

3 ways to program DCC diesel consists p.60



**New HO diesel
from Bowser** p.62

July 2016
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STEP BY STEP

BUILD A HEAVY INDUSTRY

Turn to page 24 to
learn how to build this
ore-processing plant.

**How
to use
static
grass** p.51

PLUS

- **HO track plan for a 1950s city** p.40
- **Drawings for a Pennsylvania caboose** p.34
- **How to use DCC momentum and braking** p.54

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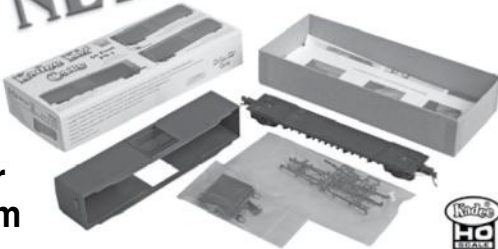
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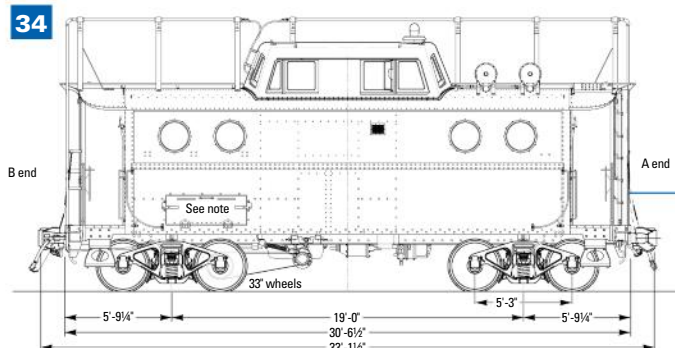


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On the cover: A Southern Pacific GP38-2 brings an empty ore train to the Eagle Mountain Mine on the 2016 *Model Railroader* HO scale project layout. Bill Zuback photo

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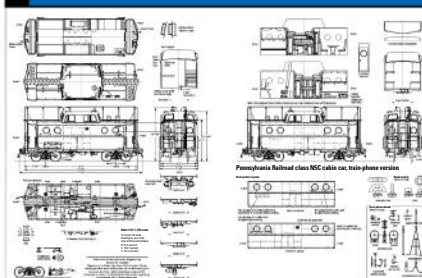


Follow the Hoosier Line



Jack Simpson's HO scale layout models the Monon through Indiana in the 1950s. Subscribers can watch trains roll through the detailed scenes of this 24 x 40-foot model railroad, featured on page 44 of this issue. Click on the link under Online Extras at www.ModelRailroader.com.

Prototype drawings



PRR N5c cabin car

Turn to **page 34** and learn about the distinctive N5c cabin car of the Pennsylvania RR. This month visitors to ModelRailroader.com can download Harold Russell's detailed drawings of the iconic Pennsy cabin car (caboose).

Download a trackside photo



Get computer desktop wallpaper

This trackside photo of Joseph Kreiss' Mosquito Creek Lumber Co. is featured on page 72. Registered members of ModelRailroader.com can also download the image for free to use as a computer screen background.

MR Video Plus

Sneak peek



Model Railroader Video Plus is a subscription video service covering all aspects of the hobby. Want to see what MRVP is all about? Then visit ModelRailroaderVideoPlus.com and click on Free Videos at the top of the home page. There you'll be able to preview a variety of selected MRVP videos.

New product review videos



Bowser GMDD SD40-2 and MTH PRR H10s steamer

There are more than **1,000** product reviews and demo videos online at ModelRailroader.com. This month's featured product videos are the HO scale Bowser GMDD SD40-2 diesel and MTH Pennsylvania RR H10s steamer.

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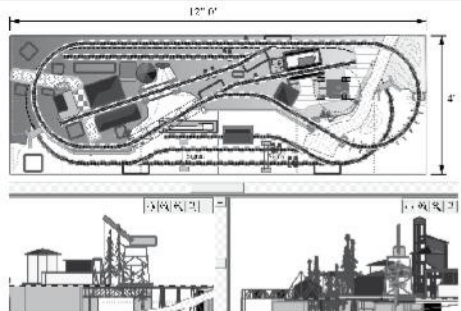
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Cabooses and momentum



We dove deeper than normal on two stories in this issue – drawings of a Pennsylvania Railroad N5c caboose and Digital Command Control braking and momentum functions.

The caboose was an easy call. The Pennsylvania RR was the Apple Inc. of its era – blazing its own trail regardless of trends and often with success.

The N5c caboose – cabin car in Pennsy lingo – is immediately familiar to anyone who has played with Lionel trains. Our story on page 34 includes Harold Russell's detailed HO scale drawings of the caboose and also takes a step deeper with an illustrated chart of paint schemes and a sidebar about train-phone antennas (you know, the ladder-like rooftop devices the railroad flirted with for many years following World War II).

In the story on page 54, realistic momentum and braking aren't normally the first things that come to mind when discussing DCC, but if you want to operate your trains in a realistic manner, your 60 mph-to-zero braking distance should not rival that of a Porsche.

Momentum is an outcome of velocity and mass. The heavier the train, the longer it will take to stop. Author Mat Thompson explains how to program momentum and a related braking function on a SoundTraxx Tsunami decoder, and Mat's ideas, concepts, and practical advice can be applied to other DCC

decoders and, for that matter, the use of straight DC throttles as well.

Even if you are not a fan of N5c cabooses and DCC programming, you will appreciate the attention to detail in the Pennsylvania RR cabin car drawings and the degree to which Mat explains the physical movements of trains.

A few weeks ago I watched an "oops" moment unfold in our workshop. Many of our projects are done as a group, so there are always plenty of chefs in the kitchen to offer practical advice and smart-aleck comments.

Here's what I witnessed:

David Popp, producer of Model Railroader Video Plus, was finishing a resin freight car kit. He was almost done when he dejectedly said ...

"Oh no. I can't believe I just did that. I just accidentally flicked a blob of super glue on the worst part possible – the freight car door."

MR associate editor Eric White, working on another project, smiled. He suggested to David ...

"Well, you could put a different door on the car as if it were repaired."

MR associate editor Cody Grivno, also in the workshop, chimed in with a more relevant suggestion ...

"David, debonder could remove it."

David, still dejected, answered ...

"But the debonder bottle says use it on 'cured' glue. It's not at all dry yet."

Cody offered a daring suggestion ...

"Put some Zip Kicker on the wet super glue blob to cure it right away. And then use the glue debonder."

David sighed, but, with nothing to lose after hours of work, he gave it a try. Success.

NEIL BESOUGLOFF

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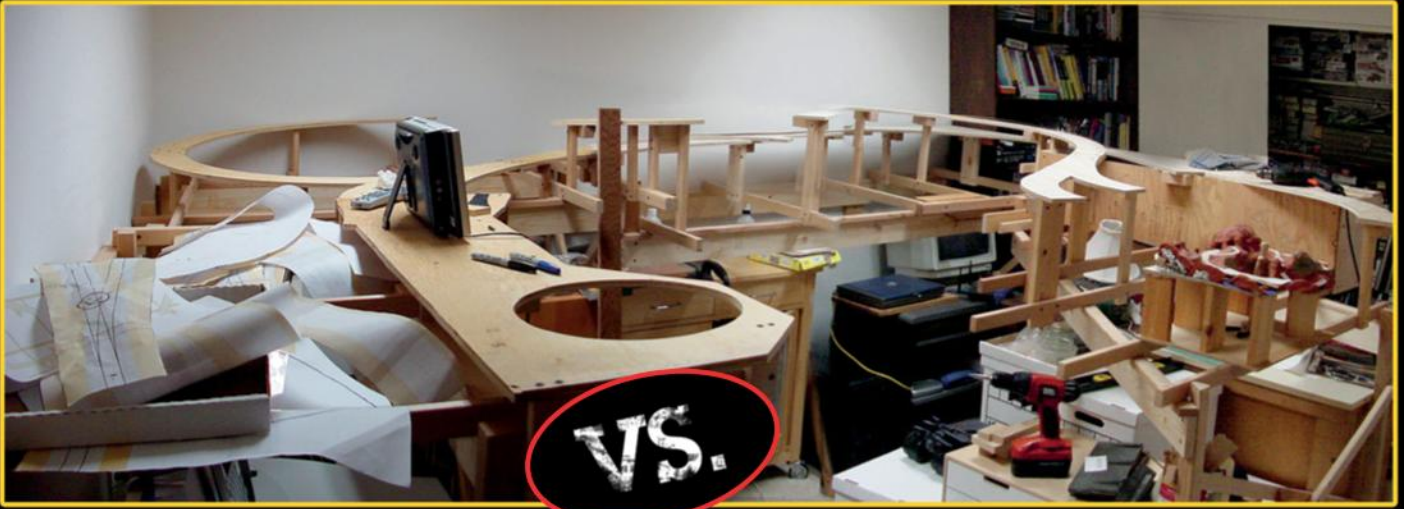
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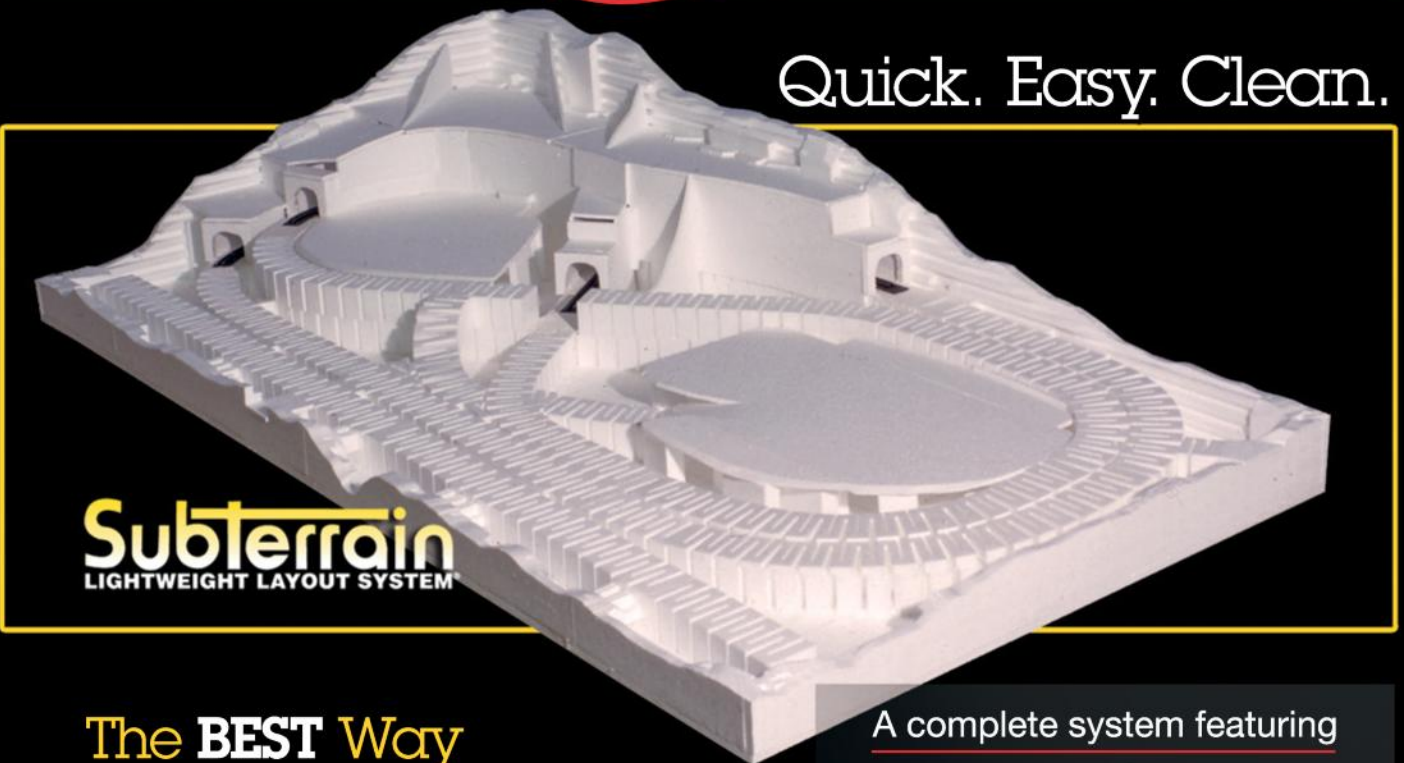
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HO scale General Electric Dash 8-40B and Dash 8-40BW diesel locomotives. Atlas is offering these Milwaukee, Racine & Troy RR four-axle road units in its Master Line. The Dash 8-40B is decorated in the *Model Railroader* magazine club layout's blue-and-white scheme and dark blue Operation Lifesaver scheme. The Dash 8-40BW is decorated in the original medium blue with the

name **Andrew P. Sperandeo**, former editor of *Model Railroader*, on the cab. The models have a die-cast metal underframe, a five-pole skew-wound motor with dual flywheels, and factory-installed details. Direct-current models retail for \$169.95. Versions with a dual-mode ESU LokSound Select decoder are priced at \$279.95. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

Industry news

■ Bachmann names new VP.

Bachmann Industries Inc. named Larry Harrington vice president of product development. During his tenure at Bachmann, Harrington has served as general manager of product development and the company's O gauge division. He was also a general manager for Williams Electric Trains in Columbia, Md.

■ Walther's announces new name

train. The 1954 Atchison, Topeka & Santa Fe *El Capitan* is the next HO scale name train from Wm. K. Walther's Inc. The train will feature Electro-Motive Division F7 locomotives (an A-B set and single A unit). The models will be offered in DC (A-B set, \$349.98; A unit, \$179.98) and with a dual-mode SoundTraxx sound decoder (A-B set, \$549.98; A unit, \$279.98).

Four of the six passenger cars will be all-new models: a Pullman-Standard (P-S) 85-foot baggage-dormitory (\$79.98), a P-S 85-foot 13-seat lunch counter/20-seat diner (\$79.98), a P-S 85-foot 42-seat coach observation car (\$89.98), and a Budd 85-foot Big Dome bar lounge car (\$89.98). The other two cars are a Budd 85-foot 46-seat coach (\$79.98) and a Budd 73-foot baggage car (\$74.98). All of the cars will feature factory-installed grab irons, a simulated stainless steel finish, and car number decals.

Two deluxe eight-car sets with factory-installed Preiser figures, factory-applied car numbers, and SoundTraxx Sound-Car-equipped baggage-dormitory and lunch counter cars will also be offered for \$1,069.98 each.

The series will be released between December 2016 and April 2017. For more information, visit www.walthers.com.

HO scale locomotives

■ Union Pacific class CSA-1 and CSA-2 4-6-6-4 Challenger steam locomotives.

CSA-1: Nos. 3707, 3802, and 3813; CSA-2: Nos. 3827, 3923, and 3937. Road-number-specific tender, stack, lettering, pilot, and steam pipes; detailed boiler backhead; and electrical pickup on all driver and tender wheels. With SoundTraxx sound decoder, \$629.98. December 2016. Genesis series. Athearn Trains, 800-338-4639, www.athearn.com



■ **Electro-Motive Division GP38-2 diesel locomotive.** New paint scheme: Norfolk Southern (First Responders scheme, road no. 5642). Plastic body with die-cast metal chassis, Kadee no. 158 scale couplers, and Rule 17 lighting. Direct-current model, \$129.95; with

Meet the MR staff at the National Train Show

The National Train Show will be held July 8-10 at the Indiana Convention Center in Indianapolis. Meet members of the *Model Railroader* magazine staff, including editor Neil Besougloff, contributing editor Tony Koester, senior editor Dana Kawala, and associate editor Cody Grivno. In addition, Model Railroader Video Plus associate editor Ben Lake will be at the show. We look forward to seeing you at the MR booth!



Proto-Sound 3.0, \$199.95. MTH Electric Trains, 410-381-2580, www.mthhottrains.com



■ **General Electric Dash 8-40M diesel locomotive.** Canadian National (sergeant stripes in four numbers and unnumbered, North America scheme in four numbers and unnumbered, “wet noodle” herald in three numbers, www.cn.ca in three numbers, and www.cn.ca with BCOL reporting marks in two numbers) and British Columbia Ry. (four numbers and unnumbered). Also available undecorated. Drill starter points for grab irons; modeler-installed grab irons, sun shades, and windshield wipers; and Dofasco trucks. Direct-current model with 21-pin socket, \$159.95; with dual-mode sound decoder, \$249.95. Winter 2017. Prime Movers by Rapido. Rapido Trains Inc. 905-474-3314, www.rapidotrains.com

HO scale freight cars

■ **Assorted freight cars.** Atchison, Topeka & Santa Fe offset twin hopper (single car, \$16.98; three-pack, \$49.98). Chicago & North Western United States Railroad Administration two-bay hopper (single car, \$15.98; three-pack, \$46.98).

Detroit, Toledo & Ironton 40-foot insulated boxcar, \$16.98. Great Northern and Northern Pacific 40-foot wood stockcar, \$16.98 each. Milwaukee Road 4,750-cubic-foot-capacity covered hopper, \$18.98. Norfolk & Western and St. Louis Southwestern (Cotton Belt) 40-foot double-sheathed boxcar, \$16.98 each. Norfolk Southern American Car & Foundry 4,600-cubic-foot-capacity covered hopper, \$17.98. Injection-molded plastic kits with plastic wheelsets and Accumate couplers. Accurail, 630-365-6400, www.accurail.com

■ **40-foot modernized boxcar without running boards.** Atchison, Topeka & Santa Fe (large circle-cross herald and “Super Shock Control” slogan); Burlington Northern; Canadian National; Chessie System (Chesapeake & Ohio reporting marks); Erie Lackawanna; and Illinois Central Gulf. Three road numbers per scheme. Separately applied brake wheel, 33” metal wheelsets, and body-mounted McHenry scale couplers. \$27.98. January 2017. Ready-to-Roll. Athearn Trains, 800-338-4639, www.athearn.com



■ **HO scale American Car & Foundry 50-foot boxcar with exterior posts.** These WaltherMainline boxcars are decorated for Minneapolis, Northfield & Southern; Port Huron & Detroit; Railbox; Atlanta & St. Andrews Bay; Apalachicola Northern; Ashley, Drew & Northern; Burlington Northern (1991 scheme); Canadian National; and Vermont Ry. in two road numbers per scheme. The boxcars (\$24.98) feature new tooling, 33” metal wheelsets, and Proto-Max couplers. Wm. K. Walther Inc., 414-527-0770, www.walthers.com



HO scale Union Pacific 4-8-8-4 Big Boy steam locomotive. This upgraded Rivarossi model is available from Hornby Hobbies. The model, available in two road numbers, has improved electrical pickup on all eight drivers and a five-pole can motor with brass flywheels.

Direct-current models with a 21-pin socket for Digital Command Control decoder list for \$389.99. Versions with an ESU LokSound Select sound decoder and an updated sound file are priced at \$459.99. Hornby Hobbies, 877-358-6405, www.hornbyamerica.com

■ **Pullman-Standard 4,740-cubic-foot-capacity covered hopper.**

Burlington Northern, Canadian National (DWC reporting marks), ConAgra, Conrail, Farmland Industries, Milwaukee Road (gray), Norfolk Southern, Producers Grain, and Union Pacific (CAGX reporting marks). Three road numbers per scheme. Body-mounted McHenry scale couplers and 36" metal wheelsets. \$29.98. January 2017. Ready-to-Roll. Athearn Trains, 800-338-4639, www.athearn.com

■ **40-foot double-sheathed refrigerator car.** New paint schemes: Crisco, Grand Trunk Western, Marhoefer Packing Co. Inc., Morrell Refrigerator Line (bacon and canned meats, one road number each), Pacific Cooperative, T.M. Sinclair & Co. Ltd., and White Rock Water. Two road numbers per scheme. Separate door bars, grab irons, ladders, and uncoupling levers; two styles of roof hatch (where appropriate); and Accumate couplers. \$39.95. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

■ **Association of American Railroads 50-foot postwar boxcar.** New paint schemes: Atlantic Coast Line ("Thanks for using Coast Line" slogan), Green Bay & Western (yellow), Illinois Central (orange), Lehigh Valley (brown), Missouri-Kansas-Texas (green), and New York Central (Jade Green). Two road numbers per scheme; also available

undecorated with 8- and 9-foot doors. Separately applied ladders and grab irons, prototype-specific side sills, and metal wheelsets. \$34.95 (undecorated, \$26.95). Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

■ **Pullman-Standard 60-foot 7,315-cubic-foot-capacity waffle-side boxcar.** Atchison, Topeka & Santa Fe (Gothic repaint in three road numbers); Grand Trunk Western (blue); Milwaukee Road (1974 as-delivered scheme, five numbers); Norfolk & Western (1974 as-delivered scheme); and Union Pacific (1985 repaint in one number). Wire grab irons, Kadee no. 58 couplers, and 36" metal wheelsets. \$44.95. Platinum Series. ExactRail LLC, 866-945-1701, www.exactrail.com



■ **American Fruit Packers 40-foot double-sheathed refrigerator car.** Hood River Pears. Injection-molded plastic model with separately applied grab irons, plastic stirrup steps, metal wheelsets, and body-mounted Accumate couplers. \$39.50. Produced by Atlas Model Railroad Co., available exclusively from Lowell Smith Signature Series, www.lowellsmith.net



■ **Pullman-Standard PS2-CD 4,000-cubic-foot-capacity covered hopper.** New paint schemes: Minneapolis, Northfield & Southern (repaint of 1962- and 1963-built cars, one number each); Atchison, Topeka & Santa Fe (repaint with 1973 restencil, three road numbers); Burlington Northern (1990 repaint, two numbers); Baltimore & Ohio (1963 Original Gray, six numbers); Chicago Great Western (Zito Yellow, one number); Chicago & North Western (1978 and 1981 Clinton, Iowa, repaints, one number each); and Norfolk & Western (1970 with "hamburger" herald, two numbers). Also available ready-to-run painted primer gray and as undecorated kit. Etched-metal running boards and brake platforms, 36" metal wheelsets, and Kadee scale couplers. \$44.95. Tangent Scale Models, 828-279-6106, www.tangentscalemodels.com

■ **263-foot, five-unit all-purpose articulated spine car.** Atchison, Topeka & Santa Fe; Burlington Northern; Conrail; Union Pacific; Trailer Train. Two road numbers per scheme. Die-cast metal body, collapsible container pedestals, and

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brake gear detail on end cars. Each unit can handle 28- to 45-foot trailers and 20- to 48-foot containers. \$119.98. Walther'sMainline. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com



■ **Gunderson rebuilt 40-foot all-purpose well car.** TTX (DTTX reporting marks with maroon plain logo and "Forward Thinking" logo) and Northwestern Oklahoma RR (two road numbers). Three numbers per scheme unless noted. Etched-metal see-through running boards, weld line detail on body, and Proto-Max couplers. \$39.98. Well can hold 20- to 40-foot intermodal containers. Walther'sProto. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

■ **Pullman-Standard 40-foot PS-1 boxcar.** Green Bay & Western; Atchison, Topeka & Santa Fe (large circle-cross herald and "Ship and Travel Santa Fe – All the Way" slogan); Boston & Maine (McGinnis scheme); Delaware, Lackawanna & Western ("The Route of Phoebe Snow" slogan); Lehigh Valley (white); and Rock Island (100 Years of Progress herald). Two road numbers per scheme. New tooling, 33" turned-metal wheelsets, and Proto-Max couplers. \$24.98. Walther'sMainline. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale passenger cars

■ **Assorted streamlined passenger cars.** Amtrak (phase 3) and Pennsylvania RR. Baggage, coach, diner, Vista-Dome, observation, and Railway Post Office. One car number per scheme. Separately applied brake wheel, RP-25 contour metal wheelsets, and McHenry scale couplers. \$29.98 each. January 2017. Roundhouse line. Athearn Trains, 800-338-4639, www.athearn.com

■ **American Car & Foundry 85-foot 4-bedroom, 4-compartment, 2-drawing-room sleeper.** Pennsylvania RR (1960s *Broadway Limited*). Factory-installed and painted grab irons,

detailed interior, and car name and number decals. \$69.98. Walther'sProto. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com



■ **Budd 85-foot 5-roomette, 1-bedroom, 3-drawing-room Strata-Dome sleeper.** Baltimore & Ohio (*Capitol Limited*). Factory-installed steel grab irons, Proto-Max couplers, four non-working rooftop floodlights, and icicle breaker bar. \$79.98. Walther'sProto. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale structures



■ **O'Doul's Flop House.** Laser-cut wood kit with injection-molded plastic doors and windows, brass laundry lines, and color graphics. Can be built as one unit or two buildings. Footprint (as



N scale Pullman observation car. The latest addition to the Lowell Smith Signature Series is the *Ferdinand Magellan*. The car features new tooling produced by Micro-Trains Line Co., separately applied speakers, the Seal of the President of the United States on the rear gate, and body-mounted Magne-Matic couplers. The observation car is part of the Executive Line and is priced at \$59. Lowell Smith Signature Series, www.lowellsmith.net

shown) is 6" x 4". \$67.95. Bar Mills Scale Model Works, 207-929-3400, www.barmillmodels.com

HO scale details and accessories

■ **40-foot intermodal container with corrugated sides.** Cosco, Hamburg Süd, MOL, NYK Logistics, Pasha Hawaii, and Zim. Separate door closure rods. Three-pack, \$29.98. January 2017. Athearn Trains, 800-338-4639, www.athearn.com

■ **Assorted scrap loads.** Baled scrap and heavy scrap. Painted and weathered one-piece resin castings. Fits Walther's Mainline 53-foot corrugated-side gondola. \$14.98 each. SceneMaster line. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

N scale locomotives

■ **General Electric U23B diesel locomotives.** New paint schemes: Erie Lackawanna (fictional scheme) and National Ry. of Mexico. New road numbers: Conrail, Chesapeake & Ohio, Milwaukee Road (two numbers), and Union Pacific. Re-release: Missouri-Kansas-Texas. Three numbers per scheme unless noted. Directional golden-white light-emitting-diode headlights, separately applied uncoupling levers, and blackened metal wheelsets. Direct-current model, \$124.95; with NCE motor decoder, \$159.95. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

N scale freight cars

■ **40-foot double-sheathed refrigerator car.** New paint schemes: Grand Trunk Western, Marhoefer Packing Co. Inc., Morrell Refrigerator Line (bacon and canned meats, one road number



HO scale Electro-Motive Division E9A and E8Bm diesel locomotives. Power for the Baltimore & Ohio *Capitol Limited* is now available in the Walther'sProto line from Wm. K. Walther's Inc. The locomotives feature a five-pole skew-wound can motor, prototype-specific

details, and stainless steel grills. Direct-current models sell for \$199.98 (E9A) and \$369.98 (E9A-E8Bm set). Versions with a dual-mode SoundTraxx sound decoder list for \$299.98 (E9A) and \$569.98 (E9A-E8Bm set). Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

each), Pacific Cooperative, and T.M. Sinclair & Co. Ltd. Two road numbers per scheme. New road numbers (three per scheme): Fruit Growers Express and Pacific Fruit Express. Positionable roof hatches, 40-ton solid-bearing trucks, and Accumate couplers. \$28.95. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

■ **National Steel Car 50-foot plug-door boxcar.** New paint schemes: Canadian Pacific (green with Multi-mark), Ontario Northland (blue and yellow), Quebec Central (green Canadian Pacific patchout with Multimark), and Youngstown & Austintown RR (British Columbia Ry. patchout). Four road numbers per scheme. Prototype-specific ends, doors, and sills; 70- or 100-ton trucks; and Accumate couplers. \$23.95. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

■ **Norfolk Southern class G-86R TopGon.** With yellow reflective stripes, test roller bearings stencil, MW scrap tie loading stencil, and 1993 263K GRL scheme in three road numbers each; Roanoke Car Shop 25,000th Rebody Car in one number. Three numbers per scheme unless noted; three- and six-packs with yellow reflective stripes and 1993 263K GRL scheme also available. Former BLMA tooling. Injection-molded plastic body, wire grab irons and uncoupling levers, and 100-ton trucks with metal

wheelsets. Single car, \$25.95; three-pack, \$77.85; and six-pack, \$155.70. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

■ **United States Railroad Administration 30'-6" two-bay hopper.** New paint schemes: Akron, Canton & Youngstown (single car and two-pack); Buffalo & Susquehanna (single car and two-pack); Charleston & Western Carolina (single car and two-pack); Chicago & Eastern Illinois; Lehigh Valley; Northern Pacific; Pere Marquette (single car and two-pack); Seaboard Air Line; and Virginian Ry. Die-cast metal slope sheet/hopper bay/center sill assembly; injection-molded plastic sides, ends and hopper doors; and Fox Valley Models metal wheelsets. Single car, \$23.95; two-pack, \$47.90 to \$49.90; three-pack, \$71.85. Bluford Shops, 618-822-6833, www.bluford-shops.com



■ **General Steel Castings 60-ton well car.** New road numbers: Allis-Chalmers and Penn Central. One number

per scheme. Injection-molded plastic body, die-cast metal well and underframe, Atlas Barber S-2A solid-bearing trucks, and Fox Valley Models low-profile metal wheelsets. \$36.95. Eastern Seaboard Models, www.esmc.com

■ **Pullman-Standard 85-foot flatcar.** North American, Soo Line (brown with Roman and Gothic lettering and white with "Custom Equipped for Custom Service" slogan), Trailer Train (yellow, six road numbers), and Western Maryland (speed lettering). Three numbers per scheme unless noted. Plastic body, die-cast metal underframe, and body-mounted Magne-Matic couplers. \$31.95. Fourth quarter 2016. Trainworx, 970-874-9747, www.train-worx.com

N scale passenger cars



■ **70-foot heavyweight baggage car.** New paint scheme: New York Central. Injection-molded plastic model with separately applied brake wheels, body-mounted Magne-Matic couplers, removable roof, clear window glazing, and plastic wheelsets. \$29.95. Micro-Trains Line Co., 541-535-1755, www.micro-trainsline.com

■ Wide-window Harriman coaches.

Illinois Central (Dark Olive, four road numbers), National Ry. of Mexico (two numbers), Pacific RR (Division Rescue Crew in one number and Dark Olive in two numbers), Southern Pacific (all-day lunch counter in two numbers, Dark Olive in five numbers, and Texas & New Orleans reporting marks in four numbers), Union Pacific (two-tone gray, five numbers), and Western Pacific (maintenance-of-way scheme, one number). Also available painted Dark Olive but unlettered. Detailed interior, arched roof with vents, and 36" metal wheelsets. \$36.95. Fall 2016. Wheels of Time, 866-737-9654 (fax), www.wheelsotime.com

N scale structures



■ **Caboose Motel.** Repurposed offset-cupola caboose with trucks and couplers; two sets of picnic tables, umbrellas, dishes, books, and sign board; two concrete table platforms; laser-cut billboard; and color sign sheet. Footprint of display shown is 2 3/4" x 2". \$37.95. Photo-etched picnic tables and umbrellas



HO scale 4,750-cubic-foot-capacity covered hopper.

These custom-decorated Rapid City, Pierre & Eastern (ex-Dakota, Minnesota & Eastern) covered hoppers are offered by Perry's Hobbies and Tesky's Trains. The ready-to-run InterMountain cars are offered in six road numbers (three each with stencil and solid reporting marks) and have etched-metal running boards, metal wheelsets, and Kadee couplers. One car sells for \$35, a three-pack is priced at \$100, and a six-pack is \$200. Contact shops for shipping information. Perry's Hobbies, 800-433-1264, www.perryshobbies.com and Tesky's Trains, 311 Second Ave. NE, Waseca, MN 56093

kit available separately for \$10.95. The N Scale Architect, 607-746-8416, www.thenarch.com

N scale details and accessories

■ Assorted 40-foot trailers.

Drop-frame: Soo Line Intermodal Service. Corrugated side: Missouri-Kansas-Texas (piggyback logo), Seaboard

("Razorback Rarin' to Go by Seaboard" slogan), and Western Maryland. Corrugated side with refrigerator unit: Soo Line Intermodal Service and Kroger grocery store. Three trailer numbers per scheme. Injection-molded plastic with mudflaps and landing gear. \$17.95 to \$19.95 each. Fourth quarter 2016. Trainworx, 970-874-9747, www.train-worx.com

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NEWS&PRODUCTS



N scale freight cars. An Atchison, Topeka & Santa Fe 89-foot TOFC flatcar with fifth-wheel hitches (\$29.95) and Pennsylvania RR 33-foot panel-side hopper with a removable coal load (\$24.95) are the latest releases from

Micro-Trains. The models feature an injection-molded plastic body, plastic wheelsets, and Magne-Matic couplers. Micro-Trains Line Co., 541-535-1755, www.micro-trainsline.com

O scale freight cars

■ **Pullman 40-foot double-sheathed refrigerator car.** New paint schemes: Joan of Arc, Monarch Brewing Co., Peoria Creamery Co., Puget Sound Butter & Egg Co., Schlosser Bros., and Stokely's Vegetables. Two road numbers per scheme. Injection-molded plastic body, die-cast metal stirrup steps, and positionable doors. \$86.95. Third quarter 2016. Atlas O, 908-687-9590, www.atlaso.com

O scale structures



■ **Emilio's Italian Restaurant.** Hand-painted structure with red stained-glass windows, outdoor menu board and seating, and printed interior. Includes four Just Plug light-emitting diode lights. Footprint is 7½" x 8⅛". \$149.99. Built & Ready Landmark Structures. Woodland Scenics, 573-346-5555, www.woodlandscenics.com

Z scale locomotives

■ **Electro-Motive Division F3 A and B diesel locomotives.** New paint scheme: Union Pacific. Two A-B sets. Can motor with flywheels, optional truck with

coupler to replace front truck, and optional drawbar for close coupling. American Z Line, 614-764-1703, www.americanzline.com

■ **Electro-Motive Division SD45 diesel locomotive.** New paint scheme: Pennsylvania RR. Four road numbers. Injection-molded plastic model with can motor, dual flywheels, traction tires, directional light-emitting-diode headlights, AutoLatch couplers, and optional pilot and plow. American Z Line, 614-764-1703, www.americanzline.com

Z scale freight cars



■ **American Car & Foundry two-bay Center Flow covered hopper.** New paint scheme: Chessie System. Four-pack (two each with Baltimore & Ohio and Chesapeake & Ohio reporting marks) and two single cars (one each with B&O and C&O marks). Metal wheelsets and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

■ **National Steel Car 42-foot coil car.** New paint scheme: Chicago, South Shore & South Bend. Four-pack and single car. Metal wheelsets and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

■ **Trinity 64-foot mechanical refrigerator car.** New paint scheme: TILX (BNSF Ry. patchout). Three single cars. Metal wheelsets and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com


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■ **Tsunami 2 Digital Command Control sound decoder.** Smoother operation, three braking methods, Dynamic Digital Exhaust for steam and diesel locomotives, and new sounds and effects. Price to be announced. SoundTraxx, 970-259-0690, www.soundtraxx.com

■ **Correction.** We listed the wrong ZIP code for the Central Ohio Model Railroad Club's HO scale boxcar on page 14 of the May 2016 issue. The correct address is COMRC, % Bill Alarie, 632 D'Lyn St., Columbus, OH 43228. 

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With Mount Shasta looming in the distance, an A-B-A set of Southern Pacific F units in the Black Widow scheme hustle train No. 20, the *Mail* (formerly the *Klamath*), northward at Mount Hebron, Calif., on Aug. 27, 1961. John C. Illman photo

Did the Southern Pacific's Black Widows pull passenger trains?

Q I have just purchased an A-B-B-A set of Bachmann's Southern Pacific F units in the Black Widow paint scheme, and being from Pennsylvania, I don't know what passenger car decor goes with them. Both A units are numbered 6444, and the Bs are numbered 8293 and 8297.

Gerald W. Cogley, no city given

A Southern Pacific no. 6444, an Electro-Motive Division F7A, and nos. 8293 and 8297, both F7Bs, were delivered in February 1953. Though the Black Widow scheme was a freight livery, both B units were equipped

with steam generators so they could lead secondary passenger trains like the *Mail* (seen above) or the *San Joaquin Daylight*.

A typical consist would be an A-B locomotive set, a couple baggage cars, a few coaches, a diner, two or three more coaches, a parlor car, and an observation. For an overnight train like the *Lark* or the *Owl*, substitute sleepers for the coaches and drop the parlor car.

With the exception of heavyweight baggage cars, the equipment was usually streamlined. These cars have a simple brushed aluminum finish. Plenty of pictures of these trains can be found online to inspire your modeling.

The Black Widow locomotive paint scheme was replaced with the scarlet-and-gray "Bloody Nose" scheme starting in 1958, which gives you a range of time when these locomotives ran.

Q I have a green Santa Fe heavy-weight passenger car from Walthers. The box is from a different car, so I don't have the part number. The car has a restroom on each end. All the windows are the same, so it's not the solarium car. It has 14 seats on both sides of the car, facing in. What's the right number for this car?

Michael Whitmer, Panama City, Fla.

A Based on your description of the seats facing inward, I believe what you have is a 28-1 parlor car. Walthers sold an HO scale version of this car painted for the Santa Fe under part number 932-10302.

Walthers doesn't say what specific prototype the car models, and I can't find a photo of a prototype Santa Fe parlor car matching the configuration of

that car. But according to the *Official Railway Equipment Register* for 1930, the Santa Fe rostered 16 all-steel heavy-weight parlor cars, numbered 3214 to 3229. By 1940, cars 3214 to 3220 were gone, numbers 3221 to 3226 had been converted to air conditioning, and 3227 to 3229 soldiered on un-air-conditioned.

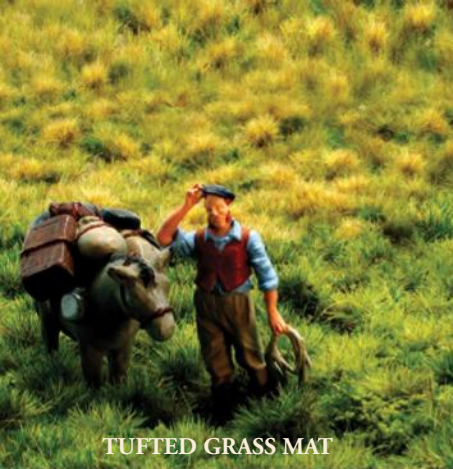
Without a picture, I can't guarantee that those Santa Fe cars looked like the Walthers model. But only a real Santa Fe expert could call you wrong if you numbered your car in that range.

Q When cleaning track, is it useful to use sanding sponges rather than using a Bright Boy? I don't want to damage the track. Some members of my club say sanding sponges are OK, while others say no.

Blane Ryan, Monroeville, Ill.

A Never use a sanding sponge to clean track. They're designed to remove material, not clean it. Even the finest grit sanding sponge will produce microscopic scratches on your railheads that will make dirt and gunk accumulate on them faster. Also, sponges are made to wrap around the shape of what they're being used on; this can make it far too easy to dislodge ballast or snag turnout points when cleaning. Stick to commercial track cleaning products or other tried-and-true non-abrasive methods.

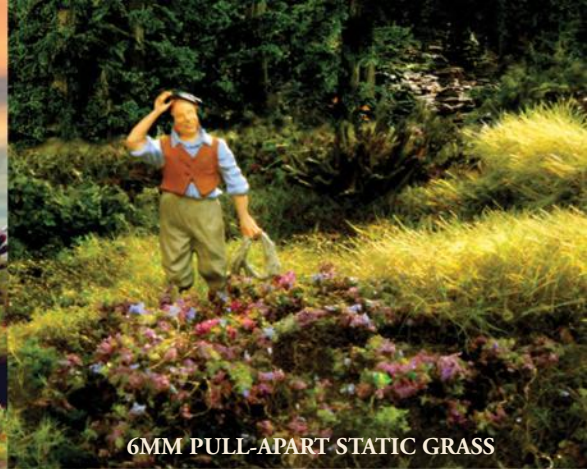
Q I want to convert my layout to Digital Command Control and need to find out how to retrofit DCC decoders into my old direct-current locomotives (none have decoder sockets). Which of your publications would cover this in detail? Is there an



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ASKMR

article in a past MR that covers this? I need to know the date because I keep all my back issues.

James Steuber, Naperville, Ill.

A Without knowing your specific models, I can't point you to a specific issue. But we've covered decoder installations like that a number of times over the years in our DCC Corner column. Flip through your back issues and look at DCC Corner's topic in the Table of Contents; we print two or three such installations a year. Even if you don't find an article about your specific model, the general how-to info will be useful.

Some of those columns have been collected in our book series *DCC Projects & Applications*. The latest book, Vol. 3, contains five such articles, as well as general how-to information and useful articles on other DCC topics. Though all those articles may be in your vast *Model Railroader* back issue stash, you might find it helpful to have all that info in one place. You can find the book for sale at www.KalmbachHobbyStore.com.

Q Canadian National, the railway I work for, has red marker lights on distributed power units that are at the rear of trains. Do BNSF Ry. and Union Pacific engines use those, as well? Is there a website where I can find a list of BNSF Ry. and UP engines used for distributed power?

Tavis Campbell, no city given

A No, BNSF Ry. and Union Pacific locomotives used as distributed power don't have marker lights. Why not? Because CN uses different operating rules than BNSF Ry. and UP.

Canadian National follows the U.S. Operating Rules. In the seventh edition of the USOR, section 415 states, "When an engine is operating without cars, or is at the rear of the train, use one of the following as a marker: trailing headlight illuminated on dim or marker lights equipped on the locomotive."

BNSF Ry. and Union Pacific follow the General Code of Operating Rules. In the fourth edition of the GCOR, section 5.10.1 reads, "When an engine is operating without cars or is at the rear of the train, the trailing headlight illuminated on dim may be used as a marker." An example of this is shown in the accompanying photo.

I'm not aware of a website that lists BNSF Ry. and UP engines set up for use as distributed power. – *Cody Grivno, associate editor*

Q I'm trying to model the Montreal Locomotive Works RS-18 diesels on the Adirondack Scenic RR in upstate New York. Railroad officials told me the paint colors used are: Hunter Green, Safety Yellow, and Gloss Black, all by Rust-Oleum. Any suggestions of what might be a good match in model colors?

Dale Janes, Herkimer, N.Y.

A Well, Rust-Oleum does make spray paint, so you could always use that, and be absolutely sure of your color choices. You'll find Hunter Green (no. 1638830), Gloss Black (no. 1679830), and Safety Yellow (no. 1644830) under the firm's Industrial Choice line. But if you prefer hobby paints, I'll give you a couple choices. From Testor Model Master line, try no. 4726 Dark Green, no. 4695 Gloss

► More Q&A



For more questions and answers, watch the video series "Ask MRVP" at www.ModelRailroaderVideoPlus.com.

Black, and no. 4683 Chrome Yellow. The green is a flat acrylic; the other two are gloss. For another flat acrylic option, look at Acrylicos Vallejo no. 70.979 G.C. Dark Green, 70.950 Black, and 70.915 Deep Yellow. Other brands, including Humbrol, Tru-Color, and Lifecolor, may also work for you.

Q I'm building a modern HO scale eastern North Carolina layout. We have a lot of farming communities here, and I can't find farm implements to fit my 1970s through early 2000s time period. For example, Case, John Deere, and Massey Ferguson tractors, harvesters, and the like. Where can I find such models? Everywhere I look I see tractors from earlier periods or European models.

Jesse Hunt, Mount Olive, N.C.

A Try the Farm Model Database, at www.farmmodeldatabase.com/en/. This site catalogs more than 8,500 farm models in all scales. Select the brand (like Massey Ferguson), scale (1:87), and click "Select" to search the site.

Though many of the manufacturers listed are European (such as Wiking and Siku), these companies do make some models of American prototypes. Once you've found a model, search Walther's website for it, or failing that, try eBay. Good luck on your search.

Q I have an HO scale Athearn F7A-F7B locomotive set, but when I couple them together, there's a large gap between them. I am using Kadee no. 5 couplers. Is there another coupler available that would lessen the gap between these locomotives?

Tom Ryan, The Bronx, N.Y.

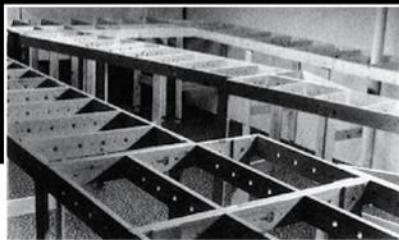
A Kadee makes short-shank couplers for modelers like you who want their locomotives and cars to couple at a closer to prototypical distance. The no. 23 and 33 are direct replacements for the no. 5. Check out all the options on Kadee's website, www.kadee.com. Just be aware that, while your locomotives may look better coupled more closely, they may have trouble transiting tight curves and sharp turnouts. **MR**



Union Pacific General Electric AC44CW no. 6662 displays a dim rear headlight. The locomotive is bringing up the end of a unit coal train rolling through Rochelle, Ill., on Sept. 1, 2007. Cody Grivno photo

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

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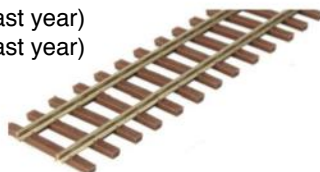
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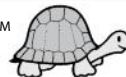
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I'd like to thank all the little people



It's spring 1985 and a relaxed railfanning couple is enjoying train action at the Tehachapi Loop on author Jim Kelly's N scale Tehachapi Pass layout. Jim Kelly photo

The biggest advantage of N scale is its small size. This advantage has been gaining importance ever since N scale first appeared in the late 1960s, and particularly since the 1990s, when N scale came of age. This is because since the 1960s, prototype locomotives and cars have been getting bigger and bigger. An HO scale SD70 practically has to twist itself into a pretzel to round an 18" radius curve, while an N scale version of the same locomotive looks pretty comfortable on a curve of the same actual size.

And this modern version of trains on steroids applies to equipment all up and down the line. The 40-foot boxcar was succeeded by the 50-footer, and now boxcars themselves are something of an endangered species, succeeded by containers on flatcars 89 feet long.

Given that the equipment to model today's railroading is widely available, all this translates to N being a good choice.

The flip side of the coin. The biggest disadvantage of N scale, coincidentally, is its small size. Railroad equipment dwarfs so much of what we find in the real world. N scale automobiles are only a little more than an inch long, and N scale people are really tiny.

A 6-foot-tall man stands a little less than 1/2" tall in N scale.

Getting some bang for your bucks.

In N scale, we just have to work a little harder and be a bit more creative in making our little folks work for us. To get more impact out of figures, I usually place them on my N scale Tehachapi Pass layout in little groups of two or three, and talking, often next to a well-anchored vehicle or structure to help protect them from wayward actual-size fingers.

And speaking of protecting figures, one of my pet peeves is their skinny little ankles. It's just too easy to literally knock them off their feet. That is to say, the bodies go flying while the feet stay glued down. I now fight this problem by gluing them with a more flexible adhesive, such as Aleene's Tacky Glue or Woodland Scenics Hob-e-Tac. In the past I would use cyanoacrylate adhesive (CA) or Walther's Goo. Now my figures are more likely to bend than break.

One thing you can do to help figures stand out is to pose them against contrasting backgrounds – figures with dark clothing against something light, and vice versa. On occasion I've repainted their clothing to accomplish this.

Another useful trick is to place figures on props. A painter on a ladder is going to be quite visible, for example, especially if part of a wall near him is freshly painted and the rest isn't.

Vertical separation between figures is also good, as in a man on the ground lifting a hay bale up to a guy in a pickup truck, or someone in an upper story window talking to someone on the ground.

A visiting friend, noted for his twisted sense of humor, once placed one of those little plastic wiring nuts over one of my railfan photographers standing by Tehachapi Loop, like a styrofoam cone to protect a tomato plant from frost. It was weeks before I noticed the little guy was hiding.

Even though those miniature citizens aren't easy to spot, I've noticed that lay visitors to the layout often comment on them and enjoy them. The woman hanging washing on the line, the guy on crutches, the railfans at the loop sitting on lawn chairs, all these draw squeals of delight and declarations of "how cute." You just have to get used to it.

Back when Gordon Odegard was working on *Model Railroader's* N scale Clinchfield RR, he would drill a hole up into a figure's leg, insert and glue in an extremely thin wire, and insert the wire into a tiny hole in the layout's surface. This was especially handy when we wanted to move figures around for photographs.

I find the best figures in all the scales are those made by the German company Preiser. Its imaginative designers have a knack for figures that have great character. Woodland Scenics has also done fine work along these lines. It also offers neat little scenelets that sometimes involve interaction with vehicles. This is America, folks, and we like cars. Viewers are always drawn to interaction between figures and cars: washing them, looking under their hoods, even getting run over by them.

One last little observation about little N scale people. If they're positioned logically and look like they belong where they are, you really don't have to sweat the small stuff – like seasonal clothing. I've never had anyone ask why one figure is wearing a heavy jacket while another is in shorts. **MR**

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To get the Eagle Mountain Mine's product to the mill in Fontana, Calif., it needed a way to load the ore. Associate editors Cody Grivno and Eric White built an iron ore processing plant and loader for our project layout. Bill Zuback photos

How to build a heavy industry

Every mine needs a way to get its product to market, and the Eagle Mountain Mine on our 2016 project layout, the Eagle Mountain RR, is no different.

Since the mine shut down in the early 1980s, most of the equipment used to process and load the ore has been removed, leaving only scattered concrete foundations along with a few shop buildings.

Fortunately, I found a Facebook page called Eagle Mountain Refugees (www.facebook.com/groups/EMrefugees/photos/), which was full of photos of the mine when it was in

operation. Of course, the exact areas we were interested in were in the background of the photos I could find, but there was enough to get the feel for the place, and to see things that would make interesting structures.

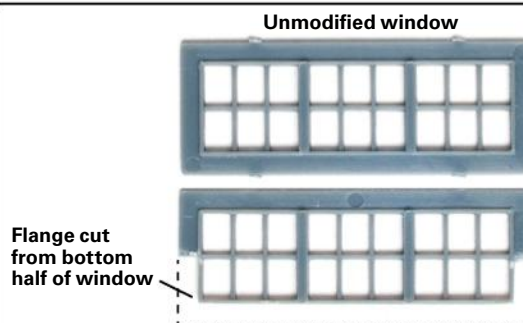
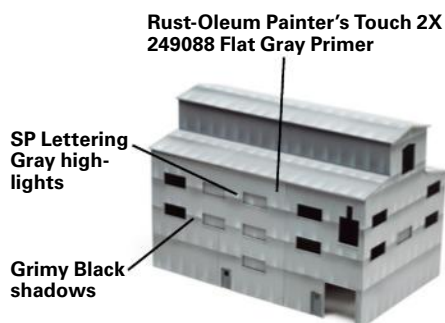
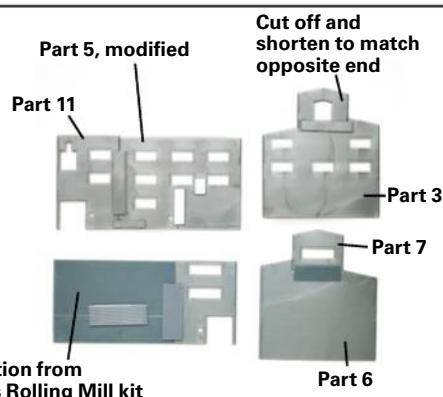
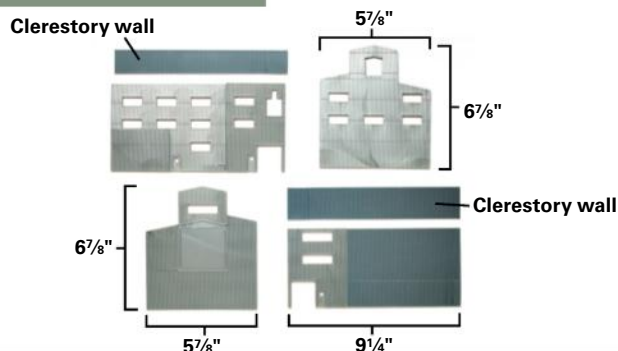
Since this was a complicated part of the layout, Cody Grivno and I split the modeling tasks. Cody elected to build the ore loading bins, and I built a processing building, called a beneficiation plant, which removed impurities from the ore.

We used several Walthers Cornerstone kits (either completely or partially)

to build the structures: Diamond Coal Corp. (933-4046), Rolling Mill (933-2971), Glacier Industrial Sands (933-4035), Glacier Gravel (933-3062), Roof Details (933-3733), and Modern Conveyors (933-3518). Follow along as we describe what we did. **MR**

Now on ModelRailroader.com

To learn more about the Eagle Mountain RR, subscribers can check out the video series on our website at www.ModelRailroader.com.

Step 1 We need walls

I used the wall sections from the Diamond Coal kit to build the walls of the structure. One of the end walls in the kit, part 3, had a shape similar to the beneficiation plant.

The opposite side, part 6, had a notch for the long walls, parts 4 and 5, to fit through. But a small wall section, part 7, filled the notch and gave a similar profile to part 3, although not as tall in the center.

I glued part 7 to part 6, using a splice of scrap wall material to reinforce the splice. When this dried, I used it as a template to modify part 3. I cut off the raised center section, then placed the parts on top of the other end wall. I marked the overlap and trimmed it to fit. Then I reassembled part 3, again using scrap material to back up the splice.

Now I needed two side walls. One wall would be mostly blank, since it would have an equipment frame up against it. The other wall needed a bunch of windows. Part 11 from the mine kit was the same height as the lower wall on the left side of part 3, and it had three doors and two windows in it. That became the first part of the one side wall.

Part 5 was nearly the same height as part 11, with seven more windows and another door, but it had a lower

section I didn't need, and a corner was chopped out where it was meant to fit the notch in the original part 6.

I cut the lower section off to get the square wall I wanted, then I filled the missing corner with a section cut from a lower roof panel, part 15 or 16, aligning the horizontal seam in the corrugated metal panels. When I joined parts 5 and 11, I aligned the bottom edge. The height of the parts is slightly different, but I covered the top edge with the roof overhang so it isn't obvious.

This left one more side, and part 12 was intended to mate with part 3 on the lower right side. This wall needed to be widened to match the opposite wall, so I used leftover sections from the Walther's Rolling Mill kit. Again, the splices were reinforced with wall scraps.

You may have noticed the end wall made from parts 6 and 7 had a large blank section to it. This was in about the same spot as a bulge on the prototype beneficiation plant. Part 8 is a long wall with a bump at one end.

That bump is the same profile as the blank area on the end wall. I cut the bumped-up area off part 8, then made short wall pieces from the lower section I'd cut from part 5.

The roof was a short section of part 13.

I used the rest of part 13 and a section of part 14 to make the high roof for the building. The low roofs are parts 17 and 18 with roof material from the rolling mill spliced on to lengthen them.

With the basic box assembled,

I painted the structure with Rust-Oleum Painter's Touch 2X 249088 Flat Gray Primer. When the gray was dry, I used a cardboard mask to paint highlights with Polly Scale SP Lettering Gray. [Now discontinued. Model Master Gull Gray (no. 4692) is a close match – *Ed.*] Any light gray paint will work. To even out the light gray highlights, I used another cardboard mask to paint a shadow line of Model Master Grimy Black.

I noticed in my prototype photo

that many of the steel sash windows were open, which made sense in the Southwestern desert. To simulate this, I removed part of the flange of the window frames so I could insert them into the window openings at an angle. This added depth to the side of the building. The windows are painted grimy black. – *E.W.*

STEPBYSTEP

Step 2 Good foundations

.060" x .125" styrene strip

.060" styrene floor, 9 1/4" x 5 7/8"

3"-long sections of towel bar replacement tube

.060" x .250" styrene strip

Styrene handrails, Plastruct 90681

.080" styrene channel

.020" styrene walkway

Parts 29, 30, and 31

With four walls and a roof, I still needed a base. I made a floor from .060" styrene. For the structure to fit on the layout, it had to straddle the tracks. The structure I used as inspiration was supported on large reinforced concrete columns.

At the local home center, I found the material I needed to model those legs: a 24" white plastic replacement

towel bar. The bar was about 1/2" square, just the size I was looking for.

The .060" floor is framed with .060" x .125" strip styrene to simulate the thickness of the reinforced concrete floor of the structure. I located the legs by laying out a grid on the bottom of the floor. I cut the legs 3" long in a miter box to ensure square cuts, then attached them to the floor with solvent cement.

I added walkways made from .020" styrene and stairs from the mine kit. The platforms are framed with Plastruct styrene handrails. I installed strips of .060" x .250" styrene strip to locate the walls on the base.

I used Rust-Oleum Camouflage Sand (263653) spray paint on the concrete parts, Model Master Engine Black on the walkways, and Reefer White on the railings. – E.W.

Step 3 Equipment frame

Part 19, shortened

Sections of column from Rolling Mill, part 5

Part 19, unmodified

Girder from Rolling Mill, part 16

Support braces, parts 41 and 42

Part 19 with center-left column removed

Parts 48 and 49

Parts 45 and 46

Part 56 (2)

8 7/16"

Glacier Industrial Sands elevator assembly

Parts 106 and 111, trimmed to fit

Parts 72, 73, and 74

Parts 63 and 64

Motorized vents

Rooftop air conditioner units

Motorized blower

I modeled the open framework used to support processing equipment with the legs from the mine kit (part 19). There are three castings in the kit. I used full-height parts for the bottom and top tiers, plus a shortened section for the center tier. Where the equipment frame had to span the track below, I used a section of a girder from the rolling mill (part 16).

Sections of the rolling mill legs, part 5, were used as the stand-offs that hold the framework off the side

of the building. They were sized to accommodate the equipment parts I found in the Glacier Industrial Sands kit. The support braces, parts 41 and 42, are from the mine kit.

The Glacier Industrial Sands kit comes with several extra castings that aren't used. These included a large cylindrical pipe, parts 45 and 46, a long rectangular duct with a blower fan, parts 72, 73, and 74, and a piece of bent circular ductwork, parts 63

and 64. The other major piece was the elevator assembly, intended to lift sand deliveries into silos on the kit. I shortened the elevator to 8 7/16" tall to fit the building roof.

In addition, I used three rooftop air conditioner units and three motorized vents from Walther's Roof Details set, as well as the large motorized blower. I built the platforms from styrene sheet and I-beam sections and used railings and steps from Plastruct and the rolling mill kit. – E.W.

Step 4 Ore loader

Micro chisel,
Mission Models
no. MM09

Remove vertical braces

Hopper bottom

Remove conveyor end

.060" angle

5/16"
3/32"
7/64"

Part 35

I used the steel bunkers from Glacier Gravel Co., a Walthers Cornerstone Series kit, as the starting point for the ore loader. Since this is the second time we used the bunkers on a project layout (see the March 2013 issue), I wanted the model to look different.

I decided the best way to do this was change the bracing on the bunker sides and hopper bottoms. Using a micro chisel, I shaved the

molded vertical braces from the hopper bottoms. To prevent the blade from wandering off course, and to avoid damaging the horizontal braces, I removed the plastic in light passes.

The vertical braces on the bunker sides and ends were a bit thinner, so I removed them with a hobby knife and no. 17 blade. I used 600-grit sandpaper to smooth out any high spots I missed with the blade.

Then I added .060" angle horizontal braces. I applied just enough liquid plastic cement so the angle would hold. Don't apply too much glue or the thin styrene may deform.

Finally, I used a razor saw to remove the conveyor end from part 35 (there are two of these parts). I used sanding sticks to clean up any rough spots from the cutting process. Then I assembled the bunker sides, ends, and hopper bottoms. – C.G.

Step 5 Up on the roof

2⁵/₃₂"

1¹/₃₂"

1⁷/₁₆"

1⁷/₁₆" filler,
.040" x .100"
styrene strip

.040" styrene
sheet
Handrails,
Plastruct
no. 90681

1³/₆₄"

Handrails, Plas-
truct no. 90681

2⁷/₁₆"

3¹/₁₆" extension
to handrails

Caged ladder,
Walthers no.
933-3515

Next, I turned my attention to the top of the steel bunkers. Because of space limitations, I had to change the orientation of the conveyor. Instead of running parallel to the sides, it runs parallel to the ends.

I made two 1³/₆₄" x 2⁵/₃₂" roof panels from .040" styrene sheet.

I filled the gap between the panels with 1⁷/₁₆" pieces of .040" x .100" styrene strip.

I made conveyor sides and ends by kitbashing part 36. Using a miter box and razor saw, I removed the vertical post between the "X" panels. The sides are longer than the back.

I added Plastruct styrene handrails (no. 90681) along the edge of the roof. I left a gap in the handrails to accommodate a caged ladder (Walthers no. 933-3515). Then I added a 3¹/₁₆" extension to the handrails so they'd reach the safety cage. – C.G.

STEPBYSTEP

Step 6 Convey it away

Once the structure was complete, I used several Walthers modern conveyor kits, the conveyor from the mine kit, and a Walthers belt conveyor kit to model the supply and distribution conveyors that sprawled around the mining operation. I built the kits according to the instructions, then assembled the sections into pieces long enough to reach the layout's edges or the backdrop.

I modified the support legs to fit the terrain and built a support bridge using rolling mill columns and girders where one conveyor crossed the main line. Once the parts were painted, using Engine Black and Reefer White, I added the ore loads. I reasoned that the ore should look different depending on where it was going.

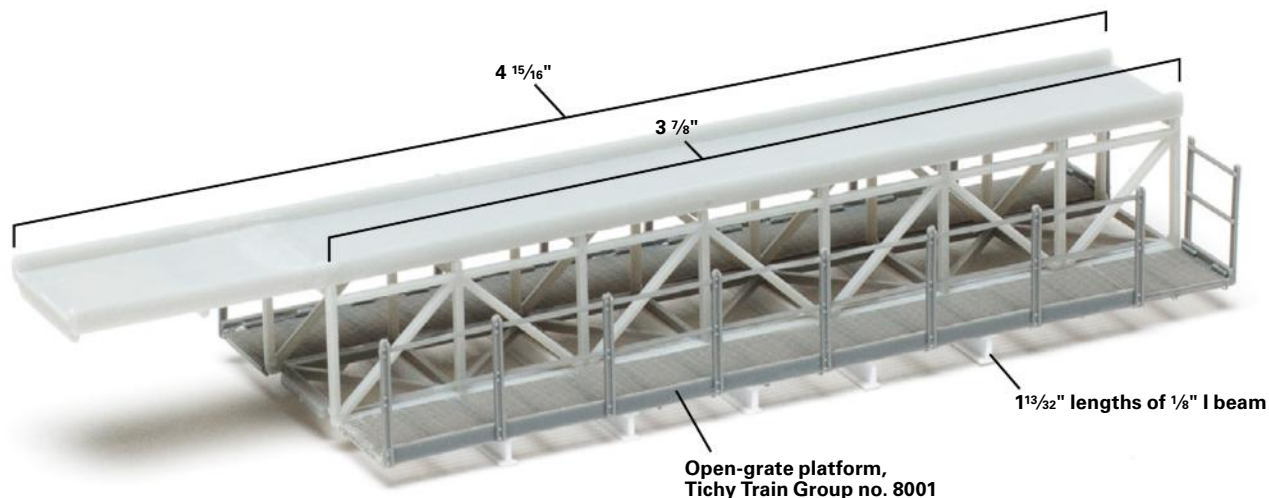
The material headed to the backdrop is going to a slag pile. It's much lighter than the loads on the other conveyors, with ballast mixed into the Arizona Rock & Mineral ore.



The long conveyor coming into the left of the beneficiation plant is imagined to be the supply, with a bit of refuse mixed into the ore. The conveyor coming out the right side has mostly refined ore that's being sent to a stockpile, and the conveyor that leads to the loader has the finest, purest ore, which is headed out on the Eagle Mountain RR.

I used weathering powders from A.I.M. Products to give the everything a well-worn, dusty look. The conveyors were coated with Dark and Light Rust, along with Grimy Black. The building roofs were streaked with Medium Gray and Dark Rust powders, while the walls received layers of Grimy Black with streaks of rust. – E.W.

Step 7 Moving the ore



I used the conveyor included with Glacier Gravel Co. to bring the ore from the beneficiation plant to the steel bunkers. I started by cutting the side and bottom trusses. Then I cut the conveyor using a razor saw and miter box. I left enough material for the

conveyor to continue into the beneficiation plant.

Next, I added an open-grate platform on each side of the conveyor. This injection-molded plastic detail, produced by Tichy Train Group (no. 8001), has see-through grating, which is a nice touch.

I was feeling pretty proud about the open-grate platforms until I noticed one big problem: There was nothing supporting them from below. To remedy this, I added 1¹³/₃₂" lengths of 1/8" I-beam, centered along the straight braces of the bottom truss. – C.G.

Step 8 Painting and weathering

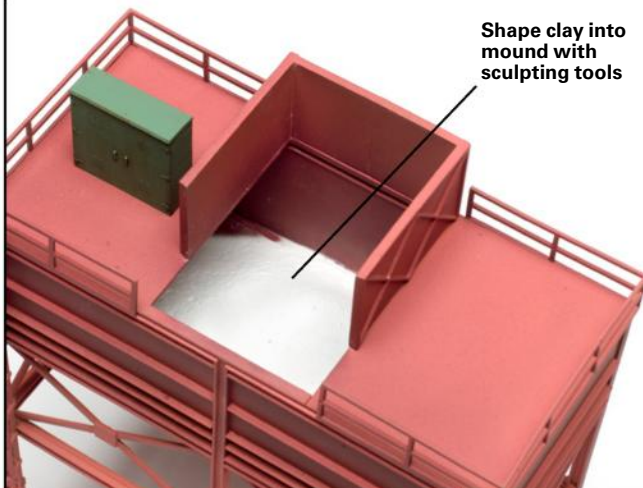
Small electrical box, BLMA no. 4310

Great Northern Orange, Polly Scale no. 414224

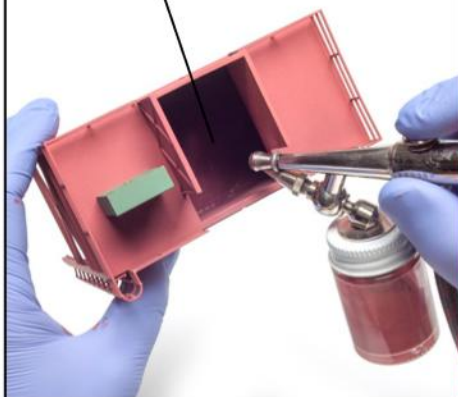
Steel bunkers weathered with thinned grimy black and oxide red



Shape clay into mound with sculpting tools



Paint clay oxide red



Union Pacific Tan Granite ballast, Arizona Rock & Mineral no. 1231



Conveyor belt painted grimy black

Union Pacific Tan Granite ballast



With the steel bunkers completed, I sprayed the model with Rust-Oleum Painter's Touch 2X Flat Gray Primer (no. 249088). This plastic-compatible spray paint is available at most home centers and hardware stores.

I sprayed the model with Polly Scale Great Northern Orange. [Testor's Orange enamel, no. 6, is a good replacement for this discontinued color. – Ed.] Then I weathered the bunkers with thinned (1 part paint, 9 parts 70 percent isopropyl alcohol) grimy black and oxide red.

To my eye, the painted and weathered bunkers were missing something. That something was an electrical control panel. Something has to run the conveyor and discharge gates, right?

I used BLMA's small electrical box (no. 4310), sprayed with Rust-Oleum Painter's Touch 2X Satin Moss Green (no. 249071), to fill the void. I secured the plastic box to the roof with medium viscosity cyanoacrylate adhesive (CA).

Since the roof is partially open, I thought it would be neat to have some ore inside the bunkers. I struggled with how to model an ore pile without adding a bunch of weight to the model.

I went to the craft store to look for a solution. A store associate asked if she could help me. I explained what I was doing, and she suggested Staedtler Fimo Air Light modeling clay (no. 8133). I noticed the package said "air-drying" and "extra light." I quickly dashed to the checkout counter with the clay in hand.

When I got back to the workshop, I put some clay into the bunkers and shaped it into a mound with sculpting tools. The clay requires 24 hours to dry.

To prevent the white clay from showing through under the ore, I sprayed it oxide red with an airbrush. It's okay if there's overspray in the bin. It looks like ore dust.

I let the paint dry overnight. Then I applied a layer of thinned white glue over the painted clay. With the glue still wet, I sprinkled on a layer of Arizona Rock & Mineral Union Pacific N scale Tan Granite ballast (no. 1231). Then I used a pipette to wet the ballast with 70 percent isopropyl alcohol.

I brush-painted the conveyor belt grimy black. After the paint had dried, I applied thinned white glue to the belt and sprinkled on UP Tan Granite ballast, wetting it with alcohol as before.

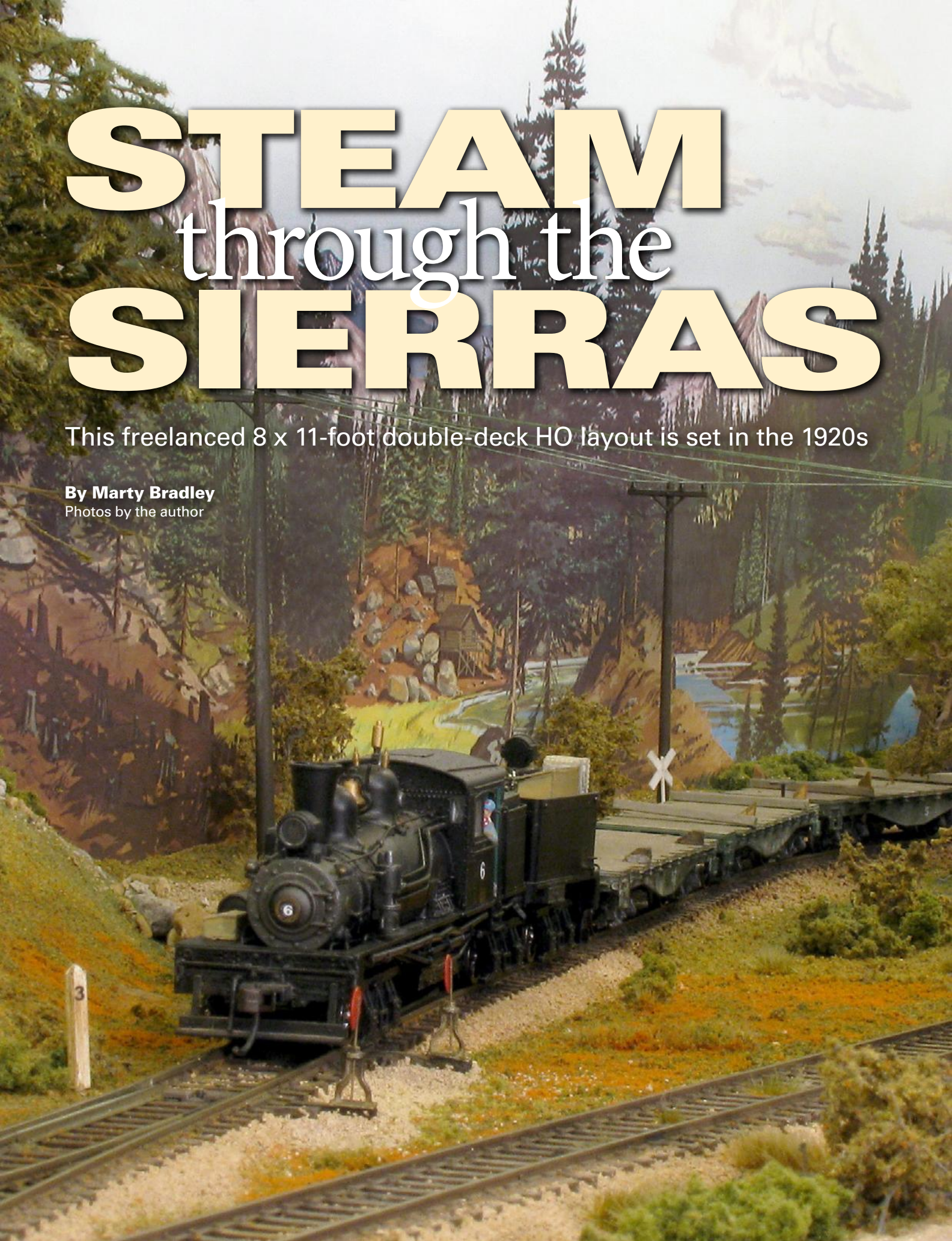
Then I cut a length of double-sided tape, dipped it in the ballast, and attached it to the end of the conveyor that flows into the bunkers. This simulates the look of ore dropping off the belt and into the loader.

Now that we have an ore loader, we need something to carry that ore. Next month, I'll show you how I detailed Southern Pacific ore cars for service on the Eagle Mountain RR. – C.G.

STEAM through the SIERRAS

This freelanced 8 x 11-foot double-deck HO layout is set in the 1920s

By Marty Bradley
Photos by the author





2. This view shows the double-deck design. Sugar Pine and Deadwood are on the lower level. Fish Camp and the Wawona Hotel can be seen on the upper level.

For most model railroaders, there is a watershed moment that hooks them on the hobby. For me, it was a train ride on the Yosemite Mountain Sugar Pine RR. The experience introduced me to the rich railroad history of California's Sierra Nevada. There were many narrow and standard gauge railroads in the area, including the Madera Sugar Pine RR, Pickering Lumber Co., and Sierra Ry. These railroads, and others, greatly influenced my freelanced HO scale Oakhurst RR. The 8½ x 11-foot model railroad is housed in a part of my garage and features logging, freight, and passenger operations.

A long and winding road

Not long after that train ride, I decided to switch my modeling focus. No longer would I be running Electro-Motive Division diesel locomotives. Instead, Roundhouse 2- and 3-truck Shays would be the order of the day.

Though I'd completed some planning, I gave up my layout space in the spare bedroom and turned my attention elsewhere. Soon I was off to college, and my trains were put in storage.

After college, I settled in Southern California. It wasn't until I had children that I dug out those trains from years earlier. I built a 4 x 8-foot layout using my old equipment so my son could see the trains run.

I eventually built the first version of the Oakhurst RR, a 16" x 16'-0" layout, along one side of my garage. Building and operating the original Oakhurst RR provided valuable experience in many aspects of model railroading.

I also purchased those Roundhouse Shays I thought about as a teenager. I built the

models from kits and got them to run reasonably well up the steep grades.

The original Oakhurst RR featured logging trains, a passenger train to the border of Yosemite National Park, and a train for the gold mine.

As I quickly learned, you can only do so much on 16" x 16'-0" layout in a dirty garage. Things stagnated until it was time to move.

Oakhurst RR, version two

In 2004 we were house shopping and found a great house in a great neighborhood. I was quick to spot the "office" that a previous owner had built into a portion of the garage. My wife, Nancy, was thinking kid's playroom/junk room, but that idea never had a chance. We made a quick offer on the house and it was accepted. The next day I asked the sellers to measure the office. I spent the time before we moved track planning. By the time we moved in, finished unpacking, and made a few repairs to the house, I was ready to start work on the new Oakhurst RR.

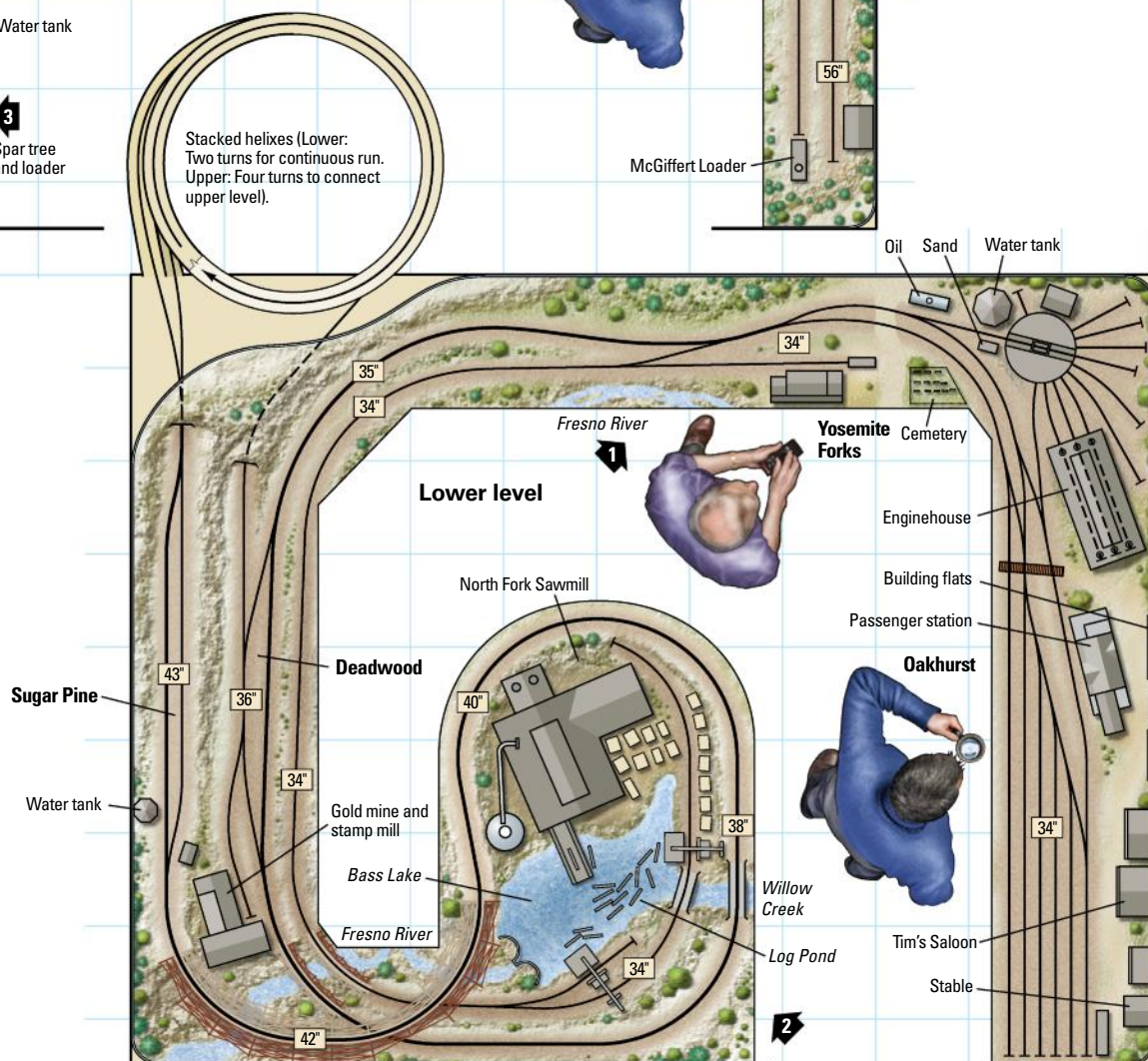
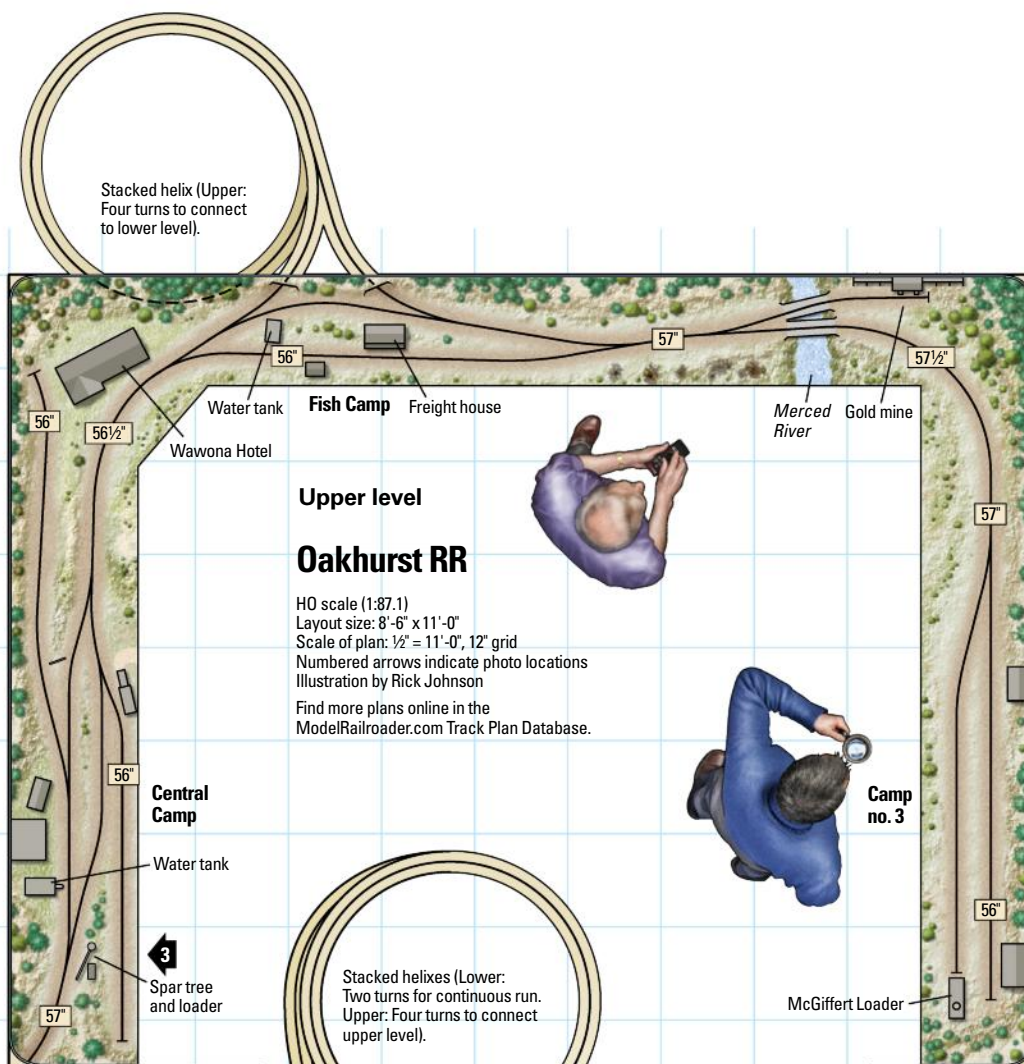
The new layout is in an 8½ x 11-foot room. The double-deck point-to-point railroad features a stacked upper and lower helix. The lower helix allows for continuous running, which is helpful for layout tours and open houses. The upper helix connects the two levels.

The benchwork is open grid with 1 x 4s on the lower level and 1 x 3s on the upper level. I use the area underneath the benchwork for storage.

Running trains

I host operating sessions several times a year using a timetable, train instruction sheets, car cards, waybills, and a fast clock. Each session covers a single day and lasts 2-3 hours. During that time, six or seven trains and maybe a second session or extra will operate. To keep things interesting,

1. Geared locomotives running through the Sierras are the focus of Marty Bradley's HO scale Oakhurst RR. The 8½ x 11-foot model railroad is housed in part of his garage.





3. Marty continues to upgrade scenes on his model railroad, such as this one at Central Camp. With Bob Grech, he also upgraded the town scene at Oakhurst.



▶▶ Meet Marty Bradley

Marty Bradley is an aerospace engineer. When he's not researching "green" technologies for future aircraft, he works on and operates his Oakhurst RR, the Los Angeles Model Railroad Society's HO scale Great Lakes & Western RR (Sept. 2015 MR), and Bob Grech's Western Pacific RR (Oct. 2012 MR).

▶▶ The layout at a glance

Name: Oakhurst RR
Scale: HO (1:87.1)
Size: 8'-6" x 11'-0"
Prototype: freelanced
Locale: California Sierra Nevada
Era: 1920s
Style: walk-in double-deck
Mainline run: 88 feet (point-to-point); 48 feet (continuous)
Minimum radius: 18"
Minimum turnout: no. 4
Maximum grade: 6 percent

Benchwork: open grid
Height: 34" to 56"
Roadbed: Woodland Scenics N scale Track-Bed
Track: code 83 sectional and flextrack
Scenery: plaster cloth over cardboard web and foam
Backdrop: Instant Horizons over vinyl
Control: Digitrax Digital Command Control

each day of the week has a slightly different schedule.

Trains are assembled in Oakhurst Yard before making the journey to the logging and mining areas on the upper level. Log trains No. 1 and No. 2 take empties to Camp 3 and Central Camp. The trains return with loads for the North Fork Sawmill.

Mill train No. 6 is a turn that takes supplies to the North Fork Sawmill. It returns to Oakhurst with cut lumber. The cars from this train are interchanged with the Southern Pacific, the Oakhurst RR's connection to the rest of the world.

One or two daily passenger trains take guests to and from the Wawona Hotel. Two days a week, a mine supply train services the gold mines and brings out ore for processing. A round trip is equivalent to 3 scale miles.

During operating sessions, the lower helix is used to stage a Southern Pacific freight, mixed, or passenger train that travels to Oakhurst, switches, and then returns to staging.

Though the layout is in a compact space, four adults will fit in the room. Often only three trains are running, so waiting crew members sit outside on patio benches. I usually watch from the outside doorway or peek in the adjacent window to answer operator questions or troubleshoot problems.

Meet the fleet

I've expanded the locomotive roster beyond the original Roundhouse Shays. A Rivarossi Heisler, three Bachmann Shays, and two 2-6-0s to power the SP trains can be found on the layout. I converted the older locomotives to Digital Command Control, which wasn't as difficult as I'd initially thought.

The rolling stock is mostly built from kits. There are 22 logging cars, eight ore cars, eight passenger cars, and a half dozen boxcars and flatcars to haul cut lumber and supplies. I also threw a few maintenance cars into the mix.

A shelf below the lower level is used for staging. The shelf is large enough to

stage equipment for the SP freight and passenger trains, including weekend special passenger excursions.


Structures and scenery

The structures are mostly kits from Walthers and Campbell Scale Models. Other buildings are from Bar Mills Scale Model Works, JV Models, Evergreen Hill Designs, Grandt Line, and Alpine Division Scale Models. The majority of the logging equipment and rigging pulleys, including a McGiffert log loader, are from Rio Grande Models.

Some structures, like the log dumps, are scratchbuilt from period photographs. I'm gradually replacing plastic building kits with wood kits. The station and most of the businesses at Oakhurst have been replaced with Campbell kits modified to fit the space. Structure modeler Bob Grech built and detailed these kits for me, and they look great.

There are about 200 trees on the layout and a lot of stumps. Many large foreground pine trees are scratchbuilt from balsa and Caspia fern. I also used commercial pines, redwoods, and oak trees produced by JTT. I filled in the wooded background areas with Woodland Scenics trees.

Stay up to date

You can learn more my layout online at www.oakhustrailroad.com. Additional photos and the latest news on operating sessions can be found on the Oakhurst RR Facebook page. Stop by and give it a like. 

A Pennsylvania RR class N5c cabin car carries the markers on train TT-1 as it arrives at Pittsburgh's Island Avenue Yard on Feb. 6, 1960. Cabin 477860 is equipped with the Pennsy's train-phone antenna. Don Wood photo



Drawings of an iconic **Pennsylvania N5c cabin car**

Pennsylvania RR's class N5c caboose has been popular with modelers in all scales for decades

By Kevin Miller

Early in 1942, the Pennsylvania RR started construction of 200 new cabin cars, the Pennsy's name for a caboose, at its Altoona and Hollidaysburg car shops. They were given the designation N5c, and were similar to the earlier N5a and N5b cars, but more streamlined.

These new cabin cars were constructed of steel with heavy crash beams on both ends to protect the crews during pusher operations. The cabin car's most distinctive features were its round porthole windows (four on each side and three on each end); the cupola, with its angled profile enhancing the stream-

lining effect; a lower belt rail; and no vertical butt strips on the sides. Many had antennas that served a special communication system called train-phone (see "The PRR's train-phone system" on the next page).

The N5c was used by the PRR until its merger with the New York Central in 1968, then saw service on the Penn Central and later, Conrail.

The cars served across the PRR system, with regional assignments as of May 1957 of Buckeye, 20; Chesapeake, 9; Lake, 19; New York, 14; Northern, 35; Northwestern, 9; Philadelphia, 11; Pittsburgh, 78; and Southwestern, 4.

Painting

After 1920, PRR specified its standard freight car colors be used on cabin cars. This oxide red remained the standard until 1965. There's ongoing debate about the best representation of this color for models. No accurate paint samples are known to exist, and the original colors changed significantly after a few months of weathering. Lighting also affects appearance.

In 1965, PRR started using Focal Orange on its steel cabin cars. Some early PRR cabin cars were also painted bright red; however, they were repainted Focal Orange in the last years before the merger. Four N5c cabin cars were painted dark brown. These were used on Pennsylvania Power & Light unit coal trains. Pigments based on the color of iron oxide can approximate an appropriate brown color.

Yellow cupolas on the cabin cars indicated that the cars were available for East-West pool service. Marker light housings were painted yellow.

Lettering

The lettering varies greatly because there were many one-of-a-kind painting and lettering styles that were either experimental or local practice. Commercial decals and dry transfers exist in several scales. Combining different decal sets may be necessary to make correct arrangements.

Class N5c cabin cars were numbered in the 477820-478019 series on the PRR. The following are lettering specifications:

1942-1956

Sides. PENNSYLVANIA, with a bar on top, the car number centered underneath, and the division/region assignment underneath the car number centered on car below the belt seam. The built date, class, and ownership were on a single line in the lower right corner of car with repack date underneath.

Ends. PRR above door, with or without car numbers below.

1956-1961


Sides. Large shadow keystone with large PENNSYLVANIA below the keystone. The car number is beneath PENNSYLVANIA, and the region assignment is under the car number and centered on the car side horizontally. The shadow keystone is above the belt seam; all other lettering is below the belt seam. The built date, class, and ownership stencils are in a single line at the lower right corner of car with the repack date underneath.

Ends. PRR with car number beneath placed above door. Car numbers were restored on the ends in 1956.

1961-1968

Sides. Large plain keystone was applied above the belt seam with a large car number beneath the keystone with the region assignment beneath it, all centered horizontally. The built date, class, and ownership were in a single line at the lower right corner of the car with the repack date below it.

Ends. PENNSYLVANIA RAILROAD with the car number below.

On cars assigned to express service, the words AMERICAN RAILWAY EXPRESS were centered on the side above the belt seam. This was later changed to RAILWAY EXPRESS AGENCY. 

Information for this article was obtained from PRR cabin cars Prototype Data 4/8/04. I would like to thank Jack Matsik for his help with information for this article.

Kevin Miller is Harold Russell's grandson. This is Kevin's first byline in Model Railroader. Harold Russell has produced scores of scale drawings for the model railroading community over the past half century.

The PRR's train-phone system

Train-phone equipment is one of the features that made some of the N5c cabin cars distinctive.

In the 1940s most portable radio equipment belonged exclusively to the military. The Federal Communications Commission restricted the use of radio waves, but PRR management wanted a way to communicate with its train crews. Because of the radio limitations, the railroad developed a train telephone system, called train-phone. The uniquely configured antennas for this telephone system were applied to some of the railroad's cabin cars, locomotives, and passenger cars.

Train-phone was used on PRR's busiest lines west of Harrisburg, Pa. It wasn't used in the PRR electrified zones because of interference from the 25-cycle overhead current and from the electric locomotives' electrical equipment. In 1956, only 20 percent of PRR cabin cars had this equipment. The train-phone system was eventually phased out by 1966.

How the system worked. The system used the track and lineside telegraph wires to send voice messages. This wasn't a radio system in the usual sense. The train-phone system worked by inducing a varying current into the rail or telegraph wires from an energized coil, or air-core transformer.

The rails or telegraph wires served as a broadcasting or receiving antenna. The voice signal from the towers was sent on the lineside wires. This created a signal of the same frequency on the antenna on the engine or cabin car. A coil device tuned the car's antenna to the low-frequency signal.

Any train with an antenna could then receive voice messages. The antenna on the rolling stock could also induce a signal in the rails or lineside wires, allowing communication with lineside structures, or other pieces of rolling stock, either train-to-train, or locomotive-to-cabin-car.

On trains, telephone-like handsets were mounted next to each engineer's seat on a locomotive and above the conductor's desk in a cabin car. A speaker was used to get the engineer's or conductor's attention, and the handset was used to continue the conversation since it was easier to hear with them.

A further development provided portable "walkie-talkies" with a hoop-like antenna structure that was worn over the shoulders.

The system used two channels: H and L. One was used for engine/cabin car communication and the other for train-to-train or train-to-block-station messages.

The antennas on Pennsylvania RR cabin cars and locomotives were large structures that looked like handrails. They were on the tenders of steam locomotives and on the tops of diesel locomotives and cabin cars. They usually ran the length of the equipment.

The placement varied, however. Some experimental placements of antennas included the top of boilers of steam locomotives. Regular pipe stock was used for receivers. The diameter of the pipe wasn't standard. A smaller diameter may have been solid rods. — K.M.

PRR N5c cabin car coloring and lettering guide

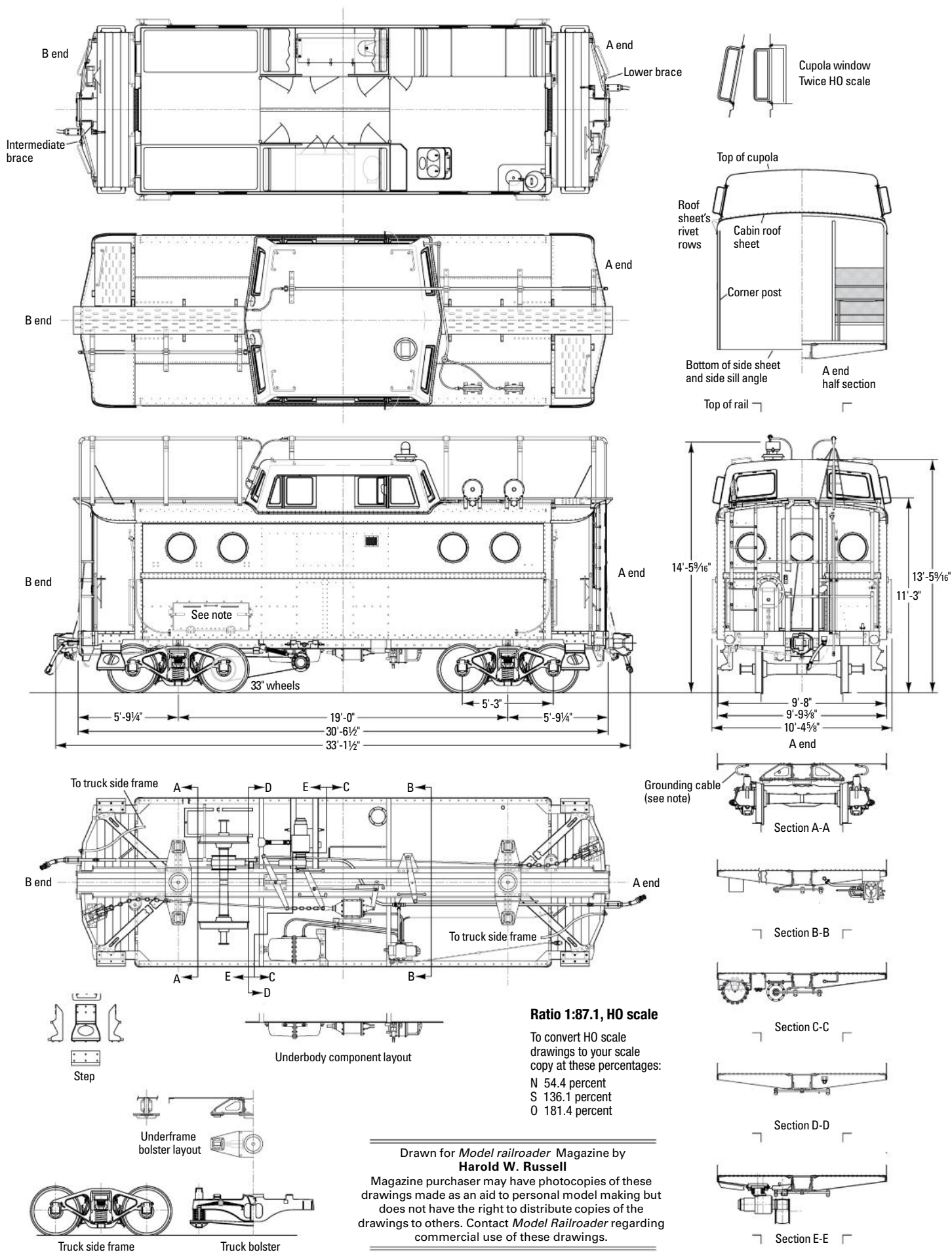


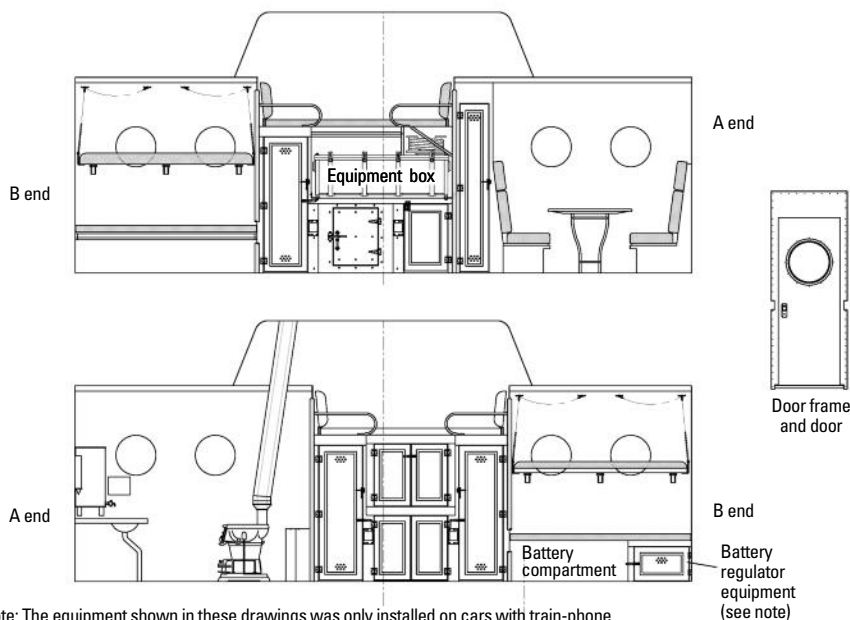
Photo number	Car number	Operating region	Special markings	Year operating	Body color
1	477829	Eastern		before 1956	Freight car color
2	477948	Central		before 1956	Freight car color
3	477925	Western		before 1956	Freight car color
4	478014	Eastern	Buy War Bonds	before 1956	Freight car color
5	478011	Eastern	Buy War Bonds	before 1956	Freight car color
6	477879	None	Large Keystone	1950-1959	Red
7	477947	Pittsburgh	Shadow Keystone	1950-1959	Red
8	477938	Pittsburgh	Shadow Keystone	1950-1959	Red
9	477911	None	Large Keystone	1965-1968	Focal Orange
10	477943	None	Large Keystone	1965-1968	Focal Orange
11	477889	Pittsburgh	Lg. Shdw. Keystone	1956	Brown



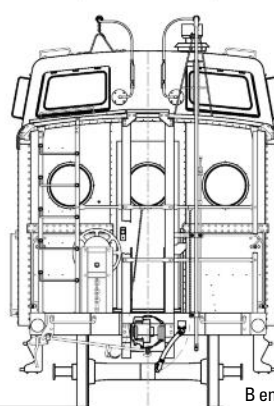
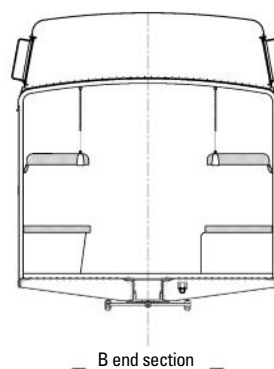
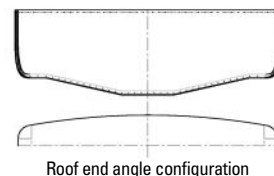
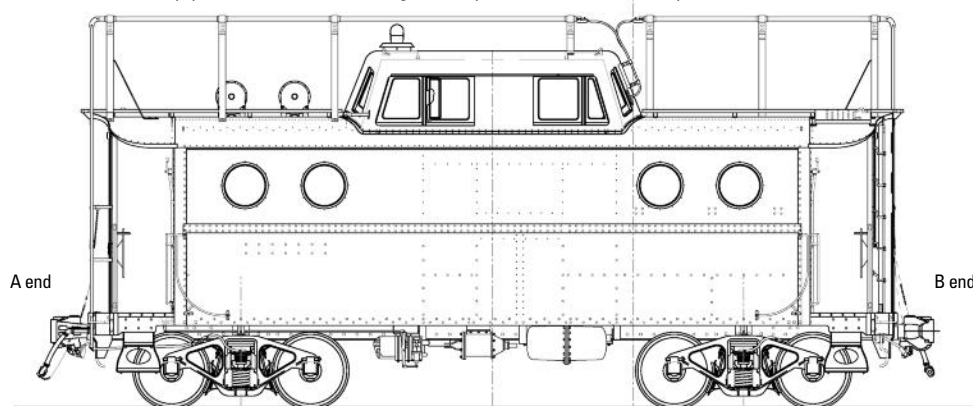
Jack Matsik photos

Roof color	Cupola color	Handrail color	Train-phone antenna	Trucks
Freight car color	Freight car color	Freight car color	No	PRR single coil
Black	Black	Yellow	Yes	PRR single coil
Freight car color	Freight car color	Freight car color	Yes	PRR single coil
Freight car color	Freight car color	Freight car color	No	PRR single coil
Freight car color	Freight car color	Freight car color	Yes	PRR single coil
Black	Black	Yellow	No	PRR single coil
Black	Black	Yellow	Yes	PRR single coil
Black	Black	Yellow	Yes	PRR single coil
Black	Orange sides, black top	White	No	Barber-Bettendorf
Black	Black	White	No	Barber-Bettendorf
Black	Yellow	Yellow	Yes	PRR single coil



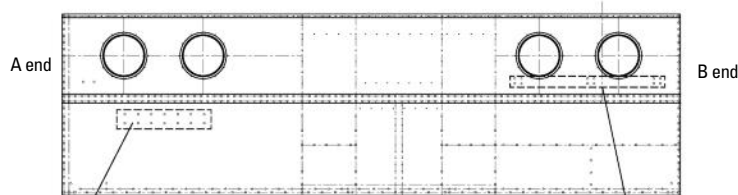


Note: The equipment shown in these drawings was only installed on cars with train-phone.



Pennsylvania Railroad class N5c cabin car, train-phone version

Rivet pattern layouts



This grouping of 14 rivets located on A end of panel A-B used for table mounting.

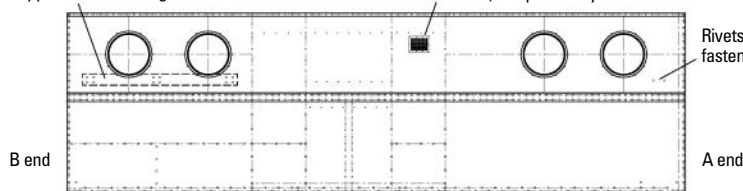
Panel A-B outside

This grouping of 12 rivets used for upper bunk mounting.

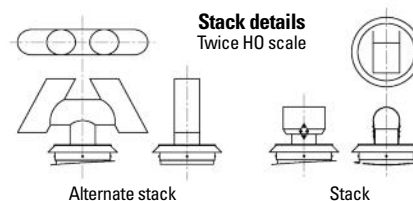
This grouping of 12 rivets used for upper bunk mounting.

Toilet vent, this panel only

Rivets for water tank fastening, this sheet only.

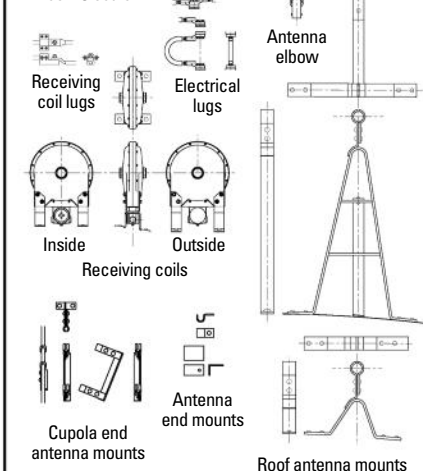


Panel B-A, outside



Train-phone details

Twice H0 scale



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Track plan for a 1950s resort-city terminal



The Atlantic Coast Line's *Champion* pulls up to the ACL's St. Petersburg passenger terminal in May 1959. The train will be broken up into parts by a switcher so the cars don't block city streets during unloading and loading. B.J. Oram photo

A vertical staging yard feeds traffic to this version of St. Petersburg, Fla.

By Christian Javier

St. Petersburg, Fla., was one of the premier destinations for Florida-bound trains in the heyday of passenger traffic. Just across the bay from Tampa, St. Petersburg boasted pristine beaches and weather that attracted tourists.

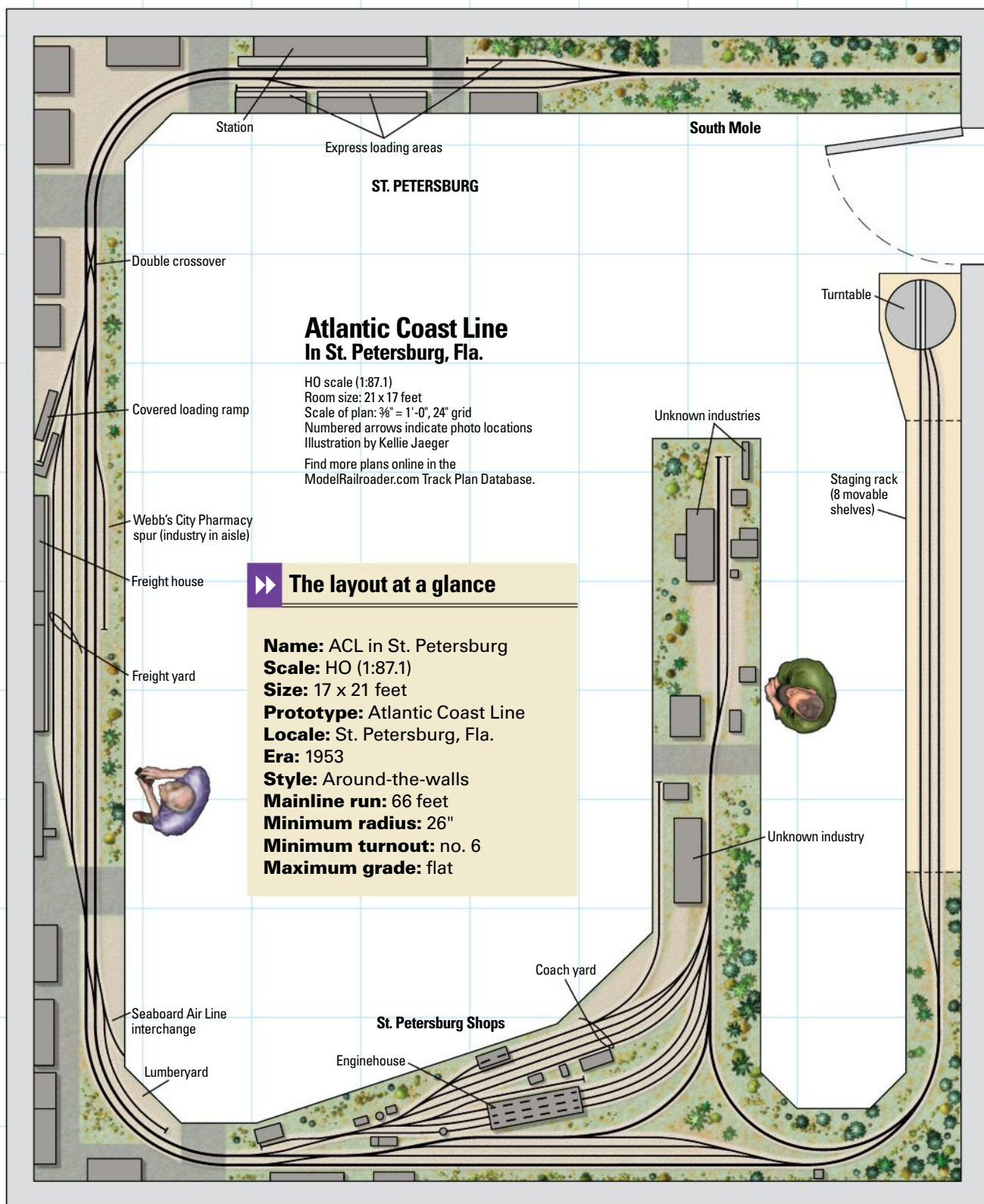
The city was at the end of an Atlantic Coast Line RR branch that left the main

line at Trilby, Fla. Despite longtime rival Seaboard Air Line competing for passenger traffic just across the street, the ACL in 1953 was enjoying successful passenger traffic into the area, while ridership on other railroads had begun to decline. With name trains like the West Coast *Champion* and the *Southland*, as well as a good amount of freight and mail

traffic, St. Petersburg makes an ideal prototype modeling subject for a large branchline terminus.

The HO scale plan

The staging shown in the HO scale track plan is unusual. It consists of eight vertically stacked shelves, each holding three tracks, that are able to move up



and down with the aid of a garage-door opener. This allows more trains to be stored with fewer turnouts and in less horizontal space.

My local model railroad club inspired this system. The members constructed a similar mechanism in place of a helix to get trains from the lower to the upper deck of their layout during operating

sessions. Each shelf on this plan represents a different origin for the trains that ran to St. Petersburg, such as Chicago; Trilby, Fla.; and Jacksonville, Fla.

After leaving staging, the trains pass the enormous locomotive and coach shops built in 1926 inside of a wye. Engine facilities had been moved twice in the history of the ACL's St. Pete spur,

with the final move placing them outside downtown to make room for the growing city.

The main line then makes its way down First Avenue, which was entirely dedicated to the ACL. The freight house complex is the first feature represented on this portion of the layout. It consisted of a four-track yard with an open-air

loading dock spur. During busy times, the yard would be packed with rolling stock, creating a switching challenge to get freight cars to their respective spots.

The final feature of the layout is the beautiful ACL station and its numerous passenger and express tracks. Trains had to be broken up in sections by switchers during arrival and reassembled for departure to prevent blocking the busy streets. On the track plan, this adds operating interest that makes up for the layout's simple track arrangements.

Operating St. Pete

The track plan I've designed focuses on ACL operations in 1953. Dieselization had been completed, but none of the less-than-glamorous black diesels had appeared yet, allowing for an entire fleet of the railroad's iconic purple locomotives. Not having to reproduce an incredibly diverse steam lineup also makes modeling the roster easier.

Timetables of the ACL Ocala District from Trilby to St. Petersburg show four trains operating over the line. Cars dropped off by mainline freight trains at Trilby Junction were taken down the line by a local freight, train No. 575. This train was most likely handled by F units and GP7s. Industries were switched along the way, including the large freight house downtown. This makes the line feel like a busy branch line.

Train No. 37 handled several loads of mail and Railway Express Agency traffic between St. Petersburg and Jacksonville, along with a few passengers on a stop-everywhere train. This train was handled almost exclusively by a single FP7.

Train 133 was the *Southland* passenger train out of Chicago. This train was probably handled by two or three E units. While I've found timetables listing the equipment on the *Southland*, I have yet to find any photos of the train in Florida in 1953. This is most likely because it arrived in St. Pete in the middle of the night.

The most famous train to operate into St. Petersburg was a section of the ACL's *Champion* service. Other sections served points such as Tampa and Miami. These split at the Jacksonville terminal before continuing to their separate destinations, providing service to West, East, and Central Florida.

Photos I've seen show the *Champion* in St. Petersburg behind a single E6, E7, or a dual-service F2 A-B pair. Several sources claim that during the winter months, when passenger traffic to Florida increased, a typical *Champion* would



The West Coast Champion prepares to depart St. Petersburg behind F units 331A-B in this undated photo. George W. Pettengill photo

have two or three E units on point and as many as 19 cars.

In 1953, it wasn't uncommon to see a few heavyweight sleepers in a *Champion* consist along with numerous lightweight stainless-steel cars. Stainless-steel sleepers were still in short supply, and had priority on the two eastern *Champions*, which had higher ridership. A timetable shows a typical consist would be two 54-seat coaches, a diner, a 6-double-bed-room/lounge car, a 10-6 sleeper, a 14-2 sleeper, and another 10-6 sleeper. Two heavyweight sleepers, an 8-1-3 and a 6-3, are also listed. These heavyweight sleepers were typically placed at the back of the train, while ACL's main rival, Seaboard Air Line (which had its station just across the street), typically put its heavyweights on the front of the *Silver Meteor*.

This *Champion* consist doesn't list the three or four head-end cars that normally accompanied this train. A rebuilt heavyweight combine, a heavyweight RPO, and a heavyweight baggage were seen on almost every train, but the occasional extra baggage or REA express reefer made it onto the train.


The *Southland* and *Champion* both needed the aid of a switcher to help them break their consist apart so they wouldn't block streets while unloading at the station. A double crossover [visible in front of the locomotive in the prototype photo on page 41 – Ed.] was installed in front of the station to help with these movements. Once the train was put back together for departure, the switchers would give a push from behind to give them a head start.

Photos taken circa 1953 showed these switchers included Electro-Motive Division SW8 no. 59 and EMD NW2 no. 611, but it would be logical to assume an SW9 occasionally came to help during higher traffic periods.

Even with only four trains a day, this layout could keep several operators busy for a few hours. One crew could be assigned to running the passenger trains, while another could be in charge of the depot switcher, and a third could handle the local freight.

Blending the best features

I'm a fan of prototypical layouts that make few compromises from their real-life portrayals. This is generally a difficult task to accomplish because of the sheer size of actual railroads compared to the limited size of the typical train layout room. Modeling a branch line usually helps with the size problem, but can sometimes seem to fall short for those of us who prefer the feel of mainline operations featuring longer trains and fast streamliners.

St. Petersburg is the best of both worlds. Staging only needs to be present at one end of the layout, and the focus is narrow and detail-oriented, but there's a lot to do. There's something for everyone on this layout, from freight duties to switching to local and long-distance passenger traffic. 

When Christian Javier isn't studying at the University of Florida, he lives in Hernando, Fla. This is his second byline in Model Railroader.

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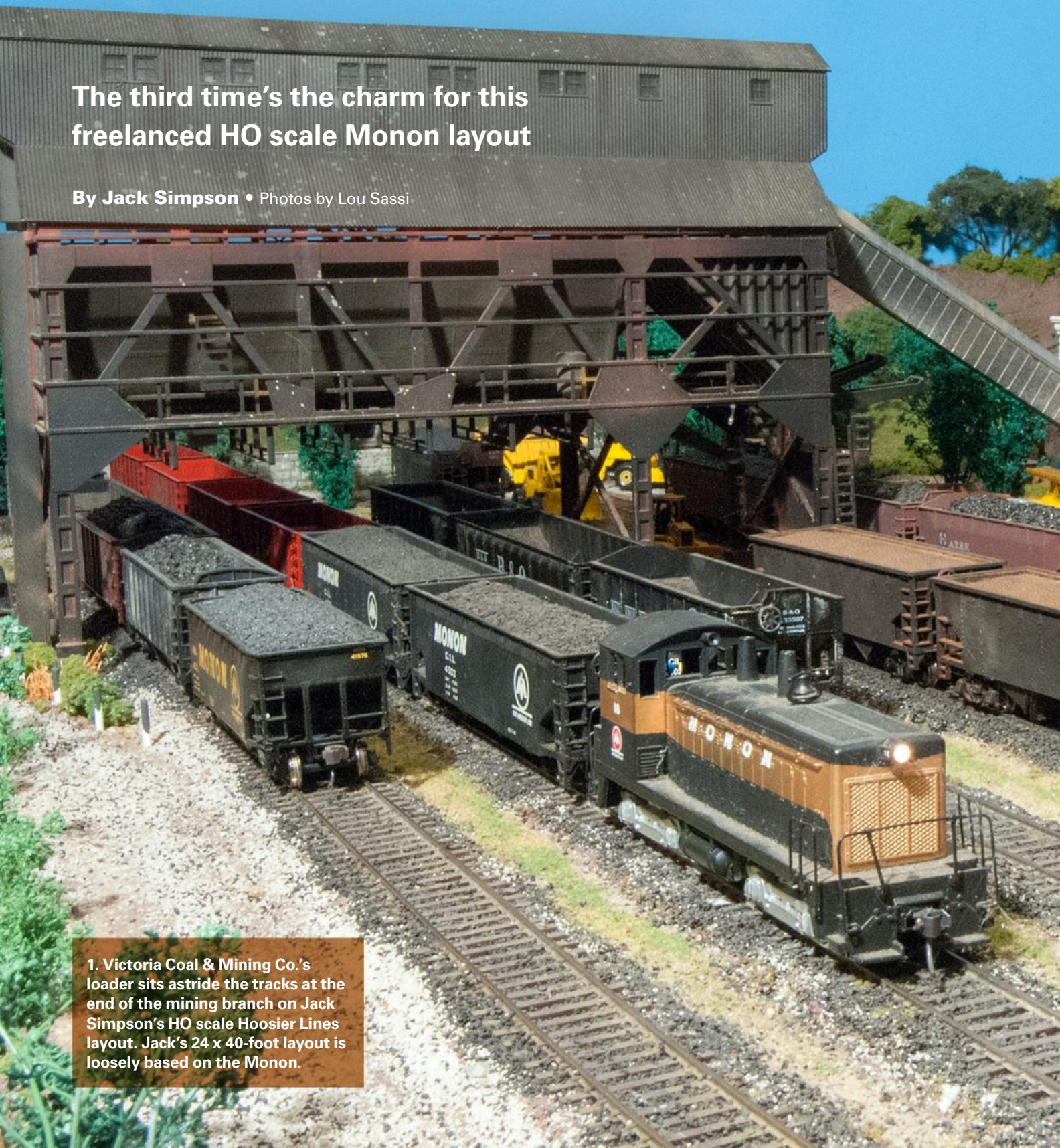
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(Re)building the

The third time's the charm for this
freelanced HO scale Monon layout

By Jack Simpson • Photos by Lou Sassi



1. Victoria Coal & Mining Co.'s loader sits astride the tracks at the end of the mining branch on Jack Simpson's HO scale Hoosier Lines layout. Jack's 24 x 40-foot layout is loosely based on the Monon.

Hoosier Line



MONON





2. A staircase divides Jack's basement into north and south rooms. This view of the north room shows Lafayette in the foreground and left, Lafayette Junction in the back left, and Lafayette Yard at back right.

My interest in trains began when I was a young boy growing up in Indianapolis. While other kids were watching cartoons, I spent my Saturday mornings watching the switching action in New York Central's Brightwood Yard. Though other concerns sometimes took precedence as the years progressed, trains never left my mind.

In 1998, with the help of friends, I started work on an HO scale version of the Monon RR that consumed half my basement. The prototype Monon, also known as the Hoosier Line, ran from Lafayette, Ind., to Bloomington, Ind. On my version, trains traveled through two basement walls as they moved between the cities of Chicago, Michigan City, Ind.; Indianapolis, Ind.; and Louisville, Ky.

As on the prototype, my passenger engines were painted crimson, cream, and gray to represent Indiana University (in Bloomington), while the freight engines were black and gold to represent Purdue University (in Lafayette).

Due to the shape of my old layout, entry to the railroad was via a lift bridge. This proved to be the biggest flaw in the design. In the summer, it would expand due to humidity and wouldn't operate properly. Ducking under the bridge to do laundry was getting old fast, and I couldn't stop doing laundry.

Take two

With visitors coming to tour my layout after it was published in the National Model Railroad Association magazine in December 1999, I remodeled it to make it more tour-friendly. Again with the help of friends, I tore out part of the railroad and rebuilt it.

The second layout wasn't too different from the first. Tracks still ran through the walls, as on the first version, but it gave the railroad more space in the main room of the basement.

However, this design proved worse than the first. Adding more railroad to the main room meant less open space for guests. Also, the design still included a duckunder bridge, which continued to be an obstacle. Something had to be

► The layout at a glance

Name: The Hoosier Line

Scale: HO (1:87.1)

Size: 24 x 40 feet

Prototype: Monon RR

Locale: Indiana

Era: 1950s

Style: walkaround

Mainline run: 124 feet

Minimum radius: 32"

Minimum turnout: no. 6

Maximum grade: ½ percent

Benchwork: open grid

Height: 43"

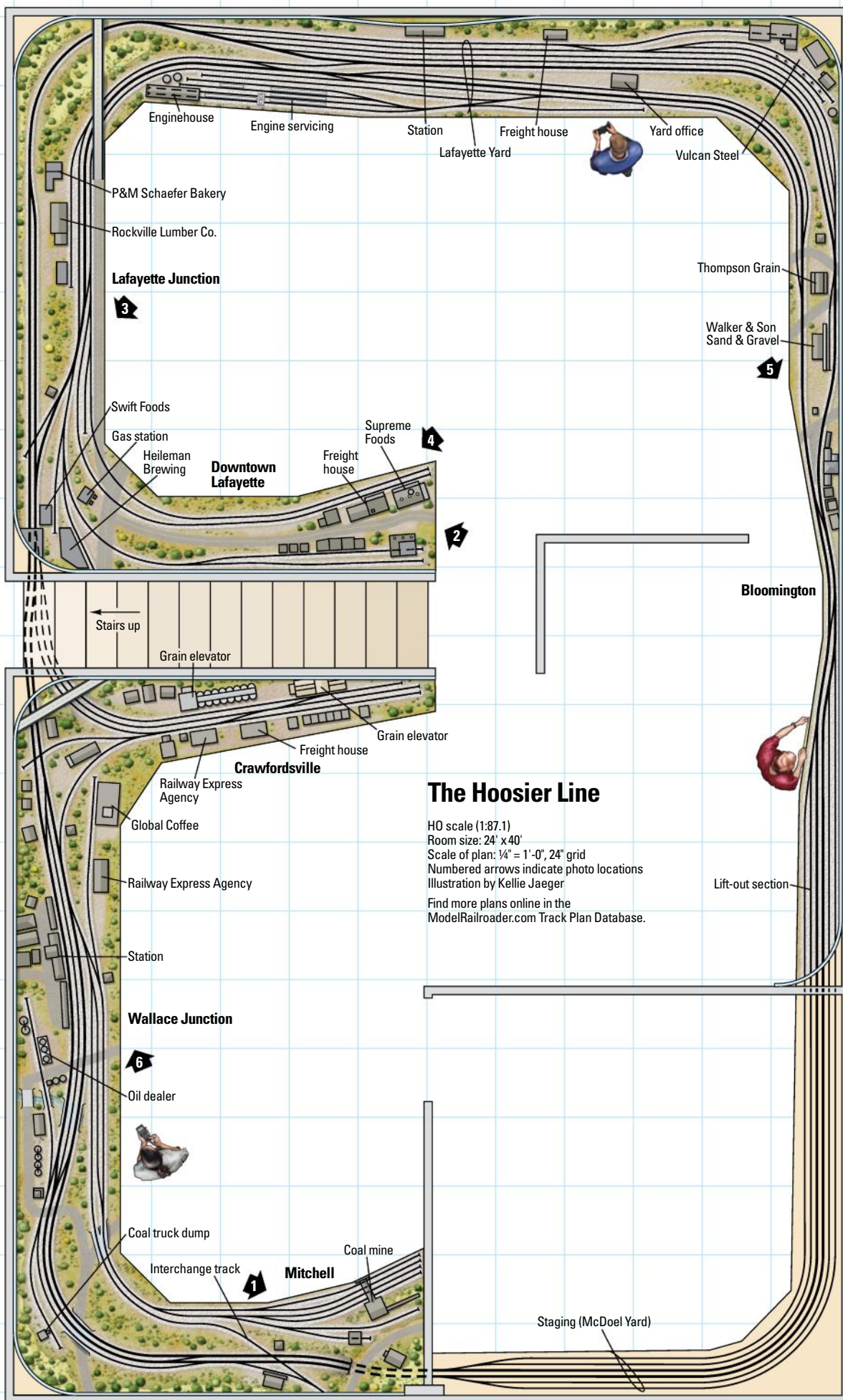
Roadbed: cork

Track: Atlas code 83

Scenery: extruded-foam insulation board

Backdrop: painted aluminum

Control: Lenz Digital Command Control



The Hoosier Line

HO scale (1:87.1)

Room size: 24' x 40'

Scale of plan: 1/4" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Kellie Jaeger

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

Lift-out section



3. *The Thoroughbred* streaks through Lafayette Junction on its way to Chicago, trying to make up time after being delayed by a coal train. The Monon's passenger equipment was painted crimson, cream, and gray to honor Indiana University.



4. Still wearing the old Chicago, Indianapolis & Louisville herald, Electro-Motive Division NW2 no. 15 switches the Monon freight house and Supreme Foods warehouse at Lafayette. The engine is a modified Athearn SW7; the freight house is a Walthers Cornerstone kit.

done to eliminate it. I chalked up this redesign to lessons learned.

Living the dream

Once again, I had to rebuild. In 2010 I called upon my friends Joe Kocsis, knowledgeable in signals and wiring, and Ron King, experienced at scenery, to help. Joe drew up the initial track plan and revised it when one of us would bring a new idea to the table. We built a separate room for the washer and dryer, hiding them behind a wall near the furnace, along with a hidden staging yard. This new design eliminated the troublesome duckunder, making more room for visitors to stroll around.

Construction began with box-girder benchwork, supported on legs that cantilever off the walls rather than resting on the floor. It gives the layout room a cleaner, more open feel. I installed a backdrop of rolled aluminum flashing, on which clouds were hand-painted.

The basic terrain forms were built from extruded-foam insulation board. This was covered with a homebrewed ground cover mix of Cellucay (a papier-

5. Led by Alco C-420s no. 502 and 501 and General Electric U23B no. 604, a 69-car manifest freight pulls out of McDoel Yard and passes Bloomington Station. The train is bound for Lafayette.





6. A Louisville & Nashville coal train exercises trackage rights through Wallace Junction on its way to interchange with the Monon. Wallace Junction is where the coal branch joins the main. The engines are Atlas models.

mache product), vermiculite (a light-weight mineral used to amend garden soil), white glue, and artist's acrylics. [For a similar recipe, see Lou Sassi's article on "ground goop" in our March 2015 issue. – Ed.] Onto this was sprinkled layers of sand or sifted dirt, ground foam, and static grass, followed by weeds, bushes, and rocks. One benefit of this material is items like trees and line poles can be pushed right into the ground.

The railroad is completely scenicked, and working signals control all main lines. Most buildings have lights. Turnouts are lined by hand. I run trains with Lenz Digital Command Control.

The lay of the land

The railroad starts in Lafayette, a large yard along the north side of the

basement. It proceeds through Lafayette Junction, where the track branches off to serve numerous industries in nearby downtown Lafayette. The industrial scene, where structures flank the main road with tracks behind the buildings on either side, is one of my favorite parts of the railroad.

The track then goes under the basement stairs to Crawfordsville, with its passenger and freight depot, as well as granaries and other industries.

The main line then crosses the Pennsylvania RR and proceeds to Wallace Junction, where a spur line branches off into the coal fields. At the end of the branch line is the Victoria Coal & Mining Co.'s large coal loader. The main line continues around to Bloomington, where there's a large hidden staging yard (McDoel Yard) as well as a town with a passenger station.

My railroad has a double-track main line to accommodate more trains, even though the prototype Monon was mainly single track.

The railroad serves my main objective, which is to help promote the hobby

by building a layout people like to watch run. Since I rebuilt the layout, the number of visitors to my layout tours has grown, and I've hosted guests from all across the country. **MR**



» Meet Jack Simpson

Jack's love for trains started with a Lionel set he received from his father one Christmas. He served on the Baltimore & Ohio RR as a fireman and an engineer, and is now a sergeant with the Indianapolis Police Department.

Now on ModelRailroader.com

Model Railroader subscribers can watch a video of trains running on Jack's layout. Find it on our website, www.ModelRailroader.com.





Grass is often the most prominent scenic element on a model railroad. As demonstrated in the diorama above, author Lance Mindheim achieved realistic results by blending static grass and other materials.

Easy and effective **STATIC GRASS**

Blending colors and textures is key to realistic ground cover

By **Lance Mindheim** • Photos by the author

With so many projects to tackle on a model railroad, it's difficult to know where to start. Once I have track laid and trains running, I set my priorities by focusing on the scenic elements that take up the most surface area. Taking this approach, nothing is more prominent on most layouts than plain, ordinary grass.

In the past, effectively modeling grass was challenging because of the limited scenery products available. Back then, ground foam was at least somewhat green, but its texture and lack of color variety weren't very convincing.

More recently, the introduction of static grass (or flock) has been a boon to our hobby. These products use individual fiber strands standing on end to realistically model the texture of individual blades of grass. Using static grass effectively requires a special applicator that imparts a static electrical charge on the flock. This causes the flock to stand straight up on the scenery base.

However, static grass flock tends to be very uniform in length and color. Just loading up an applicator with a pack of static grass will often result in scenery that looks more like a well-tended put-

ting green than railroad-owned land along a right-of-way. To avoid this I apply static grass in several passes, varying its color and texture.

Although I model in HO, the techniques in this article can be used in any modeling scale. Follow along as I show you how to easily add realistic ground cover with static grass.

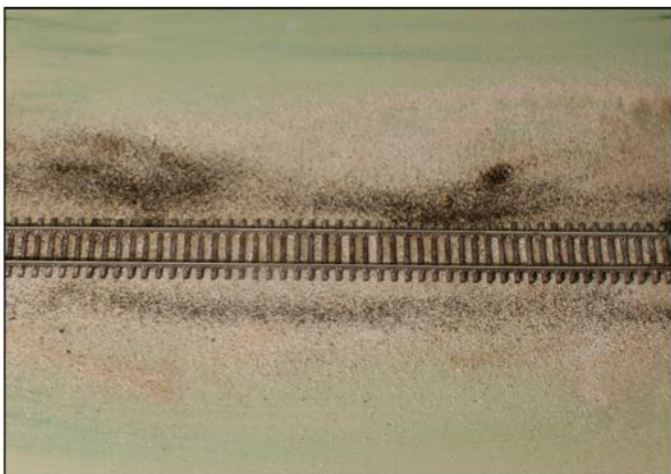
Lance Mindheim is a frequent contributor to Model Railroader and its special issues. He lives in Silver Spring, Md., where he owns the Shelf Layouts Company, Inc., a custom layout building firm.



1. This prototype photo shows the complex mixture of grass colors and textures seen in an overgrown lot. A key feature to modeling this type of ground cover is an undergrowth layer of yellow-brown thatch followed by grass of varying lengths and shades of green.



2. Most static grass applicators are battery powered with a metal grounding clip that attaches to a pin. The hopper often includes screens for coarse or fine flock. Lance used a Noch Gras-Master shown above. Other applicators are available from Faller and GrassTech USA.



3. Lance demonstrates his technique on the square diorama above with the track already laid and ballasted. He first paints the foam scenery base with earth-tone acrylic craft paint. For a large grassy area such as this, he doesn't bother adding a soil layer or any other ground cover first.



4. It's difficult to be precise with a static grass applicator, so it's important to mask any areas where grass isn't wanted. Lance tears paper towels and places them over the track. He mists the paper towels with water to weigh them down and keep them in place during the project.



5. Lance applies white glue and spreads it into a thin layer with a wet brush. He then sprays the area with water. Placing the applicator's metal grounding pin in the wet surface increases conductivity, ensuring the flock receives a strong charge and is more likely to stand on end.



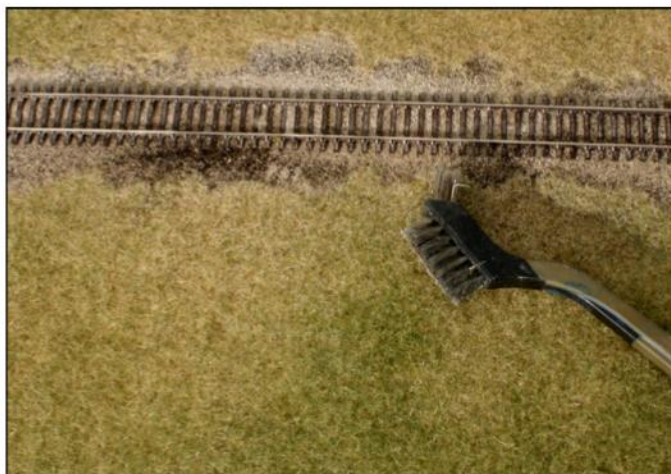
6. For the thatch layer Lance loads Heki "prairie grass" flock into the hopper. With the grounding pin in place, he applies the flock with a shaking motion, keeping the applicator 1/4" from the surface. A few pumps of hairspray helps fix the static grass in place.



7. The static grass doesn't need to dry between applications. Next Lance lightly applies 2mm green flock, making sure not to obscure the prairie grass below. To simulate the effects of weed control used along the right-of-way, Lance doesn't add green within an inch of each side of the track.



8. For additional color contrast, Lance sprinkles on a light layer of Woodland Scenics blended turf ground foam. Then he loads his Gras-Master with Silflor 6mm autumn grass. The longer 6mm lengths of the autumn flock helps break up the uniform texture of the material applied so far.



9. Removing the mask reveals a sharp boundary between the roadbed and grass. For a more natural-looking transition, Lance rakes a wire brush back and forth along the boundary. He then sprays all the ground cover with dilute matte medium and lets it dry overnight.



10. After the matte medium dries, Lance adds larger weeds to further break up the uniformity of the grass and add another layer of texture. He uses sharp-tipped tweezers to pull off pinches of green poly fiber that he then inserts into the foam scenery base.



11. Static grass is especially useful for modeling weeds growing between the rails of little-used track, as in the photo of the spur on Lance's layout (left). To achieve this effect he creased strips of masking tape and laid them over the rails (inset). He then applied static grass. [MR](#)

Parts List

Noch

Gras-Master

Scenic Express

0020 dilute matte medium
002-22 Silflor 2mm Late
Summer grass flock
006-34 Silflor 6mm
Autumn grass flock
3363 Heki Prairie Grass

Woodland Scenics

FP 178 green poly fiber
T1349 Blended Turf

Miscellaneous

hairspray in pump bottle
paper towels
spray bottle
white glue
wire brush



Diesel no. 45 slows to pick up a hopper on Mat Thompson's Oregon Coast RR. Follow along as Mat shows how to add momentum and braking effects that make DCC-equipped locomotive models perform more like their prototypes.

A practical guide to **MOMENTUM AND BRAKING**

An experienced operator provides Digital Command Control programming tips for locomotive decoders

By Mat Thompson • Photos by the author

Digital Command Control (DCC) has been part of my model railroading hobby for 15 years, but for most of that time my decoder programming skills were limited to the basics. With my first decoders, all I did was program the locomotive address. With sound decoders, I learned to adjust the overall volume.

To run my locomotives at prototype speeds, I used the same approach one would with an analog direct-current (DC) throttle. I advanced my DCC throttle knob slowly to start the train, and then decreased it just as slowly to stop a train. This approach worked reasonably well, but didn't take full advantage of the capabilities of a DCC decoder.

Then I went to an operating session and ran a locomotive equipped with a SoundTraxx Tsunami decoder that had been programmed with acceleration and deceleration momentum as well as an independently controlled brake. After I set the throttle knob, the locomotive gradually came up to speed, just like the prototype. I could bring the locomotive

to a gradual stop by pressing a function key without touching the throttle knob. The sounds of squealing brakes added to the sense of realism.

This experience inspired me to learn more, and the online manuals available at the SoundTraxx website (www.soundtraxx.com) and other manufacturers' websites proved an excellent resource. In addition to adjusting momentum and adding independent brakes, I've learned about several other configuration variables (CVs) that I use to fine-tune locomotives. Though SoundTraxx decoders are used in the examples I give, other manufacturers also make DCC decoders with similar features, including independent braking, as outlined in the list on page 35.

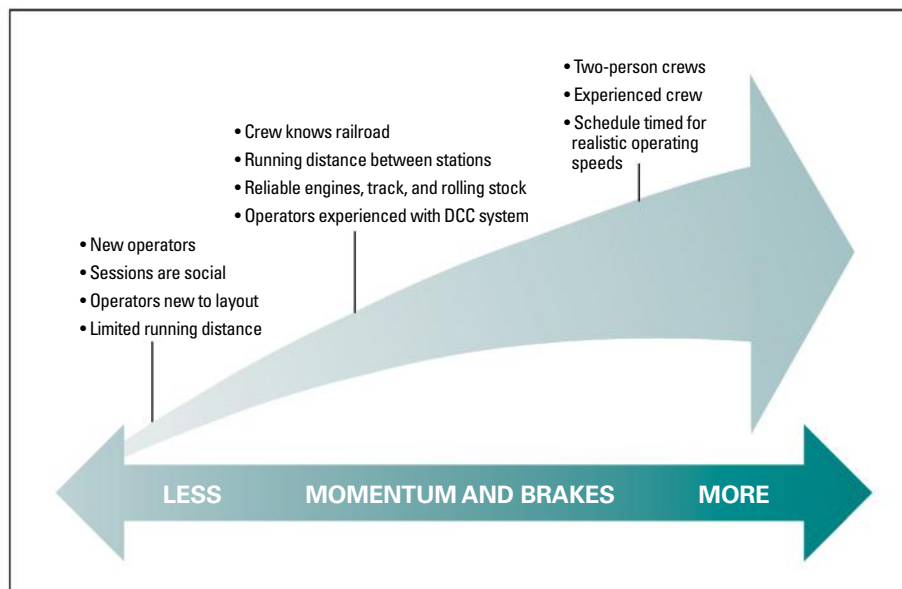
Braking and momentum

SoundTraxx refers to its independent braking feature as the "Train Brake." [After this writing, SoundTraxx announced the release of its Tsunami 2 decoders, which feature function-controlled independent brakes, automatic train brakes, and (on diesels) dynamic brakes. – Ed.] Once this feature is set up, braking involves pressing a function key. This is F11 on aftermarket Tsunami decoders. While the locomotive is moving, press F11 and it comes to a gradual stop with squealing brakes. Press F11 again to release the brakes, and unless the throttle is at 0, the locomotive will accelerate back up to the throttle's speed setting.

It's important to remember that on the SoundTraxx Tsunami and Econami decoders, the brake function works like a switch. Braking is either on or off. The number of times or how hard or soft the function button is pressed has no effect on how quickly the locomotive stops. [Other manufacturers handle brakes differently. On Model Rectifier Corp. and QSI decoders, the throttle must be at 0 before the brake is applied. On TCS WOWSound decoders, the brake function button is pressed multiple times to slow and then stop the train, and a second button releases the brakes. – Ed.]

On most Tsunami or Econami decoders, the Train Brake isn't active by default. Setting up the function involves three CVs. Acceleration momentum (CV3) and deceleration momentum (CV4) are found on virtually all DCC decoders. These CVs determine how quickly or slowly a locomotive accelerates or decelerates when the DCC throttle is advanced or decreased.

The braking rate is a SoundTraxx-specific CV (CV61 on the Tsunami and



The chart shows how Mat aligned train crew skills with how much momentum and braking to add to his locomotives. Since he often hosts new operators, he found that adding less momentum made the most sense for his layout.

CV117 on the Econami and Tsunami 2) that activates the independent brake feature called the "Train Brake" in the SoundTraxx manuals. This CV determines how quickly the locomotive decelerates when the brake function button is pressed.

It will take some trial and error to find settings that work on a particular layout. Lower settings in CVs 3 and 4 mean less momentum or faster starts and stops. Less momentum is often more comfortable for casual operation or new operators on a layout. Higher settings in CVs 3 and 4 mean more momentum or slower starts and stops. More momentum makes a model locomotive look more like the real thing and is often more popular with experienced operators. The chart above shows how I align my train crews' skills and momentum effects.

I tested the locomotives on my layout and came up with the following baseline settings. These should at least provide a starting point for programming momentum. See "Setting up the SoundTraxx independent brake" on page 57 for more specifics on how momentum and braking rate affect one another.

Baseline momentum and braking rate			
CV	Description	Low	High
CV3	Acceleration	50	132
CV4	Deceleration	35	128
CV61 (117)	Braking rate	140	240

A balancing act

During testing, higher momentum settings made my locomotives look more realistic, but I also saw the potential for problems. My Tsunami-equipped Kato HO scale Alco RSC-2 provides an example. First I used low momentum and braking rate settings. At switching speed (about 25 scale mph) the locomotive's stopping distance was 4 inches after I applied the brake. If I just decreased the throttle to 0 and let the locomotive coast, the distance was 9 inches. With high momentum and braking rate settings, the locomotive's stopping distance was more than 12 inches. The coasting distance with the high settings was 30 inches – the length of five HO scale 40-foot freight cars.

Higher momentum makes it harder to make precise stops. Even though the locomotive appears to be slowing down, it's still actually moving under power.

During an operating session, an engineer has to deal with switchlists, car cards, and setting turnouts, among other tasks. Amid this activity, even experienced operators may not be the most attentive engineers when it comes to perfectly timed brake applications.

That's the rub about momentum and braking. A locomotive with a lot of momentum looks and sounds realistic, but that same engine can be frustrating to use at an operating session and drain the fun out of running trains.

On my locomotives I set the momentum close to the low baseline settings noted on the left. These settings provide enough momentum to not appear



To measure stopping distances, Mat placed the locomotive on a straight track then lined up freight cars on an adjacent track. Once the locomotive reached road speed, Mat decreased the throttle to 0 or applied the brakes as the engine passed the first car. Measuring stopping distance in number of cars versus inches provides an easier reference for his train crews.

toy-like, but still allow enough control for my engineers to easily make more precise stops.

I also use low momentum settings because some of my locomotives are equipped with decoders that don't have independent braking. I program these locomotives so that the distance it takes for them to stop when the throttle is set to 0 is close to the stopping distance of my locomotives equipped with function-button controlled brakes.

I also reduce the top speed of my locomotives to about 40 scale mph for road engines and about 25 scale mph for switchers. Prototype locomotives can usually travel faster, but I find that scale locomotive models traveling at prototype top speeds on the compressed distances of a model railroad look unrealistic. To reduce the top speed on my SoundTraxx-equipped locomotives I use forward and reverse trim, as described in "Suggested CV settings" on page 59.

Once I've determined the momentum settings, I test the locomotive. I then note the stopping (or "drift") distance with and without brakes (if equipped).

I note the drift distances, top speeds, and other information on each locomotive's engine card, as I describe on page 58.

On any locomotive equipped with independent braking, I also remap the brake function key to F6. My operators and I find this to be the most comfortable key for the brakes on my Digitrax utility throttles. Many decoders allow users to map any function to any key. Others, such as the SoundTraxx Tsunami, allow only specific function and button combinations. I include examples for remapping the Tsunami brake function to a one-key operation on page 58.

A better way to run trains

With momentum and brakes properly configured, I can run locomotives with less throttle manipulation.

The programmed acceleration momentum provides a prototypically slow start with plenty of time to adjust the running speed as needed. To stop from road speed, I apply the brakes by pressing the function key (or turn the throttle to 0 for decoders with no brake function) and let the programmed

deceleration momentum bring the locomotive to a halt.

When using a locomotive with brake functionality for switching, it's not necessary to turn the throttle up and down. Instead, I set the throttle to a slow speed. Then I use only the brake button to stop and start the locomotive and the direction button to move forward or reverse.

On page 37, I've included a list of the key CVs with a range of values that I use. My list reflects SoundTraxx Tsunami decoders. However, many of the CVs are universal.

Understanding how to program a few basic CVs has made running trains and hosting operating sessions a lot more enjoyable. I hope this guide provides an inspiration for modelers to get the most out of their DCC-equipped locomotives.

Mat Thompson's HO scale Oregon Coast RR was featured in Great Model Railroads 2014. In addition to working on his own layout, Mat has participated in operating sessions on layouts around the country. He lives in Gainesville, Va., with his wife, Victoria.

Sound decoders and braking effects

There are no National Model Railroad Association (NMRA) standards for braking, such as specific configuration variables (CVs). Therefore, decoder manufacturers offer varying approaches to braking effects.

In the list below I've outlined decoders that have both function-controlled braking and brake sound effects, brake sound effects only, and no braking or brake sound effects. The list is current as of this writing.

Sound decoders with independent braking and brake sound effects

Model Rectifier Corp.: On MRC 16-bit decoders, F5 activates braking with sound effects when the throttle is set to 0.

QSI Industries: On Quantum- and Titan-series decoders, F7 activates braking with sound effects when the throttle is at 0. The longer F7 is pressed, the quicker the engine stops.

SoundTraxx: Econami and Tsunami decoders feature independent braking and sound effects. In addition, the brand-new Tsunami 2 has separate programming and function control of an automatic (train) brake. Tsunami 2 diesel versions have function-controlled dynamic braking.

Train Control Systems: On TCS WOWSound decoders, each press of F7 applies 20 percent of the braking rate with a full stop applied on the fifth keypress. F6 releases the brakes. Diesel versions include functioning dynamic brakes.

Sound decoders with brake sound effects only

Broadway Limited Imports: On Paragon2 and Paragon3 locomotives, F12 triggers a brake squeal effect when the throttle is set above speed step 5.

Digitrax: On the firm's latest sound decoders, F9 triggers a brake squeal effect.

ESU: On LokSound Select decoders, F13 activates brake squeal sounds.

MTH: On Digital Command System Proto-Sound 3.0 engines, a brake squeal is heard when the throttle is quickly decreased. F26 toggles the brake squeal effect on or off.

Sound decoders with no independent braking or brake sound effects

SoundTraxx: Factory-installed decoders in Athearn Ready-to-Roll, Bachmann SoundValue, and Walther's Main-line locomotives have no braking or brake sound effects.

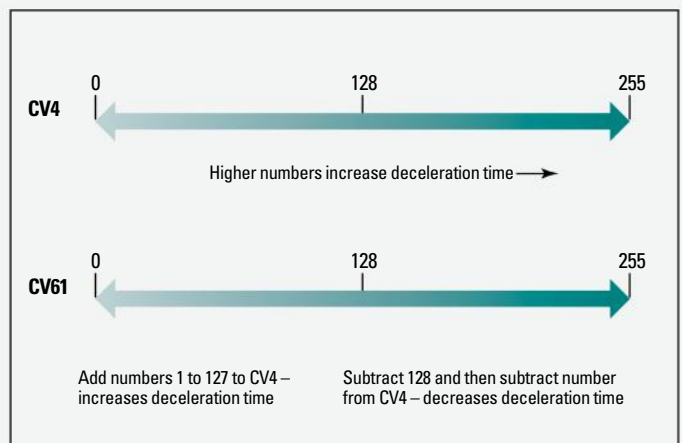
Setting up the SoundTraxx Independent Brake

On SoundTraxx Econami and Tsunami decoders, the braking effect is a combination of the configuration variables (CVs) set for deceleration momentum (CV4) and the braking rate (CV61 or CV117). [In addition to the independent brake that simulates the brakes on a locomotive running light, the Tsunami 2 allows users to set up a separate automatic (train) brake that simulates the engineer applying the air brakes along the entire train. Controlled by CV118, this effect is programmed using the same techniques outlined in this section. – Ed.]

Deceleration momentum can be a value between 0 and 255. The higher the value in CV4, the farther the locomotive will coast. The braking rate is the amount (0 to 255) that pressing the brake function key affects deceleration.

A braking rate between 1 and 127 increases the deceleration momentum. If CV4 and CV61 are both set to 50, then the deceleration rate will be 100 ($50 + 50 = 100$). Pressing the brake function button extends the stopping distance. This effect could be useful for simulating a locomotive slowing a heavy coal drag down a mountain grade.

A value between 129 and 255 shortens the stopping distance. To determine how much the braking rate will affect the deceleration momentum, subtract 128 from the value of CV61 (117). For example, I have a locomotive with CV4 set to 50 and CV61 set to 153. Subtracting 128 gives a value of 25 ($153 - 128 = 25$). This means that when I press the brake function button, it has the same effect as if I'd programmed CV4 to a value of 25 ($50 - 25 = 25$), cutting the stopping distance in half.



The braking rate (CV61) works in conjunction with the deceleration momentum (CV4). The chart above helps visualize how the CVs relate to one another.

The difference between CV4 and CV61 (117) needs to be great enough so that pressing the brake function button has a noticeable effect. For example, setting CV61 to 128 would have the same result as disabling the brake function ($128 - 128 = 0$). It's also important not to set the braking rate CVs too high, or it will simply become an emergency stop button.

Understanding the relationship between the momentum and braking rate will help you get the most out of SoundTraxx decoders' braking features.

Engine cards

Many modelers are familiar with car cards that describe rolling stock and route it across a layout during an operating session. On my Oregon Coast RR, each locomotive gets an engine card.

Adding momentum and braking drastically affect the way a locomotive model responds to throttle commands. Engine cards let my train crews know what to expect.

In addition to the engine number, type, and address, I include momentum and brake information as well as the top speed in scale mph. If the engine has brakes, the card lets the engineer know what function button activates them.

The power setting shows both a number as well as a clock position. The digital display on my Digitrax throttles shows the power setting as a percentage. Other manufacturer's throttles may display a speed step. The clock position is a reference for my utility throttles that have a speed control knob but no display.

I encourage engineers to immediately turn their throttles to the power setting on the card, and adjust the speed up or down from there. The momentum programmed into each decoder provides a prototypically slow start and allows enough time for them to adjust the running speed.

The stopping ("Drift") distance is also determined by that power setting and is measured in HO freight cars. Notice that OCR 121 (left) doesn't have independent brakes. However, it does have momentum programmed as well as a measured drift distance. By knowing how a locomotive will react, an engineer has a better chance of making smoother, more controlled stops and starts.

OREGON COAST RR ENGINE CARD	OREGON COAST RR ENGINE CARD
ENGINE: OCR 121 TYPE: 2-6-0 ADDRESS: 121 MOMENTUM: YES BRAKES: NO	ENGINE: SPS 64 TYPE: RS-2 ADDRESS: 64 MOMENTUM: YES BRAKES: F6
POWER SETTING	POWER SETTING
30 (= 16 MPH) (11 O'CLOCK)	40 (= 20 MPH) (11 O'CLOCK)
DRIFT DISTANCE AT POWER SETTING	DRIFT DISTANCE AT POWER SETTING
NO BRAKES: 3 CARS BRAKES: N/A MAX MPH: 25	NO BRAKES: 5 CARS BRAKES: 3 CARS MAX MPH: 37

An engine card provides a quick reference for train crews. At a glance an engineer knows where to set the throttle for smooth acceleration up to road speed, which is listed in scale mph, and how many car lengths it will take for a locomotive to brake or coast to a stop.

Remapping the SoundTraxx Tsunami Brake function

On a DCC throttle, the F11 function key activates independent braking on aftermarket Tsunami decoders. Factory-installed Tsunami decoders often use other function buttons as a default, such as F9 on Athearn Genesis locomotives and F10 on Bowser locomotives.

I have a Digitrax DCC system on my layout and also regularly operate on layouts that use CVP EasyDCC and NCE systems. All these systems have utility throttles that require pressing a shift key before accessing F11.

I suggest remapping the Tsunami brake function so that it doesn't require a two-key operation. On my Digitrax throttles I've remapped the brake function to F6.

The default setting of an aftermarket Tsunami is that F6 controls some secondary lights (ditch lights or strobe) and F8 controls the audio mute. To retain these functions, you may have to remap more than one key.

Many decoders, such as the SoundTraxx Econami, ESU LokSound Select, and TCS WOWSound, allow users to remap any function to any key. On Tsunami decoders function mapping is limited to certain button/function combinations. For quick reference, I've outlined three options for remapping the Tsunami brake function. For a complete function-mapping list, see the Tsunami manual at www.SoundTraxx.com.



For one-key operation, Mat remaps the brake function from F11 to F6 on Digitrax throttles (center), F9 on CVP throttles (left) or F8 on an NCE throttles (right).

Option 1: F6 brake

Set CV30 to 4. This swaps functions 9 to 12 with functions 5 to 8.

Set CV44 to 64. This moves F11 (brakes) to F6.

Set CV46 to 16. This restores the mute function to F8.

Option 2: F8 brake

Set CV30 to 4. This swaps functions 9 to 12 with functions 5 to 8. F8 now controls the brake.

Set CV44 to 16. This moves the mute function to F6.

Option 3: F9 brake

Set CV43 to 128. This sets the brake function to F9. No other functions are affected.

Suggested CV settings

Below is a list of the configuration variables (CVs) that I normally program on my SoundTraxx Tsunami decoders. The list is specific to the Tsunami, but many of the CVs are also found on other manufacturers' decoders. The instruction manual included with the decoder or found online will usually include a list of all the supported CVs.

Basic setup CVs

CV1 (short) or CV17/18 (long) address

- Engine (cab) number
- On my Digitrax system, two-digit or short addresses are actually primary address values from 1 to 127. Four-digit or extended or long addresses are 128 to 9983.

CV29 (decoder configuration)

- 18 or 50
- If using a primary address, I set CV29 to 18. If using an extended address, I set CV29 to 50. With these values, speed tables are enabled, 28/128 speed steps are enabled, the engine's normal direction is forward, and the analog direct-current mode is off. If an engine will run reversed in a consist or its motor leads were wired backwards, I then set CV29 to 19 or 51.

Speed control CVs

CV25 Speed table register

- 2 for road engines, 5 for switchers
- A setting of 2 is a straight line speed table where speed increases at a constant rate. With a setting of 5, locomotive speed increases quickly as power is first applied, which is prototypical for a switcher.

CV66 (forward) and CV95 (reverse) trim

- 20 to 25
- These CVs are only effective when CV25 (speed table register) is enabled by CV29. A value of 1 to 127 scales down (decreases) the speed table set in CV25, while a value of 129 to 255 scales up or increases the speed settings. A value of 128 has no effect.

Momentum and braking CVs

CV2 (VStart or starting voltage)

- 1 to 10
- A CV2 setting above 0 helps eliminate low-speed motor inefficiency. My diesels start smoothly at a setting of 5 and lower, while my steam engines usually require a CV2 value of 10.

CV3 (acceleration momentum)

- 35 to 50
- This setting slows throttle response by 3 to 5 seconds for movement to begin and 45 seconds to reach top speed. Lower settings are for switchers, while I use higher settings for road engines.

CV4 (deceleration momentum)

- 35 to 50
- This setting determines how far a locomotive will travel when the throttle is set to 0. A value must be entered in CV4 for the Tsunami Train Brake feature to be enabled.

CV61 Braking Rate

- 140
- A setting of 1 to 127 increases the deceleration momentum set in CV4, while a setting of 129 to 255 decreases the value of CV4. See "Setting up the SoundTraxx Independent Brake" on page 57 for more information.

Sound control CVs

CV112 Sound Configuration (steam locomotives only)

- 0 or 65
- I use setting 0 to replicate the sounds of a conventional rod locomotive with single air pump for my Consolidations and Mikados. I use setting 65 to replicate the sounds of a compound steam engine with dual air pumps for my articulated Mallet locomotives.

CV113 Quiet Mode Timeout Period

- 255
- With this setting, locomotive sounds start when the address is selected and either the throttle is advanced or a function is activated. When the throttle is set to 0, all sounds stop if no commands are received after 45 seconds.

CV116 Engine Exhaust Control (steam)

- 40 to 45
- This CV roughly synchronizes the steam exhaust chuffs with the motion of the drivers. My settings work well with the reduced road speeds of my steam locomotives.

CV116 Engine Exhaust Control (diesel)

- 4
- By default Tsunami diesel decoders are set for 7 speed steps to each engine notch, with notch 8 (maximum engine rpm) at speed step 48 of 128. Since my locomotives run at slow speeds, I reduce the setting so that I can hear all the notches.


CV128 Master Volume Control

- 60 to 80
- I set the level loud enough to be heard by the engineer walking along with his train, but not so loud that the sound of multiple locomotives overwhelms my train room.

CV130 Bell Volume

- 40 to 60
- A continuously ringing bell can quickly become irritating, so I reduce the effect's volume so that it can only be heard by the locomotive's engineer.

CV139 Brake Squeal Volume

- 70 to 90
- Especially when it comes to braking, I find my operators are more confident when they can hear a response to the throttle command. Therefore I set the brake squeal to a louder setting than other sound effects. 



SD40-2 1027 leads a unit coal train through Williams Bay on the Milwaukee, Racine & Troy club layout at the *Model Railroader* offices. Using DCC consisting you can operate multiple locomotives just as the prototype does. Bill Zuback photos

Tips for consisting DCC locomotives: basic, universal, and advanced

The process of coupling together and operating two or more locomotives as a single unit is known by several names. Multiple unit operation or mu-ing, also called consisting, has been used by railroads since the early years of the 20th century, first with electric locomotives and then with diesels.

Once a group of locomotives is set up for multiple unit operation, all the control operations in the lead locomotive are simultaneously sent to the other locomotives so they operate as a single unit. To accomplish this, both air and electrical lines are connected between locomotives to control the throttle, brakes, lights, dynamic brakes, and sanders. If you're wondering, double-headed steam locomotives always required individual crews.

When it comes to our model locomotives, we can imitate prototype multiple unit operation with Digital Command Control (DCC). This is accomplished using one of three methods referred to in Digitrax literature as basic, universal, and advanced consisting.

Other sources and manufacturers may refer to these methods by different names.

For example, I've seen universal consisting referred to as basic, brute force, and old-style consisting. To avoid confusion, I'll describe what each does and you can use whatever name suits you.

Using these three methods we can control the speed, direction, lights, whistles, bells, and other functions that we normally use with a single locomotive. Let's take a look at each of these methods and their pros and cons.

Basic, or address, consisting is the simplest form of multiple unit control. All that's required is setting the decoder address in each locomotive to the same value. Since all locomotives in a basic consist have the same address, they'll all respond simultaneously to throttle commands – there will be no delays. Another point in favor of basic consisting is only one address slot is required no matter how many locomotives are in the consist. This can be an important consideration when using DCC systems having a small number of available slots.

For example, if your system has only 10 address slots, and you have three uni-

versal consists with three locomotives in each, that will use up nine of your slots. However, with basic consists, you would only use three slots. Another advantage is that since all the decoders in the consist have the same address, you can easily move the locomotives to another layout without having to re-create the consist.

There are some limitations to basic consisting. All the locomotives in a consist must be facing the same direction, unless you change configuration variable (CV) 29 so a locomotive you want to run backward is set to "reverse" for normal direction of travel. This will allow the lights to automatically reverse in sync with the consist, although in prototype practice, the lights on a trailing unit wouldn't be on.

The real issue is with sound, since you can't control the functions in each locomotive separately. If you blow the horn, ring the bell, or activate other sounds, all the locomotives will respond.

Universal consisting is probably the most popular. This method, also known as command-station-assisted consisting,

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works by having the command station keep track of each locomotive in the consist. To do this, it uses a memory slot for each locomotive address.

All the DCC systems I've used have some way of initially setting the direction of the locomotive so no special reprogramming or rewiring is required. The first locomotive entered when the consist is created becomes the top or lead locomotive, and the command station keeps track as additional locomotives are added.

However, the address of the first locomotive remains as the consist address and all commands are sent to it first. This is where time lags can creep in.

Because commands are sent sequentially to each locomotive in the consist, you can visibly see response delays. For example, I once lined up five locomotives in a consist, turned on the headlights and reversed direction – the headlights in each locomotive came on in the order in which they had been added to the consist, one after the other, not simultaneously.

Why is this an issue? The same thing happens when you alter throttle settings, creating visible delays in how fast the locomotives respond. Since the command station has to keep track of all the locomotives being operated, these delays get longer as the number of locomotives being operated in the consist increases.

Another downside to universal consisting is that if you move the locomotives to another layout, you'll have to re-create the consist there. That's because the command station has all the information about the consist in its memory. Also, if you have to reset the command station or its internal battery goes dead, you'll have to re-enter your consists.

On the positive side, although the delay issue will be visible, it usually doesn't become a problem on most home and even most club layouts where few locomotives are actually running at the same time. Also, even though a locomotive is part of a consist, you can still select its address and control individual functions – for example headlights can be turned on and off and individual sound effects like horns and bells can be triggered.

Finally, there's advanced consisting, which offers many advantages over the other methods. With this method the same consist address is entered into

CV19, consist address, in each locomotive's decoder. Some older decoders don't support CV19, but current decoders do.

This means the consist is independent of the command station and can be moved to another layout and operated without any reprogramming. Also, because each locomotive decoder is responding to the same address, there are no delays, and each consist only uses one address slot.

Using CVs 21 and 22, you can control how each of the first eight functions responds to commands when in a consist. For example, you can turn off lights and sounds in all the middle units and only allow the first unit to respond. Some decoders now offer other advanced consisting functionality. The biggest downside to advanced consisting I know of is you're limited to consist addresses 1 to 127.

Setting up consists can require some advance planning and programming. With advanced consists in particular you need to decide how you want the functions on individual locomotives to respond when in a consist and set CVs 21 and 22 accordingly.

Of course this may all change if you switch a mid-consist locomotive to a lead position. Clearly, once a consist is set up there are disincentives to altering it in the future.

Depending on the capabilities of your DCC system and throttles, you may find it easier to use DecoderPro to program your decoders for advanced consists through the Java Model Railroad Interface (JMRI) on your computer. There's also a tool for setting up consists.

Another factor with all types of consisting that needs to be dealt with is ensuring the locomotives to be consisted all operate at about the same speeds. Speed matching is the process of programming the decoders in the locomotives so their speeds match throughout the throttle range. Failure to do this may result in poor performance.

Later this year I'll be doing a column on speed matching where I'll go over both simple and more complicated methods for tweaking locomotive performance. In the meantime, enjoy experimenting with consisting and visit my website (www.dccguy.com) for more on this topic. **MR**

Consist styles pros and cons

Basic, or address, consisting Pros

- Simple
- Instantaneous response
- Only one address slot needed
- Easy to move to other layouts

Cons

- Locomotives must face same direction
- Sound effects triggered on all locomotives simultaneously

Universal consisting Pros

- Direction of locomotives can be set individually
- Sound effects can be triggered individually

Cons

- Time lag between units as commands are sent
- Consist can't be used on another layout because information is stored in command station

Advanced consisting Pros

- Consist address stored in each locomotive's decoder, so consist is portable
- Direction, lighting, sound effects are set for each locomotive
- No time lag in response to commands

Cons

- Limited to consist addresses of 1 to 127
- Changing consist requires multiple steps
- Requires decoders that support CV19, which is absent from some old decoders

The menu on this NCE Powercab takes you through the steps to build a consist. Old-style consisting is equivalent to universal consisting.





Bowser HO SD40-2 models the Canadian version of a North American workhorse

More than a generic Electro-Motive Division SD40-2 painted in Canadian railroad colors, this newly tooled HO scale SD40-2 from Bowser Trains is detailed to match its CP Rail prototype. Our review sample, CPR no. 6038, is part of the first run of Bowser's General Motors Diesel Division (GMDD) SD40-2s. Although this run is sold out at Bowser, many are still available on hobby shop shelves. A second run of prototype-specific models is in production.

The prototype. Introduced in 1972, the 3,000 hp SD40-2 received 40 component upgrades to increase reliability and efficiency over its predecessor, the SD40. These included improvements to the turbocharged 16-cylinder 645E3C prime mover and D77 traction motors, as well as the introduction of high-adhesion

HT-C trucks. Like other locomotives in EMD's Dash 2 line, the SD40-2 received a solid-state electrical control system.

Most of the 3,982 SD40-2 locomotives were built at EMD's plant in LaGrange, Ill. General Motors Diesel Division, a GM subsidiary with a plant in London, Ontario, built 684 SD40-2s for the Canadian market. Canadian Pacific (later CP Rail) received its first SD40-2 from EMD in 1972, but most of its 486 SD40-2s came from GMDD and still serve today.

The model. Most of the model's dimensions match prototype drawings in the *Model Railroader Cyclopedic: Vol. 2, Diesel Locomotives* (Kalmbach Publishing Co., out of print). The trucks are 6 scale inches farther inboard to avoid getting hung up on the pilots while negotiating sharp model railroad curves.

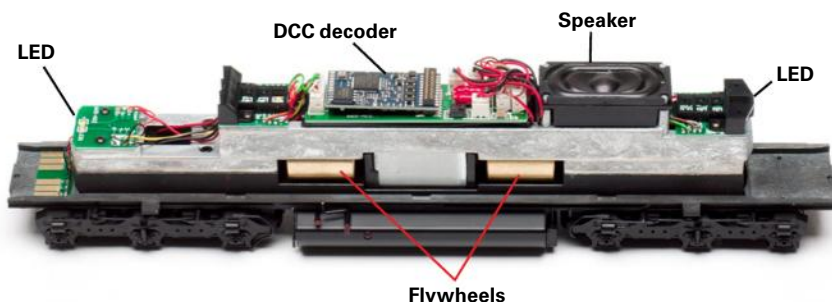
Bowser didn't miss any of the prototype-specific spotting features. These include obvious details like the nose-mounted headlight, single rear light, class lights, and bell mounted between the number boards. As on the prototype, the model doesn't have rear number boards. More subtle details include the 102" short hood, exhaust silencer, and streamlined snowplow.

Even though they are quite thin, the flexible plastic handrails and stanchions are straight and securely fastened.

The plastic HT-C truck sideframes include separately applied sand lines and brake cylinders. Just like on the prototype, the trucks have the name of the Canadian foundry that cast them (Dofasco) molded into the sideframes. The model's metal wheels are chemically blackened for a realistic appearance.

Our review sample is detailed and decorated as no. 6038 appeared upon its 1983 delivery to CP. A packet of user-installed parts includes a Locotrol antenna and knuckle holders for those who want to model the locomotive as it appeared at later points in its career.

The paint scheme matches prototype photos. There's sharp color separation between the Multimark logo and the nose stripes. The labels for the snowplow and electrical connections on the m.u. stand are clearly printed. This is impressive, since the part is barely 1/16" wide.



A die-cast metal weight runs the length of the locomotive chassis. The ESU LokSound Select decoder plugs into a 21-pin socket on the motherboard.

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Although no crew figures are included, the inside of the cab is fully detailed with control stands and seats for the engineer, fireman, and brakeman.

The mechanism. After removing the couplers I could easily lift off the plastic body shell. A die-cast metal weight runs along the length of the chassis and over the top of the dual-flywheel-equipped can motor. The motherboard and lighting boards are mounted atop the weight. All lighting is provided by surface-mounted light-emitting diodes (LEDs).

On our DCC-equipped sample, the ESU LokSound Select decoder is plugged into a 21-pin socket on the motherboard. Behind that is an enclosure with an oval speaker that faces up.

Performance. As shown in the charts at right, the Bowser SD40-2 features smooth performance in direct current (DC) and Digital Command Control (DCC). On both our DC and DCC test tracks, the model accelerated from less than 1 scale mph to 55 scale mph. This is 10 mph slower than the top speed of the lowest gear ratio available on the prototype, but it's more than fast enough for freight operations on a model railroad.

The model easily rounds 18"-radius curves and has plenty of pulling power on straight and level track, as noted in the charts. I also used the locomotive to pull a 10-car freight up a 3 percent grade. The model's back electromotive-force (BEMF) control kept the speed constant both up and down the hill.

For DCC users, the decoder supports setting up a simple three-point speed curve with CVs 2, 5, and 6, as well as full 28-step custom speed curves. The decoder is programmed with some momentum effects right out of the box, but both acceleration and deceleration rates are easily adjusted with CVs 3 and 4.

A paper quick-start guide is included. A more extensive manual is available as a free download at www.esu.eu/en/start/.

Sound. After setting the SD40-2 on our DCC-equipped layout, I pressed 8 and heard the 645 engine start. The sound is clear without any buzzes or rattles. Notching occurs automatically with the throttle. I appreciated that the decoder's

functions include the ability to manually notch, so that I could increase and decrease the rpm sound independently from the locomotive speed.

The default bell and playable air horn sounded prototypical. For those that disagree, other options include an E-bell as well as 15 other air horn sound samples.

Function 4 triggers a realistic dynamic brake sound sequence. I heard the engine go down to an idle, then notch up before the fan sound started. Pressing the button again causes the fan sounds to gradually stop, then the engine drops down to idle and notches back up.

Other user-triggered sounds include sanding valves, compressor, and spitter valves. The volume level of each effect is adjustable and functions can be remapped to any available throttle key. Many of these programming tasks, including function mapping, require setting an index CV before programming the CV that performs the specific task.

The model features a realistic lighting package with ditch lights and dimmable headlights. Our CP Rail prototype also has a lighting feature I've never seen before: adjustable class lights. With the push of a button (F5) I toggled the lights between white, green, red, and off.

DC operation. Most of the sound and light effects are more limited when the locomotive is operated on a DC layout. The white class lights remain on and the headlights operate according to locomotive direction.

That said, I find that ESU LokSound decoders offer some of the best DC performance compared to other dual-mode decoders. The engine rpm sound realistically notches up before the locomotive starts moving. There's no interruption in the sound when I flip the direction button on the power pack. As long as I kept the track voltage above 6 volts (or with the throttle dial of our MRC Tech4 set to the 12 o'clock position) the SD40-2's sound and lights didn't cut out. To access sound effects other than the diesel engine, an analog sound controller, such as an MRC Tech 6, is required.

The impressive ESU decoder means that the model's performance matches its good looks. Accurately modeling its Canadian prototype, the Bowser GMDD SD40-2 looks like the successful result of a superdetailing project, except that I didn't have to do anything but open up the box. — Dana Kawala, senior editor

Dana Kawala

►► HO scale GMD SD40-2

Price: \$299.95 (with DCC sound), \$199.95 (DC, no sound)

Manufacturer

Bowser Manufacturing Co., Inc.
1302 Jordan Ave.
P.O. Box 322
Montoursville, PA 17754
www.bowser-trains.com

Era: 1972 to present

Road names: (Second run) CP Rail (Multimark, no Multimark, dual flag schemes); Algoma Central; BC Rail; Canadian National; Canadian Pacific; HLCX Lease; O.N. Rail; Quebec, North Shore & Labrador; and St. Lawrence & Hudson. In addition to CP Rail and BC Rail, first run included British Columbia Ry. (green); Dakota, Minnesota & Eastern; Iowa, Chicago & Eastern; and Ontario Northland Ry. (green and blue and yellow schemes) Multiple road numbers and variations available.

Features

- 21-pin DCC socket
- All-wheel drive and electrical pickup
- Can motor with brass flywheels
- ESU LokSound Select dual-mode decoder (DCC version)
- Kadee knuckle couplers at correct height
- Light-emitting diode headlights, class lights, and ditch lights
- Scale 40"-diameter RP-25 contour metal wheels in gauge
- Weight: 1 pound 3 ounces

HO scale SD40-2

Drawbar pull		4.8 ounces	
		67 HO scale freight cars	
Scale speed (DC)		Scale speed (DCC)	
Volts	Scale mph	Speed step	Scale mph
6.75 (start)	<1	1	<1
9	13	7	15
10	25	14	40
12	55	28	55

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Subscribers can watch a video of the Bowser SD40-2 on the Videos page of www.ModelRailroader.com.



Pennsylvania RR class H10s Consolidation by MTH has plenty of both detail, power

Pennsylvania RR modelers will be glad to see MTH's latest HO scale offering on their hobby shop shelves – an authentically modeled PRR class H10s Consolidation, complete with that railroad's characteristic Belpaire firebox. Thanks to its die-cast boiler and traction tires, this hefty hauler musters enough drawbar power to pull even more freight cars on level track than its prototype. The addition of Proto-Sound 3.0 and a chuff-synchronized puffing smoke unit only add to the locomotive's realism.

Old reliable. Before the turn of the 20th century, the Consolidation was the freight engine of choice for railroads across the country. But while other railroads were testing 2-8-2 Mikados, the Pennsylvania RR wasn't done exploring the possibilities of the 2-8-0. The railroad's adoption of the Belpaire firebox, with its unique square profile, let its engines make more steam.



The MTH H10s features a wireless two-pin connection between the locomotive and tender.

The class H10s was basically a class H9s with larger cylinders, an improvement that resulted in a 17 percent greater tractive force than its predecessor. Another way the Pennsy got more out of its Consolidations was with steam superheating. MTH lists its model as a class H10, but it's more properly an H10s, with the "s" denoting the superheater.

The H8, H9s, and H10s were so efficient that the 2-8-0 remained Pennsy's primary freight engine as late as the 1920s. Many were later brought back into mainline use during World War II.

The Pennsy rostered almost 500 class H10s, built by Alco, Baldwin, Lima, and the PRR's own Juniata shops. Number 7688, an H10s built by Lima in 1915, is preserved at the Railroad Museum of Pennsylvania in Strasburg, Pa.

Design. This is an impressive looking model, capturing perfectly the muscular look of the prototype. The model's major dimensions match those of a PRR class H9 drawing in *Model Railroader Cyclo-pedia: Vol. 1, Steam Locomotives* (Kalmbach Books). The only difference between the H9s in the drawing and the H10s model is the size of the cylinders.

The model's cast-metal boiler bears fine banding and rivet detail. The Dark Green Locomotive Enamel paint is smoothly applied, as is the graphite on the smokebox. The Dulux gold lettering on the cab and the tender matches prototype photos of no. 7103 I found in Alvin Stauffer's book *Pennsy Power* (Standard Printing & Publishing Co., 1962). The model also resembles those photos in the

size and placement of equipment, piping, running gear, and other details. I was impressed to see that the lettering on the smokebox builder's plates was all legible under extreme magnification.

The tender matches prototype photos and bears a separately applied coal load. Adjustments for the smoke unit and sound volume are under the magnetic water hatch; a slide switch on the bottom changes the model from Digital Command Control (DCC) to MTH's proprietary Digital Command System (DCS).

The blackened metal wheels on our sample model follow National Model Railroad Association RP-25 contour and were all in gauge. The model picks up electricity on all eight tender wheels and six drivers; the third set of driver wheels has traction tires. A replacement driver set without traction tires is provided.

Sound and lights. Dual speakers in the tender provide clear, robust sound in our Proto-Sound 3.0-equipped model. The piercing PRR-style "banshee" whistle sounded authentic, and the steam chuffs were synched to the wheels.

When sitting idle, the engine plays a mix of steam hisses, air pumps, dynamo sounds, and cab chatter.

When operating under direct current, sound effects are limited to those ambient sounds, the engine chuffs, and an automatic brake squeal that sounds when the throttle is decreased quickly. Under DCS or DCC, more sounds are available, including the bell, whistle, startup and shutdown sequences, coupler clank, and crew dialogue.

The light-emitting-diode headlight and backup light are dimmed when the engine isn't moving. The PRR pilot-beam marker lights are separately controllable using function key F5. The markers on the tender are decorative only.

Test track. I tested the engine under direct current first. Sound effects came on at 6 volts, and at 7½ volts, the engine started to chuff and puff its way down the track at less than 1 scale mph. At these slow speeds, though, the extra current draw of the smoke generator caused the model's motor to hesitate with each puff. The engine reached a maximum of almost 30 scale mph at 12 volts.

Running under DCC, I had more control over the engine's functions, such as sounds and lights. The engine also didn't display the same hesitancy at slow speed under DCC or DCS.

Using DCC or DCS, I could also control the Proto-Coupler on the back of the tender. (The front coupler is a scale-size Kadee.) Pressing function key F7 on our DCC throttle, or the Rear Coupler button on the DCS Commander, resulted in a "clank" sound effect as the rear coupler opened. The Proto-Coupler works best mated with scale-sized knuckle couplers.

Two pins under the deck of the locomotive engage two holes on the tender drawbar. These pins carry the electrical connection between the engine and tender. Rather than pivoting on a single point, both ends of the drawbar ride in a pair of curved slots that pull the tender and cab close together when the two are aligned on straight track and allow more space in between when taking a curve. This system allows the engine to take 18" radius curves. However, I found the drawbar to be rather stiff and troublesome on S curves.

Our test bench digital force meter registered a hefty drawbar pull for a small steam engine, 4.2 ounces. That translates to a train of 58 standard 40-foot boxcars on straight and level track. The prototype was expected to pull no more than 50.

A welcome offering. I can personally testify to the joy a Pennsylvania RR modeler feels when he finds an authentically detailed, Belpaire-firebox-equipped PRR steamer appropriate for his layout. Now, would it be too much to ask for a sound-equipped class D16 4-4-0? – Steven Otte, associate editor

▶ MTH HO scale PRR H10s

Price: with Proto-Sound 3.0, \$399.95; with Proto-Sound 3E+ (for Märklin 3-rail track), \$429.95.

Manufacturer

MTH Electric Trains
7020 Columbia Gateway Drive
Columbia, MD 21046
www.mthhotrains.com

Era: 1913 to 1940s

Roadnames: Pennsylvania RR (Nos. 7099, 7103, 7122), Long Island Rail Road (Nos. 103, 107)

Features

- Cast-metal detail parts (including whistle, bell, pop valves)
- Detailed backhead and illuminated cab
- Die-cast metal boiler, chassis, and tender body
- Digital Command System with Proto-Sound 3.0
- Electrical pickup on 3 driver axles (with traction tires installed) and 4 tender axles
- Five-pole skew-wound motor with flywheel
- Light-emitting-diode headlight and backup light
- Minimum radius 18"
- Puffing smoke unit
- Remote-opening Proto-Coupler on rear; Kadee coupler on front (extra user-installed Kadee coupler provided)
- RP-25-contour blackened metal wheels (in gauge)
- Weight: 1 lb. 1.5 ounces; 10.6 ounces (engine alone)
- Wire grab irons

HO scale PRR H10s

Drawbar pull 4.2 ounces
58 HO scale freight cars

Scale speed (DC)		Scale speed (DCC)	
Volts	Scale mph	Speed step	Scale mph
7.5 (start)	<1	1	2
9	7	7	13
10	12	14	34
12	29.5	28	36

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Walthers brings *Broadway Limited* into the 1960s

By the 1960s, many passenger trains had become shadows of their former selves, but one soldiered on, providing all-sleeping-car service as it had from the beginning of the 20th century, the *Broadway Limited*. Modelers who wish to replicate this train late in its Pennsylvania RR life now have the Walthers Proto 1960s *Broadway Limited*.

The prototype. In 1949, following the deferred maintenance of the war years, the PRR updated the *Broadway Limited* with all-new equipment from the big three passenger car builders, Budd, American Car & Foundry, and Pullman-Standard. These cars would be with the train until the end of the PRR, and many would continue to serve under Penn Central and on to the early years of Amtrak. Some of these cars were used in the PRR's other passenger trains.

The model. The 1960s-era *Broadway Limited* is a modified version of Walthers' model of the 1953 train released in 2011. The main difference is the side skirting on the cars. The Pennsylvania, like many railroads, removed the skirting between the trucks to simplify access to under-floor mechanical systems.

The reviewed models are a Pullman-Standard 12-duplex, 4-bedroom sleeper, and a 1 bedroom-2 master room-buffet lounge-observation car. Both models match prototype photos and floorplans.

The 24 sleepers in the *Creek* series had duplex rooms with a staggered up

and down placement in the center of the car, and two bedrooms at each end. The staggered compartments resulted in a unique up-and-down window placement on the room side of the car. The aisleway had conventional window placements.

The two observation cars in the *View*-series were reserved for the *Broadway Limited*: the *Mountain View* and the *Tower View*. The observation car carries an updated *Broadway Limited* tail sign, which on the prototype was lit from above. The model has no provision for lighting the sign. There is a noticeable gap between the blunt end of the car and the side walls.

Walthers' models include complete interiors molded in tan plastic. I reached the interior by releasing the locking tabs on the roof with a no. 17 chisel blade in a hobby knife. The locations of the tabs are indicated on the instruction sheet.

All dimensions with the exception of coupled length matched published figures. The longer coupled length is due to the slightly oversized model couplers. The sleeping car weighed 7 ounces, matching National Model Railroad Association (NMRA) Recommended Practice 20.1. The observation was slightly lighter at 6.8 ounces.

Both body-mounted die-cast metal couplers on the sleeper and one on the observation drooped about 1 mm. I adjusted the trip pins higher so they wouldn't foul turnouts.

Out of the box, the diaphragms touch when the cars are pushed together and

▶ H0 scale sleeper and obs

Price: \$74.98, sleeper; \$79.98, blunt-end observation car

Manufacturer

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

Era: 1960-1968

Features

- Factory-installed, painted grab irons
- In gauge turned metal wheels match NMRA Recommended Practice RP-25
- Tinted windows and printed gasket detail, as appropriate

are just slightly apart when the cars are being pulled. Although the cars will operate on a 24" minimum radius curve, they look better on broader curves. Walthers includes a set of user-installed draft-gear boxes that allow the cars to negotiate 22"-radius curves. However, these parts also increase the distance between the cars.

The Tuscan Red paint and buff lettering and striping were all evenly applied and opaque. Decals are provided for the car names. Only the *Mountain View* and *Tower View* decals are appropriate for the observation. The underbody equipment matched photos I found of both cars.

The 1960s were a fascinating time in railroading as classic rolling stock gave way to modern equipment. Walthers 1960s *Broadway Limited* lets modelers relive some of the old glory. – *Eric White*, associate editor

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PRODUCTREVIEWS

QUICKLOOK

Atlas HO scale 50-ton offset-side two-bay hopper

Price: \$21.95

Manufacturer

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

Era: 1964-1973 (as decorated)

Road names: Interstate, Clinchfield, Montour, and Nickel Plate Road. Two numbers per scheme.

Comments: Atlas is offering its Association of American Railroads 50-ton offset-side two-bay hopper with oval heap shields in new road numbers. The ready-to-run model is part of the company's Trainman line.

The model features a one-piece injection-molded plastic body with molded grab irons and ladders and well-defined rivets. The draft-gear boxes, bolsters, and center sill are a separate plastic casting that spans the bottom of the car. Exposed steel weights, installed below the slope

sheets, are painted the same color as the body.

The hopper includes a removable plastic coal load. The car's interior features bracing and rivet detail, ideal for those who want to run the car empty.

Our sample is decorated as Interstate RR (INT) no. 9584. The car, part of the railroad's 9400 through 9718 series, was added to the INT roster in 1964, three years after the Virginia-based coal hauler was purchased by the Southern Ry.

The paint is smooth and evenly applied, and the white lettering is opaque and legible. The lettering placement matches a prototype photo of car no. 9584 I found online.

The model's dimensions closely follow prototype drawings published in the 1940 *Car Builders' Cyclopedia of American Practice* (Simmons-Boardman Publishing Corp.). One detail discrepancy between the model and the prototype photo is the heap



shield. The shield on the model is symmetrical across the end. On the full-size car, the shield was notched for the end ladder.

The model weighs 2.5 ounces with the load installed, which is .8 ounce too light based on National Model Railroad Association recommended practice 20.1. The Accumate couplers are mounted at the correct height. The 33" metal wheels, mounted on plastic axles, are correctly gauged.

Offset-side two-bay hoppers were a common sight on many railroads for decades. Whether it's one or two cars at a local coal dealer or a solid cut of cars coming from the mine, the Atlas offset-side twin hopper would look good on any HO layout set from the 1930s through the 1970s. – Cody Grivno, associate editor

QUICKLOOK

Micro-Trains N scale 70-foot heavyweight horse car

Price: \$29.95 to \$34.90

Manufacturer

Micro-Trains Line Co.
351 Rogue River Pkwy.
Talent, OR 97540-1200
www.micro-trainsline.com

Era: 1928 to 1968 (as decorated)

Road names: New York Central, Baltimore & Ohio, and Pennsylvania RR. One number per scheme.

Comments: The latest body style in the Micro-Trains line is a 70-foot heavyweight horse car. Though the model doesn't follow a specific prototype, it shares some features with cars in New York Central's 8660-8669 series.

The specialized cars were used to haul horses between training centers and tracks in the first half of the 20th century. The heavyweight cars featured three sliding baggage-style doors on each side and hinged doors on the A end.

When not used to transport horses, the cars could be reconfigured to haul vehicles, baggage, theater props, and freight, among other items.

Some cars were used to transport cavalry units during World War II. In later years, some railroads converted horse cars to conventional baggage cars.

The injection-molded plastic model features a one-piece body, a separate fish-belly underframe with molded brake appliances, and a removable roof. The stirrup steps are separate castings installed between the bottom of the floor and the underbody. Inside the car is a one-piece weight and window glazing.

The distance over the striker plates is a scale 72'-6". The truck centers are a scale 56'-0". The openings for the five-window baggage doors are a

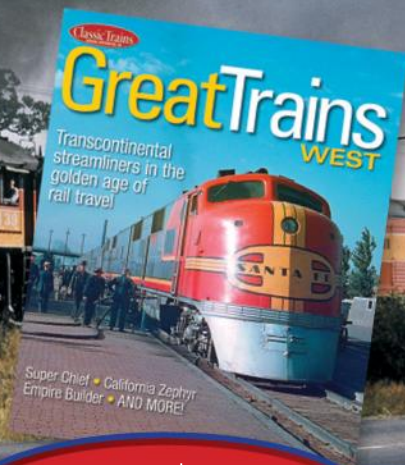


scale 4'-9". The opening for the six-window middle door is 5'-6". All side doors are a scale 6'-3" tall.

The body-mounted Magne-Matic couplers are installed at the correct height. The plastic wheelsets are correctly gauged. At 1.2 ounces, the model is .1 ounce too light based on National Model Railroad Association recommended practice 20.1.

Though the Micro-Trains car is of a generic design, allowing the model to be painted in several schemes, it has key spotting features that suggest it's a horse car. These cars wore many hats over their careers and would be appropriate for passenger trains from the late 1920s to the late 1960s. – C.G.

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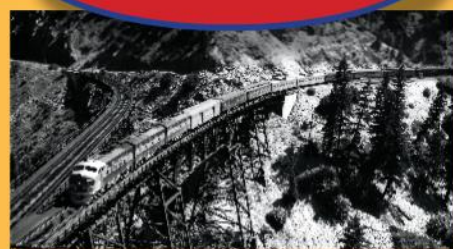


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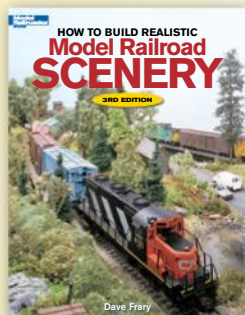
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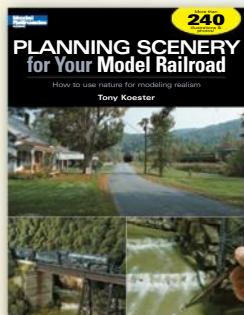
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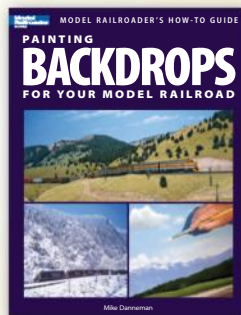
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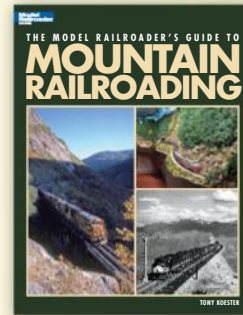
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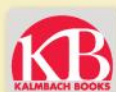
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Waybills and switch lists

A car full of weary Los Angeles-area railfans might have suffered through a very wintry night in the Feather River Canyon in February, 1974, if not for Bob Nowland. He was the Western Pacific clerk at Keddie, Calif., who sheltered us in the yard office there. When my bulb flashed this photo, I didn't know that it would become one of my favorites.

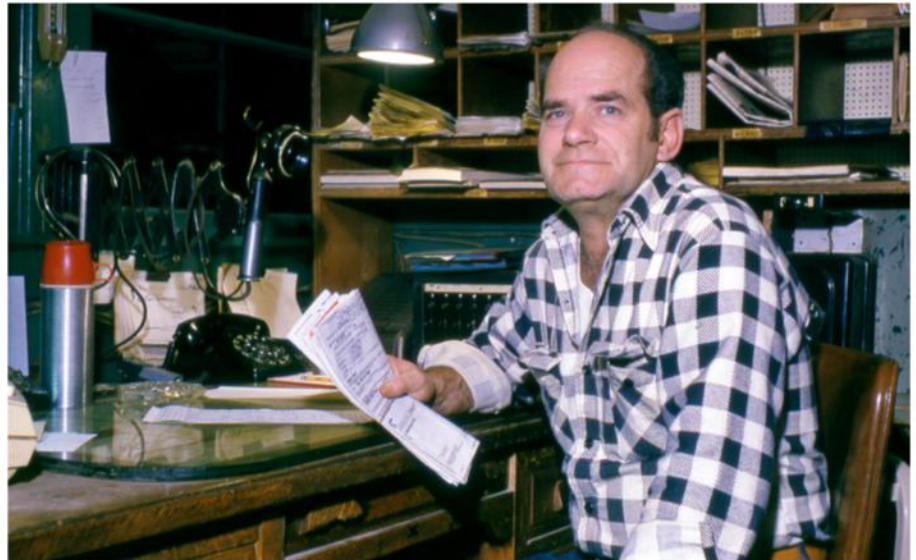
I thought of the photo while I was reading one of the recent threads debating waybills and switch lists. These discussions often have people arguing the merits of one over the other, as if to make a choice. Consider another possibility: do they both deserve a place?

Waybill information displays the shipper, the consignee, the car, its contents, and the route from origin to destination. A waybill is railroad currency. It travels with its shipment, passing from conductor to conductor. Using them can be another way to superdetail a layout. Let's examine some in my collection.

The waybill of a Pacific Fruit Express reefer carrying Bartlett pears from Ukiah, Calif., to an A&P warehouse in New Jersey in 1954 bore the routing line "NWP SHV SPOGD UP KC WAB HUNTINGTON ERIE NYSW." The translation: After the car was loaded on the Northwestern Pacific, Southern Pacific moved it to Ogden, Utah. The car then traveled via Union Pacific to Kansas City. The Wabash forwarded it to the Erie at Huntington, Ind., and the New York, Susquehanna & Western made the final delivery.

Another 1954 bill routed a Nashville, Chattanooga & St. Louis covered hopper of bulk cement via "NCSTL GAR ACL RF&P BO PK JCT RDG BDBK CNJ WHKN ERIE CROX NYSW." Penn Dixie Cement loaded it at Richard City, Tenn. The car rolled over Atlantic Coast Line, then the Richmond, Fredericksburg & Potomac to Potomac Yard near Washington, D.C. Baltimore & Ohio moved it to the Reading at Philadelphia's Park Junction for delivery to Central of New Jersey at Weehauken, N.J. Finally, Erie brought it to Susquehanna to place at a local ready-mix plant.

I used all caps in these routes because this was typical of all waybill entries. Lower case letters were uncommon on billing typewriters.



Bob Nowland works with a fistful of waybills at Western Pacific's Keddie, Calif., yard office in February 1974. Jerry Dziedzic photo

Routing information conveys a sense of time and place. The reefer becomes a travelogue of Donner Pass, the Great Plains, and the eastern industrial belt. The car of cement reads history to me: the prosperity of the postwar building boom and a manufacturer that thrived on it. This information pleases me and I insert it on my waybills.

There are plenty of waybill systems from which layout owners may choose. They range from the familiar handwritten car card/waybill combination to new, database-driven variations. No matter its form, the system will instruct the crew handling a car at any particular time. A crew may not give a hoot about how the car got on its train, but it sure needs to know what to do with it.


Typically, we'll hand a crew a throttle and a package containing waybills for its train and information about its work. Itching to go, the crew heads out on the road, shuffling the bills like a deck of cards. Some crews intrude on a carefully modeled scene, standing bills up against cars to be switched. And, who hasn't fumbled his bills, scattering them across the floor?

Here's another approach: make a handwritten switch list that summarizes the waybill information. This was a universal practice on the prototype. Waybills didn't stray far from the caboose, the yard office, or the depot. They were too valuable to risk to damage or loss.

A switch list contains the detailed instructions needed to handle each car. Conductors, yard clerks, and agents relied on them. I prepare one before I depart. Town by town, I note cars to set out and the location at which to place them – for example, team track, freight house, or creamery. I add door or track number as necessary. I abbreviate information, marking only the first two letters of the reporting marks and the last three of the car number. I leave space on the list to add pickups that I'll find when I reach a particular town.

After I complete a move, I line out the car on the list. The car cards go into a shirt pocket or other safe place until they're needed to deposit in a depot bill box or bundled to hand to a yardmaster at the end of the run.

Doing this forces me to plan the job. It organizes me, so I know where I'll work and how long it will take me. It also divides my train into small, manageable sets of cars for each town, making it easier to work.

Many years after meeting Bob that night, I zoomed in on the slide of the railroader at work. Imagine my surprise to find him holding a fistful of waybills in his right hand! The pigeonholes behind him contain more. The form on his desk might be a switch list. If not, there may be one more to prepare before he calls it a night. 

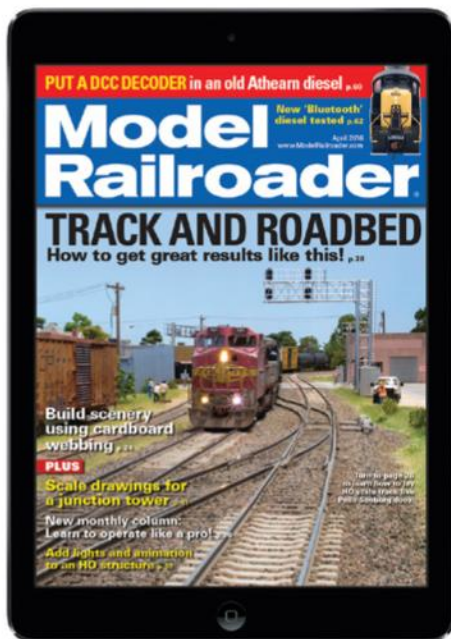
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TRACKSIDE PHOTOS





◀ The Mosquito Creek Lumber Co.'s lone Climax locomotive leads the "Clean-Up Train" across a low bridge over the algae-covered swamps of Louisiana. Joseph Kreiss of Fairmont, Minn., whose HO scale Big Island Rail layout was featured in the January 2012 *Model Railroader*, built and photographed the On30 logging scene. The engine is from Bachmann and the flatcars are converted On3 models. The bridge uses HO scale Atlas girders.

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The photo at left of Joseph Kreiss' On30 scale Mosquito Creek Lumber Co. layout is this month's wallpaper. Download it free from our website, www.ModelRailroader.com.



TRACKSIDEPHOTOS



▲ With the help of a 125-ton crane, a crew of National Transcontinental Ry. (now Canadian National) workers construct the Little Salmon River Viaduct in New Brunswick, Canada. Gilles Cote of Grand Falls, N.B., modeled the landmark's construction in HO scale. Once finished, the model bridge will be 78" long. Studio Martine Caron of Grand Falls shot the photo.



◆ Crystal River Logging & Transportation Co. Heisler no. 1 delivers a loaded car to the sawmill log dump. Dave Smith of Carmel, Ind., scratchbuilt the unloading equipment based on the cover photo of Ralph Clement Bryant's book *Logging* (National Model Railroad Association, 2nd Edition, 2008). Dave also photographed the scene on his 2'-6" x 9'-0" HO scale layout.



▲ Led by Electro-Motive Division GP50 no. 5542, a unit train of empty grain hopper cars leans into Big Bend Curve. Kenny Ravenscroft of Fremont, Wis., shot the action on his freelanced HO scale Pilar Valley Ry. All four engines are Athearn models. Kenny detailed the locomotives and rolling stock and weathered them with artist's oils, acrylics, powders, and an airbrush.

► It's quiet for the moment at the Ingersoll coal mine, but soon the switcher will start arranging the hoppers into an outgoing train. Vince Pugliese of Toronto photographed the scene on the York Railway Modellers Club's HO scale layout in Toronto. Club member Bill Miller scratchbuilt the tippie, which is a pivotal industry on the layout. The hoppers are from a variety of manufacturers.



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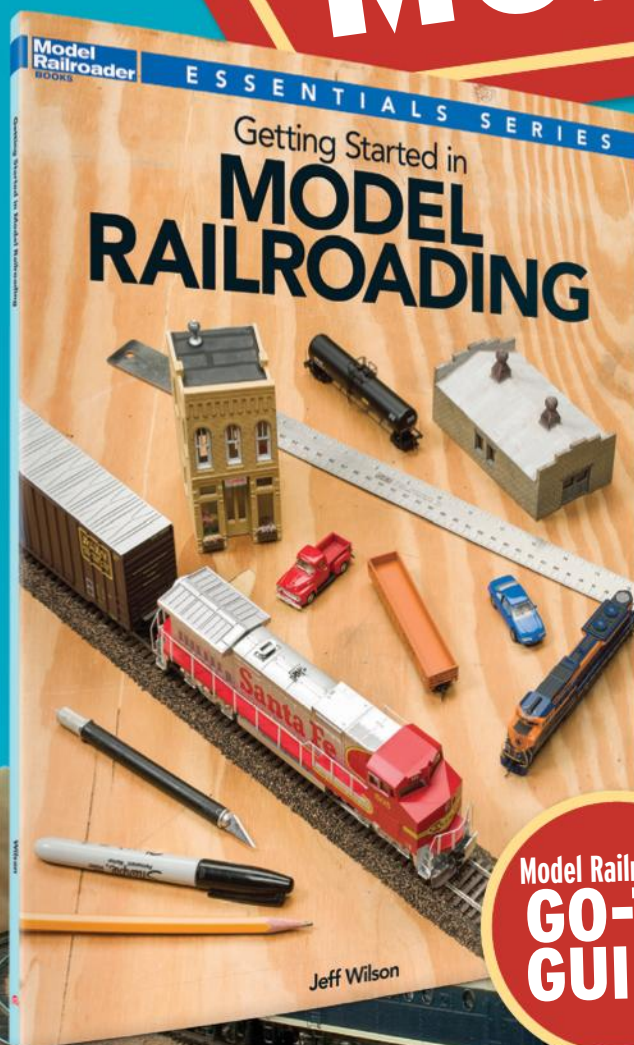
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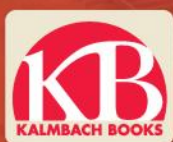


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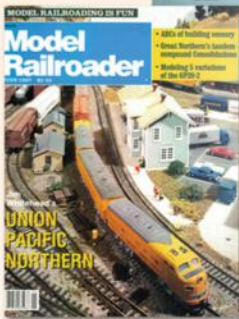
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Note to Readers: Show dates, times and locations sometimes change. Confirm the details before driving any distance.

Schedule of Events

AZ, PRESCOTT AREA: Beat the Heat Model Trains Swap Meet. Liberty Traditional School, 3300 N. Lake Valley Rd., Prescott Valley. Saturday, August 13, 2016, 9:00am-1:00pm. Adults \$5.00, children 12 and under free. Tables \$30.00. Presented by: The Central Arizona Model Railroad Club. Contact: Dick Gage, 802-272-1352.

CA, SAN CARLOS European Train Enthusiasts (<http://www.ete.org>) EUROWEST at Hiller Aviation Museum, San Carlos Airport, 601 Skyway Road, Zip: 94070. July 23-24, 2016, Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Layouts, clinics, vendors, raffle. Admission (<http://www.hiller.org>) includes Air Museum, free parking. Contact Jens Ullmann: eurowest@ete.org

CO, PUEBLO: Colorado Rail Fair, Pueblo Union Station. August 6-7, 2016, 9:00am-4:00pm. Admission: \$5.00, children free w/adult. Operating layouts, sales tables, railroad museum and more. Train rides conducted by the Pueblo Railway Foundation. Contact: John Denny, 719-547-7990, lonecowboy@centurylink.net

IL, GALESBURG: Galesburg Railroad Train Show. NEW LOCATION: Galesburg High School Fieldhouse, 1242 W. Dayton St. June 25-26, 2016, Saturday 9:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$5.00, under 12 free. Free parking and shuttle bus to depot museum area. Info: 309-221-3909 E-mail: cobra@grics.net

IL, ST. CHARLES: 40th Annual Kane County Railroadiana and Model Train Show. Kane County Fairgrounds, 525 South Randall Rd. Sunday, June 12, 2016, 10:00am-3:00pm. Admission: \$6.00 w/tax. Tables \$60.00. For information: 847-358-1185, RussFierce@aol.com or www.RRShows.com

KS, OVERLAND PARK: The N Scale Enthusiast hosting the 24th National N Scale Convention. Sheraton Overland Park Hotel, 6100 College Blvd. Public show July 1st noon-4:00pm and July 2nd 9:00am-4:00pm. Admission \$8.00, children under 15 free. Free parking. 15 club layouts, dealers and manufacturers. For info: www.nationalscaleconvention.com

MI, NOVI: National S Scale Convention, August 10-14, Novi Sheraton Hotel. Dealer hall, operating layouts, tours, clinics, model contest, home layout visits and operating sessions. Basic registration \$60 plus options. Visit www.smsrtrains.org or contact Dave Campbell at (248) 464-1597. Sponsored by Southeastern Michigan S Gaugers.

OH, PAINESVILLE: Railroad Memorabilia Show Painesville Railroad Museum (Painesville Depot), 475 Railroad Street, Zip Code: 44077. Sunday, August 28, 2016, 10:00am-4:00pm. 216-470-5780 Email: prrm@att.net www.painesvilleraillroadmuseum.org

WI, LA CROSSE: Rail Fair. Copeland Park, Rose & Clinton Streets. July 16, 2016, 10:00am-4:00pm. Admission \$5.00, under 12 free. Railroad Show, Sale & Exhibition. Model, Toy & Antique Trains & Memorabilia, Railroad Exhibits & Displays. Information: 4000 Foundation, P.O. Box 3411, La Crosse, WI 54602, 608-781-9383.

WI, MILWAUKEE: Trainfest, at Wisconsin State Fair Park. November 12-13, 2016, 9:00am-5:00pm. WISE Div. NMRA. Exhibitors include Operating Layouts, Major Manufacturers, Modeling Clinics, and Hobby Vendors. Admission Information and Tickets available at www.trainfest.com Contact us at info@trainfest.com

WI, WAUPACA: WAMR 27th Strawberry Fest Model Railroad Show & Model Contest. Waupaca Recreation Center, School/State/Badger Sts. June 18-19, 2016, Saturday 10:00am-5:00pm and Sunday 10:00am-3:00pm. FREE. Many layouts/vendors/swap tables. Roger Hildebrandt, 7693 Evergreen Dr. E. Waupaca, WI 54981, 715-258-8218 or check club website: www.wamrltd.com

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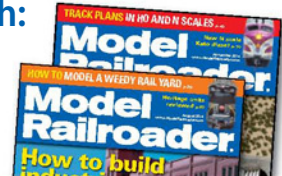
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From plan to railroad



There's plenty of action, but little scenery, on Dave Olesen's Chessie System as his crew puts the railroad through its paces. Indeed, that's part of the plan. Tony Koester photo

The above snapshot shows a work in progress. Specifically, it's a recent look at Dave Olesen's HO scale Chessie System (with a touch of CSX). Since the photo was taken, the open space between the upper and lower levels has been covered with landform scenery and a small forest of SuperTrees.

From a purely pragmatic standpoint, the more scenery along the edge, the fewer opportunities for a derailed locomotive or car to take a long vertical plunge to the concrete floor below. But the reason there isn't much to see, at least at this stage, is what we'll discuss this month.

Model railroaders are, almost by definition, builders. Only a few of us have the Layout Fairy show up and – poof! – create a finished layout on our behalf. Most of us toil away for some time to transform our ambitions to hardware.

Some of that toil is rather enjoyable. Some of it isn't and, at best, it's a means to an end or a rite of passage. As proud as we are of a finished scene (I'm not sure there's such a thing as a finished railroad), we sometimes wish we could have found a way around the myriad tasks that lie between a 2-dimensional plan and 3-dimensional railroad.

Among the more enjoyable, if a bit intimidating, chores is the construction of scenery and structures. It's best not to think too far ahead, to contemplate in

great detail every step that lies on the path from Here to There. You can become exhausted just thinking about it.

And it's ever so tempting to skip ahead. It's rewarding to have that L-shaped junction depot constructed and ready to plop down on the railroad – this despite the fact that you don't have a railroad on which to place anything.

It's hard to be patient and get the railroad operating reliably first, but this is almost always has the best outcome. Best-laid plans are just that, and not reality. Even those of us who have decades of experience building and operating model railroads find that we overlooked this or failed to allow for that.

We usually discover an oversight as the railroad begins to function, preferably as a railroad should. Ideally, a model railroad is far more than a place to run our trains. It's an opportunity to learn how railroads functioned, and to emulate their activities on a smaller scale. This can be done to a greater or lesser degree depending on your time, interests, and knowledge, but there is nothing more discouraging than to have a model railroad that doesn't run well. It may look like a million bucks, but if its performance fails to measure up to the aesthetics, it will gather a lot of dust.

The photo shows the acquisition of an insurance policy: an operating ses-

sion. Just out of view are perhaps 20 fellow modelers who have gathered in the Olesen basement to put the Chessie System's 1:87.1 edition to the test. It will fail the test, of course, as it's only one of the first few formal operating sessions. But with each passing session, its failures will become fewer and farther between.

Soon it will become worthy of the name "railroad." If it looks like its prototype and it functions like its prototype to a practical degree, it's more than a model railroad. It's a *model of a railroad*.

This will require more than having good models and good scenery. Its crew will slowly but surely coalesce into a team, each person capable of performing one or more tasks as they should without a lot of coaching. They'll come to know what the Chessie System's former Chesapeake & Ohio lines through the Virginias did in the 1980s, and they'll enjoy re-creating that on Dave's railroad.

For now, however, we're all in the same – pardon the expression – boat as the railroad. We have a rough idea what to do, just as the railroad has a few rough spots to be ironed out. Next month will be better. The appearance will also improve as the mechanical and electrical kinks are resolved, but not before then. A plan becomes a layout that, with a lot of fine-tuning, becomes a railroad. Dave's Chessie System is well along that path to success. **MR**

HO
Scale



A Blast From the Past EMD SD40-2 Mid

Last released in 2007, the SD40-2 at the time was a revolution for Kato's HO design, featuring operating ditch lights (toggleable between steady and flashing modes on both DC and DCC!), fully assembled parts, and prototype specific details like the rear mounted horn and roof AC units on the Santa Fe models.

Today the SD40-2 Mid Production Version remains one of the gold standards of Kato HO Engineering, and is available again in Santa Fe and (coming soon) Burlington Northern, in a paint scheme never before done on this model by Kato in HO! Both models feature ready-to-run detailing, DCC+Sound friendly chassis' and Kato's legendary motorized drive!



▲ EMD SD40-2 Mid Nose Headlight ver. in AT&SF Paint



N Scale version shown for reference

▲ EMD SD40-2 Mid Cab Headlight ver. in BN "Standard"

Item #	Description	MSRP
#37-6604	HO EMD SD40-2 Mid Production - BN "Standard" #7036 (Cab Headlight)	185.00
#37-6605	HO EMD SD40-2 Mid Production - BN "Standard" #8023 (Cab Headlight)	185.00
#37-6616	HO EMD SD40-2 Mid Production - Santa Fe #5072 (Nose Headlight)	185.00
#37-6617	HO EMD SD40-2 Mid Production - Santa Fe #5088 (Nose Headlight)	185.00
#37-6604-LS	HO EMD SD40-2 Mid Production - BN "Standard" #7036 w/ ESU LokSound DCC	285.00
#37-6605-LS	HO EMD SD40-2 Mid Production - BN "Standard" #8023w/ ESU LokSound DCC	285.00
#37-6616-LS	HO EMD SD40-2 Mid Production - Santa Fe #5072 w/ ESU LokSound DCC	285.00
#37-6617-LS	HO EMD SD40-2 Mid Production - Santa Fe #5088 w/ ESU LokSound DCC	285.00

*DCC and Sound versions of these locomotives are available on a built-to-order basis. Contact your local hobby shop or visit our web site at www.katousa.com for more details!

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