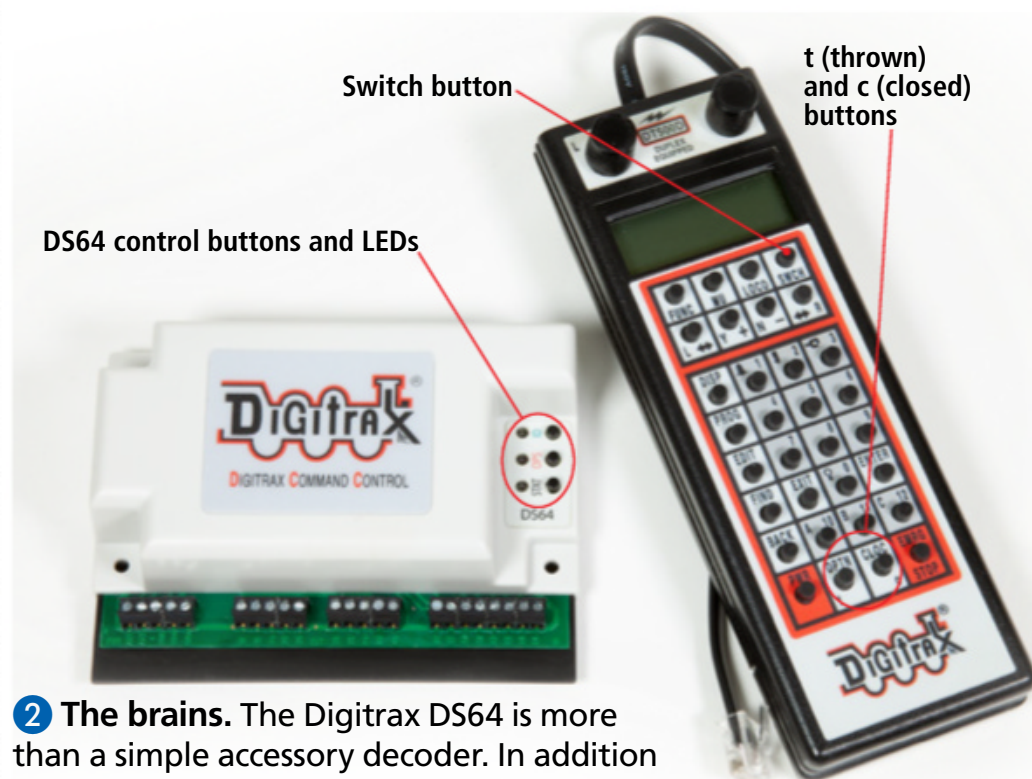
Unfortunately, diode matrix circuits don't work with stall motor switch machines. Solutions include more complicated circuits, or computer programs like Java Model Railroad Interface (JMRI) or Bruce Chubb's Computer Model Railroad Interface (CMRI). Digital Command Control (DCC), offers other options.

When designing the ladder and tracks for Monroe Yard on my Piedmont Southern, I wanted to control turnouts using push-button switches on control panels **1**. I described how to build these control panels in my books *Wiring Your Model Railroad* (Kalmbach Books, 2015) and *Wiring Projects for Your Model Railroad* (Kalmbach Books, 2018). Now I want to look at the details of automating routes and yard ladders.

With the Digitrax DCS240 command station I use on the Piedmont Southern, there are a few options for automating routes. First, the command station can save and operate routes by sending commands to the stationary decoders controlling turnouts. This is fine if you want to use only throttles and computers to operate routes, but I also wanted to use push buttons.

Fortunately, Digitrax DS64 accessory decoders **2** have terminals that control up to four switch machines, and eight terminals where push buttons (or other devices such as occupancy detectors) can be connected. These eight inputs can be used to activate routes programmed into the DS64, giving you the ability to use computer commands, throttles, or push buttons to control turnouts. The four turnouts can be programmed as part of eight routes each. Multiple DS64s can be connected to control additional turnouts.

Setting up DS64 decoders requires assigning each an



2 The brains. The Digitrax DS64 is more than a simple accessory decoder. In addition to controlling four turnouts, it can be programmed for multiple routes. Use either a programming throttle like the DT500 shown, or the DecoderPro program that's part of the Java Model Railroad Interface suite. Several DS64s can be connected together for more turnouts.

individual identification (ID) as well as unique addresses for each of the four turnout outputs. To set the device ID, press the status (STAT) button on the decoder until the STAT light-emitting diode (LED) blinks fast, then slows and alternates red and green. Next, press the switch button (SWCH) on your throttle and enter the desired ID number (1-256) followed by pressing the "c" (closed) or "t" (thrown) button. If you're successful the LED will turn off.

To set the four turnout output addresses, press the

DS64 ID button until the green LED blinks slowly. Then press the SWCH button on the throttle and enter the address for the first turnout. Pushing the "c" or "t" button will save the address and the LED will blink faster. Repeat this for the other addresses.

The LED will blink faster each time an address is saved, then will become a "heart beat" blink after the fourth address. Digitrax has an excellent YouTube video demonstrating these procedures.

Programming the DS64 for your specific set of desired functions requires setting a series of option switches (OpSw) using either a DT400 or DT500 series programming throttle **2** or JMRI's DecoderPro **3**. DecoderPro makes changing the OpSw settings a click-and-save operation. [DecoderPro is available free as part of JMRI at jmri.sourceforge.net. – Ed.]

Without DecoderPro, you'll need to follow the manual procedure for changing OpSw settings. Connect the DS64 to the tracks, then press and hold the OPS button on the DS64 until the red and



TO UNDERSTAND ROUTES, YOU NEED TO KNOW THAT DIGITRAX CONSIDERS A TURNOUT CLOSED ("C") IF IT'S SET FOR A TRAIN TO TRAVEL STRAIGHT AND THROWN ("T") IF IT'S SET FOR THE DIVERGING DIRECTION.

– LARRY

green LEDs flash alternately. Then enter the OpSw number using the SWCH button on your throttle and press either the “c” or “t” button. Once you’re done, press the OPS button again to get out of programming mode.

The DS64 manual includes a table of OpSw settings, their default statuses, and a description of their functions. Tech support documents at www.digitrax.com/tsd/product/DS64/ make it easier to understand these settings. For example, KB799 covers setting up routes, KB393 covers yard ladders with push-button activation, and KB394 covers cascaded routes with push-button activation.

The default status for the OpSw settings is “t,” so for my application I changed three OpSw settings to “c.” When set to “c” OpSw 1 provides a constant output current capable of operating stall motor switch machines like those I used. Setting OpSw 11 to “c” enables local push-button inputs to control routes, while OpSw 15 set to “c” prevents the push-button inputs from directly triggering the outputs.

To understand routes, you need to know that Digitrax considers a turnout closed (“c”) if it’s set for a train to travel straight and thrown (“t”) if it’s set for the diverging direction. Consequently, each turnout output in a route must be assigned either a “c” or “t” position.

In my yard ladder ① the first turnout address, 17, must be set to “t” to go up the ladder. Then each subsequent turnout must be set to “c” or “t” depending on whether you want to continue up the ladder or enter that track. For example, to enter yard track 3 the sequence would be 17t, 18c, and 19t. To end a route you must enter the last

command twice, thus: 17t, 18c, 19t, 19t.

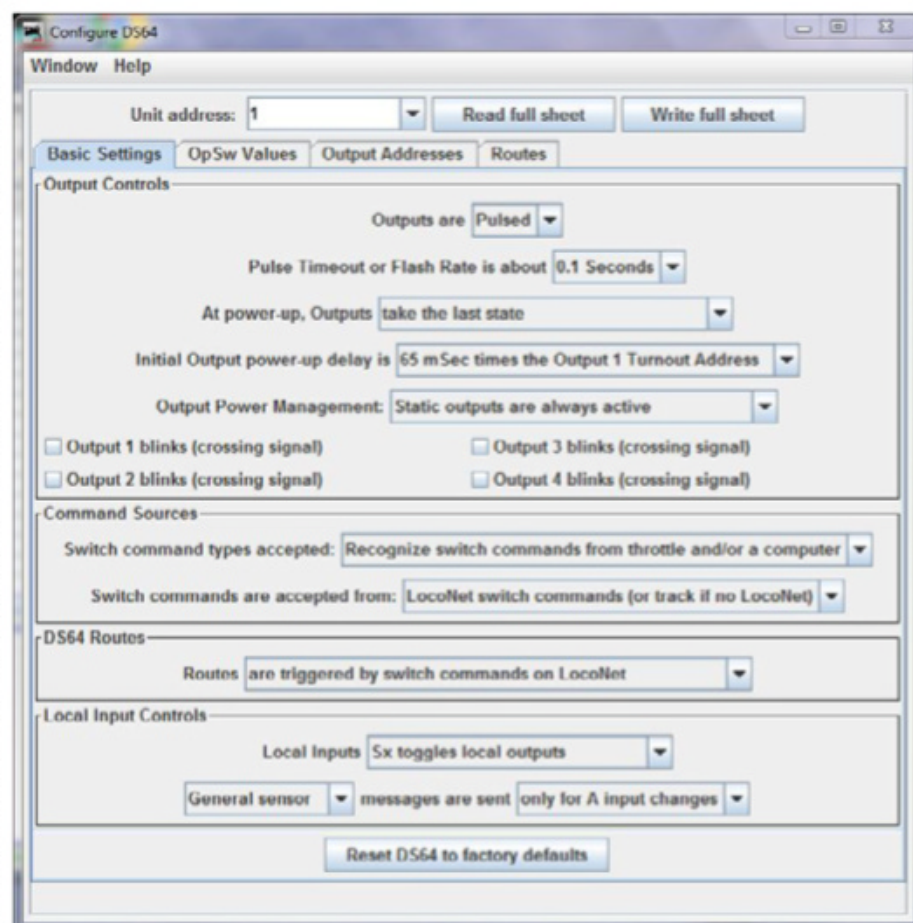
Digitrax also suggests using a dummy top address (1 to 2048) for each route, but don’t use the same number as any actual turnout switch on your layout. I used 201 as the first route address instead of using the actual decoder address of 17. So my first route is 201c, 17c, 17c.

When I hit the push button for the first track (the north passing track), it sets the turnouts for trains to go straight through. However, if I need a switcher to enter or leave yard track 1, the route is 202c, 17t, 18t, 18t. To go all the way up the ladder to track 6, the route would be 207c, 17t, 18c, 19c, 20c, 21c, 22c, 23t.

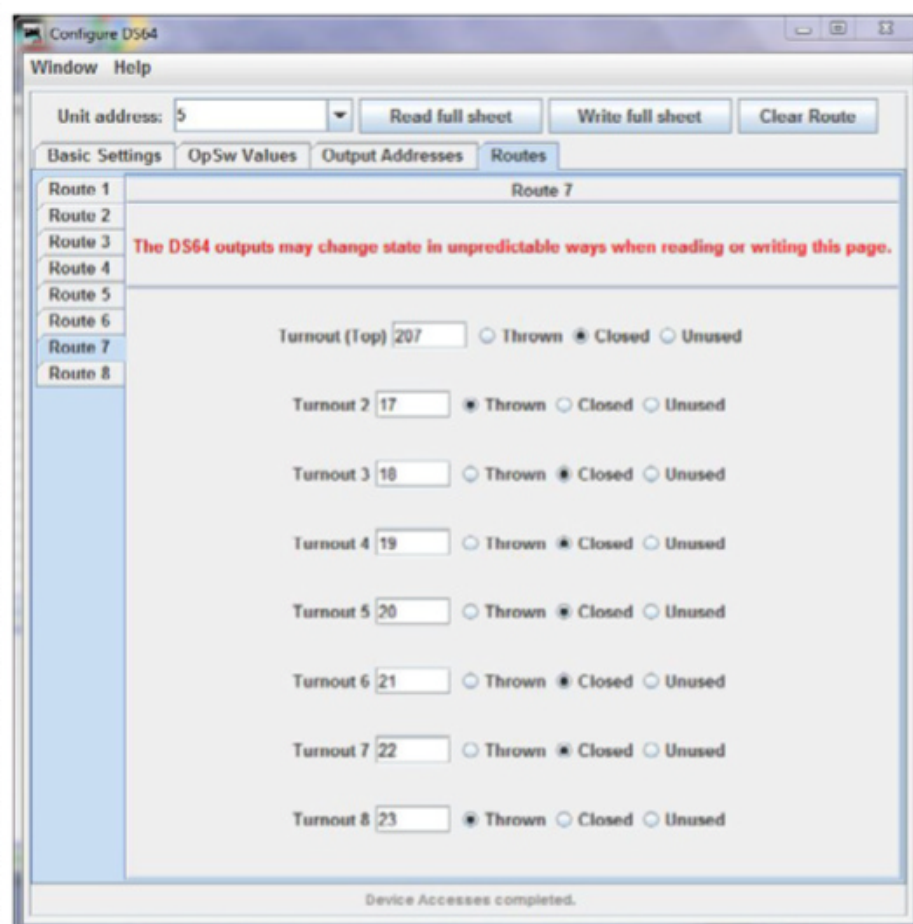
Entering routes can be as easy as point and click if you use the DecoderPro DS64 programmer ④. If you’re using a programming throttle, press the STAT button on the DS64 until the green LED blinks quickly. Next, using the throttle SWCH button, enter the first of the eight switch addresses followed by “c” or “t.” Next, enter the top address for the first route, in my case 201, followed by “c” or “t.” At this point the STAT LED should blink at a slower rate.

Continue entering the switch addresses in the route followed by “c” or “t” as required for the route. When you enter the eighth route, the DS64 will automatically drop out of route entry mode and the LED will go off. To enter fewer than eight addresses, repeat the last address and “c” or “t.” To run the route, press the SWCH button and enter the route’s top address, and “c” or “t.” Repeat this for other routes.

If you want to use routes with more than four turnouts, then two, three, or more DS64s are required. These must be connected with 6-conductor LocoNet cables,



③ **Easy access.** DecoderPro has the ability to directly access and program DS64s connected to the LocoNet on a layout. The point-and-click interface simplifies the programming process. This is found under the LocoNet menu option.



④ **Setting the route.** This DecoderPro pane allows users to easily and quickly enter routes and write them to the DS64.

and must also be connected to an active Digitrax LocoNet. [Non-Digitrax users can set up a LocoNet using JMRI. – Ed.]

When using DecoderPro to program DS64s, they

should be connected to LocoNet and the program will be able to directly access each based on its unique ID number. There’s more information on this subject on my website www.dccguy.com.



Broadway Limited Imports N scale EMD F7

Electro-Motive Division's F7, the most popular hood unit diesel ever made, is being offered in N scale with a little something extra – Broadway Limited Imports (BLI)'s Rolling Thunder. The subwoofer system turns the sounds generated by the model's Paragon3 decoder into an earth-shaking experience.

Broadway Limited's N scale locomotives are accurately modeled, nicely painted, and well engineered, operating smoothly over their full range of speeds. Consisted together, the A and B units exert enough pulling power to haul a 38-car train. And the sound effects, even without the extra rumble of the Rolling Thunder, are realistic and impressive.

The prototype. The 1,500-horsepower F7 was Electro-Motive Division's (EMD) best-selling cab unit of all time, outselling all other F units combined. From February 1949 to December 1953, EMD built 2,366 F7As and 1,483 F7B boosters. It's no coincidence that nearly twice as many A units as B were sold; the locomotives were often run in three-unit A-B-A sets.

The F7 had the same horsepower and, indeed, the same 567B engine as its predecessor, the F3. The body dimensions were the same, as well. The main spotting differences between these two locomotives are the side grills, which are made of crisscrossed "chicken wire" on F2s and F3s. On early F7s, these grills had horizontal air slits; in late 1951, EMD started using Farr grills, which had vertical

slits. Railfans refer to these detail changes within models as "phases."

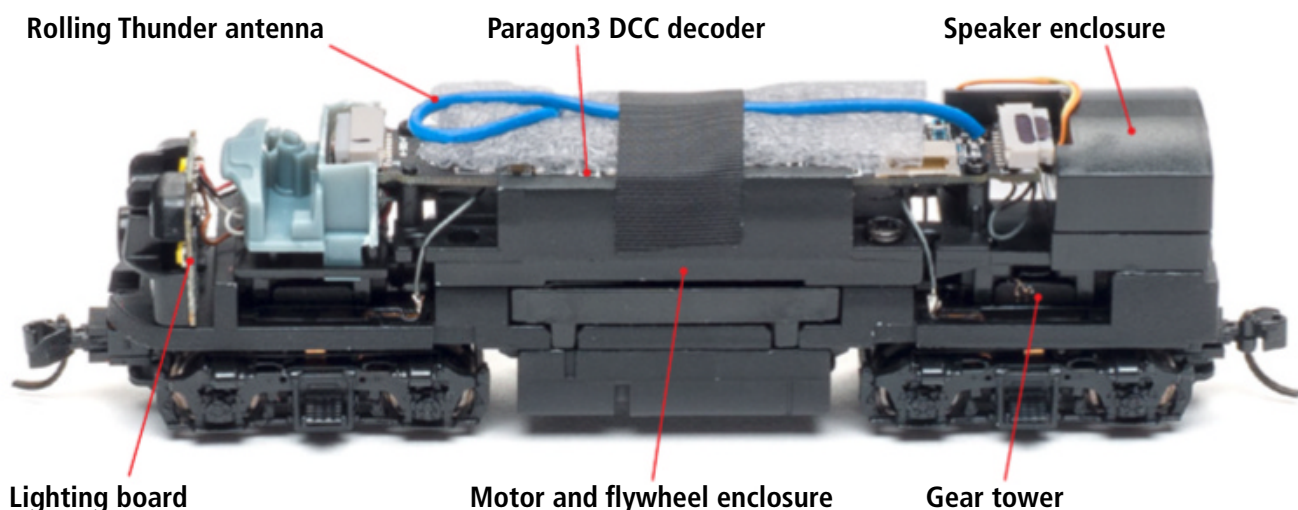
Another spotting difference is the dynamic brake enclosure, just behind the cab, which on an F3 is topped with a pair of rectangular chicken-wire grills. Phase I F7s have 36" dynamic brake fans, the same size as the radiator fans; Phase II locomotives have 48" dynamic brake fans. Broadway Limited's N scale model is a Phase I, with horizontal-slit side grills, 36" dynamic brake fan, and horizontal body vents.

Inside and out. The one-piece plastic body shell is nicely finished, with smooth, opaque paint and sharp color separation. The fine black stripes separating the orange and maroon sections are straight, unbroken, and perfectly aligned. The lettering on the Milwaukee Road herald is likewise crisp, opaque, and legible.

The separately applied wire handrails are close to scale thickness. There are pivoting diaphragms on the end doors that almost touch when the couplers are under tension, and do touch when the units are pushed together.

The body dimensions on both A and B units matched those on drawings published in the April 2000 issue of *Model Railroader*. Detail placement matched photos published in that article and in other reference works. The blackened metal wheelsets were all in gauge, and the Micro-Trains Magne-Matic couplers were mounted at the correct height.

I was able to remove the friction-fit plastic shell by lifting the back up and off the frame, then turning the shell to thread the front coupler through the opening in the pilot. The die-cast metal frame entirely encloses the motor and flywheels. The dual-mode decoder sits on top, with wires leading to the array of



Every bit of space under the shell is used. The blue wire is the antenna for the Rolling Thunder system. The light-emitting diodes are all mounted on one board.

surface-mount light-emitting diodes on the front and the sugar-cube speaker enclosure in the back. Taped atop a strip of insulating foam on top of the decoder is a wire that serves as the antenna for the Rolling Thunder system.

On the test track. The engine's Paragon3 decoder is dual-mode, meaning it will function under Digital Command Control or direct current. The decoder draws a lot of current. When operated with a DC power pack, sounds started at 9.5V, but the locomotive didn't start rolling until 11.5V. We normally test locomotives up to a maximum of 12V DC, but to get top speed out of this one, I cranked the power pack up to 14V. At that voltage the engine reached 65 scale mph, appropriate for the prototype.

On a DC power pack, the only sound effects are the diesel engine, which ramps up and down in RPM according to the engine's speed, and a brake squeal, which sounds automatically when the throttle is quickly decreased. To access more sounds, I hooked up a BLI DC Master control box between the throttle and the test track. This control box has buttons to trigger the bell, horn, compressor, and dynamic brake sounds, as well as to control the sound effects volume and program Configuration Variables (CV) without DCC. This let me try a potential fix for the short DC speed curve issue.

The Paragon3 decoder includes a CV that governs the analog starting voltage. However, under DC control, the model won't move until the sounds kick in. Lowering CV 131, or Analog Sound Unit Startup, to a value of 0 let sound effects start at a slightly lower voltage. Pairing that with a CV 252 setting of 100 gave me an engine startup sound sequence at 9V and a slow and steady speed of 7.8 scale mph at 10.25V. This helped stretch out the locomotive's DC speed curve a bit.

I had more control of speed and sound under DCC. The F7 accelerated smoothly from 4.5 scale mph at speed step 1 to 112 scale mph at step 28 – nearly twice the prototype's rated top speed of 65 mph. The top speed is easily lowered by programming the decoder's top voltage using CV 5. I enjoyed revving the prime mover sounds up and down with function keys F5 and F6.

PERFORMANCE CHARTS (SINGLE UNIT)	
DRAWBAR PULL	0.8 ounce 19 N scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
11.5 (start)	6
12	24
13	42
14	65
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	4.5
7	29
14	49
28	112

The decoder also has a DCC Easy Consist function that lets you build an advanced consist by programming two CVs. I programmed CV 230 to 1 for the lead unit and 2 for the booster, then programmed the consist address (CV 19) to 10. Both locomotives then responded to address 10, but only the lead unit played horn and bell sounds. While consisted, though, neither would respond any longer to their individual addresses until I reprogrammed their CV19s to 0.

The thunder rolls. The locomotive's Paragon3 sound decoder is equipped with one feature you won't find in other decoders: Rolling Thunder. This system broadcasts sound signals on a low-range radio frequency to a receiver attached to a subwoofer (sold separately). The subwoofer plays low-frequency sounds not reproduced well by tiny in-locomotive speakers, turning diesel engine sounds into a floor-shaking rumble.

There's no programming or special wiring involved with Rolling Thunder. The system comes with a subwoofer and a receiver that plugs into it. Whenever a Rolling Thunder-equipped locomotive comes into range (about 15 feet, enough to cover most room-sized layouts), the receiver picks up its signals and plays the low frequencies through the subwoofer. The receiver can only play the sounds of one locomotive at a time, usually the one closest to the receiver.

The Rolling Thunder unit I used was Broadway Limited's N scale version, sold separately for \$199.99. Although it's designated "N scale"; the product works with any scale of Rolling Thunder-equipped engine. The term merely indicates that the subwoofer is physically smaller (an approximately 8" cube) than the original version we reviewed in the March 2016 issue.

Facts & features

Price: A or B unit, \$229; A-B set, \$299

Manufacturer

Broadway Limited Imports

9 East Tower Circle

Ormond Beach, FL 32174

www.broadway-limited.com

Era: November 1948 to early 1970s

Road names: Milwaukee Road; Atchison, Topeka & Santa Fe (passenger Warbonnet); Baltimore & Ohio; Denver & Rio Grande Western (5-stripe scheme); New York Central (lightning stripe scheme); Northern Pacific (Loewy scheme); Pennsylvania RR (Dark Green Locomotive Enamel single-stripe freight scheme with train-phone system antenna); and Southern Pacific (Bloody Nose scheme). Available unpainted (separate A or B only).

Features

- Blackened metal wheelsets, in gauge, with all-wheel electrical pickup
- Flywheel-equipped can motor
- Golden-white light-emitting diode lighting
- Micro-Trains Magne-Matic knuckle couplers at correct height
- Minimum radius: 9³/₄"
- Paragon3 dual-mode sound decoder with Rolling Thunder
- Separately applied wire handrails and grab irons
- Weight: 2.8 ounces (single unit)

The sound was by no means small, though. I placed the subwoofer on the floor under the workbench next to the one I was using to test the locomotive. As it rumbled to life, I could feel the bench and floor vibrate. The deep, rich blast of the horn made me feel I was truly at trackside. I was worried my colleagues in the offices downstairs were going to complain.

A ubiquitous engine. Practically every railroad in North America ran Electro-Motive Division's cab units during the steam-to-diesel transition era. Many of these doughty locomotives are still at work today on museum and excursion lines. At least one set probably belongs on every N scale transition-era layout. The inclusion of Rolling Thunder in BLI's version makes sure that addition will be heard loud and clear. – *Steven Otte, associate editor*



Bachmann HO scale Sound Value GG1

GG1s have been riding the model rails almost as long as they did the prototype railroads. Bachmann Trains has added an HO scale model of Raymond Loewy's Pennsylvania RR masterpiece to their Sound Value line. The dual-mode-decoder-equipped model operates with sound on direct-current (DC) and Digital Command Control (DCC) layouts.

Well-documented prototype. The GG1 has been well-documented over the years, so I'll hit the highlights of this classic heavy electric. Built from 1934 to 1943, the 139-unit fleet was erected at PRR's Altoona shops, with the exception of the first 15 locomotives, built by General Electric (GE). Major castings came from Baldwin subsidiary General Steel Castings, and electrical equipment came from GE and Westinghouse.

The first 58 locomotives had flat steel pilots with rigidly mounted couplers. After January 1937, rounded pilots with drop couplers were installed. All except the first locomotive, no. 4800 known as "Rivets," had Loewy's welded steel streamlined body design.

By the 1950s, shrinking passenger schedules saw the GG1s, which were built to haul 18-car passenger trains at 90 mph, taking over freight duties from the P5a electrics they had previously displaced from passenger duty.

The GG1s outlasted the PRR and successor Penn Central, eventually hauling freight for Conrail. Amtrak and New Jersey Transit used them in passenger service until 1981 and 1983,

respectively. Several examples have been preserved in non-operating condition.

Well-proportioned model. Bachmann's GG1 features an injection-molded plastic body shell attached to a die-cast metal frame. The body shell captures the overall look of the prototype's styling well. Factory-applied detail parts include wire grab irons and cab window guards, windshield wipers, horns, and cab steps.

The pantographs are chemically blackened wire with metal shoes and bases. A switch mounted inside the locomotive on the frame allows owners to select overhead power pickup, if desired.

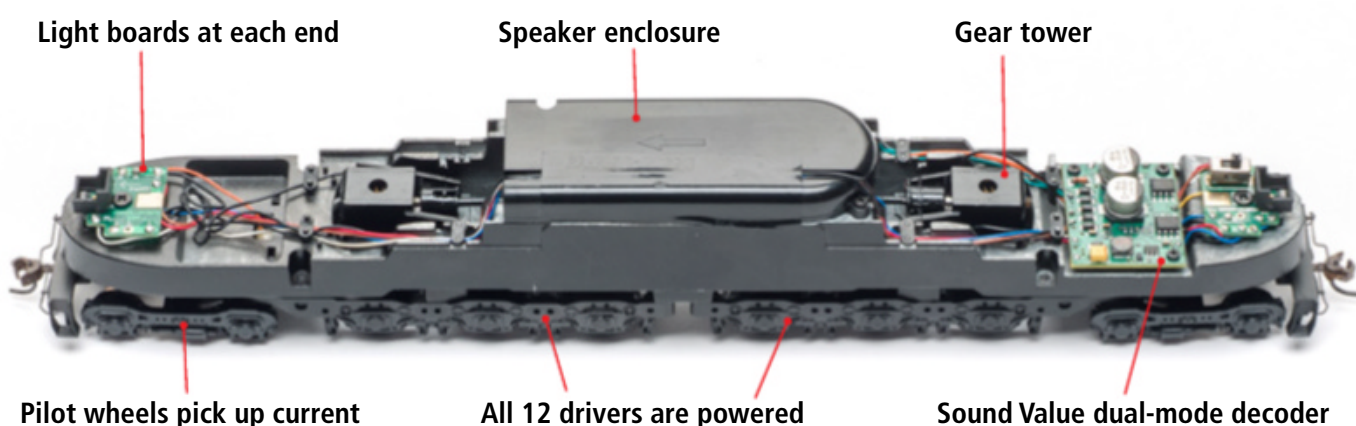
All dimensions were within scale inches of drawings in the October 1994 *Model Railroader*. Our sample was painted in Penn Central basic black. The coverage was even and smooth, and the Penn Central "worms" herald, lettering, and road numbers were all sharp and opaque. Based on its road number, this locomotive should have a flat pilot

instead of the rounded, drop-coupler pilot on the model.

Into the depths. To remove the body shell, I removed four screws in the frame between the power trucks and pilot trucks. Then I spread the center of the body, allowing it to lift free of the frame.

The flywheel-equipped motor powers the 12 scale 57" drivers through a pair of gear towers, similar to a six-axle diesel locomotive. The drivers, which each pick up current from the rails, have significant lateral movement to allow negotiation of tight model railroad curves. This results in a noticeable gap between the sideframes and wheels, as well as the flattening of some sideframe detail.

The power trucks are part of a two-piece subframe, similar to the construction of the prototype GG1. On the prototype, the subframes are hinged together at the center of the locomotive. On the model, the subframes pivot on a mount between the first and second driver axle.



Bachmann's GG1 has a die-cast metal frame with a flywheel-equipped can motor mounted in the center below the speaker enclosure.

PERFORMANCE CHARTS	
DRAWBAR PULL	3.36 ounces 47 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
6 (start)	2.2
7	38
8	67
9	78
10	84
11	115
12	138
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	7.8
7	52
14	96
21	99
28	109

The four-wheel pilot trucks are mounted to the forward arms of the power truck subframes. The pilot castings are part of the subframe casting, similar to the prototype's construction.

The Sound Value dual-mode decoder features audio files by SoundTraxx. The downward-facing speaker is housed in an enclosure on top of the motor. Surface-mount light-emitting diodes (LEDs) on small printed-circuit (PC) boards at each end of the frame illuminate the locomotive lights. A pad on these boards contacts a brass arm connected to the pantographs.

On the test track, Bachmann's GG1 started making the sounds of an air compressor and blower motors at 6V DC, then just above that voltage started to move at about 2 scale mph after making two horn blasts. The locomotive's bell rang until I reached 6.5V on the powerpack, about 13 scale mph.

Top speed at 12V was 138 scale mph, a bit higher than prototype. Drawbar pull was 3.36 ounces, equivalent to 47 HO scale freight cars.

Using DCC, the locomotive started moving at 7.8 scale mph in speed step 1, and reached a top speed of 109 scale mph in speed step 28. Using 128 speed steps brought the speed down to 2.6 scale mph in speed step 1.

On our Milwaukee, Racine & Troy staff layout, the 1 pound, 4.7 ounce GG1 threw its weight around, pulling 12 freight cars up a 3 percent grade. The horn had that loud blat I recall from hearing GG1s at grade crossings.

Besides the horn function, users can trigger the sound of the pneumatically operated pantographs being raised or

Facts & features

Price: \$329 (DCC and sound), \$235 (DC, no sound)

Manufacturer

Bachmann Industries
1400 E. Erie Ave.
Philadelphia, PA 19124
www.bachmanntrains.com

Era: 1968 to 1976 as decorated

Road names: Penn Central, Amtrak, Pennsylvania RR (Brunswick green 5-stripe, Tuscan red 5-stripe, Brunswick green single stripe, *Congressional*/silver with red stripe)

Features

- 12-wheel drive
- Die-cast metal frame
- Plastic knuckle couplers, at correct height
- Weight: 20.7 ounces

lowered using function button 4, the sound of traction motor blowers with F5, or the sound of the compressor building air pressure for the brakes with F6. Press F1 to ring the bell. The headlights are directional, bright in the direction of travel and dim in the opposite direction.

I changed the lighting programming to give me manual control. I set the headlight to turn on and off with F0, and the rear light to turn on and off with F1. I then remapped the bell to F9.

For the lights, I set configuration variables (CVs) 33 and 34 to 1. This made sure the headlight would turn on and off with a push of F0. Then I set CV35 to a value of 2, which made F1 the function button for the rear light. Setting CV49 and 50 to a value of 145 allowed the dimmer on F7 to work. Setting CV39 (F5) to 1 and CV43 to 8 moved the bell to F9.

I also added momentum to the acceleration rate on CV3, increasing the value from 6 to 50. Likewise, I increased the value of CV4, the deceleration rate, to 30. You may want to add more.

The prototype GG1s made a strong impression on me as a youngster at trackside, and Bachmann's model has brought back that feeling of power and grace. Whether you want to model the high-density traffic of the New York-to-Washington PRR main line or are just a fan of timeless industrial design, Bachmann's GG1 should serve your needs well. – *Eric White, associate editor*

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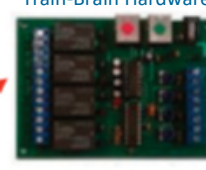
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HO scale boxcar

N scale boxcar

Atlas Santa Fe class BX-177 boxcar in N, HO scales

An **Atchison, Topeka & Santa Fe** class BX-177 plug-door boxcar is now available in N and HO scales from Atlas Model Railroad Co. Don't confuse this Master Line car with the BLMA (now Atlas) class BX-166 double-plug-door boxcar that I reviewed in the March 2016 *Model Railroader*. The BX-177 boxcar is a newly tooled model, featuring a single door on each side and the signature angled exterior post on each side of the door.

Topeka built. Santa Fe built its class BX-177 boxcars (numbered 621600 through 622099) at its Topeka, Kan., shops in 1975. The boxcars were fitted with Evans Dual Air Pak air-inflatable bulkheads and had the mechanical designation XLI (equipped boxcar between 59'-8" and less than 79'-8").

The BX-177 boxcars are still in service today on the BNSF Ry., part of its 780985 through 781425 series. As of January 2018, there were 121 BX-177 boxcars on the BNSF roster.

One car, two scales. Both models have a one-piece plastic body with painted etched-metal crossover platforms and a separately applied brake wheel and uncoupling levers. The HO model has factory-installed and painted wire grab

irons on the sides, freestanding plastic stirrups and end ladders, and separate door rods. The lower door track is mounted on stand-off brackets.

The N scale boxcar features molded grab irons, stirrups, end ladders, door track, and door rods.

The paint on both models is smooth and evenly applied. The printing is opaque and crisp, with even the smallest lettering legible under magnification.

Both boxcars have plastic underbodies. A steel weight is secured to the top with two washer-head Phillips screws. The center sills, crossbearers, crossties, and body bolsters are molded details.

The air reservoir, AB control valve, brake cylinder, and lever support brackets are separately applied. The brake pipes are freestanding on both boxcars.

By the numbers. I compared both models to data published in Robert C. Del Grosso's *BNSF Railway Freight Cars: Volume One* (Great Northern Pacific Publications, 2004). The distance over the strikers and door opening dimensions match published data. The distance between truck centers is a scale foot short on both models.

I tested the HO scale car on our Wisconsin & Southern Troy Branch

Facts & features

Price: N scale, \$31.95; HO scale, \$46.95

Manufacturer

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

Era: 1975 to early 1990s (Santa Fe), 2005 to present (BNSF Ry.)

Road names (12 numbers per scheme):

Atchison, Topeka & Santa Fe (as-delivered scheme) and BNSF Ry. (post-2005 herald). Also available undecorated in both scales.

Features:

- 36" metal wheels (correctly gauged in N and HO scales)
- Magne-Matic-compatible couplers (N) and Kadee-compatible metal whisker-style scale couplers (HO), mounted at correct height
- Weight: N scale – 1.5 ounces (.3 ounce too heavy based on National Model Railroad Association Recommended Practice 20.1). HO scale – 4.9 ounces (.4 ounce too light).

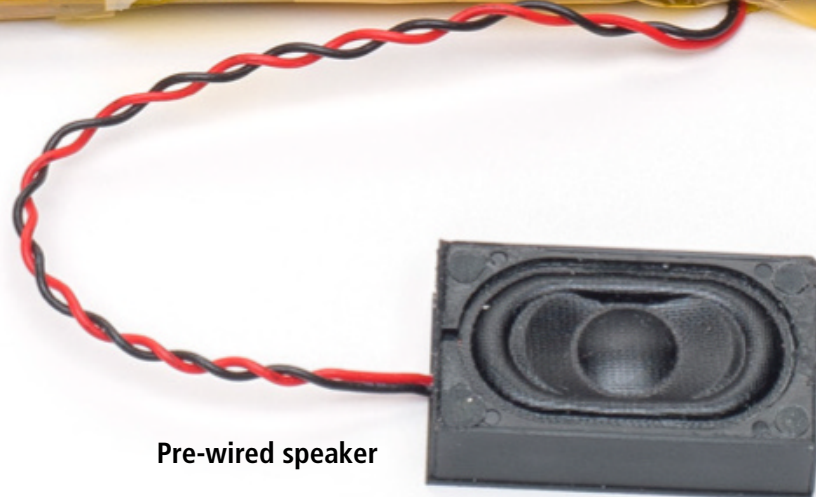
layout, which has no. 5 turnouts and 30" radius curves. The boxcar ran without incident while being pushed and pulled. One minor issue was that the trainline air hoses would occasionally snag on the rails as the car passed through turnouts.

The N scale car performed flawlessly on our Red Oak layout, which has Peco medium no. 6 turnouts and 13" curves.

Atlas has done a wonderful job capturing the lines of Santa Fe's class BX-177 boxcar in HO and N scales. The railroad-built car is sure to be a standout on your model railroad. – *Cody Grivno, Group Technical Editor*



LocoFi board



Pre-wired speaker



Throttle app screenshot

Facts & features

Price: \$140

Manufacturer

WiFi Model Railroad LLC
6937 Village Parkway, Unit 2681
Dublin, CA 94568-2405
www.wifimodelrailroad.com

WiFi Model Railroad LocoFi locomotive decoder

For those who don't wish to convert a layout to Digital Command Control (DCC), LocoFi by WiFi Model Railroad provides an intriguing option for independent locomotive control as well as on-board sound. Unlike DCC, LocoFi doesn't require additional layout components such as command stations, boosters, or conventional throttles. It also doesn't require a computer. Instead, each locomotive is equipped with a LocoFi decoder that transmits a unique WiFi signal. Operators then use a virtual throttle on their smartphones or tablets to run trains.

The board measures .37" x .69" x 3.45" (9.4mm x 17.5mm x 87.6mm) and is wrapped in protective film. On one end of the board are power, motor, lighting, and common leads that follow National Model Railroad Association recommended practices. A .28" x .6" x 1.03" (7.1mm x 15.2mm x 26.2mm) rectangular speaker enclosure is factory-wired to the board.

Installing the board is comparable to installing a wired board-replacement DCC decoder. Some proficiency with soldering is required.

I installed the decoder and speaker into the long hood of a Bachmann HO scale GP7, and it was a tight fit. For some installations, chassis modifications or removing a weight would be necessary.

The board features 3.3V lighting outputs with built-in resistors, which simplified wiring light-emitting diodes (LEDs) for the locomotive headlights.

There's also an onboard capacitor to keep the lights and sound steady over dirty or uneven track.

LocoFi can operate on track voltages from 9V to 24V and can be used on existing DC or DCC layouts. I ran our LocoFi-equipped Geep on a DC test track and our DCC-equipped HO scale staff layout, the Milwaukee, Racine & Troy.

An internet connection isn't needed to run LocoFi-equipped locomotives, except to download the free LocoFi app. I easily downloaded the app onto my Android smartphone from the Google Play Store. An Apple iOS version should be available soon.

After placing the locomotive onto a stretch of powered track, I opened the app and typed a name for my network. Then I selected the locomotive name on the screen and the virtual throttle came up. I also changed the locomotive name to its reporting marks and road number (PRR no. 8805).

The throttle interface is intuitive, with independent controls for the front and rear headlight, bell, horn, throttle, and direction. There's also a speedometer and Engine Start/Stop button. A recent update added an auto-reversing headlight option.

The LocoFi app also features so-called "haptic" control, where the phone or other device will vibrate with each throttle notch. This helped me more easily control the throttle without having to look at the screen.

The decoder has some built-in momentum and steady speed control. As on a real locomotive, I couldn't change the direction until the engine came to a complete stop.

The decoder includes generic diesel engine, horn, and bell sounds loaded onto a microSD card. For those who wish to add prototype-specific sounds, it's easy to download custom sound files onto the microSD card using a sound editor program such as Audacity, available at www.audacityteam.com. There's a step-by-step guide for editing and downloading sound files to LocoFi on the WiFi Model Railroad website.

As of this writing there's no ability to consist locomotives. However, this and many other features are in development. These features include support for battery-powered "dead rail" control, steam locomotive sounds, and additional function and layout control options. Any firmware updates can be easily added to an existing LocoFi decoder using the LocoFi app and a WiFi connection.

Other than changing a locomotive's name, there's no other programming required for this system. However, there are plans to add a graphic interface to the app that will allow some performance customization.

This early release shows the potential that LocoFi holds for becoming an alternative to DCC. I look forward to further refinements to this technology from WiFi Model Railroad. – Dana Kawala, senior editor

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Complying with restricted speed

Sources on which I rely

often bring news of slow-moving trains hitting bumping blocks or even colliding. Physics makes a train or an engine a battering ram that's capable of inflicting heavy damage. Three serious incidents which occurred during 2018 involved movements that violated restricted speed. Restricted speed is a factor on model railroads, too.

Various forms of restricted speed have appeared in rulebooks for almost 100 years, yet it remains a major concern. Participants in a 1996 Federal Railroad Administration (FRA) focus group named violations of restricted speed as a significant problem. Restricted speed also prompted a 2003 FRA study of its history and a 2012 FRA Safety Advisory. The rule continues to see emphasis in rules classes today.

What is restricted speed?

Today's rulebooks are generally worded like this: Movements at restricted speed must be able to stop within half the range of vision, short of other engines or equipment on the track, switches not properly lined, derails, or any stop signal. Movements must not exceed 20 mph.

Stopping in half the distance that can be seen is crucial. It's necessary when two trains are moving toward one another on the same track. They won't collide if each stops in half the distance that separates them.

Moving at restricted speed requires careful judgment. Running down a



"Bad switch!" blares from the radio, bringing a yard move on Dave Abeles' HO scale Onondaga Cutoff to a screeching halt. Dave Abeles photo

straight track that's clear for half a mile might allow 20 mph, the rule's maximum. Curves in which cars on adjacent tracks, trees, buildings, or other items obstruct the view demand lower speeds.

Where does restricted speed apply? Certain block signal indications on main track demand movement at restricted speed. A good example is a train authorized to enter a block occupied by another train, following that train. Here, we'll consider only tracks other than main tracks, such as unsigned sidings and yard tracks. An employee timetable will specify such trackage governed by restricted speed.

Restricted speed has a place on model railroads, too. Part of the rule refers to "switches not properly lined." How many of us have derailed equipment

because we ran through a mis-lined switch?

Reading a switch – that is, observing that its points are properly lined for the direction of movement – is a skill that takes time to learn on the prototype. A switch stand target can give an indication from a distance. Railroaders also observe the switch points. Experience teaches them the peculiarities of each individual switch and the way it shows a dark gap between the shiny railheads of the point and stock rails.

It's relatively easy to see a switch lined for normal movement on a long straight. A switch that's just around a bend requires a speed reduction. Reading switches at night adds another wrinkle.

The bird's-eye view we enjoy as modelers gives us an advantage. However, the National Model Railroad Association standard for HO scale point clearance is about 1/16 of an inch! There aren't many of us with eagle eyes, especially when squinting into a dark corner.

Our models don't have the mass to become battering

rams, but hitting a bumping block can jackknife a string of cars. Massive fingers reaching into a scene to rerail cars, no matter the reason, invites damage to details. The number of broken grabs and dislodged ladders littering layout rights-of-way amazes me.

Reverse moves, as pictured above, further complicate matters for railroaders. The engineer can't see behind, so he relies on a crew member riding the end of the movement. (Before radio, members of the crew spaced themselves along the train's length and "passed signals" to the engineer with hands and lanterns.) Try this: As engineer, turn away from the layout and rely on your conductor's voice commands.

Compliance isn't a term that normally enters model railroad discussion, but perhaps it deserves a place. Hold yourself accountable. Operate at restricted speed and watch to see that switches are properly lined and the track is clear. Can you complete an operating session without derailling on a mis-lined switch? 



TRY THIS: AS ENGINEER, TURN AWAY FROM THE LAYOUT AND RELY ON YOUR CONDUCTOR'S VOICE COMMANDS.
— JERRY



A **Baltimore & Ohio** class E-24 Consolidation arrives to switch the industries at Winchester, Va. The action takes place on the HO scale B&O Shenandoah Valley Branch model railroad built by John King of Boyds, Md. John set his railroad's operations in October 1949 to take advantage of the extra traffic created by the apple harvest season. Paul Dolkos shot 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.

MORE ON THE WEB

• Paul Dolkos' photo of John King's layout is this month's free computer wallpaper. Download it at ModelRailroader.com



Locomotive no. 361 leads a westbound Denver & Rio Grande Western passenger train through Black Canyon on the way to Gunnison, Colo. Tom Bielefeld of Tucson, Ariz., photographed the scene on his HO scale diorama representing part of the D&RGW in Colorado in the 1920s. The narrow-gauge 2-8-0 is a brass import. The baggage car is from Precision Scale Co. and the coach is by Blackstone Models.



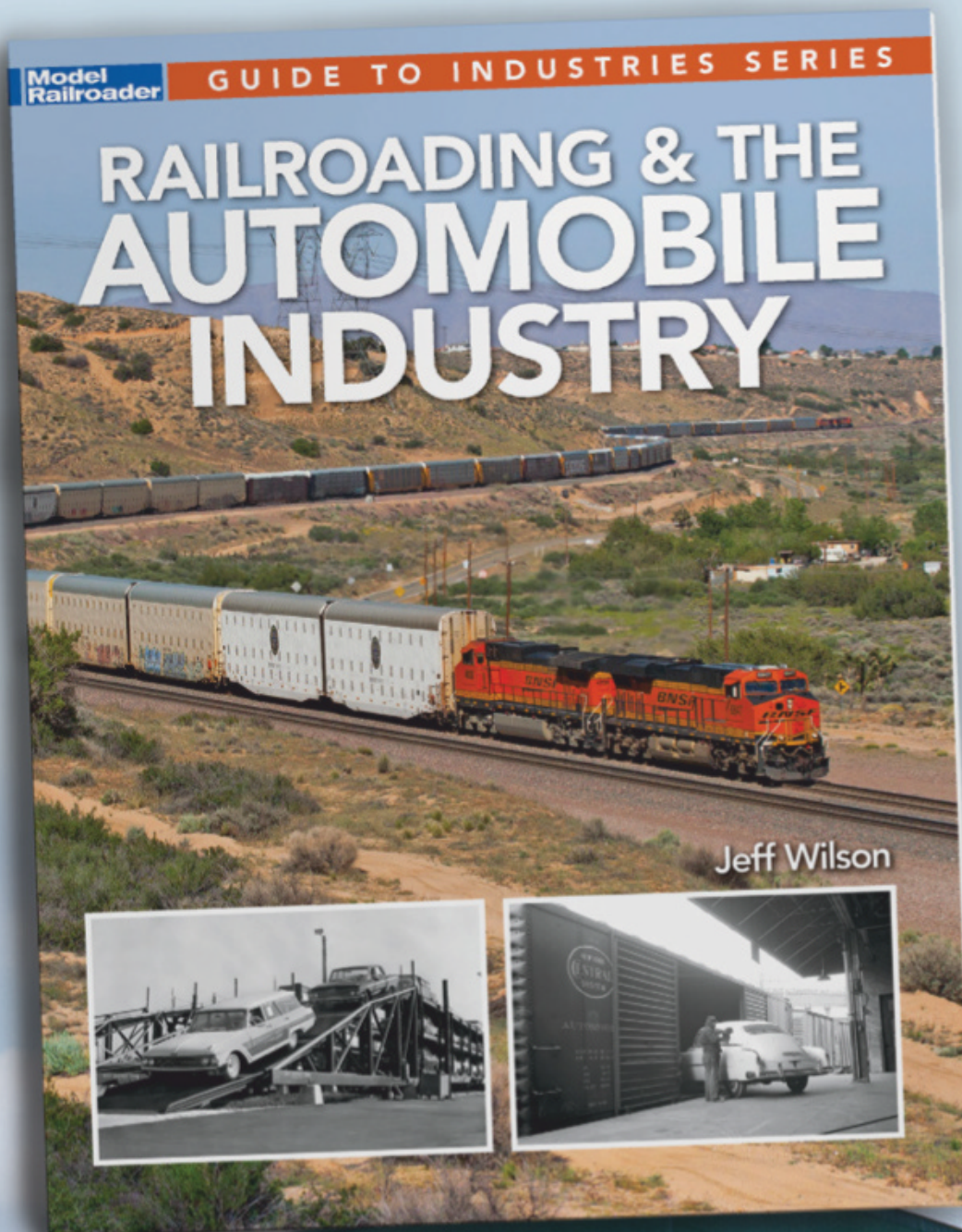
The daily mixed train stands at the station while nearby road workers prepare some new pavement. Ken Kirkwood of Yucaipa, Calif., shot the scene on his HO scale Ma & Pa K Ry., a freelanced short line set among the redwoods of Northern California.



Rock Island no. 415, an Alco C-415, switches tank cars at the Sinclair Oil Refinery. James Brubaker of Coal Valley, Ill., detailed the vintage Mehano locomotive, repainted it, and converted it to Digital Command Control. He also photographed the scene on his HO scale Coal Valley & Western layout. The refinery is a modified Walthers kit.



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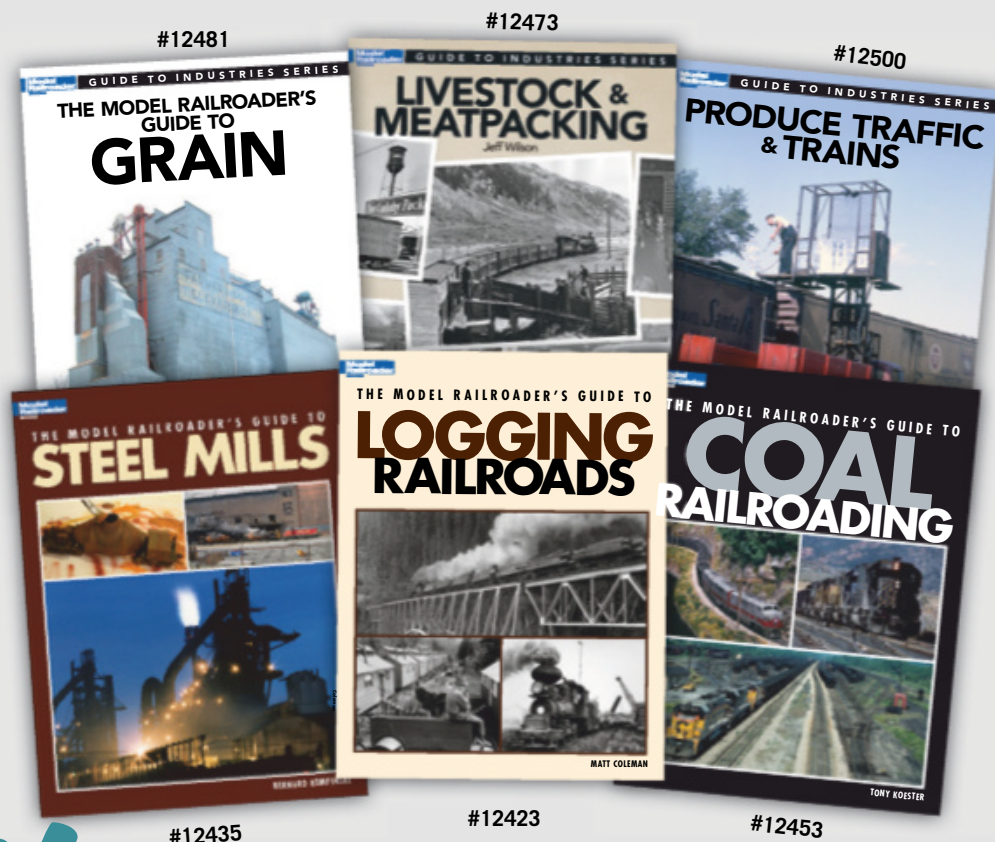
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Schedule of Events

AL, MOBILE: Model Train Show sponsored by South West Alabama Railroad Modelers (SWARM). Via Health, Fitness and Enrichment Center, 1717 Dauphin Street. March 9-10, 2019, Saturday 9:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$5.00, family \$10.00, under 10 free. Operating layouts, demonstrations and dealers. Contact Charlie Boyer, 251-454-0572, email charlieboyee66@att.net

AR, BENTONVILLE: Sugar Creek Model Railroad Historical Society, 16th Annual Show. Benton County Fair Grounds, Highway #12, Saturday, March 2, 2019, 9:00am-4:00pm. Adults \$8.00, under 12 free. Keith Johnson, 479-871-2802, E-mail: train072@cox.net, NWA Train Show, PO Box 1283, Farmington, AR 72730. www.sugarcreekrailroadclub.com.

CA, BAKERSFIELD: 26th Annual Bakersfield Model Train Show Kern County Fairgrounds, 1142 South "P" Street. March 9-10, 2019, Saturday 10:00am-5:00pm., Sunday 10:00am-4:00pm. Admission \$8.00, Kids 12 and under free with adult. Kevin Birkbeck, 661-496-9514, Kevin4strings@gmail.com

CO, DENVER: Rocky Mountain Train Show March 2-3, 2019. Denver Merchandise Mart, 451 East 58th Avenue, Denver, CO 80216. Saturday, 10:00am-5:00pm, Sunday 10:00am-4:00pm. 2-1/2 acres of model trains of all scales, 30 layouts, 700 sales tables, clinics and more. Admission \$10.00 Free-Parking. Phone: 303-364-0274 www.RockyMountainTrainShow.com information@RockyMountainTrainShow.com

FL, CRYSTAL RIVER: Regal Railways, Toy Train Collectible & Hobby Show, US Army National Guard Armory, 8551 West Venable Street, Crystal River, FL 34429. Saturday, March 23, 2019, 9:00am-2:00pm. Admission: \$5.00 adults. Vendors, operating layout lunch items for sale. Contact Joe: 727-244-1341 or visit: www.regalrailways.com.

FL, FORT MYERS: Scale Rails Annual Train Show. Araba Temple, 2010 Hanson Street. February 9-10, 2019, Saturday & Sunday, 10:00am-4:00pm. Dealers and Collectors: 100+ tables, new & used equipment for all scales. Admission Adults: \$7.00, Teens: \$2.00, Children under 12: Free. Contact: Dwight Sedgwick 239-850-6764.

FL, PLANT CITY: H.B. Plant Railroad Historical Society Train Show and Swap Meet. John Trinkle Building, Plant City Campus, Hillsborough Community College, 1206 North Park Rd., Zip: 33563. March 23, 2019, 9:00am-3:00pm, Adults \$7.00, under 17 free w/adult. Contact: Gilbert Thomas, 863-412-3090, E-mail: Thomas_12399@msn.com Website: www.hbplantrr.org

FL, SARASOTA/BRADENTON: 42nd RealRail Train Show. Bradenton Area Convention Center, 1 Haben Blvd, Palmetto. March 9-10, 2019, Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$8.00, under 13 free. Door prizes, interactive Lionel, kids' HO layouts, Florida Lego group layout. 150 vendors. Information: Bill Clark 941-504-2474 or williamclark133@gmail.com

ID, LEWISTON: 8th Annual Lewis-Clark Railroad and Collectibles Swap Meet. NPC Fair Grounds, 1229 Burrell Ave. Sunday, March 24, 2019, 9:30am-4:00pm. Adults \$5.00, children under 12 free w/adult. Several vendors. Operating model RR's available. Operation Lifesaver Train Simulator. Refreshments/food. Contact Dan Wise, 208-816-0845, wrails@cablone.net

IL, LOMBARD: Chicago O Scale Meet (2-Rail), Westin Lombard Yorktown Center, 70 Yorktown Center. March 15-17, 2019. Friday dealer set-up, show open to public Saturday 9:00am-5:00pm, Sunday 9:00am-2:00pm. Buy/sell, trade, clinics, layout-tours, model contest. Largest O Scale show. \$20.00 entire weekend. Info: Melissa 630-745-7600 or www.marchmeet.net

IL, ROCKFORD/BELVIDERE: Rock River Valley Division NMRA 28th Annual Show & Sale. Belvidere North High School, 9393 Beloit Rd., Belvidere, IL. March 30th 10:00am-5:00pm, March 31st 10:00am-4:00pm. Admission \$5.00 under 12 free. Website: rrvd-nmra.org or Doug 815-765-3135 vendors contact donbrindle@aol.com or Don 815-874-6095.

IL, SPRINGFIELD: Springfield Railroad Society Annual Train Fair. Orr Building on the State Fairgrounds. Sunday, March 24, 2019, 10:00am-4:00pm. Early Bird shopping starts at 9:00am. Free parking. Largest show in down-state Illinois! For info call Ray at 217-544-4295 or visit www.springfieldtrainfair.com

IL, URBANA: Midwest Central RR Club 38th Annual Train Show. Urbana Lincoln Square Village, 100 S. Vine St. in downtown Urbana. March 30-31, 2019, Saturday 10:00am-6:00pm and Sunday 11:00am-4:00pm. No Admission, selling trade, operating layouts, handicap accessible. Contact Rick, 217-552-6514 or rickschrol@gmail.com

IN, EVANSVILLE: Evansville All Gauge Model Train and Railroaders Show. St. Paul's UCC, 2227 West Michigan Street, Zip: 47712. Saturday, March 2, 2019. Gates open 10:00am-3:00pm CST. Admission \$3.00, under 12 free. Vendors, test track, operating trains, Lego layout & Thomas dealer. Contact John 812-426-2989

IN, INDIANAPOLIS: The Indianapolis Model Railroad Show and Open House. Manual High School Gymnasium, Saturday, March 2, 2019, 10:00am-3:00pm. Admission \$5.00, under 12 free. Boy Scouts in uniform free. Free parking. Naptown & White River Model Railroad Club. Contact: Steve Handy, 317-786-8627, E-mail: naptownmrr@gmail.com Website: www.naptownmrr.org

IN, MICHIGAN CITY: Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, February 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, NAPPANEE: Elkhart Model Railroad Club Annual Train Show & Sale, Saturday March 16, 2019, 10:00am-3:00pm. (E.S.T.) NEW LOCATION! Claywood Event Center, 13924 N. 1100W (County Line Road) Nappanee. Admission \$5.00. Operating Layouts, Vendor Tables. Information: Randy Robbins 574-584-4550 or email trainshow@emrrc.com Website: www.emrrc.com

MA, AUBURN: Worcester Model Railroaders Annual Show at Auburn Elks Club, 754 Southbridge St. Sunday, February 24, 2019, 10:00am-3:30pm. Admission: \$5.00, children under 12 free. Two floors of dealers, exhibits, modular layouts. WMRR operating layout included with admission. Contact: Ralph Kimball, 508-868-5189, ralphkimball@charter.net or www.wmrr.org

MA, WORCESTER: HUB Division NER/NMRA SPRING TRAINING CLINICS/TRAIN SHOW; Saturday March 16, 2019, 10:00am-4:00pm. Worcester State University, 280 May Street. Admission \$8.00, Children under 12 FREE. Featured clinician Joe Fugate, Editor Model Railroad Hobbyist magazine. More information and clinic details visit website www.hubdiv.org

ME, AUGUSTA: Whitefield Lions Club 33rd Annual Model Railroad & Miniature Dollhouse Show, National Guard Armory, Western Avenue. February 16, 2019, Open 10:00am-3:30pm. Adults \$5.00, under 12-free, family-\$10.00. Operating layouts, miniature displays. Contact: Steven Laundrie, 50 Fairview Ave., Randolph, ME 04346. 207-582-1410, slaundrie@roadrunner.com, Website: www.whitefieldlionsclub.com/modelrailroaddollhouseshow.

MI, HOLLY: Detroit Model Railroad Club, 104 North Saginaw St. Holly, Michigan starts its open house season in November for the winter season. Please, visit our web site at www.dmmrc.org or visit us on FACEBOOK@DMMRC for times and dates.

MN, ST. CLOUD: GRANITE CITY TRAIN SHOW AND SALE. River's Edge Convention Center, 10 4th Avenue South. Saturday, April 13, 2019, 9:00am-3:00pm. \$6.00, 10/under free. Buy/sell model/toy trains, books, videos, railroad collectibles. Operating displays. Win a LIONEL train set or FSM structure kit. 320-255-0033; edwardolson@cloudnet.com or www.GraniteCityTrainShow.com

NC, ASHEVILLE: Asheville Train Show. Western North Carolina Agricultural Center. March 1-2, 2019. Friday 12:00pm-7:00pm and Saturday 9:00am-5:00pm. Admission \$6.00, under 10 free. All scales, all gauges, collectibles, artifacts. Operating layouts, Thomas The Tank Engine, hundreds of vendor tables. More: www.Asheville-Trainshow.com

NC, GREENSBORO: 11th Annual "Greatest Little Train Show". SEE OUR WEBSITE FOR LOCATION. Saturday March 16, 2019, 10:00am-3:00pm. \$5.00 adults, under 12 FREE. Contact Jim Turkett, 336-314-3341, jturkett@gmail.com or mail CMR, PO Box 13642, Greensboro, 27415 or www.carolinamodelrr.org

NC, NEW BERN: 24th Annual Train Show, New Bern High School, 4200 Academic Dr. March 2-3, 2019 Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$7.00, under 12 free w/adult. Operating layouts, 90 vendor tables, food concession, door prizes. Carolina Coastal Railroaders, George Shalhoub, 252-626-3476

NE, DESHLER: Train Show & Open House, June 29-30, 2019. Thayer County Activity Center, 4th & Race St. Hours: Saturday, 9:00am-5:00pm, Sunday 10:00am-4:00pm. Special clinics, layouts, and manufactures. Admission \$6.00, under 12 FREE. Extended hours at Spring Creek Model Trains. 304 E. Bryson Ave. Details: www.springcreekmodeltrains.com

NJ, CLARK: Jersey Central Train Show & Sale. Mother Seton Regional High School, 1 Valley Road, Clark, NJ. Sunday March 3, 2019, 9:00am-3:30pm. Admission: \$5.00, children under 12 FREE. Model Trains, Railroadiana, Books, etc. Email: Heinz Ricken hrcken@gmail.com

NJ, EAST RUTHERFORD: METCA/NYSME Train Show, St. Joseph's School, 120 Hoboken Road, Zip: 07073. Saturday, March 30, 2019, METCA/NYSME members 8:00am, Public 9:00am-2:00pm. Admission: \$5.00 Adults 16+, FREE for METCA/NYSME families. NYSME Club layouts open FREE to attendees. Info: www.METCA.org; Bob Amling, Secretary@METCA.org - 718-541-8619 or contact@modelengineers.org

NY, ALBANY: Albany Train Show, Polish Community Center, 225 Washington Avenue Extension, Albany NY. Saturday March 9, 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 Train related items. www.albanytrainshow.com or Jeff Stedje 518-852-7725.

NY, BETHPAGE: Annual Bethpage High School Train Show, Cherry and Stewart Avenue. (Exit 9 off Route 135). Saturday March 23, 2019, 11:00am-4:00pm. Admission: Adults, \$5.00 children \$1.00. Multi Scale Train Show. Information: Yolanda, 516-547-1300.

OH, COLUMBUS: The 11th Ohio N Scale Weekend, "For N-Scalers by N-Scalers" Franklin County Fairgrounds, Hilliard, Ohio. Presented by Central Ohio N-Trak. May 18-19, 2019, Saturday, 10:00am-5:00pm and Sunday 9:00am-3:00pm. Set-up Friday May 17th, 1:00pm-8:00pm. Event registration \$10.00. Event info www.centralohiontrak.org or e-mail ohionscaleweekend@yahoo.com

OH, HAMILTON: Ross Train Show Fundraiser, 3371 Hamilton Cleves Rd. Saturday March 2, 2019, 9:00am-2:00pm. Public welcome. Admission: Adults \$5.00, under 12 Free. Tables \$25.00, additional tables \$20.00. 88 tables available. Operating layouts, music performances. Show has sold out each year. Worth the drive. Contact: Kent Acree, 513-235-3086

OH, KIRTLAND: Lakeland Community College (AFC), 7700 Clocktower Dr., Kirtland, OH 44094. NMRA MCR Div. 5. March 16-17, 2019, 10:00am-4:00pm. All Gauge Train Show with over 400 tables. For Information: 440-357-8890 or www.Railfest.org.

OH, MT. HOPE: CJ Trains Spring Train and Toy Show. Mt. Hope Event Center, 8076 St. Rt. 241, Zip 44660. Saturday, March 23, 2019, 10:00am-4:00pm. Admission: \$5.00, Free under 12. \$25.00/dealer table. 600+ tables. Contact, Jon Ulbright, 330-262-7488, cathijon@ssnet.com. www.cjtrains.com (GPS directions: Millersburg, OH 44654)

OH, TOLEDO: Greater Toledo Train & Toy Show. Owens Community College (SHAC), 30335 Oregon Rd., Perrysburg, OH 43551. Sunday, March 10, 2019, 11:00am-3:00pm. Early Birds: 9:00am-3:00pm. Adults \$6.00/Early Birds \$10.00, 12/under FREE w/adult. Contact: Randy Ramsey, 1566 South Ave., Toledo, OH 43609, 419-215-4181, email: toledotoymasters@gmail.com, website: toymasters.org.

OK, BIXBY: Greater Tulsa Train Show, Bixby Community Center, 211 N. Cabaniss Avenue, Zip 74008. Saturday April 6, 2019, 9:00am-3:00pm. Admission: \$5.00 adults, under 12 Free. For info: TTOS-Sooner.org

SC, COLUMBIA: Jamil Temple, 206 Jamil Road. Saturday, March 23, 2019, 9:00am-3:00pm. Admission \$5.00, under 10 FREE. Over 200 vendor tables. Large variety of G, O, HO, S/AF, N gauge. Contact Todd at 843-307-8674, sctradeshows.com

UT, OGDEN: 30th Annual Hostlers Model Railroad Festival. Historic Union Station, 25th St. & Wall Ave., March 8-9-10, 2019, Friday 3:00pm-8:00pm; Saturday 9:00am-6:00pm; Sunday 9:30am-3:00pm. Admission \$7.00, 12/under free, weekend-pass \$10.00. Layouts all scales, many vendors, LEGO layout. Biggest train show in the West. Information: 801-394-4952, www.hostlers.info

VT, ST. ALBANS: Vermont Rails Show. Collins Perley Sports & Fitness Center, Interstate 89, Exit 19. Saturday, March 9, 2019, 10:00am-4:00pm. Adults \$6.00, children 6-12 \$2.00, children under 6 free, Sponsor: NWV Model Railroad Association. Contact Ron Piro, 802-598-0905, www.nwvrailroad.org

WA, CHEHALIS: Lewis County Model Railroad Club, Annual Spring Model Railroad Swap Meet and Show. Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 N. National Ave., Zip: 98532. April 6-7, 2019, Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$5.00. Free parking. Contact information: Ted, 360-985-7788 or TedsTrains@LewisCounty.com

WA, MONROE: UNW/4-H 28th Annual Model Train Show and Marketplace. Evergreen State Fairgrounds. February 23-24, 2019, Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults \$10.00; Juniors/Seniors \$8.00; kids under 9 FREE w/paid adult. Featuring 25 layouts, over 300 vendor tables, clinics, presentations, family fun for all ages. www.unwclub.com/unwshow.htm

WA, SPOKANE: River City Modelers Spring Train Show, Spokane Fairgrounds, 404 North Havana. Sunday, March 10, 2019 from 9:30am-3:30pm. Adults \$6.00, Free under 12. 200+tables of Railroad items for sale, operating layouts, Free-MO, Operation Lifesaver & more. Free parking. For information: Shirley Sample, 509-991-2317 or email shirley@busnws.com

Schedule of Events Cont.

WI, LA CROSSE: La Crosse & Three Rivers Railroad Club's 38th Annual Model Railroad Show: NEW LOCATION: Omni Center, 255 Riders Club Road, Onalaska, WI. March 16-17, 2019. Saturday 9:00am-5:00pm, Sunday 10:00am-4:00pm. Adults \$7.00, \$6.50-non-perishable food item, children 11 and under free w/adult. John Uehling 608-790-8889.

WI, MADISON: Mad City Model Railroad Show and Sale. Alliant Energy Center, February 16-17, 2019, Saturday 9:00am-5:00pm. Sunday 9:00am-4:00pm. 90,000 sq.ft. of layouts, toy trains, clinics, exhibits, and vendors. Adults \$12.00, Seniors \$11.00, Children (5-11) \$6.00, under 5-free. 2-day pass \$16.00. Information: nmra-scwd.org

CANADA-ON, ESSEX: 24th Annual Model Train Show. Essex Public School, 72 Brien Ave. E. Essex, ON, N8M2N8. February 23-24, 2019, Daily 9:30am-3:30pm. Adults \$5.00. Display, Memorabilia, Interactive Train Model and More! Contact Historic Essex Railway Station at 519-776-9800 or heritageessex@bellnet.ca

CANADA-ON, KINGSTON: Model Train Show. Ambassador Hotel, 1550 Princess St. K7M9E3. March 9-10, 2019, 10:00am-4:00pm. Adults \$6.00 under 12, \$3.00. Operating layouts, vendors, displays, Thomas activity table, free parking, restaurant, and ATM. Contact Graham Oberst, CHRA Kingston, 613-542-9461 or graham.oberst@bell.net

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Coming home again



Tony knew from the outset that building the L-shaped hometown depot would be challenging, but he tackled one problem at a time until it was finished. Tony Koester photo

I'd been putting off a project I knew would be a bear: scratchbuilding a model of the L-shaped brick depot that graced the intersection of the Chicago & Eastern Illinois' Chicago-Evansville, Ind., double-track main line and the Nickel Plate Road's St. Louis Division in Cayuga, Ind. But there was no getting around it, as Cayuga was my hometown for much of the 1950s and a signature location on my HO tribute to the Third Subdivision of the NKP's St. Louis line.

I can't recall a time when trains didn't fascinate me. My interest might have been triggered by my mother's love of steam locomotives, with their beautiful, sometimes mournful whistles, and all of the exposed monkey motion.

When my family moved from Iowa to west-central Indiana in 1951, it didn't take me long to find the crossing of the C&EI and NKP, and I spent time there with the interlocking tower operators and station agent. I tried to help the towermen move the armstrong levers to line up a route for a train,

but they were beyond my adolescent strength.

The depot had the characteristics of a medieval castle, with turrets and a dark waiting room. But it was quite an edifice for a small Hoosier town with few claims to fame beyond a large grain elevator, a canning factory, a small concrete-block plant, and the brickyard my dad managed.

I'd thought about modeling the depot for decades but had yet to devise a clear path forward. So I tiptoed around the project by first kitbashing a Walthers interlocking tower kit into a surprisingly close replica of the one that guarded the crossing. I was so enamored with the tower that I built it twice; the first time involved some compromises that later came to haunt me.

I also had to build the town's Thompson grain elevator – a relatively easy kitbash of two Walthers kits – and the post office, another kitbash using a Pikestuff kit. The Fable House hotel behind the depot was dispatched in short order by using actual photos of the prototype, reworked with Adobe's Photoshop Elements

to replace the boarded-up windows and remove recent tack-ons. Glued to a shell of .080" Evergreen styrene and with a 3-D styrene roof, porch, and windowsills, the photos did the job.

So there I was, with nothing else to hide behind. It was time to build the depot.

One thing experienced modelers learn by osmosis is that you can't always clearly see the path forward. For example, the depot's brick walls curved around the corner and formed half circles under each bay widow. Fortunately, brick sheets from N Scale Architect (they also make HO stuff) bonded to sheet styrene reduced this challenge to a workable project.

I got lucky when I found that a Tichy window molding – when butted up to four compatriots – worked to create the five-windowed bays. Other Tichy windows and

doors were deemed good enough for the tasks at hand.

Then came the roof. The depot had hip roofs – two of them, in fact, one per wing. The hip is "cranked," meaning it starts with a shallow slope at the eaves, then segues to a steeper slope up to the peak. At the corner of the two wings, the roof transitioned into a quarter circle, where one steeply sloped quarter-cone truncated at the top, fitted atop a shallow quarter-cone.

That done, I had to fabricate two full cones, one for each bay window, and fit them into the sloping roof.

Cardstock templates and trial and error were the order of the day.

The biggest surprise occurred after I plunked the finished depot into its new home: I was instantly transported back to the '50s. I was back home again. A finer accolade for prototype modeling, I can't conceive. **MR**



SO THERE I WAS, WITH NOTHING ELSE TO HIDE BEHIND. IT WAS TIME TO BUILD THE DEPOT.
– TONY



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