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diesel tested** p.62

April 2018
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Build a backdrop
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- Online bonus ModelRailroader.com



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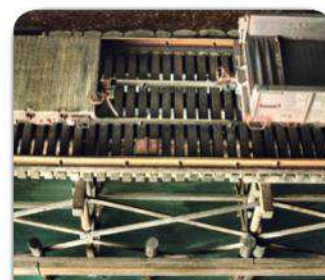
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Look to the prototype to enhance operations



On the cover: Modeler John Travis captures the Pennsylvania RR look on his Johnstown & Gerryville HO scale layout. Lou Sassi photo



Next issue

In May, learn how to hide uncoupling magnets on a coal trestle, visit southern England via Atlanta, make an operating overhead door, and more!

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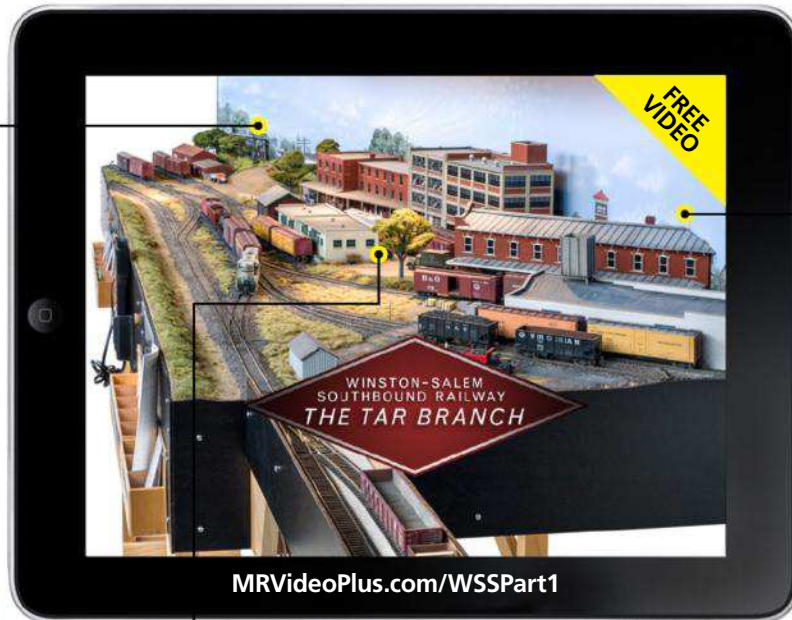




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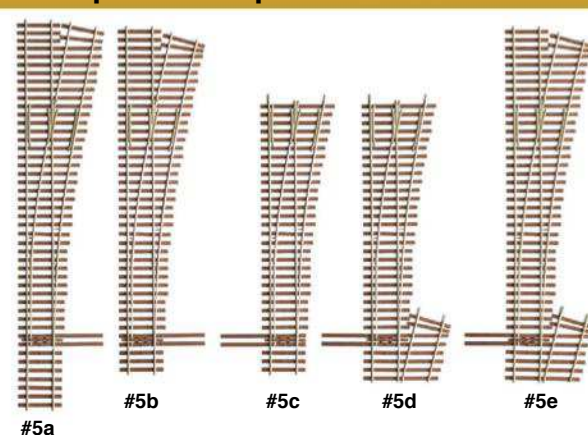
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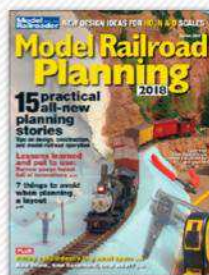
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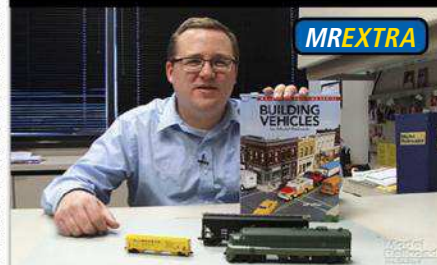


Share your layout videos

John Colombo's N scale Nickel Plate Road is featured in *Model Railroad Planning 2018*. John also shared an online layout video at www.ModelRailroader.com. Do you shoot videos of your layout? Be sure to post them on the User Videos page, where you'll find hundreds of layout tours and project videos uploaded by your fellow model railroaders.



ONLINE EXTRAS



What's inside Cody's Office?

Don't miss the latest episode of our popular web series Modeler's Spotlight Video – Inside Cody's Office. Each month associate editor Cody Grivno shows you the latest hobby products, provides tips, and answers viewer questions.

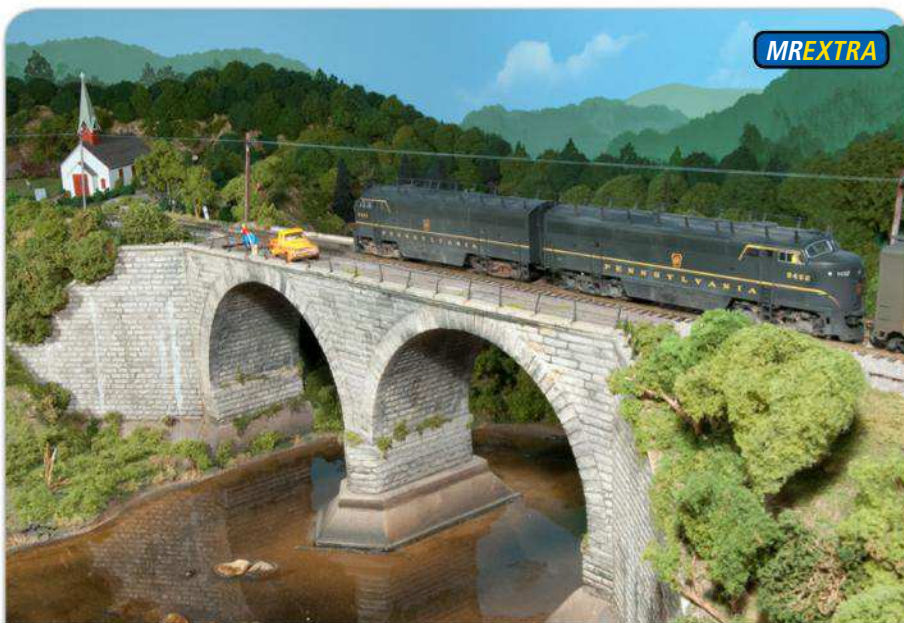


Project plans

Fertilizer blend plants have been common rail-served industries since the 1950s. Rich Cobb describes the prototype for his HO model of a fertilizer blend plant on page 50. Click on the link under Online Extras on the MR home page to download the Harold W. Russell plans for this trackside industry.

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Classic Pennsy scenes along the J&G

Built by John Travis with help from his wife, Gerry, and several friends, the HO scale Johnstown & Gerryville is a freelanced layout set in southwestern Pennsylvania in the 1950s. *Model Railroader* subscribers can see this layout come to life in an exclusive online video.

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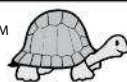
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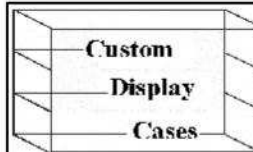
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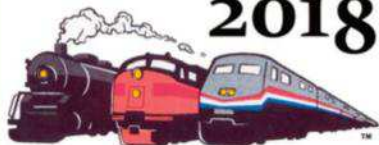


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Someday, this is going to be cool

Time is a funny thing. Its passage has the ability not only to age us, but also to make us look at things past in a different light.

The effect is noticeable in a lot of places, including the railroads we model.

About 30 years ago I was a single budding railfan and modeler, with a job, a car, and a bag full of camera gear. On the weekends and when I had time off, I'd chuck my bag into the back seat and drive for hours to shoot the railroads and their infrastructure in the region where I lived.

In addition to the short lines, which were colorful and plentiful, I got a pretty steady diet of the Santa Fe, Union Pacific, and Burlington Northern railroads.

As a modeler, I thought the first two were pretty cool. The latter, not so much, as only a decade earlier Cascade Green and black had replaced

the Mandarin Orange and white of the Frisco in my part of the world. I shot the BN, but I didn't have to like it, and I darn sure wasn't going to model it. And even though I really didn't come into contact with them very much, I added Conrail and Amtrak to that list, too.

Oh, foolish youth. About a decade later I arrived at *Trains Magazine* and watched as BN and Santa Fe merged; then Union Pacific and Southern Pacific; and Canadian National bought Illinois Central. Locally, Canadian Pacific moved to do away with its Soo Line subsidiary and consolidate its corporate image.

Suddenly, Burlington Northern didn't look so bad. It was, after all, now a part of railroad history, and therefore subject to viewing with rose-colored glasses. I'm pretty

sure I also said, "Someone will find Amtrak cool to model someday." I'm glad I'm actually living to see it.

Coincidentally, 2018 is the 50th anniversary of the formation of Penn Central, and I'm sure there are many in the generation before me that felt the same way about it as I did about BN. But even Penn Central, and its follow-on Conrail, get some love today, as I think they should.

In many cases, we like to model what we remember from our youth or a certain point in life. The railroads that existed at that point in time were the buffet we had to choose from. Time, like some meals we've eaten in the past, has made them more tasty than we first thought.

Speaking of time passing, it seems like just yesterday we were celebrating *Model Railroader's* 80th anniversary.



We're now making plans for the 85th, which we'll celebrate with the January 2019 issue.

We'd like your help in putting this issue together, identifying layouts that appeared in *Model Railroader* prior to 1985 that still exist. We'd like to have a picture or two of them, if possible. Please email us at mrmag@mrmag.com with "85" in the subject line.

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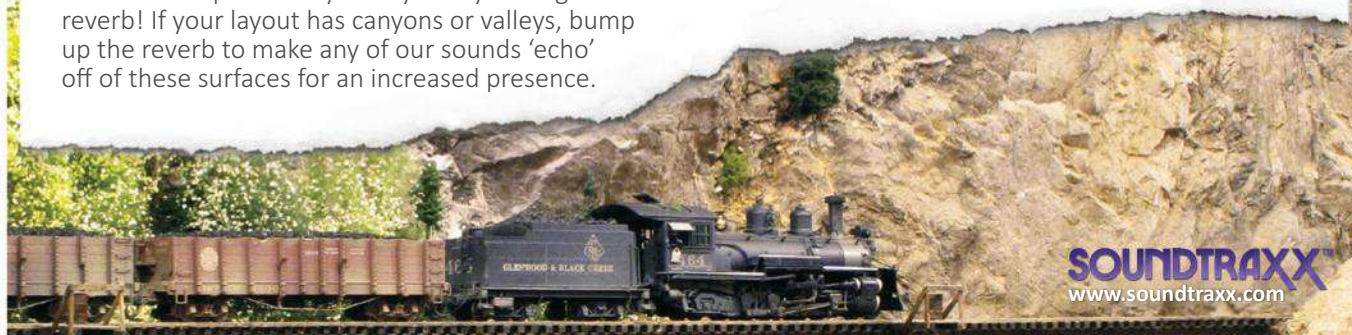
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HO scale



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Union Pacific (ES44AH). The HO models are offered in four road numbers per scheme (two each in direct current [**\$129.98**] and with a dual-mode SoundTraxx sound decoder [**\$199.98**]) and feature working front ditch lights. Wm. K. Walther's Inc., 414-527-0770, www.walther's.com

HO scale locomotives

• **General Electric Dash 9-44CW diesel locomotive.** BNSF Ry. (red and silver warbonnet); Canadian National; Chicago, Burlington & Quincy (Chinese Red and gray, fictional scheme); Chicago & North Western; Great Northern (simplified Omaha Orange and Pullman Green, fictional scheme); Norfolk Southern; Spokane, Portland & Seattle (yellow and green, fictional scheme); and Union Pacific (C&NW patchout). Three numbers per scheme. Prototype-specific truck sideframes, factory-installed and painted wire grab irons, and eight- and nine-pin connectors for Digital

Command Control decoder. \$129.98. December 2018. Roundhouse line. Athearn Trains, 800-338-4639, www.athearn.com

• **Electro-Motive Division MP15DC diesel locomotive.** New paint schemes: CITX, GMTX (GATX Locomotive Group), Kansas City Southern (two road numbers), Morristown & Erie, Reading & Northern, and Union Pacific. New numbers: Conrail. Three numbers per scheme unless noted; undecorated models (three versions) also available. Prototype-specific details, painted crew figures, and Accumate couplers. Direct-current model, \$169.95; with ESU LokSound Select dual-mode sound

decoder, \$279.95. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

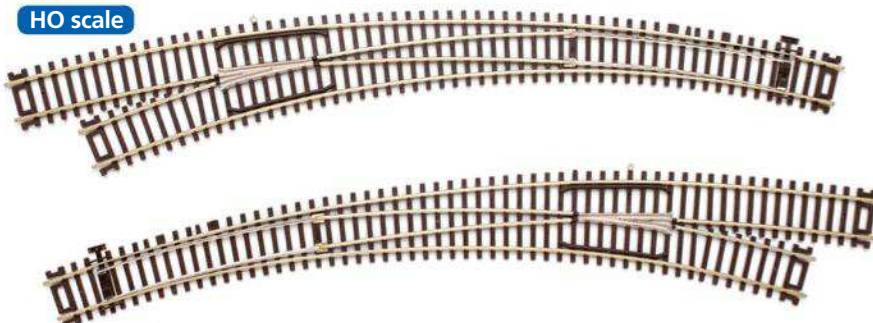
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• **Gunderson 60-foot double-door boxcar.** BNSF Ry. (circle-cross herald), Canadian National ("wet noodle" herald and www.cn.ca), Canadian Pacific Ry.

HO scale



Code 83 curved turnouts. These new Custom Line Mark IV series turnouts are available from Atlas Model Railroad Co. The HO scale curved turnouts (**\$24.95** each) come in left- and right-hand versions and feature brown plastic ties; nickel-silver rail; and die-cast metal points, frog with a power contact, and guardrails. The outer radius is 30", and the inner radius is 22". Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



(red with herald), Northwestern Oklahoma (factory weathered), Penn Central (fictional scheme), and Railbox. Three road numbers per scheme. Wire grab irons, etched-metal crossover platforms, and body-mounted McHenry scale couplers. \$39.98. November 2018. Ready-to-Roll. Athearn Trains, 800-338-4639, www.athearn.com

- **North American Car Co. 8,000-gallon tank car.** Amaizo, National Starch & Chemical, Staley, Union Tank Car Co. (black and brown), and Vulcan Materials Co. Three road numbers per scheme. Photo-etched metal platforms, separately applied ladders with bracing, and body-mounted McHenry double-shelf couplers. \$34.98. December 2018. Ready-to-Roll. Athearn Trains, 800-338-4639, www.athearn.com

- **Pacific Car & Foundry 57-foot mechanical refrigerator car.** Alaska RR ("McKinley National Park Route" slogan), Bangor & Aroostook, Fruit Growers Express ("Real Cold"), Golden West Service, Green Bay & Western (Bangor & Aroostook patchout), and Union Pacific Fruit Express. Three road numbers per scheme. Body-mounted McHenry scale couplers, RP-25 contour 33" metal wheels, and separately applied brake wheel. \$29.98. November 2018. Ready-to-Roll. Athearn Trains, 800-338-4639, www.athearn.com

- **NE-6 caboose.** New paint schemes: Chicago, West Pullman & Southern (one road number) and Seaboard Coast Line/Family Lines (ex-Clinchfield). New numbers: Conrail; Monongahela; New York, New Haven & Hartford; Norfolk & Western; and Penn Central. Two numbers per scheme unless noted; also available undecorated (New York, New Haven

& Hartford and Nickel Plate Road versions). Brake line detail, solid- or roller-bearing trucks as appropriate, and Accumate couplers. \$45.95 (undecorated, \$35.95). Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

- **40-foot postwar boxcar with 6-foot doors.** Atchison, Topeka & Santa Fe ("The Grand Canyon Line" and "Ship and Travel Santa Fe All the Way" slogans); Gulf, Mobile & Ohio (red); Indiana Harbor Belt ("Connects with all Chicago Railroads" herald); Montana Rail Link (tool car, two road numbers); Norfolk Southern (pre-1982 company); and Pittsburgh & Lake Erie ("Serves the Steel Centers" slogan). Prototype-specific

roof, ends, and doors; detailed under-frame; and blackened metal wheels. Three numbers per scheme unless noted; also available undecorated. \$31.95 (undecorated, \$25.95). Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



- **Pennsylvania RR class X38 50-foot automobile boxcar.** Cast-resin kit features one-piece body, wood running boards, and decals. Panel and recessed

N scale



FMC 4,700-cubic-foot-capacity three-bay covered hopper. Fox Valley Models offers this car

decorated for Chicago & North Western, BNSF Ry. (post-2005 herald and Cascade Green with circle-cross herald in three road numbers; buffer service in four versions, one to three numbers each). The N scale covered hopper (\$26.95) has etched-metal running boards, body-mounted couplers, and metal wheelsets. Fox Valley Models, www.foxvalleymodels.com

N scale



NE-5 caboose. Atlas has released this Master Line model decorated for New York, New Haven & Hartford; Boston & Maine; Chicago Great Western; Conrail; and Penn Central in three road numbers per scheme. The N scale model, priced at **\$29.95**, features prototype-specific trucks, brake line detail, and Accumate couplers. Undecorated models (**\$19.95**) are also available. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

roof versions. \$49.99 each. Funaro & Camerlengo, 570-224-4989, www.fandckits.com

- **Southern Pacific class C-40-4 bay-window caboose.** As-delivered and brown bay side repaint (1400-1499 and 1500-1599 series), end-mounted marker lights, and 4000-series rebuild. Four road numbers per scheme; undecorated kit also available. Etched-metal details, metal wheelsets, and Kadee couplers. \$59.95 (undecorated kit, \$29.95). July/August 2018. Centralia Car Shops and InterMountain Railway Co., 800-472-2530, www.intermountain-railway.com
- **Pullman-Standard 50-foot PS-1 boxcar.** Boston & Maine (built 1956, shipped 6-77). Two-piece self-centering trucks, no. 2100 scale couplers, and nine-foot Youngstown doors. \$38.95. Kadee

Quality Products Co., 541-826-3883, www.kadee.com

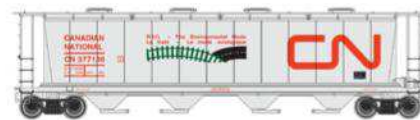


- **Pacific Car & Foundry flatcars.** Shielded-deck flatcar, rail deck flatcar, and I-beam deck flatcar. Cast-resin kits with trucks but no wheels. \$29 each plus shipping. Pennsylvania residents add 6 percent sales tax. Schuylkill Iron Works, P.O. Box 3678, Reading, PA 19606
- **Treadwell slag car.** Resin kit with one-piece resin trucks and decals but no wheels. \$29 plus shipping. Pennsylvania residents add 6 percent sales tax. Schuylkill Iron Works, P.O. Box 3678, Reading, PA 19606

Z scale

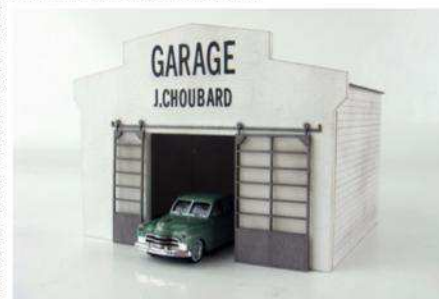


Krauss-Maffei diesel-hydraulic locomotive. American Z Line is offering this limited run (90 pieces total) brass model decorated for Denver & Rio Grande Western and Southern Pacific in three road numbers per scheme. The Z scale model includes a spare front truck with plow and coupler, directional light-emitting-diode headlights, and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com



- **National Steel Car 4,550-cubic-foot-capacity four-bay cylindrical covered hopper.** Round hatch covers: Canadian National ("Rail - The Environmental Mode" slogan) and Toronto, Hamilton & Buffalo (black). Trough hatch covers: BNSF Ry. (mineral red with circle-cross herald), CP Rail (black with Multimark), Canadian Wheat Board (CNWX and CPWX reporting marks), and National RR of Mexico. Four road numbers per scheme. See-through running boards, 100-ton American Steel Foundries trucks with 36" turned-metal wheelsets, and Proto-Max couplers. \$29.98. June 2018. Walther's Mainline. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale structures



- **LeGarage Chouard.** Laser-cut cardboard kit. Designed from a Charente building. Car not included. Measures 4.13" x 3.14" x 3.14". \$42.21 (price may vary based on exchange rate). Minifer, www.minifer.fr/en
- **Orangeburg passenger depot.** Kit features laser-cut walls, doors, and windows; details; and peel-and-stick shingles. Footprint (including eaves) is 14½" x 8". Based on Southern Ry. drawings, circa 1922. \$265. Nick and Nora Designs, www.nickandnoradesigns.com



- **Modern printing plant.** Injection-molded plastic kit with tip-up style concrete construction, alternate doors and windows, molded cut lines for

customizing, organic vapor cleaner and roof-mounted air conditioners with piping, and docks for rail and truck loading. \$79.98. Cornerstone series. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

HO scale details and accessories

- **Ford Model A tow truck.** Auto Club Towing, Crown/Motor King, Diamond Valley Towing, Rowe's Service, Springfield Auto Body, and S&L Motor Co. Cab interior with separate steering wheel, vinyl tires, and clear window glazing. \$21.98. November 2018. Athearn Trains, 800-338-4639, www.athearn.com
- **1997 Ford F-150 pickup truck.** New paint schemes (\$22.95 each unless noted): Atlas Model Railroad Co., Greenlawn Landscape Experts, police, and Maintenance-of-Way Yellow (\$18.95). Single-color schemes (\$18.95 each): black, dark red, Moonlight Blue, Pacific Green, tan, and white. Two-tone schemes (\$22.95 each): black and silver, green and tan, red and tan, and white

HO scale



Electro-Motive Division GP9 diesel locomotive. Athearn is offering its four-axle road switcher in new paint schemes, including Burlington Northern (Great Northern patchout) and Great Northern (as-delivered scheme) in four road numbers each. The HO scale Genesis series model has road-number-specific body styles and details, wire grab irons, and a detailed cab interior. Direct-current models retail for **\$189.98**. Versions with a dual-mode Tsunami2 sound decoder sell for **\$289.98**. Athearn Trains, 800-338-4639, www.athearn.com

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HO scale



Electro-Motive Division F7A and F7B diesel locomotives.

Paint schemes on these new additions to the Walther's Proto line include Burlington Northern, Canadian National (1973 to 1988 rebuilds), Chesapeake & Ohio (1952-1963 "low bow wave" scheme), and Union Pacific. The HO scale models

feature railroad-specific details, factory-installed wire grab irons, and a dual-mode SoundTraxx Tsunami sound decoder. Single A units (BN, CN, and C&O) and B units (UP) are **\$279.98** each; F7A-B sets are **\$549.98**. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

and tan. Undecorated model also available (\$14.95). Painted bumpers and plastic head and brake lamp covers. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

- **Assorted UPS International 4900-series vehicles.** Single-axle semi-tractor, dual-axle semi-tractor, and single-axle box van. Bow tie shield logo and modern shield logo. \$11.98 each. SceneMaster line. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

- **Intermodal yard pavement kit.** Injection-molded plastic kit with molded cut lines for customizing. Includes

trackside lanes and scale 60-foot wide grade crossing sections for truck and crane access. Can be expanded with additional kits. \$34.98. Cornerstone Series. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

N scale locomotives

- **Electro-Motive Division MP15DC diesel locomotive.** New paint schemes: CITX, GMTX (GATX Locomotive Group), Kansas City Southern (two road numbers), Morristown & Erie, Reading & Northern, and Union Pacific. New

numbers: Conrail. Three numbers per scheme unless noted; undecorated models (three versions) also available. Scale Speed motor with dual flywheels, separately applied uncoupling levers, and Accumate couplers. Direct-current model, \$129.95; with Digital Command Control motor decoder, \$164.95. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

- **Electro-Motive Division SD40-2 diesel locomotive.** BC Rail (red, white, and blue), CIT Group (CEFX reporting marks, blue with white stripes), CSX (blue, yellow, and gray), Genesee & Wyoming (Goderich-Exeter Ry. in one road number; Rapid City, Pierre & Eastern in three numbers), Indiana Rail Road (three numbers), Montana Rail Link (one number), Nebraska Central (three numbers), Seaboard System, St. Lawrence & Hudson, and Union Pacific (six numbers). Four numbers per scheme unless noted. Separately applied details, all-wheel drive and electrical pickup, and working ditch lights as appropriate. Direct-current model, \$139.95; with ESU LokPilot V4.0 Micro slide-in motor decoder, \$189.95; and ESU LokSound Select Micro slide-in sound decoder, \$249.95.

InterMountain Railway Co., 800-472-2530, www.intermountain-railway.com

- **Western Pacific Electro-Motive Division F7A diesel locomotives.** Nos. 913 (orange and silver) and 917, 918, and 921 (green and orange stripes). Prototype-specific details, wire grab irons, and etched-metal details.

HO scale



Trailmobile 40-foot 1970s-style Dry Van.

These Walther's SceneMaster trailers are lettered for Conrail; Chicago & North Western; Crab Orchard & Egyptian; Atchison, Topeka & Santa Fe; Boston & Maine; and Illinois Central ("Piggyback"). The injection-molded plastic HO scale trailers have modeler-installed raised and lowered landing gear, four latch bars for piggyback service, and scale rivet detail. A two-pack is **\$29.98**. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

Club offerings



- **Hocking Valley 41-foot gondola.** Accurail HO scale kit decorated for the Central Ohio Model Railroad Club. Two road numbers (21402 and 21217). \$22 each plus \$8 shipping for one car. Add \$3 shipping for each additional car. Ohio residents add 7.5 percent sales tax. Check or money order to COMRC, 2017 Club Car, 6471 Proprietors Rd., Worthington, OH 43085



- **Kankakee, Beaverville & Southern three-bay covered hopper.** Accurail

HO scale model produced for the Kankakee Model Railroad Museum. Kit, \$25; assembled with Kadee couplers, \$30. Shipping \$3.00 per car. Payment by check or money order. Kankakee Model Railroad Museum, 197 South East Ave., Kankakee, IL 60901



- **Ocala Midland RR transfer caboose.** Bluford Shops HO scale model decorated for the Ocala Model Railroaders Historic Preservation Society Inc. Two road numbers. One car, \$49.99; two cars, \$90. Shipping \$8

for one car, \$10 for two cars. Money orders to Ocala Model Railroaders, P.O. Box 6235, Ocala, FL 34478-6235



- **Railroad Museum of Long Island "Steam Up LIRR 39" 40-foot boxcar.** Bachmann HO scale Silver Series model. One road number. \$39.39 (shipping and restricted membership included). Canadian and foreign orders add \$10 shipping. New York residents add \$3.40 sales tax. Check or money order to RMLI, P.O. Box 307, Southold, NY 11971-0307; online orders at www.rmli.org

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HO scale



Pullman 10-section, 1-drawing-room, 1-compartment heavyweight sleeper. Atlas has added this heavyweight car to its Master Line. The HO scale sleeper is decorated for Pullman; Chicago, Burlington & Quincy; Chicago & North Western; Norfolk & Western; Northern Pacific; Pennsylvania

RR; Southern Pacific; and Union Pacific. An undecorated version is also available. The sleeper, priced at **\$64.95**, features a detailed interior and underbody, sprung diaphragms, and metal wheelsets. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

Direct-current model, \$139; with Digital Command Control motor decoder, \$189; and with ESU LokSound DCC sound decoder, \$244. Summer 2018. Custom Editions line. Produced by Inter-Mountain Railway Co. exclusively for Wheels of Time, www.wheelsotime.com

N scale freight cars

- **Bay-window caboose.** Atchison, Topeka & Santa Fe (red with yellow circle-cross herald); Great Northern (Vermillion Red, two road numbers); Conrail (blue); Nickel Plate Road ("Nickel Plate High Speed Service" slogan); Norfolk & Western (red); Kansas City Southern (stainless steel); Southern Pacific (American Revolution Bicentennial in one number, brown and orange in three numbers); St. Louis Southwestern (Cotton Belt); and Western Pacific (red). Three numbers per scheme unless noted. Injection-molded plastic body, caboose trucks with metal wheels, and McHenry scale couplers. \$26.98. December 2018.

AthearnN. Athearn Trains, 800-338-4639, www.athearn.com

- **40-foot double-sheathed refrigerator car.** New paint schemes: American Refrigerated Transit; Jelke Good Luck Products; New York, New Haven & Hartford (ice service); Soo Line; and Standard Fruit & Steamship Co. ("Yes Bananas" slogan). New road numbers: North Western Refrigerator Line Co. Two road numbers per scheme; also available undecorated. Injection-molded plastic body with wood grain detail, positionable roof hatches, 40-ton trucks, and Accumate couplers. \$32.95 (undecorated, \$25.95). Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



- **Aluminum-sided auto rack.** New paint schemes: Amtrak (phases 3 and 4). Two four-packs per scheme. All-wheel electrical pickup, blackened metal wheels, and Kato knuckle couplers. Four-pack, \$95. Kato USA Inc., 847-781-9500, www.katousa.com

N scale structures

- **Lee King Radiator and Muffler Repair Shop.** Kit features tab-and-slot construction, cast-pewter details, and signs. \$36.95. Showcase Miniatures, 334-750-3276, www.showcaseminatures.net

N scale details and accessories

- **Ford C rescue truck.** County Fire Dept. no. 2 (orange), County Fire no. 6

(red and white), Fire Protection District no. 213 (yellow), Fire Rescue no. 3 (yellow and white), Rescue Co. no. 32 (white), and Tri-State Volunteer Fire Department Rescue Squad no. 2 (red with white stripe). Separately applied details, tinted emergency lights, and clear window glazing. \$28.98. December 2018. AthearnN. Athearn Trains, 800-338-4639, www.athearn.com

- **Body-mounted coupler conversion.** For Precision Master/Red Caboose covered hoppers. Black, brown, green, light gray, light tan, natural gray, orange, orange/yellow, red, and yellow. Factory assembled with brake gear detail. Two-pack, \$4.25. Trainworx Inc., 970-874-9747, www.train-worx.com

- **Peterbilt 379 tractor with 40-foot corrugated trailer.** Budweiser (bowtie logo). \$64.95. Trainworx Inc., 970-874-9747, www.train-worx.com

- **Step Van.** 1960s to present. 3-D printed vehicle with separate steering wheel. Two-pack: frosted ultra detail, \$17.19; black hi-definition acrylate, \$21.98. Three-pack: frosted ultra detail, \$22.99; black hi-definition acrylate, \$28.99. Custom Editions line. Wheels of Time, www.wheelsotime.com

O scale freight cars

- **Pennsylvania RR class H21A four-bay hopper.** New paint schemes: Pennsylvania RR (simplified scheme) and Penn Central (ex-PRR, ore service). New road numbers: Pennsylvania RR ("Coal Goes to War" slogan), Norfolk & Western, and Virginian Ry. Four road numbers per scheme; also available undecorated. Plastic and die-cast metal construction, wire handrails and grab irons, and positionable hopper doors.

In Memoriam

Steve Rodgers, 1952-2018

Steve Rodgers of Luka, Ill., died Jan. 22, 2018. Steve was a veteran of the model railroad industry, starting with Micro Engineering in 1986. A decade later he became general manager of DeLuxe Innovations. In 2007 he co-founded Bluford Shops LLC, a manufacturer of HO and N scale products, with Craig Ross.

\$79.95. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

• **Trinity 5,161-cubic-foot-capacity three-bay covered hopper.** New paint schemes: Alaska RR, Chessie System (Chesapeake & Ohio reporting marks), Chicago Freight Car, Conrail (brown), and Southern Pacific (speed lettering). Four road numbers per scheme. Except for Chicago Freight Car, schemes are fictional. Metal stirrup steps and grab irons, etched-metal running boards and crossover platforms, and die-cast metal trucks and couplers. \$119.95. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

S scale freight cars



• **Consumers Power Co. (CPOX) no. 820 Schnabel car.** Cast-resin kit with load and assembly hardware. Includes decals but no trucks or couplers. \$199.99. Concept Models, www.con-sys.com

N scale



Trinity 5,660-cubic-foot-capacity Pressure Differential covered hopper. This Atlas N scale car (\$34.95) is decorated for Archer Daniels Midland, ConAgra ("Feeding America" slogan, six road numbers), First Union, and Norfolk Southern in 12 numbers per scheme unless noted. A donation for every ConAgra "Feeding America" car will be made to the Community Food Bank of New Jersey. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

Z scale locomotives

• **Budd Rail Diesel Car.** Baltimore & Ohio. Three road numbers. Directional light-emitting-diode headlights, separately applied air horns, and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

• **General Electric ES44AC diesel locomotive.** New paint scheme: Union Pacific. Three road numbers. Prototype-specific details, working ditch lights, directional light-emitting-diode headlights, traction tires, and can motor with dual flywheels. American Z Line, 614-764-1703, www.americanzline.com

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Showcase



1 50-foot mechanical refrigerator car. This Walther's Mainline HO scale model (\$27.98) is decorated for Chicago, Burlington & Quincy. The model has see-through running boards and Proto-Max couplers. Wm. K. Walther's Inc., www.walthers.com

2 Electro-Motive Division GP38 diesel locomotive. New paint schemes on this Atlas Master Line HO model include BNSF Ry., Iowa Interstate, Norfolk Southern, and North Shore. Direct-

current models sell for \$169.95. Versions with an ESU LokSound decoder retail for \$279.95. Atlas Model Railroad Co., www.atlasrr.com

3 Thrall 4,727-cubic-foot capacity carbon black covered hopper. ScaleTrains.com offers this HO scale Rivet Counter line model decorated for Orion Engineered Carbons, Columbian Chemicals, DeGussa, and Sid Richardson Carbon Co. The plastic model (\$39.99) is offered in

four road numbers per scheme. ScaleTrains.com, www.scaletrains.com

4 Pullman-Standard covered hoppers. Fox Valley Models offers Milwaukee Road covered hoppers in gray (4,740-cubic-foot capacity) and Federal Yellow (4,750-cubic-foot capacity) in three numbers each. The models are priced at \$26.95 each. Fox Valley Models, www.foxvalleymodels.com

5 HO adjustable parallel track spacing tools. Main-

tain consistent track centers with these tools from Bachmann Trains. The spacers (two-pack, \$21.99) can be used on tangent and curved track. Kalmbach Hobby Store, KalmbachHobbyStore.com

6 Micro fine tapered sanding sticks. This five-pack of 6½" x ¾" sanding sticks is produced by Alpha Precision Abrasives. The pack (\$10.99) contains 1,000; 2,000; 4,000; 6,000; and 12,000-grit sticks. Kalmbach Hobby Store, KalmbachHobbyStore.com



• **Electro-Motive Division GP30 diesel locomotive.** New paint scheme: Soo Line. Two road numbers. Directional light-emitting-diode headlights, Alco trucks, prototype-specific details, and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

Z scale freight cars



• **Gunderson 60-foot hi-cube boxcar.** Union Pacific. Four road numbers. AutoLatch couplers and metal wheelsets. American Z Line, 614-764-1703, www.americanzline.com

• **40-foot single-sheathed boxcar.** New paint scheme: Southern Pacific

(black-and-white Southern Pacific Lines herald). Eleven road numbers (single car, two-pack, and two four-packs). Etched metal running boards, positionable steel doors, metal stirrup steps, blackened metal wheels, and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

Tools



• **Sharp point tweezers.** Stainless steel finish. Measures 4¾". \$5. Produced by Excel Hobby Blades Corp., available from Kalmbach Hobby Store, www.KalmbachHobbyStore.com

Books

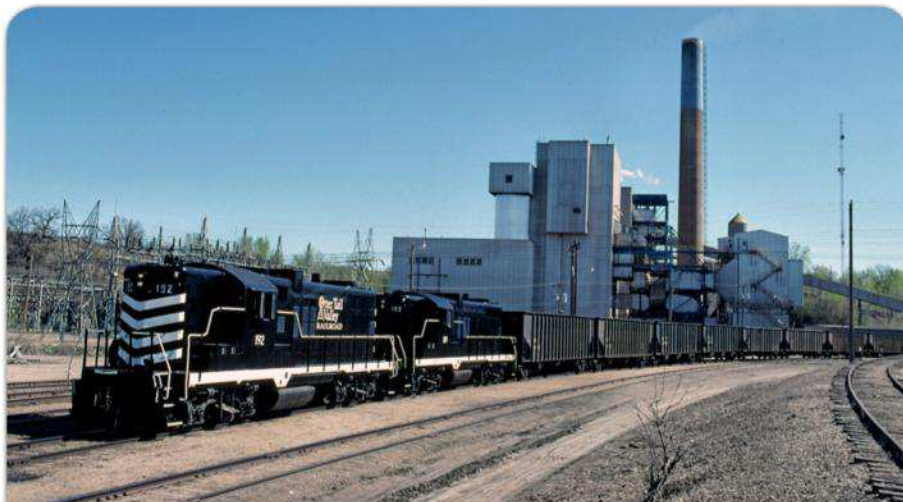
• **2017 Ntrak Steam Annual.** Edited by Jim Kline, Max Magliaro, and

Ed Kapuscinski. Full color, 120-page perfect-bound book. Features articles on kitbashing and scratchbuilding locomotives, making your own valve gear, installing Digital Command Control sound decoders, and more. Includes index and addenda to prior Ntrak Steam Annuals. \$28 (includes tax and shipping). Ntrak, Order Dept., 1421 Trowbridge St., Garland, TX 75044; www.ntrak.org

Decals



• **HO scale Gulf, Mobile & Ohio 40-foot boxcar.** Covers Frascati Shops (Mobile, Ala.) bright red repaints started in 1966. Screen printed. Completes one car. Set includes several reweighs, capacity blocks, car numbers, and lettering diagram. Illinois Central Gulf Decals, paducah.home.mindspring.com **MR**



Otter Tail Valley GP18s pull hoppers from the Hoot Lake Power Plant in Minnesota. Nathan Brett's N scale track plan depicts the short line in 10 x 10 feet. He intends to build the layout after finishing college. Steve Glushinski photo

Otter Tail Valley RR

I enjoyed Nathan Brett's track plan very much ["Minnesota's Otter Tail Valley RR," January]. I hope he does, in fact, get a chance to build it in the future, and I would be interested in a follow-up article when that happens. As someone who lived in Moorhead, Minn., for almost four years in the late 1970s, and who searched out prototype rails and their destinations while there, I found his plan both interesting and as accurate as space would allow.

Thanks for *Model Railroader*. The quality and diversity of what you do is mind-boggling. Please keep it up.

Bob Craft, via email

Age and scales

Tony Koester's January column, "Both ends of the spectrum," provided me with a bit of a jolt.

If my reading of it is correct, Tony made the case that as some of the smaller-scale modelers become beset with old-age infirmities, perhaps they should consider larger scales that aren't as physically demanding.

To be honest, I got into HO scale when I was 12 via an Athearn train set. Today I am 70 and still play with the same set with the same enthusiasm I did as a child.

Call it vanity, but I really didn't think Koester's column applied to me. That was until I put down the magazine and realized I'd read the entire column with the aid of a magnifying glass!

Manny Gamallo, Sand Springs, Okla.

More on the helium car kit

To the reader in February's *Railway Post Office* who questions why anyone would build one of those older kits ["Building a vintage wooden freight car kit" by Eric White, January]: I believe there are model railroaders who like to get out of the mainstream of the hobby and try something different.

I did this back in the 1950s when I left HO and tried TT scale for a while. Why? Because there was so little available that I had an excuse to try scratchbuilding. I was only about 12 years old, but I had great fun building structures out of wood. Clearly, they were not as good as the available HO structure kits, but there was nothing like them in TT.

Bill DeBuvitz, Mendham, N.J.

I absolutely loved the article on building an Ambroid kit!

Way back in 1971, I purchased a B&O Cushion Coil car kit by Ambroid. I studied the drawings, and two years later cut one or two pieces of wood to shape. Then I put the box back on a shelf.

More than 10 years later, I again opened the box and shaped a few more parts. The Central Valley trucks I'd purchased had melted into the foam in their plastic box, but I managed to clean and paint them.

Sometime in the mid-2000s I developed the skills for scratchbuilding, and I told myself I should finish the kit once and for all. I carefully went through the same steps Eric described in his article – and I may have done even more, as I also super-detailed and weathered the model. In all, there are more than 400 (mostly tiny) pieces on this car.

I entered it into the National Model Railroad Association's Peachtree 2013 National and took home first place in kit-built freight cars!

Good things, the satisfaction of completing a difficult project, and good modeling come to those who have patience. Kudos to Eric on his efforts!

Robert Hoenes, Marietta, Ga.

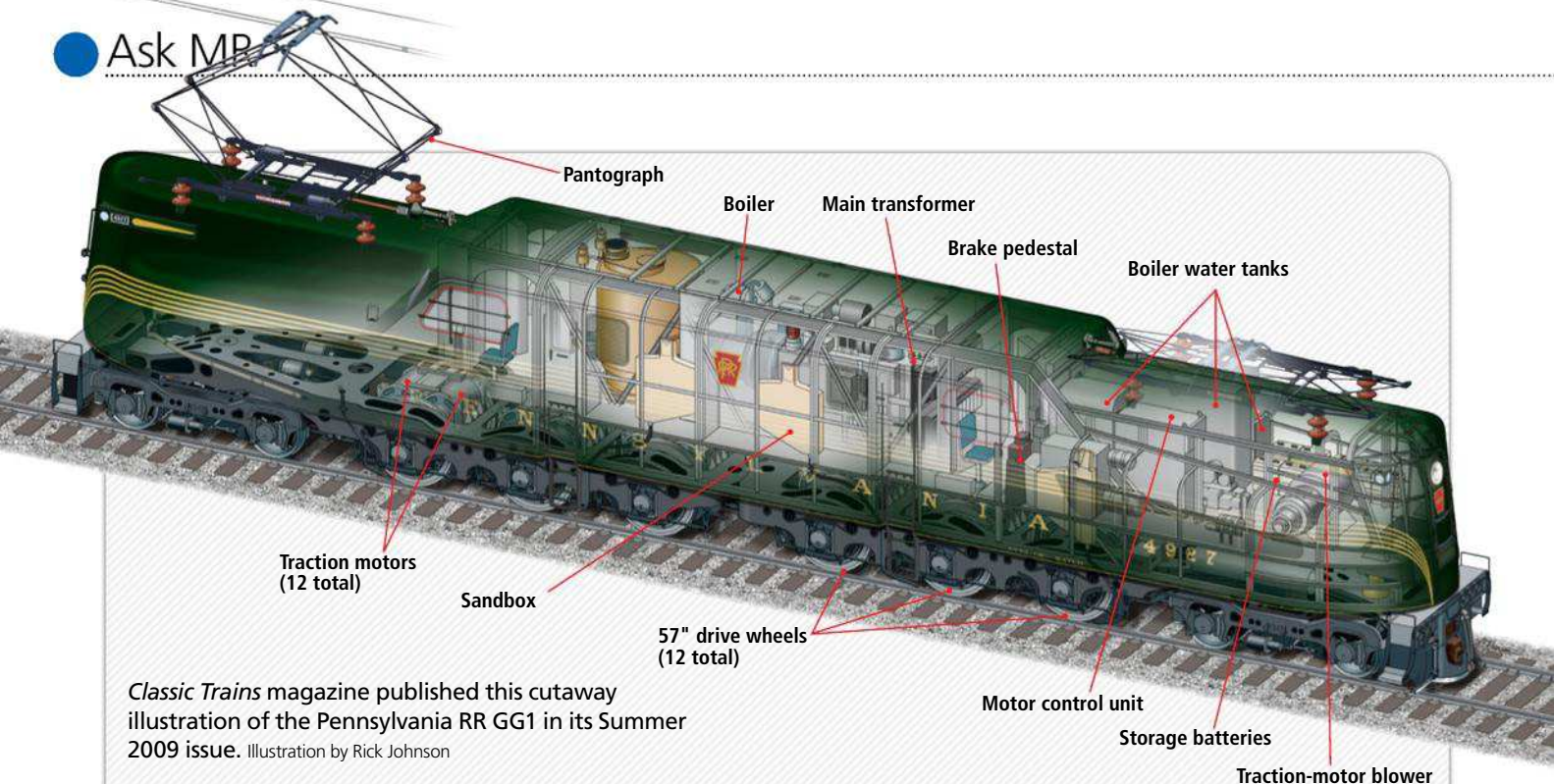
Eric's article was great. The photos illustrating the progress showed well what people are missing when they buy ready-to-run "stuff." I could even see the young man sweating and his brain straining to come to grips with all those tricky bits that couldn't be done with the push of a button. Well done, Eric, for persevering and producing a well-built model!

Brian Franklin, Cape Town, South Africa

Corrections and clarifications

In "A big splash of California Sunshine" (February), caption 9 incorrectly stated that Suydam & Co.'s imported brass traction models were painted.

In "O scale's economic woes in the early 1970s" (Heritage Fleet, February): Rivarossi O scale locomotives used wheels with scale-sized flanges and scale-sized couplers. Also, the Rivarossi tank car, three-bay hopper, and AT&SF caboose were advertised, but not produced.



Classic Trains magazine published this cutaway illustration of the Pennsylvania RR GG1 in its Summer 2009 issue. Illustration by Rick Johnson

Pennsylvania RR's GG1: What's under the hood?

Q I know how diesel locomotives and steam locomotives work. I've ridden trolleys and the South Shore Line with traction motors on the trucks. So what's inside a Pennsylvania RR GG1?

Ned Brause, Holland, Mich.

A Neither a steam engine nor a diesel-electric, the GG1 is an electric locomotive. The traction motors on its two three-axle drive trucks ran on 11,000V of alternating current picked up from overhead wires via a pair of pantographs mounted on the roof. Each of the locomotive's six drive axles had two traction motors and sophisticated wheel-slip detection.

Our sister publication *Classic Trains* ran a special issue on the GG1 in Summer 2009 that showed a cutaway diagram of a GG1's interior, seen above. Among the equipment under each hood were traction-motor

blowers, motor control units, water tanks for the steam boiler, brake equipment, cab-signal equipment, and storage batteries. In the cab itself were the steam boiler (for passenger car heating), sandboxes, a sizable electrical transformer, and control equipment.

The name GG1 came from the wheel arrangement. The Pennsy's designation for steam engines with the 4-6-0 wheel arrangement (two unpowered axles followed by three drive axles) was the Class G. Since the new electric locomotive's wheel arrangement was 2-C-C-2 — two unpowered lead axles, three powered axles, three more powered axles, and two unpowered trailing axles — essentially two 4-6-0 Class G's back-to-back, it was named the GG1. [The Association of American Railroads classifies diesel and electric locomotives using letters for powered axles and numbers for unpowered ones. —Ed.]

Q I came across an article showing how to construct a dual-gauge HO-HOn3 turnout. My question is, can trains of both these gauges be run at the same time? How do these gauges compare side by side? I'm tempted to design a layout using both gauges, but only if the structures will fit both gauges.

John Gilmore, Marienville, Pa.

A The hobby's early use of the words "gauge" and "scale" as synonyms caused a lot of confusion that persists to this day. Gauge refers to the distance between the rails on the prototype. Standard gauge is 4 feet, 8½ inches; narrow gauge railroads of 2 feet, 3 feet, and other

gauges were built, as well as broad gauges such as 5 feet. Scale is the proportion of the size of objects in the model to the prototype; for instance, N scale is 1:160, meaning one foot on the model represents 160 feet in real life. Narrow gauge model railroads are described with a combination of scale and gauge: a 3-foot-gauge railroad in HO scale is called HOn3, for instance (the "n" stands for "narrow").

Narrow gauge locomotives and rolling stock were usually built slightly smaller than on standard gauge roads; the economics of lighter equipment was a big selling point of narrow gauge. But structures, vehicles, figures, and other

elements of a narrow gauge layout should be the same size as those on a standard gauge layout of the same scale. Industries don't get smaller just because they're served by smaller gauge trains.

And yes, trains of multiple gauges can run side by side on a dual-gauge layout — even on the same stretch of dual-gauge track. The wiring's a little more complicated for direct current than for DCC, but not excessively so.

Q How do wood-chip gondolas keep their loads from blowing away? Wouldn't the wind of the train moving cause them to fly out?

Allen Kennedy, Hilo, Hawaii

A That would be a concern if the wood chips were as small as the ones we use to mulch our flower beds, but they aren't. On average, they're the size of your palm. Being freshly cut, they're also not dried out yet, so they're not all that light. And their rough, irregular shape helps them interlock and stick together. Some cars also have netting that can be used to cover the wood chips, as pictured on page 52 of *The Model Railroader's Guide to Industries Along The Tracks 2* by Jeff Wilson. It's available in the Kalmbach Hobby Store, www.kalmbachhobbystore.com.

Q When I visited the Steel Museum in Youngstown, Ohio, a few years ago, I looked through some old employee bulletins of the Youngstown Sheet & Tube Co. In 1920, YS&T ordered some 70-ton coal hoppers. Could you give me any information about this type of car and whether it was ever modeled?

James Loverde, Chicago

A A similar notice was published in the trade magazine *The Iron Age*, June 17,

1920: "Steel Companies Buy Cars." The brief news item said YS&T had ordered 500 70-ton hopper cars from Cambria Steel Co. for delivery in August 1920. By 1930, the next year for which we have a copy of the *Official Railway Equipment Register*, 140 of them were listed on the YS&T roster, numbered 1700-1839.

Whether the other 360 cars were canceled, resold, or scrapped, is unknown.

The Pennsylvania RR was also a big purchaser of these hopper cars from Cambria Steel, classifying them as H21. They were equipped with clamshell doors and archbar trucks. Later, when they were upgraded to higher capacity trucks and sawtooth hopper doors, the Pennsy reclassified them as H21a.

Bowser Trains once produced the 40-foot, four-bay H21 and H21a in HO scale, including one with YS&T lettering. Westerfield Trains also once offered several unpainted resin kits, though only in Pennsy versions. Both models are

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

discontinued now, but you might luck out online or at a swap meet.

Q Occasionally I see various freight cars on a siding and wonder why the railroad choose to put them there.

Bob Thompson, Cadiz, Ky.

A Cars parked on a siding, unattended, are likely to be empty, since time is money when it comes to delivering cargos. The cars may be stored there because they aren't needed at the time, and the railroad needs space in the yard. Often times, railroads will stage empties that they know will be needed later, such as covered hoppers in anticipation of the annual grain rush. Perhaps the cars were empties dropped off by one train for another train to pick up and take elsewhere. Or the railroad may be accumulating empties there until they have enough to assign a locomotive to return them to their home road. Or the cars' owners might pay the railroad to store them on an unused siding. There are likely more possible reasons.



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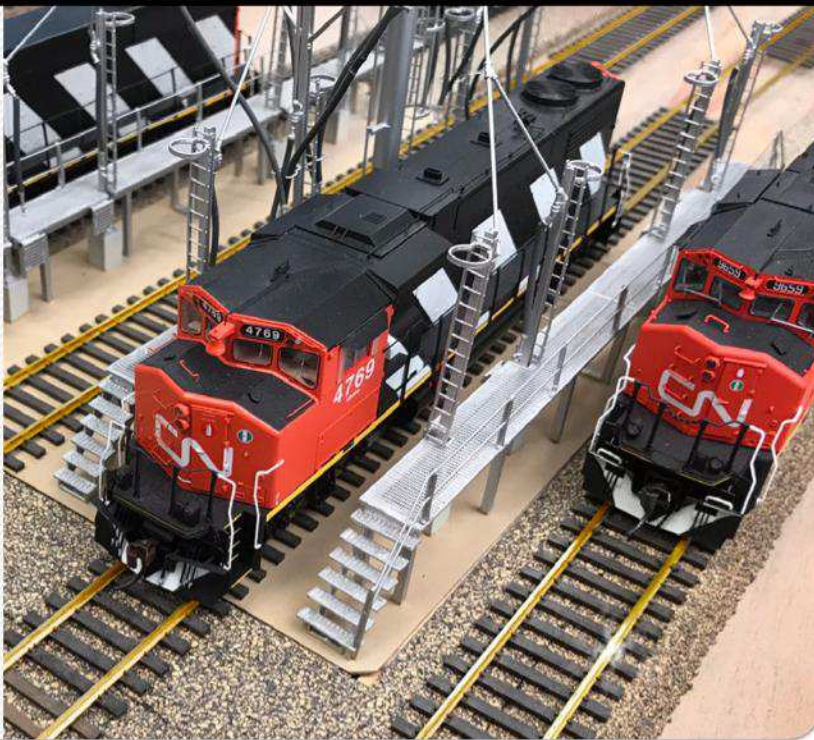
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READER TIP

Extreme rail gleaming

Your recent questions about cleaning rails and keeping dust off the layout [Nov. 2017 and Oct. 2017, respectively –Ed.] made me think about my HO scale layout's problems with dust and dirt. No matter what I did, I had constant problems with bad electrical contact. Then one day I was in the electronics store buying a new audio cable when I noticed the top-end ones all had gold-plated contacts. If it works for my subwoofer, why not my layout?

My wife had gold jewelry she never wore, probably because she got it from her grandma and it's out of style. So I took some to the jeweler and asked them to melt it down and use it to gold-plate a bunch of flextrack. A few days later, I got the track back, installed it, and what a difference! No more Bright Boys or track cleaning cars. Even my oldest engines sail along without a stutter. My wife will be thrilled for me when she comes back from her mother's. – *Auric Goldfinger, Fort Knox, Ky.*



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Compromise was the name of the game

Growing interest in model railroading since the 1933-1934 Chicago "Century of Progress Exposition" and later fairs in Texas and California culminated in the 1939-1940 New York World's Fair, where visitors viewed large and elaborate O scale layouts.

In response to that interest, Lionel made two 1:45 proportion O scale models to run on its O72 track: a Union Pacific M-10000 streamlined passenger train in 1934 and a Milwaukee Road 4-4-2 *Hiawatha* locomotive in 1935. (The National Model Railroad Association (NMRA) had established 1:48 O scale standards in 1935.) Mass produced Lionel models were less costly than some scale models, but they had compromises.

Yet both were welcomed on scale home and club layouts as the only models of their kind. They were Lionel's toe in the scale waters before introducing its 1937 1:48 scale New York Central Hudson, Pennsylvania RR B6 0-6-0 switcher, and four 1940 freight cars.

The reasonably accurate *Hiawatha* lacked maroon striping, and its tender rode on two stamped-metal six-wheel trucks rather than a lead six-wheel and rear four-wheel truck. Lionel sold it with inappropriate

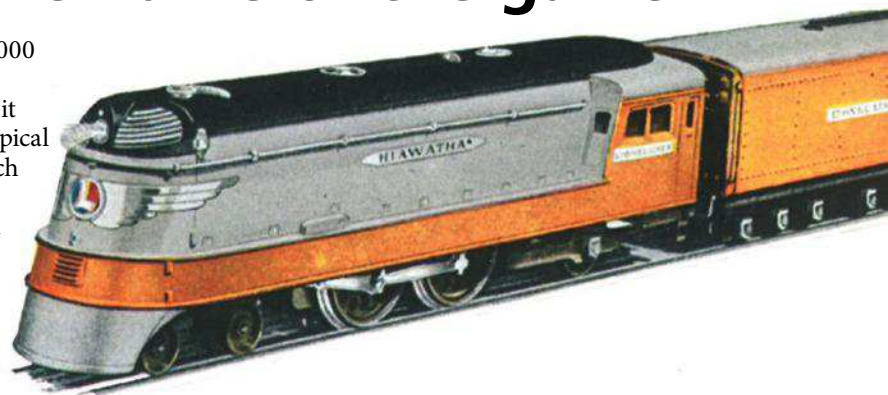
coaches from its M-10000 streamliner.

Some modelers ran it with Walther's prototypical *Hiawatha* consist, which included an accurate beaver-tail observation car. Mass manufacturing required compromises, but O scale operators happily accepted both scale-tinplate streamliners.

Catalogs of the 1930s make one appreciate the attention given to O scale. A wartime 1940s Polk's catalog stated bluntly one should not expect the same detail in HO as O scale because the lack of close-up detail on the former wasn't an issue.

The late 1930s saw a burgeoning of HO manufacturing: Varney, Mantua, Walther's, and others each proclaimed their models were accurately reproduced from prototype plans. Kit locomotive makers, not manufacturing to Lionel's volume, also found it necessary to compromise. Technology and 1930s financial restraints likely prevented better detailed models, and hobbyists were glad to get what they could.

Varney made well-detailed die-cast metal steamers with applied piping and appliances,



Lionel's O gauge 1:45-proportion Milwaukee Road *Hiawatha* certainly wasn't a toy, but its tender rode on a pair of six-wheel trucks, instead of a six- and four-wheel truck like the prototype. Compromises such as this were more readily accepted in the early days of the hobby.

some that was accurate, some that was freelanced, and subject at times to super detailing with piping and appliances without rhyme or reason to its purpose. Generally, Varney's models were quite handsome.

Mantua's models had plain formed brass boilers lacking rivets, boiler bands, or other details, but "accurate" according to its catalogs; today we'd say semi-detailed. Mantua prewar locomotives reveal simplicity of form and detail.

Two others, a screwdriver-assembly Mogul and "Belle of the Eighties" 4-4-0, were equally plain. Die casting was doing well in O, but a 1938 American Flyer die-cast metal HO scale Hudson boasted "AUTHENTIC.... an exact reproduction." Compared to Lionel's 1/4" scale and OO scale super-detailed versions, it too was semi-detailed.

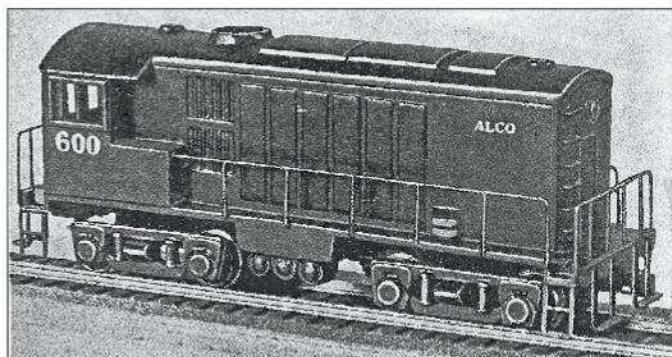
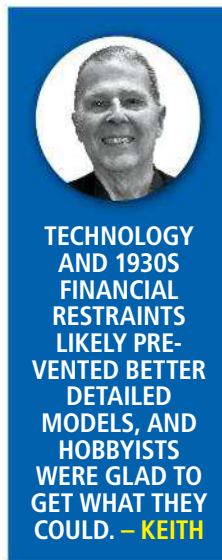
Walther's HO scale Alco HH600 switcher (left) was likewise semi-detailed. Varney's

C-16 Dockside, a favorite for decades, reveals the limits to casting small models. Advertised without handrails, though indicating holes for them on the tank and cab, it came without a valve gear kit, which thus revealed the pickup wires on the drivers.

An inexpensive, \$15 entry-level model, the Dockside had some parts on the casting that seemed a bit heavy. Varney's 1948 catalog revealed one modeler who detailed it with additional jeweled headlight, working valve gear, pilot details, applied smoke box handrails, and

other parts that gave it life beyond the basic kit.

Many hobbyists weren't picky, nor were manufacturers concerned with exact authenticity, contrary to claims. We were happy with Flyer's Hudson, Walther's Alco, Varney's Dockside, and Mantua's bare steamers. At least they didn't resemble tinplate! **MR**



The Walther's HO scale Alco HH600 has the chunky lines of its prototype, but the lack of detail likely would have modern hobbyists up in arms.

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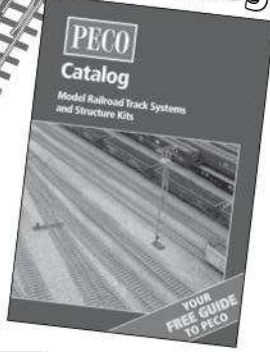
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How to build a wood caboose kit

In the February 2018 issue, I shared how I stripped, detailed, painted, and decaled an Electro-Motive Division GP9 for the Winston-Salem Southbound, our HO scale project layout. But no train in 1957 would be complete without a caboose.

Fortunately, American Model Builders offers a Norfolk & Western class CF caboose kit (no. 864). The laser-cut wood kit has peel-and-stick windows and doors, metal steps, and a white-metal smokejack. The caboose is a good match for those found on the Winston-Salem Southbound. As you'll recall, the WSS was jointly owned by the N&W and Atlantic Coast Line.

At first, wood kits may seem intimidating. But if you take your time and follow the instructions, things should go smoothly. This isn't to say there won't be a few bumps along the way. As you'll read, I made some mistakes, but fortunately nothing beyond repair.

Lettering the model required some detective work. Though we got lucky and found a decal set for the GP9, we struck out with the wood caboose. Reasonably close letters and numbers were contained in a decal set for N&W cabooses. I found the smaller data in a set for New York Central boxcars. Who woulda thunk?

With an engine and caboose, we have the cornerstones of our WSS roster. We can use ready-to-run commercial models for the rolling stock fleet.

STEP 1 SUBWALL ASSEMBLY

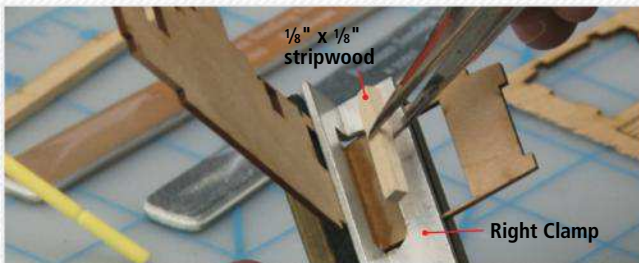


The subwalls are laser-cut wood. Use a fresh no. 11 blade to separate the parts from the carrier sheet.

I also cut the floor from its carrier sheet. I didn't glue the floor to the subwalls. Instead, I used it to confirm the corner joints were at a right angle.

The side and end subwall pieces are unique, so pay close attention during the assembly process. There's an

STEP 1 SUBWALL ASSEMBLY (CONT'D)

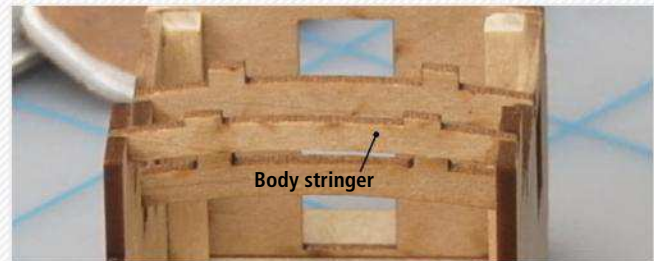
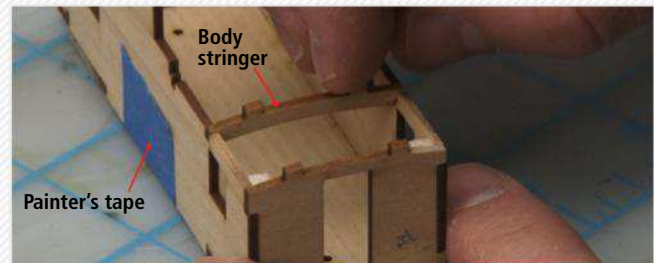


extra window on one of the side walls, and the tab-and-slot configuration is different on the ends.

To keep things straight, I wrote the part number on each piece with a pencil. Before assembling the subwalls, I used a sanding stick to remove the nubs where the parts were attached to the carrier sheet.

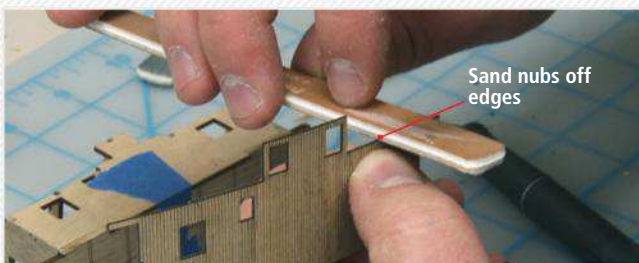
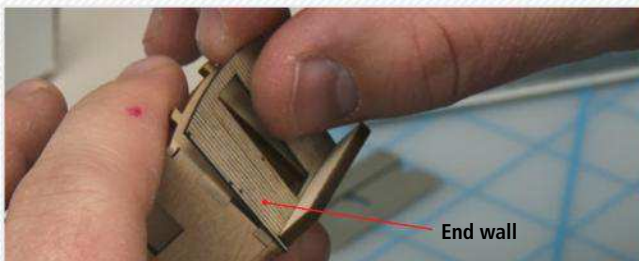
I used a Right Clamp from Coffman Graphic Solutions Co. to keep the subwall sections at right angles. The 1" tall slot made it easy to apply the medium viscosity cyanoacrylate adhesive (CA) and 1/8" square stripwood. I added the latter to reinforce the corner joints.

Next, I dry-fit the floor to make sure it seated properly. Then I used blue painter's tape to hold the floor to the body before adding the roof stringers.



After cutting the stringers from the carrier sheet, I attached them to the subwalls with CA. Pay attention, as there are different stringers for the body (upper right) and cupola (above).

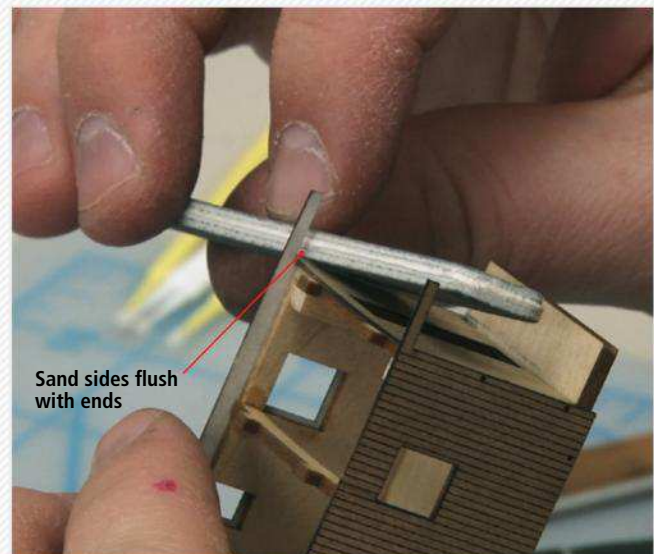
STEP 2 SIDE AND END WALLS



I used a sanding stick to make sure the tab-and-slot joints on the subwall were flush. Then I added the end walls, which are centered on the subwalls.

After cutting the end walls from the carrier sheet and sanding the nubs smooth, I removed the protective backing on the peel-and-stick parts. With the floor tight to the subwalls, I attached the end walls.

Next, I sanded the edges of the end walls so they were flush with the side subwalls. Push the sanding stick toward

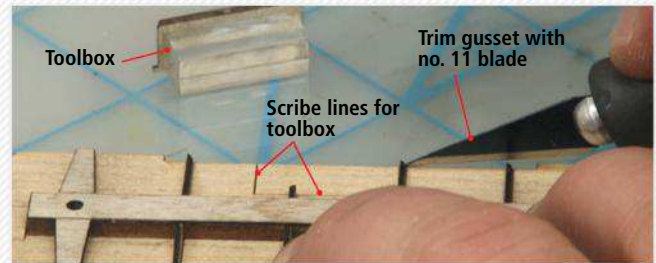
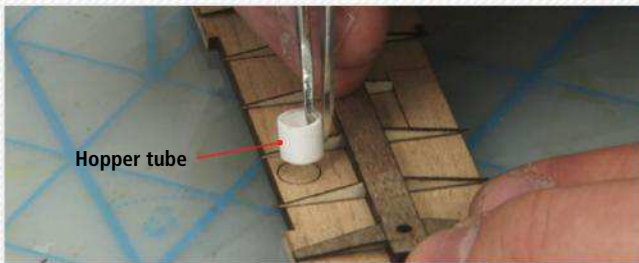
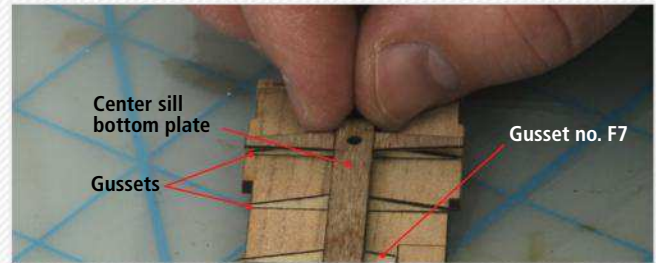
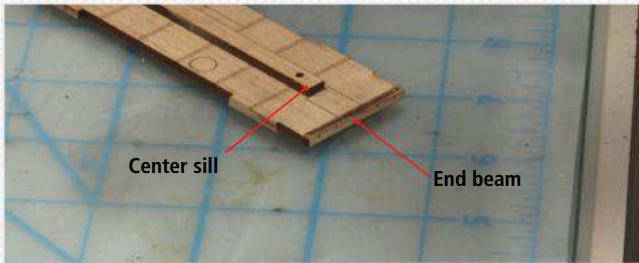


the center of the car. If you work in a back-and-forth motion, you may lift off the self-adhesive parts.

I repeated the cutting and sanding process for the side walls. If the sides are curled a bit, don't worry. They'll lay flat once they're attached to the subwalls.

The sides overhang the ends slightly. I removed the excess material with a sanding stick. Again, push the stick toward the center of the model. Use caution when sanding so you don't snap the tails on the upper wall corners.

STEP 3 UNDERBODY ASSEMBLY



After separating the center sill from the carrier sheet and doing touch-up sanding, I added medium viscosity CA to the back. Work fairly quickly, as the wood is porous and will absorb the CA.

I placed the center sill inside the etched lines on the underbody and made sure the holes for the truck screws were in alignment before pressing the part into place.

Next, I added the end beams. Pay attention when installing the end beams, as the grab iron holes go toward the bottom.

I then installed the gussets with wood glue. Cyanoacrylate adhesive quickly soaks into the laser-cut edge of microplywood. Wood glue gives more working time.

After pressing each gusset into place, I confirmed it was at a right angle using a thin-beam square.

Next, I attached the center sill bottom plate. The plate is a peel-and-stick part. After some quick touch-up with a sanding stick, I removed the paper to expose the adhesive. Then I lined up the kingpin holes, pressed the plate into place, and bent the body bolster on the laser-scribed line.

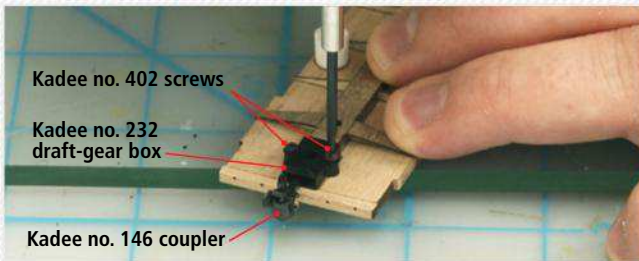
The hopper (toilet) tube is a piece of styrene rod. After putting some medium viscosity CA on the gluing face, I aligned the styrene on the scribe mark and set it in place.

The toolbox is a multi-piece assembly with a clear acrylic core, a microplywood frame, and peel-and-stick doors.

The instructions note that the gussets may need to be trimmed for the toolbox to seat properly. Using a sharp no. 11 blade, I trimmed the outside edge of the gusset.

I put CA on top of the acrylic core. After laying the part inside the scribed lines, I pressed the toolbox into place.

STEP 4 A SIDE TRIP



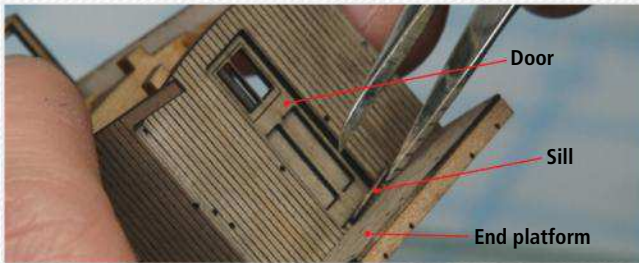
Since I was working on the underbody, I added the draft-gear boxes. This gave me a chance to check the coupler height and see if I needed to add the wood shims (I didn't).

Most wood kits do not include trucks and couplers, and this American Model Builders kit is no exception. I used Kadee no. 146 couplers, no. 232 draft-gear boxes, and no. 402 metal roundhead screws to secure the boxes. The screws are a bit long, so I trimmed them to fit.

Using the laser-scribed lines, I set the draft-gear box into position. With the box in place, I used a no. 61 bit in a pin vise to drill clearance holes for the screws. I didn't tap the hole, as the wood is soft.

I next added Kadee no. 581 Bettendorf T-section caboose trucks. The holes for the bolsters are factory drilled. All I had to do was set each truck in place, line up the holes, and drive the supplied screws home.

STEP 5 PEEL-AND-STICK PARTY



As you guessed, this step is largely about adding peel-and-stick parts. I started with the end platforms. The laser-cut holes should go to the outside of the platform.

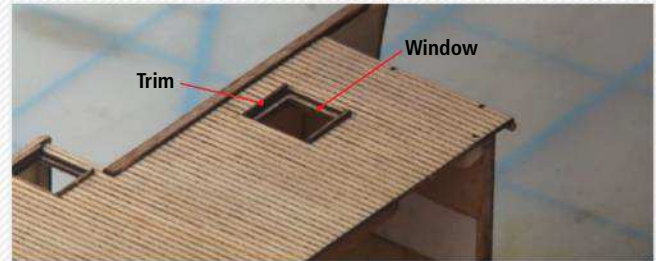
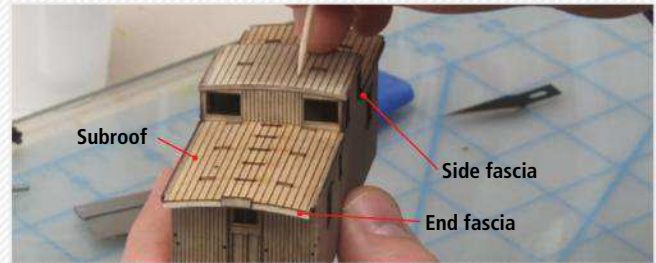
The doors are a multi-piece assembly. First, I attached the front half of the door to the back. I then ran a bead of wood glue along all four edges of the door and pressed it into place.

Once the doors were in place, I added the sills with a pair of tweezers, as shown in the upper left image. The sills are delicate, so handle them with care.

Next, I installed the subroof pieces. They're notched so they can only be installed one way, making the process pretty goof-proof.

Unfortunately, I made a mistake earlier in the assembly process. I didn't seat the cupola ends low enough. After contacting the manufacturer, I learned that I mistakenly had the top of the cupola ends flush with the cupola sides. Instead, the cupola ends should be seated lower to accommodate the cupola subroof. I was able to break the glue joints with a single-edge razor blade and a no. 17 blade. I repositioned the cupola ends and secured the joints with medium viscosity CA.

The side and end fascia are a mix of peel-and-stick and glue-on parts. I started with the end fascia, which I attached with wood glue. I carefully lined up the raised



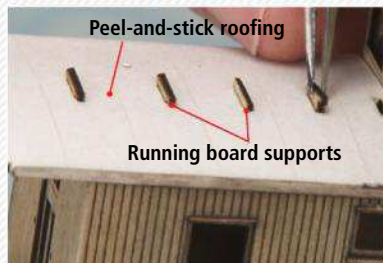
part of the fascia with the holes for the running board supports on the subroof. The finished fascia is shown in the upper right photo.

The windows are multi-part assemblies, similar to the doors. The manufacturer also pointed out that I'd mistakenly put the window frames on the exterior. Thankfully, the peel-and-stick adhesive was forgiving. I carefully separated and cleaned up the parts with a no. 17 blade and sanding sticks.

Then I installed the window frames from the inside with thinned carpenter's glue. The top and bottom trim should be attached from the outside. I also added the thinned glue to the back of the trim, as the peel-and-stick backing was weakened by removing the parts. The correct installation is shown in the bottom right image.

STEP 6 ROOF

Like the wood parts, the peel-and-stick roofing is attached to a carrier sheet. After cutting out the canvas-style roofing material (the caboose also includes metal-style roofing), I removed the backing paper and attached it to the subroof. Make sure the slots in the roofing line up with the openings in the subroof. I used a single-edge razor blade to trim roofing that overhung the fascia.



Next, I installed the running board supports. I used a toothpick to apply carpenter's glue in the slots. I pressed a metal straightedge on all of the supports to make sure they were at a consistent height.

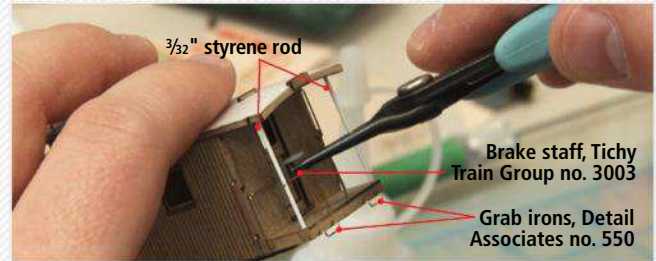
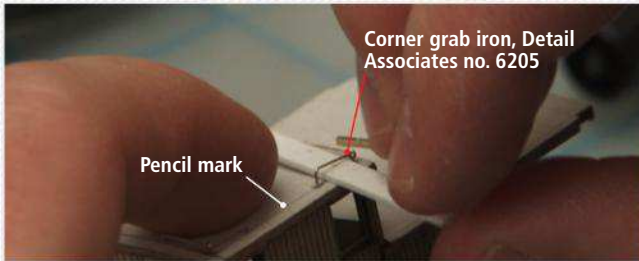
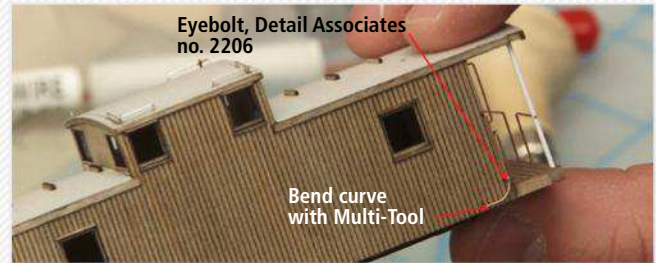
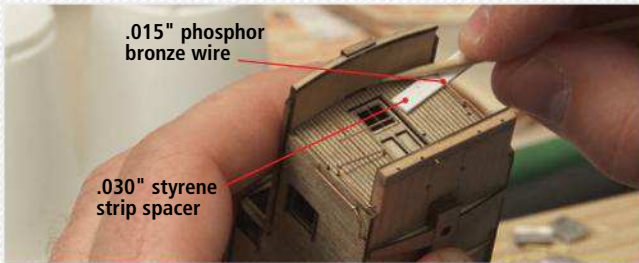
WATCH THIS ON



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STEP 7 GRAB IRONS



I used .015" phosphor bronze wire for most of the grab irons. To bend grab irons, I used smooth- and serrated-jaw needlenose pliers. After I made the bends in the grab irons, I used etched-metal shears to trim off the excess.

With the grab iron formed, I dipped the legs in CA and set them into the holes. I used a piece of .030" styrene strip to maintain prototypical spacing.

I used Mission Models Multi-Tool (MMS007) to bend the curved grab irons. After making the curve, I used smooth- and serrated-jaw pliers to shape the legs of each grab iron.

On the cupola, I used Detail Associates no. 6205 corner grab irons. I put a pencil mark $\frac{1}{16}$ " in from each edge, followed by an eyebolt where the lines intersect. I used a no. 79 bit in a pin vise to make holes for the grabs. As before, I secured the grab irons with CA.

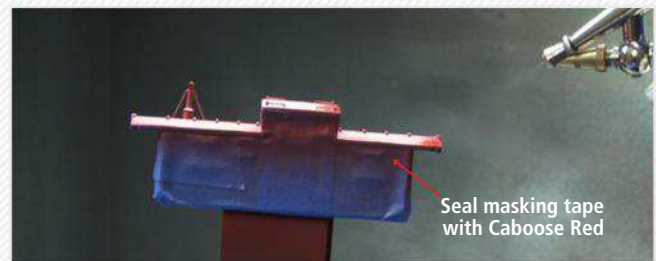
I then turned my attention to the $\frac{3}{32}$ " styrene rod corner posts, included with the kit. First, I bent the bronze wire that attaches to the post. Then I painted the wire black, set the styrene into place, and pressed the rod into the paint.

To prevent the drill bit from wandering, I used a push pin to make an indentation in the styrene. After securing the wire with CA, I trimmed the excess with metal shears.

Next, I added the grab irons to the end beams. I shortened the legs slightly, then dipped them in CA. As before, I used the .030" styrene spacer to position the grabs.

Finally, I added a Tichy Train Group vertical brake staff (no. 3003) to each end. I dipped the supplied wire in CA and set it in the wheel. Then I trimmed the excess wire, dipped the other end in CA, and set each staff in place.

STEP 8 PRIMER, PAINT, AND DECALS



I primed the model with Rust-Oleum Painter's Touch 2X Flat Gray Primer. I let the primer dry until there was no discernible odor (at least 24 hours). Then I airbrushed the kit with Model Master Caboose Red (no. 4880).

Once the red had dried, I masked the caboose with blue painter's tape. To ensure crisp color-separation lines, I cut the factory edge of the tape with a fresh no. 11 blade. With the tape in position, I burnished it with a toothpick.

Before applying the next color, I sprayed two light coats of Caboose Red along the edge of the masking tape. This seals the edge and reduces the chance of paint bleeding under the tape. Then I airbrushed the roof and underbody Model Master Grimy Black (no. 4887).

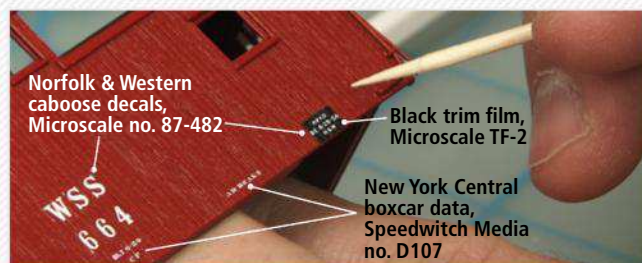
After the Grimy Black dried, I removed the painter's tape and sprayed the caboose Model Master Gloss Clear Acryl (no. 4638) in preparation for decaling.

STEP 9 DECALS

Unfortunately, there aren't commercial decals for Winston-Salem Southbound wood cabooses. However, Microscale's Norfolk & Western caboose set (no. 87-482) contains reasonably close letters and numbers.

I turned to Speedwitch Media's set no. D107 to get the "BLT 6-29", "CF", and "AB Brake" lettering.

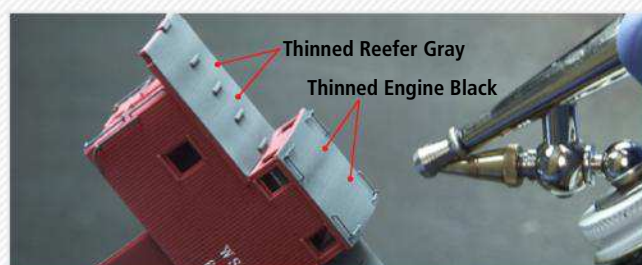
Once the decals were dry, I used a sharp no. 11 blade to slit the decal film between the boards. I applied Micro-Sol to help the decals conform to the irregular surfaces.



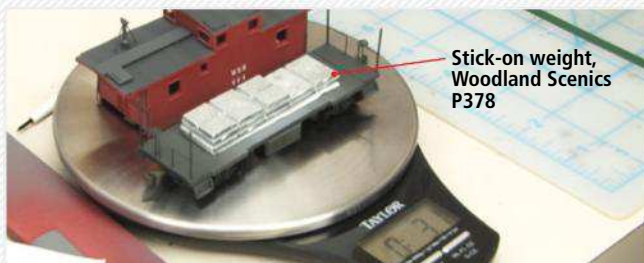
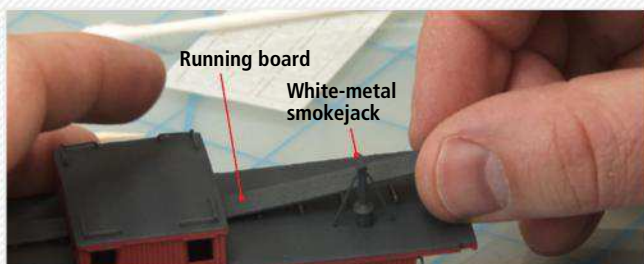
STEP 10 REALISTIC WEATHERING

I applied a final gloss coat to the caboose to seal the decals, giving them a painted-on look. Then I weathered the model with thinned Model Master Reefer White (no. 4873), Reefer Gray (no. 4886), Grimy Black, and Engine Black. I put enough paint in to cover the bottom of a one-ounce jar. I filled the rest of the jar with 70 percent isopropyl alcohol.

Once the weathering was completed, I sealed it with Model Master Clear Flat Acryl.



STEP 11 FINAL DETAILS




With the weathering complete, I attached the wood running boards. The parts are peel-and-stick, but I put carpenter's glue on the running board brackets for safety. I used the same glue to attach the running board laterals.

Next, I installed the window glazing. To make sure the glazing would stick, I coated the back of the windows with Woodland Scenics Scenic Accents glue.

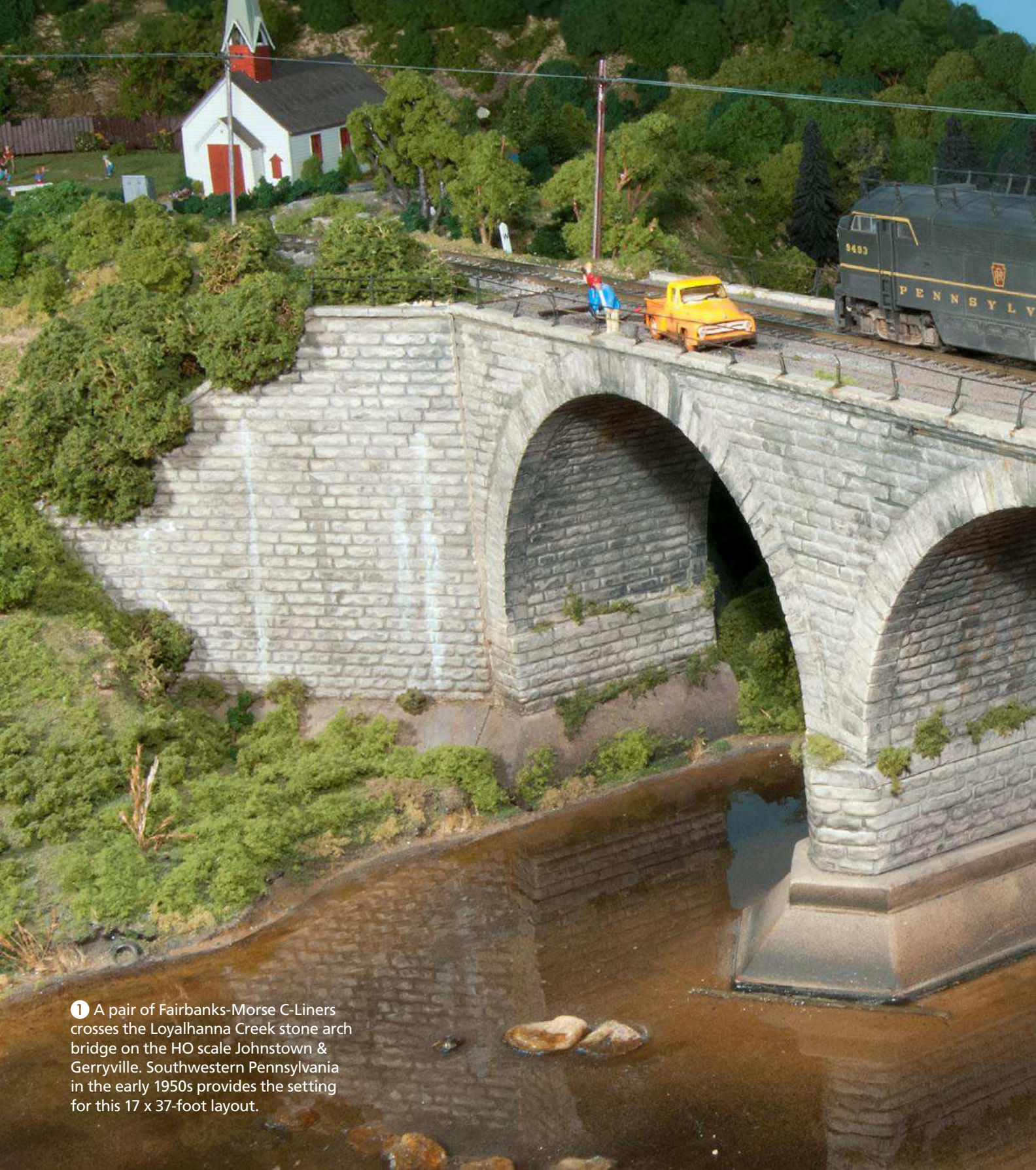
The end cupola windows are a bit different, as the frame is attached from the outside. I put Scenic Accents glue on the sticky side of the window frame.

I added weight to the caboose using Woodland Scenics no. P378 weights. Though designed for Pinewood Derby cars, the lead-free weights work fine for model railroading. I painted the weights flat black.

Finally, I set the shell back on the body and installed the four corner handrail legs. Then I attached ladders, marker lamps, crew figure, and Kadee fiber washers.

I'd never built an American Model Builders wood caboose kit before. I hope these techniques show you how fun and rewarding a project like this is. Give it a try! 

REBUILDING A



① A pair of Fairbanks-Morse C-Liners crosses the Loyalhanna Creek stone arch bridge on the HO scale Johnstown & Gerryville. Southwestern Pennsylvania in the early 1950s provides the setting for this 17 x 37-foot layout.

BRIDGE LINE

The operation-oriented Johnstown & Gerryville fills two decks with stunning scenery and a CTC-controlled main line

By John A. Travis • Photos by Lou Sassi



When I told my wife, Gerry, that I thought it was time to move, she was quite surprised. After all, we had a large HO

scale model railroad in the basement, and I was involved in a local model railroad operating club. However, we were the oldest couple on the block and had a large house with three empty bedrooms. We were ready for a change but had no plans to give up model railroading.

It didn't take long to find a new house in an active 55-and-over community. Our new home included a finished basement with its own restroom and central heating and air conditioning, which were amenities we didn't have in the basement of our old home. The basement also provided a 17 x 37-foot space that could accommodate a double-deck layout.

I took my time tearing down the old railroad. In addition to locomotives, rolling stock, and structures, I had a lot of electronics that could be reused. My friend Paul Voelker took on the assignment of packing several hundred trees that Gerry had built. I also saved most of the benchwork lumber and any unballasted track. Everything else went into the dumpster.

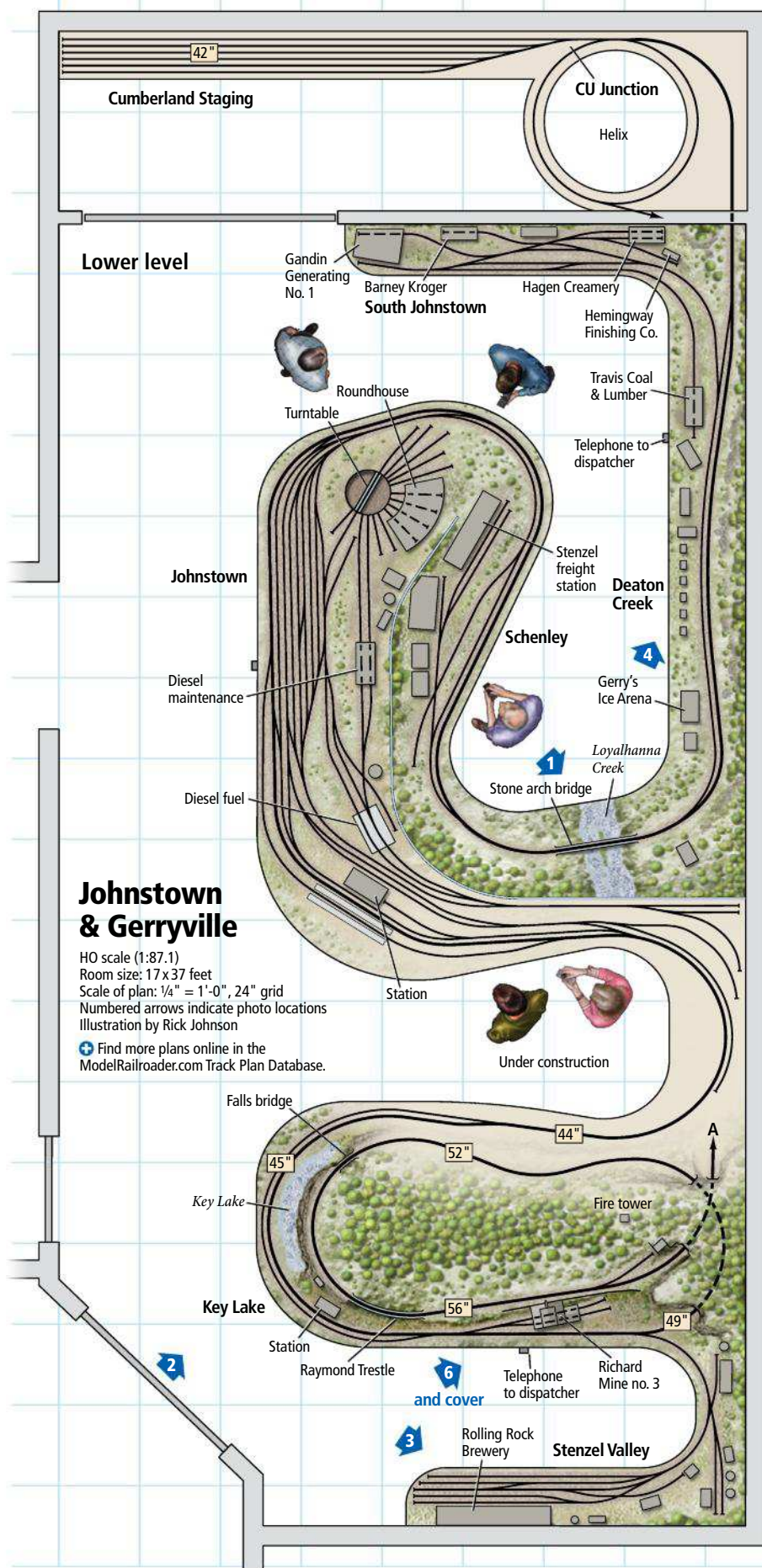
With all the boxes labeled, I was ready to start work on a new and improved version of our Johnstown & Gerryville. However, the layout's setting and operating purpose would remain the same.

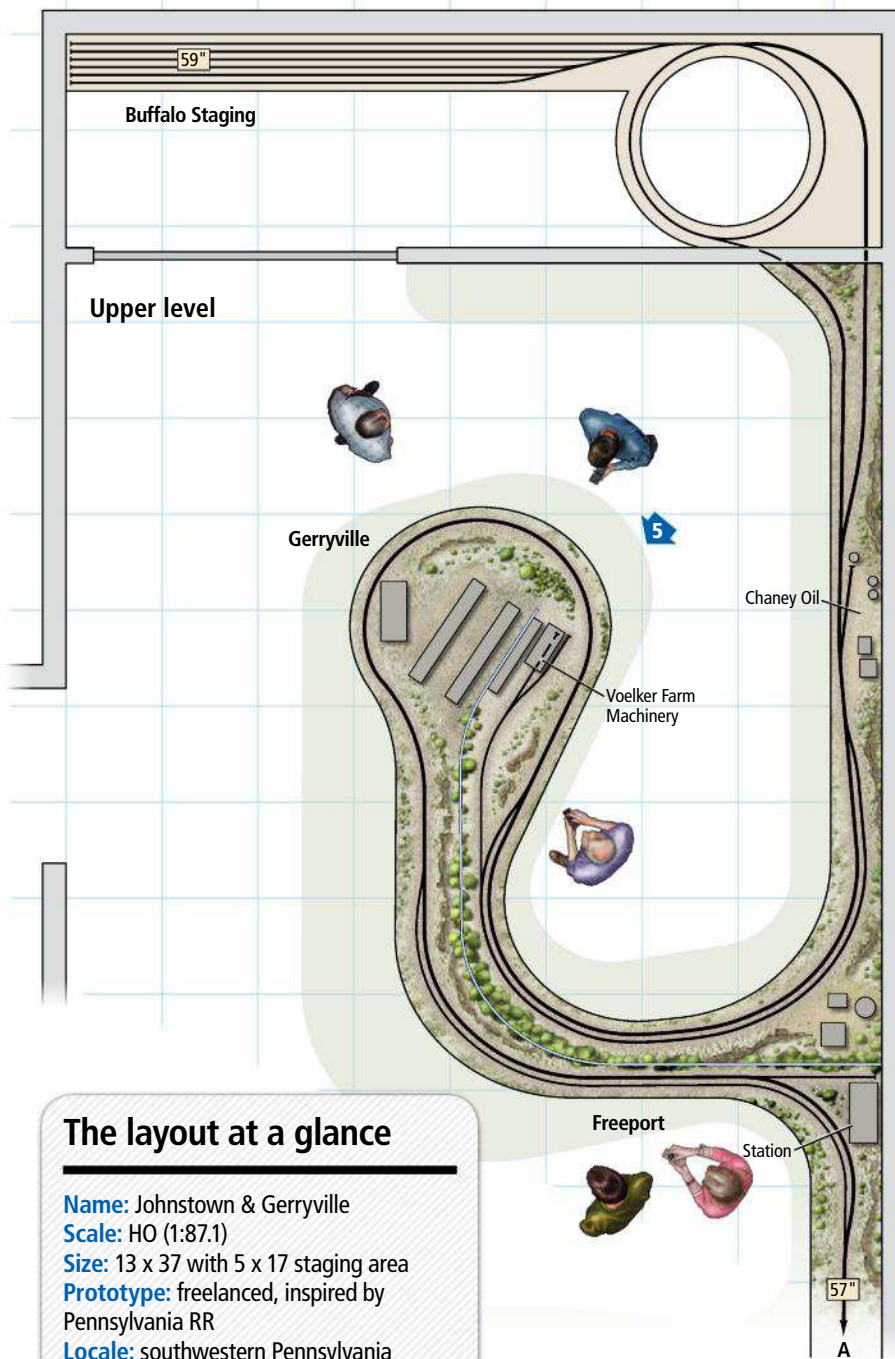
History of the J&G

Gerry and I had visited her parents in Latrobe, Pa., many times. The southwestern Pennsylvania town had a rich railroad history. Gerry's father had also worked for the Pennsylvania RR. It seemed right that the Johnstown-Latrobe area would be the focal point of our freelanced model railroad.

The Johnstown & Gerryville serves as a bridge line between the Pennsylvania RR in Johnstown, Pa., and the Baltimore & Ohio RR in the fictional town of Gerryville, Pa. Pennsy traffic originates in Cumberland, Md., and B&O traffic originates in Buffalo, N.Y. This gave me three railroads to model: the PRR, B&O, and custom-decaled equipment for our J&G. For the time period, I chose the early 1950s so I could plausibly run both steam and diesel locomotives.

The original HO scale J&G layout was built between 1989 and 1995 with help from the local operating club, the Joint





The layout at a glance

Name: Johnstown & Gerryville

Scale: HO (1:87.1)

Size: 13 x 37 with 5 x 17 staging area

Prototype: freelanced, inspired by Pennsylvania RR

Locale: southwestern Pennsylvania

Era: 1953

Mainline run: 240 feet

Minimum radius: 30"

Minimum turnout: no. 5

Maximum grade: 2.5 percent

Benchwork: L girder and open grid

Height: 42" to 59"

Roadbed: cork (main line), Homasote (industries and yards)

Track: Atlas code 100 flextrack

Scenery: plaster cloth over cardboard strips, crumpled newspaper or extruded-foam insulation board

Backdrop: Painted drywall and tempered hardboard

Control: Digitrax Digital Command Control

Railway Association of Georgia (JRAG). Most of what I learned about layout construction and operation came from this round-robin group. We had the scenery finished on the double-deck layout in time for tours during the 1995 National Model Railroad Association (NMRA) national convention in Atlanta. A couple photos of the first J&G taken during those tours can be seen in the June 1995 *Model Railroader*.

I operated this layout with the JRAG group for many years after the convention, until my wife and I decided to move. Although the J&G's theme would remain the same, I wanted to make a few improvements to the new version.

New design considerations

Before designing the new track plan, I listed the things I wanted to do differently. The list included:

- **Better layout lighting:** My previous train room didn't provide enough light to really show off the scenes.

- **Better structure lighting:** After 10 years, the small light bulbs inside my structure models were starting to burn out. I wanted to take advantage of the inexpensive, small, light-emitting diodes (LEDs) that were now readily available.

- **Flat and level:** The previous J&G was built on a constant grade to cover the elevation change between the two decks. Switching on a hill was a problem during operating sessions, as cars had a tendency to roll back down the hill.

- **Better scenery space:** Previously I'd crammed a large layout into a

② This overview shows both levels of the layout, with Key Mountain on the right and Johnstown Yard on the left. Operators can easily switch cars on both levels without having to use a step stool.





3 Johnstown & Gerryville no. 19, an Alco RS-1, switches reefers full of beer at the Rolling Rock Brewery in Stenzel Valley. Inspired by the Latrobe Brewing Co., this brewery is the largest industry on the layout.

The new and improved J&G

Construction of the new Johnstown & Gerryville began in 2008. Having the basement finished by the builder before we even moved in proved to be a great time saver. We could get started on the railroad without having to deal with preparing the train room first.

My friend and fellow JRAG member Norm Stenzel helped me come up with a layout design that met my criteria of improvements and fit my new layout space. Norm suggested we do the planning using CADRail software. While Norm designed the main line, I could add other details as needed.

Once Norm and I finalized the track plan, I planned all the benchwork needed to support the double-deck layout. This plan included the location and length of every board. Using this information, I could cut several boards at once in my workshop, and then bring the finished lumber to the layout room for installation.



4 Baltimore & Ohio F units speed a freight through Deaton Creek past Gerry's scratchbuilt blue house. Scenes like this help reinforce the small-town setting.

medium-size basement. Some scenes were only 1" deep with tracks running along the edge of the fascia. My wife contributed the idea of allowing space for some non-rail-related structures and animation to add more interest.

- **No duckunders:** My previous layout had a nod-under and a crawl-under. I wanted to avoid either arrangement.

- **Broader curves:** I think this feature is something most model railroaders

realize after building a layout or two. The new layout would have a 30" minimum curve radius, instead of the 24" minimum on the previous one. The new J&G also has a turnouts no smaller than no. 5.

- **Better people space:** Making a layout space more comfortable makes the model railroad more fun. The new layout would have broad aisles and plenty of room to work on projects.

With a plan in place, we were ready to start building, but there was one element missing. I'd enjoyed the club environment of my previous layout, so I started a new club to help me build and operate the new J&G. I placed announcements around my subdivision, at the local hobby shop, and with our local Piedmont Division of the NMRA. Today, the Deaton Creek Model Railroad Club has about 12 members. The group includes several experienced modelers and some with prototype railroad expertise, but the main benefit of a club is the camaraderie that naturally develops.

Backdrop, track, and lighting

The painted backdrop was one of the first features installed on the layout. Depending on the location, we either painted the scene directly on the drywall or on tempered hardboard fastened to the benchwork. We covered all the backdrop corners using either tempered hardboard or large sheets of styrene.

We painted the backdrops light sky blue with a few clouds and hills to add some depth. I don't think the backdrop should stand out. It's there to enhance the scenery and structures.

With the backdrop and benchwork done, we turned to track. Many of the turnouts were reused from the first J&G. For the main line, we used Atlas code 100 flextrack and Shinohara turnouts laid on cork roadbed. For industrial areas and yards, we used Atlas code 100 flextrack and Peco turnouts laid on 1/2" Homasote.

We painted all the track with Krylon Camouflage Brown spray paint. For added weathering, we applied rust-colored paint along the sides of the rails.

During this stage of construction, we also installed the layout lighting using General Electric 6500K Daylight compact-fluorescent lamps (CFLs). These are tucked behind a valence to light the upper level and behind the upper level fascia to light the lower level.

We determined the CFL size and spacing by first setting up a test section before actual layout construction. We chose CFLs instead of long fluorescent tubes to make it easier for the lighting to follow the layout's many curves. The 66 CFLs use less than 750 watts and generate almost no heat.

Tried-and-true scenery

We made basic landforms from either cardboard hill profiles stuffed with newspaper or a web of cardboard strips.



Even if a siding has only a slight grade, model freight cars can roll away after being set out. This simple hill brake lays flat when not in use (left) and stops runaway cars when engaged (right).

A simple hill brake for spotting cars

Spotting cars on a siding that's on a grade can be frustrating, as the cars tend to roll downhill as soon as they're uncoupled. While I try to make all the car spots level, sometimes a spur or siding that's on a grade can't be helped. In these locations, a simple hill brake makes switching operations much smoother.

My friend Ned Spiller came up with the idea. He formed the brake out of a length of .033" brass wire bent to a rough U shape. The brake end and the handle face the same direction. The bottom of the "U" is between two ties so that the brake end is between the rails. Ned bent three staples into U-shaped hinges that hold down the wire while allowing it to pivot.

At the handle end of the wire, he used cyanoacrylate adhesive to attach a small fishing weight painted yellow, so it's easily visible.

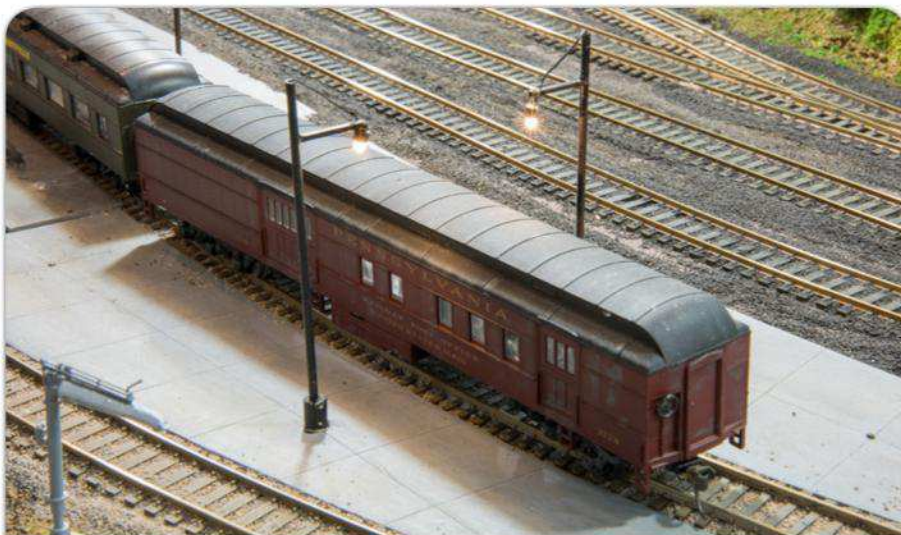
Normally the brake lays flat against the ties, as shown in the photo on the left. During switching moves, the train crew makes sure to spot the car just upgrade from the brake and moves the brake handle to vertical, as shown in the photo on the right. The wire will catch the car's axle if it starts to roll away.

When picking up the car, a slight shove from the locomotive will push the brake back down into its flat position.

This simple hill brake has made operating sessions run much smoother on the Johnstown & Gerryville. – John Travis



5 While a West Penn Rys. streetcar makes a stop, a Pennsy freight picks up new tractors from Voelker Farm Machinery. John followed Association of American Railroads rules for blocking and tie-downs when he detailed the flatcars.



John and his club members made yard lights out of brass tubing and LEDs salvaged from Christmas light sets.

Scratchbuild yard lights

With inexpensive light-emitting diodes (LEDs) now readily available, my fellow Deaton Model Railroad Club members and I began adding lots of lights to the Johnstown & Gerryville. In addition to using LEDs to illuminate the interiors of structure models, we came up with a method for easily scratchbuilding industrial light poles.

To build a light pole, I first cut a 30-scale-foot-long length of $\frac{3}{32}$ " x .014" brass tubing. Next I cut a 5-scale-foot-long length of $\frac{1}{16}$ " x .014" brass tubing for the cross arm and solder it a scale 4 feet from the top of the pole.

I stick the bottom of the pole through a base made of Plastruct no. 90106 $\frac{1}{4}$ " x $\frac{1}{2}$ " styrene tubing. The base will fit into a $\frac{1}{4}$ " hole that I drilled into the scenery where I plan to locate the light pole. Cyanoacrylate adhesive will help secure the pole to the base.

For the light, I use a 5mm warm white LED. Our club salvaged many of its LEDs from Christmas string lights, which also came wired with 1.0K Ω to 1.2K Ω , $\frac{1}{4}$ W resistors. After soldering one leg of the LED to the crossarm, I run 30AWG stranded wire from the bottom through the top of the pole and solder it to the other LED lead. The wire also does a credible job of simulating a support cable between the crossarm and the pole.

Next I solder a resistor to the wire at the bottom of the pole. Another wire runs from the resistor to a lighting bus powered by 9 to 12V DC. I finish the project by using heat shrink tubing to protect all electrical connections and to provide a light shield around the base of the LED. – John Travis

Then we covered the landforms with two layers of plaster gauze. Once this dried, we painted on a layer of molding plaster and blended in plaster rock castings. We finished the scenery base with a layer of perlite plaster to provide some texture.

After the plaster dried, we painted it with thinned tan acrylic paint followed by an India ink wash. The ground cover is commercially available turf in a variety of textures and colors. Dave Frary's book *How To Build Model Railroad Scenery* (Kalmbach Publishing Co.) provided us with an excellent guide.

Gerry enjoys building layout scenery and will sometimes spend a couple hours

detailing one small scene. She also scratchbuilt many of the trees using cotton balls and four colors of ground foam.

We modeled water with Enviro-Tex Lite poured over plywood, which is painted blue, green, or black depending on how deep we want the water to appear. We used silicone caulk to add ripples and falling water.

Structure showcase

There were many structure models left over from the first J&G. We reused about 40 of

the old structures and sold or gave away others. Since the town names on the new J&G remained the same, we tried to place structures into the same town as on the previous layout. Because of building footprint or vertical height constraints, some structures had to be moved to new locations.

Several of the scratchbuilt structures reinforce the layout's Latrobe-area setting. The Latrobe Brewing Co. was famous for its Rolling Rock brand beer. This brewery is the largest industry on the J&G. One of my favorite scenes is the Loyalhanna stone arch bridge, which is an accurate model of an ex-PRR bridge that still stands today.

Another favorite is the Stenzel freight station, which is modeled after the Latrobe freight station that was removed in the early 1950s. This building features large doors in the back where freight cars can be pushed inside for loading and unloading.

The fire observation tower at Key Mountain near Saltsburg is another interesting structure. I scratchbuilt the HO fire tower using plans that I found on the internet.

Old magazine articles inspired other structures. The Travis Coal & Lumber Co. is based on the article "Lineside lumber yard" from the July 1960 *Model Railroader*. Challenging to build, this structure was worth the effort. It adds a lot of operating interest since it handles both coal and building supplies.

While installing the structures, we replaced all interior and exterior incandescent light bulbs with LEDs. This project was a major undertaking, but since LEDs last a lot longer than bulbs, we felt the time was well spent. We bought Christmas light sets and removed all the LEDs. Each LED already has a 1.0K Ω to 1.2K Ω resistor to protect it from a 12V power supply. Once rewired, the structures were ready for installation on the new layout.

We also used LEDs to add exterior light poles to some scenes. [Check out "Scratchbuild yard lights" above. – Ed.]

As of this writing, we have installed more than 150 LEDs inside structures and 35 yard lights.

Operation with CARS

The layout is wired for Digital Command Control using a Digitrax system and divided into seven power districts. I have six Digitrax throttles and club members

MORE ON THE WEB

Subscribers can watch an online video of trains running along the Johnstown & Gerryville at ModelRailroader.com.



Meet John Travis

John Travis is a National Model Railroad Association Master Model Railroader. He retired from General Electric, where he worked in computers. John and his wife, Gerry, live just north of Atlanta in Hoschton, Ga. In addition to model railroading, they enjoy travel, sports, their church, and spending time with their grandchildren.

will also often bring their own to operating sessions.

Traffic on the layout is controlled by a Computer Assisted Railroad Signals (CARS) system from the first J&G. In 1996 Norm Stenzel, Rick Hemingway, Ned Spiller, and I designed this home-built system. Primary features of CARS include a dispatcher panel on a computer screen, trackside signals, dispatcher-controlled mainline turnouts via Tortoise by Circuitron switch motors, track detection, and a fast clock. The signals can be run in either Centralized Traffic Control (CTC) or automatic block signaling (ABS) modes.

During an operating session the railroad is operated using CTC, where the dispatcher controls signals and turnouts remotely. In between sessions, we run the layout in ABS mode without a dispatcher, where the train crews can line their own turnouts.

During a 3-hour operating session, we try to run the full timetable of 19 trains. A typical session includes a dispatcher, yardmaster and yard crew member at Johnstown, and a few train crews. We use one- or two-person crews, depending on the number of operators available for a particular session.

To simplify operating sessions we use the sequence method, where only each train's departure time is listed in the timetable. Crew members then mark up and watch the clock for their train's departure time. After getting permission to depart from the dispatcher, crews follow the trackside signals.



Each session includes a variety of traffic, including unit trains, passenger service, and local freight. For car routing, we use car tags with a specific location printed on each side. The fast clock is set to 4:1, but the dispatcher can adjust the ratio as needed.


The fun continues

The J&G was finished enough to host layout tours when the NMRA national convention returned to Atlanta in 2013. However, we still have work to do.

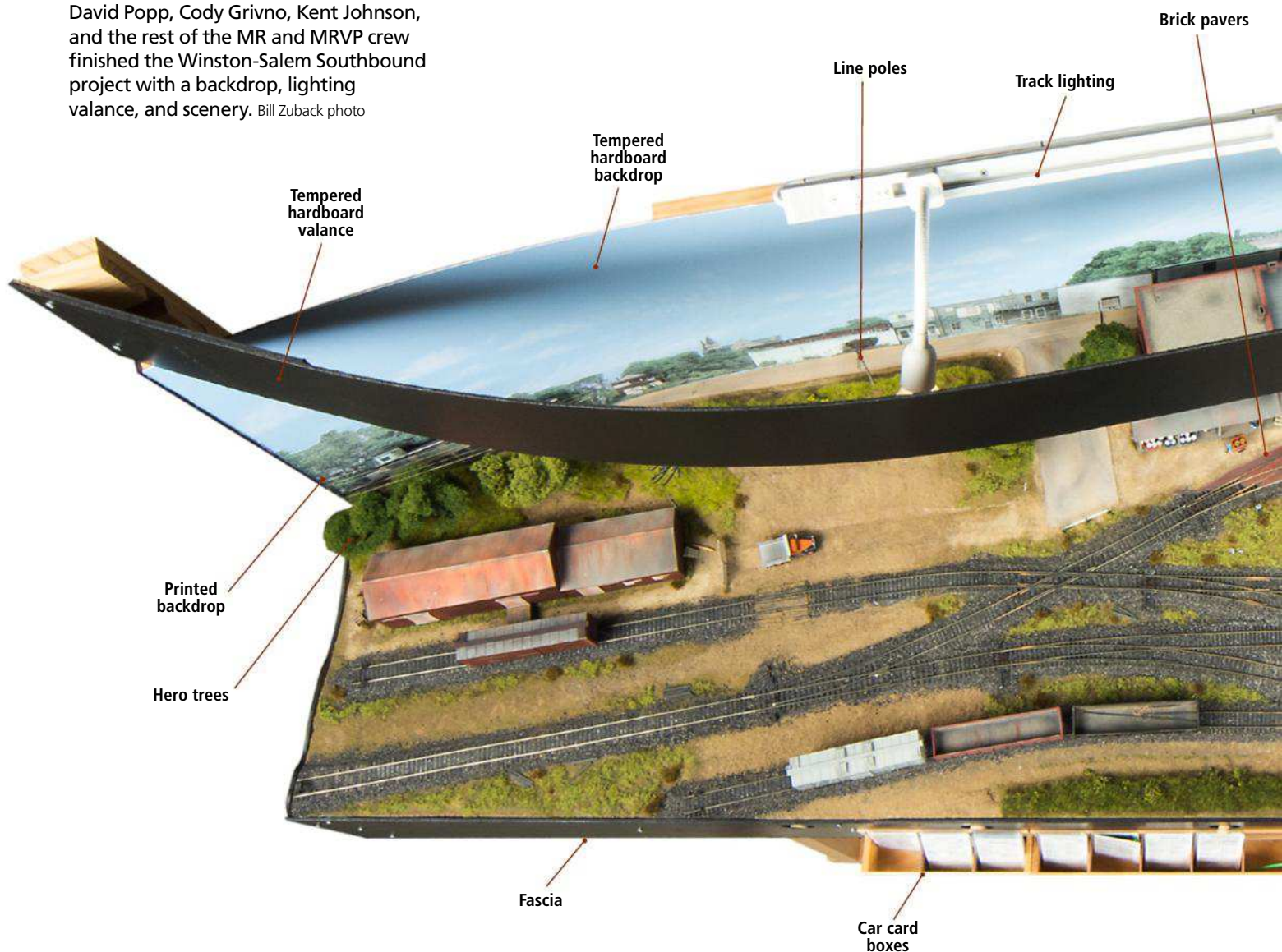
As of this writing we're working on the city scene in Gerryville, but still have a lot of details to add. Other ongoing projects focus on Latrobe, where we're

6 The tunnel portal at Saltsburg, Pa., is detailed with exhaust fan screens and a telltale. John scratchbuilt the fire-observation tower based on plans he found on the internet.

adding several neon signs. We also want to include the streetcar my wife rode when she was growing up. Adding animation beyond the railroad is a great way to bring a layout to life.

Model railroading has been a great way of combining several of my favorite interests, including trains, computers, electronics, and model and scenery building. Best of all, I've enjoyed teaching what I know and learning from the many friends I've made through the hobby. 

David Popp, Cody Grivno, Kent Johnson, and the rest of the MR and MRVP crew finished the Winston-Salem Southbound project with a backdrop, lighting valance, and scenery. Bill Zuback photo



BUILD THE TAR BRANCH

PART 4: Backdrop, lighting, and scenery for the HO scale Winston-Salem Southbound project

By Steven Otte

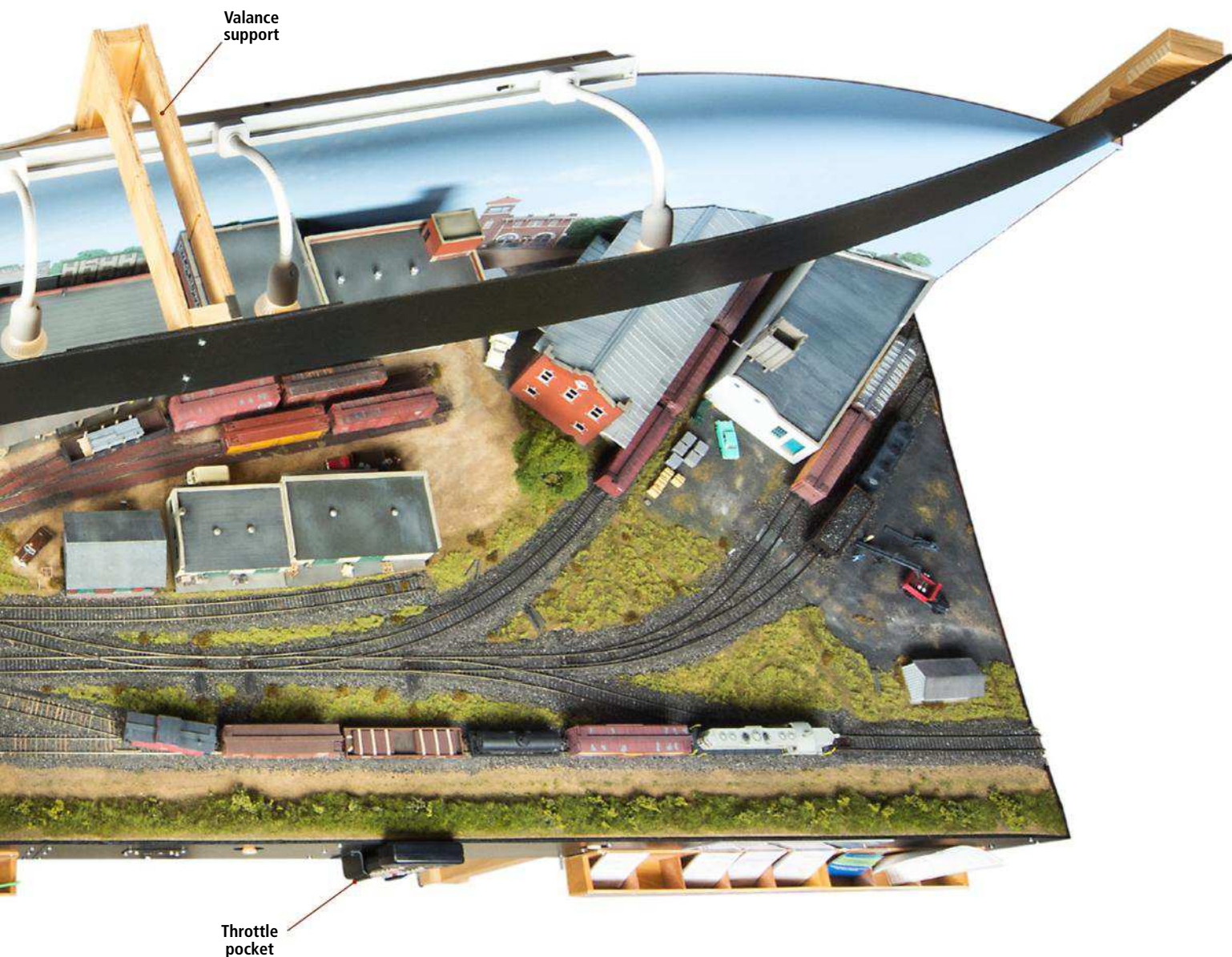
Photos by the Model Railroader Video Plus staff unless noted

IT'S BEEN SAID that a model railroad is like a stage, and the trains are the actors. It's almost a cliché, but there's truth to it. The scenery that surrounds our trains is the stage dressing that lets us be transported into our railroad's daily dramas. It must be believably realistic, but it musn't compete for the viewer's attention. The trains are the stars, after all, and our scenery musn't upstage them by being either obviously unrealistic or cluttered with fastidious detail.

In constructing the scenery for the HO scale Winston-Salem Southbound,

Model Railroader Video Plus producer David Popp and the rest of the crew set the stage for the drama that realistic model railroad operation brings.

Every stage needs a backdrop, and so does the Tar Branch. Since the layout's angled design made it prone to tip over, David planned and built the backdrop to be as light as possible. Rather than building a frame for the backdrop, he took advantage of the layout's curved back profile, and bent the $\frac{1}{8}$ " tempered hardboard vertically. This gave the backdrop enough rigidity to support itself.



The Tar Branch series

January: Going Southbound; meet *Model Railroader's* Winston-Salem Southbound project layout

February: Benchwork and track

March: Structures

April: Backdrop, lighting, and scenery



While shopping for lumber for the project, David came across a track lighting fixture that intrigued him. After attaching it to the top of the layout, though, he found its four halogen spots shone in operators' eyes. A lightweight valance of tempered hardboard solved that issue.

David, *Model Railroader* associate editor Cody Grivno, and former staff illustrator Jay Smith decorated the backdrop with sky-blue paint, airbrushed clouds, and buildings cut from printed photo backdrops.

With the help of MRVP contributor Gerry Leone, David finished the project with scenery, including ground cover, trees, and strung line poles.

To see in detail how this project was completed, join MRVP at www.MRVideoPlus.com. We hope the videos, and these articles, give you some ideas and techniques you can use on your own home layout.

WATCH THIS ON



Not a subscriber yet?

Click on the free videos page at MRVideoPlus.com to view episodes of the Winston-Salem Southbound series.

◆ BUILDING THE BACKDROP



Rather than building a wood framework on which to attach the 1/8" tempered hardboard, David glued 1 x 3 stiffeners to the ends of the 24" high backdrop, and let the curvature of the hardboard lend it rigidity ❶. This also let the backdrop follow the organic curve of the layout's surface. With the help of MRVP associate producer Kent Johnson, he attached it to the benchwork's joists with screws and washers.

Because of that curvature, the backdrop had to be a few inches longer

than the 8-foot length of the hardboard sheet. David placed the splice in the middle, on a part of the backdrop that would be flat. He glued a splice plate to the back, attaching it to the benchwork with screws on the bottom ❷. David cut the splice plate 3" shorter than the height of the backdrop to leave room for another 1 x 3 stiffener bar on the top.

To hide the unfinished wood on the ends of the backdrop, David glued on some 1 x 3 mounting brackets, then

sheathed it with a 2" wide strip of hardboard ❸. When painted the same color as the fascia, this would give the layout a unified, finished appearance.

If the backdrop was going to present a professional appearance that wouldn't distract from the layout, the seam down the middle would have to be smoothed over. David sanded the seam flat and applied drywall tape. After several rounds of applying drywall joint compound, sanding, and dusting, the seam was invisible ❹.

◆ PAINT



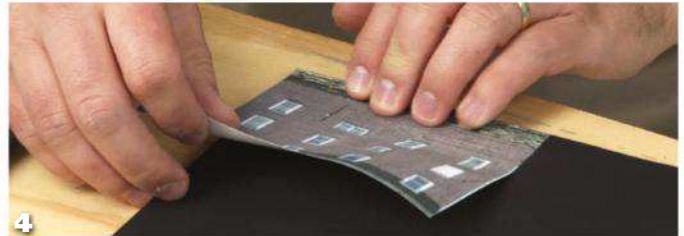
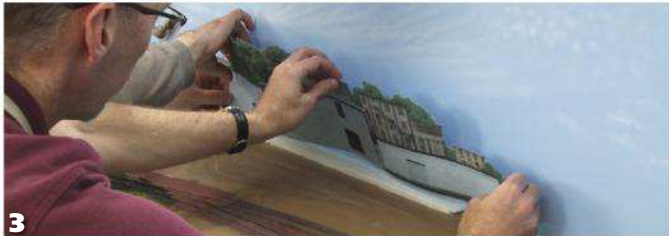
With the backdrop seam thoroughly taped, plastered, and sanded, it was time to paint. David started by applying a layer of white primer ❶. The porous white joint compound and the impermeable brown hardboard would take paint differently, so a coat of primer would guarantee even paint coverage in the next step.

To protect the track, terrain, and scenery that had already been installed, David taped paper over the layout surface. He used a 1" paintbrush to cut in along the edges of the backdrop ❷, then used the roller to apply sky-blue paint in an even coat.

After the first application, it was discovered that the shade of blue chosen

for the sky was too light for white clouds to be visible, so a darker shade was rolled over the first ❸. Former Kalmbach illustrator Jay Smith then airbrushed clouds onto the backdrop, working from reference photos ❹.

PHOTOS



David enlisted Cody to apply printed photo backdrops from SceniKing. Since Jay had painted our sky, Cody removed the sky from the printed backdrop, using a sharp hobby knife, a steel straightedge, and a glass cutting surface to minimize tearing **1**. Then, where there were trees on the backdrop, Cody used an assortment of sizes

of paper punches to nibble away at the edges, giving the trees a more random and organic shape.

Cody and David adhered the cut-out skyline to the backdrop using 3M Super 77 spray adhesive **2**. Applying the printout to the backdrop really is a two-person job, or else bubbles and wrinkles may develop **3**.

To provide some visual depth to the backdrop, Cody cut out a couple of buildings from the unused sections of the backdrop and applied them to black foam core board **4**. After trimming the edges of the foam core at an angle, the buildings provide a visual "pop" that gives the backdrop more interest.

LIGHTING VALANCE



David found a compact track light with gooseneck heads that he wanted to try as layout lighting. [The Home Depot has since discontinued the lights David used, but similar fixtures are available at home centers. – Ed.] To keep from straining the lighting mounts by bending them too far over, he cut the edge of a 1 x 3 at a 45-degree angle and mounted it to the stiffener board on the top of the backdrop **1**. This let him mount the track at an angle that would give the lights more flexibility.

Pointing the heads directly down at the layout didn't prevent them from shining in operators' eyes, so David added a lighting valance. He extended the stiffener boards on either side of the backdrop by 6", cutting an angle into the sides so the valance would arch outward over the layout. To support the middle of the valance, he made a cantilever bracket that he attached to top and bottom of the backdrop **2**.

Like the backdrop itself, the 6" wide valance was longer than 8 feet, so it

likewise required a splice. David positioned the splice in the center, where the attachment to the bracket could give it strength **3**. Once the valance was in place, David reattached the lights to the track **4**.

The valance and lighting proved just a bit too heavy for the benchwork, causing it to tip over at the slightest touch. David added concealed counterweights – actually, dumbbell weights – under the front of the benchwork to balance it out.

HERO TREES



Woodland Scenics tree kits are inexpensive and easy to build, but as they come from the manufacturer, these trees don't look as realistic as they could. David Popp modified them into "hero trees," models strong enough to hold up under scrutiny.

The armatures are molded flat from a plastic flexible enough to bend and twist into a more natural shape **1**. The problem is that the armatures don't have enough branches to look really natural. David used another armature as a donor, cutting off limbs and gluing them onto the first armature to fill empty spots **2**. Trimming the base of the donor limbs into a concave shape helps them fit flush

against the trunk, forming a stronger glue bond.

After adding branches, David sprayed the armature with gray primer **3**. After that dried, he sprayed it with Testor's Dullcote to kill the primer's shiny finish. Then, to bring out the texture, he drybrushed the trunk and lower branches with Testor's Model Master Reefer Gray **4**.

Rather than using the dense foam clump foliage that comes with the tree kits, David instead used Woodland Scenics Foliage. This fine poly-fiber netting has ground foam attached and comes in several colors. Gently stretching it out turns it into wispy clouds of foliage that simulate

the fine twigs and leaves at the tips of tree branches **5**.

David used sparing drops of Testor's Clear Parts Cement, a tacky glue that dries clear, to glue the Foliage to both sides of the branches **6**. Another layer rounded out the crown of the tree into a natural shape **7**.

As you stretch out and handle the Foliage, it tends to shed ground foam. David worked over a sheet of paper to collect this material. Then, once he was happy with the shape of the tree, he sprayed it with unscented super-hold hairspray and sprinkled the loose ground foam back onto the foliage **8**.

◆ BRICK PAVERS



What better material to model red clay bricks than red clay? David used an air-hardening art clay from DAS, available at arts and crafts stores, to pave an area around and between the rails on a pair of spurs by the Atlas Supply Co. warehouse loading dock.

The first step was to roll small amounts of the clay into "snakes" and press it between the ties **1**. Next, he eliminated fingerprints and smoothed the surface with a putty knife dipped in water **2**. The water helps keep the clay from sticking to the putty knife and balling up or pulling out of the ties.

Before the clay dried, David cleared the flangeways to ensure trains could run on the rails **3**. He rolled a freight

truck over the track, then used a plastic sculpting knife to get the clay out of the web of the rail.

David's next step really made an impression. (Get it?) Using room-temperature vulcanizing (RTV) molding compound, David made a negative mold of a brick texture from a sheet of patterned styrene by The N Scale Architect. Gluing that rubber mold to a wooden block gave him a brick pattern stamp **4**. David used this tool to stamp the brick texture into the surface of the still-soft clay.

After letting the clay dry thoroughly, David used paint and powders to give it realistic color, texture, and weathering. He first brush-painted the surface with

Model Master Oxide Red **5**. After it dried, he applied a coat of Grimy Black, then promptly wiped it off with a damp cloth **6**. This left the darker paint only in the crevices of the texture, bringing out the brick pattern.

Next, David highlighted the brick texture with Burnt Sienna and Iron Oxide weathering powders from PanPastel **7**. After rubbing these into the brick surface, David cleaned the railheads **8**, and the brick-paved lot was finished.

◆ GROUND COVER



Static grass looks great, but you don't always need an electric applicator to get that realistic look. Scenery manufacturers are coming out with more and more versatile products to simulate everything from carefully cultivated farm fields to overgrown, weedy lots.

For a thickly weed-covered embankment, David turned to a Meadow Green Wild Grass mat from Heki. This densely thatched product is made of static grass on a poly-fiber base. After

painting the underlying terrain an earth color and applying fine ground foam, David used Woodland Scenics scenic cement to glue the grass mat to the surface **1**. To model the bushes seen in a photo of the prototype scene, he added clumps of Woodland Scenics Fine-Leaf Foliage **2**. This is a natural material with ground foam foliage.

For a more low profile, sparsely weeded lot, David turned to a different Heki product, Deco Grass. This material

has a much thinner fiber base, so it can be easily stretched out into a sparse, patchy ground cover. David prepared the scenery base between the tracks with paint, white glue, and ground foam before adding the grass mat **3**. To add to the area's visual interest, he also added clumps of tall grass pulled from a Busch Thinning Grass Pad **4**. This mat has a thin, rubbery base material, which makes it easy to pull off clumps for planting on the layout.

◆ LINE POLES



Model Railroader Video Plus contributing editor Gerry Leone, who detailed many of the scenes on the Tar Branch project, also built and detailed the line poles on the layout. Starting with Rix Products poles, Gerry first scribed wood grain into the poles with a razor saw **1**. He then drybrushed the poles and crossarms with Model Master Reefer Gray acrylic paint and painted the insulators Testors Jade Green enamel.

Gerry used a rule to evenly space the poles across the layout, gluing each into a hole drilled into the terrain. He then strung the poles with black EZ Line from Berkshire Junction, leaving enough slack so the wires would sag prototypically **2**. He glued the EZ Line to the insulators with canopy glue, a tacky glue that dries clear.

Gerry added details to some of the poles, such as a bird landing on

a pole **3** and a set of transformers from a Walther's set. To help tie the foreground details into the backdrop, he placed the pole with the transformers in front of a photo of a house with a power pole next to it. Gerry glued a strand of black thread from the transformer to the pole on the backdrop **4**. **MR**

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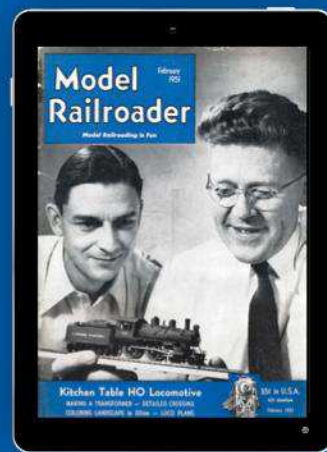
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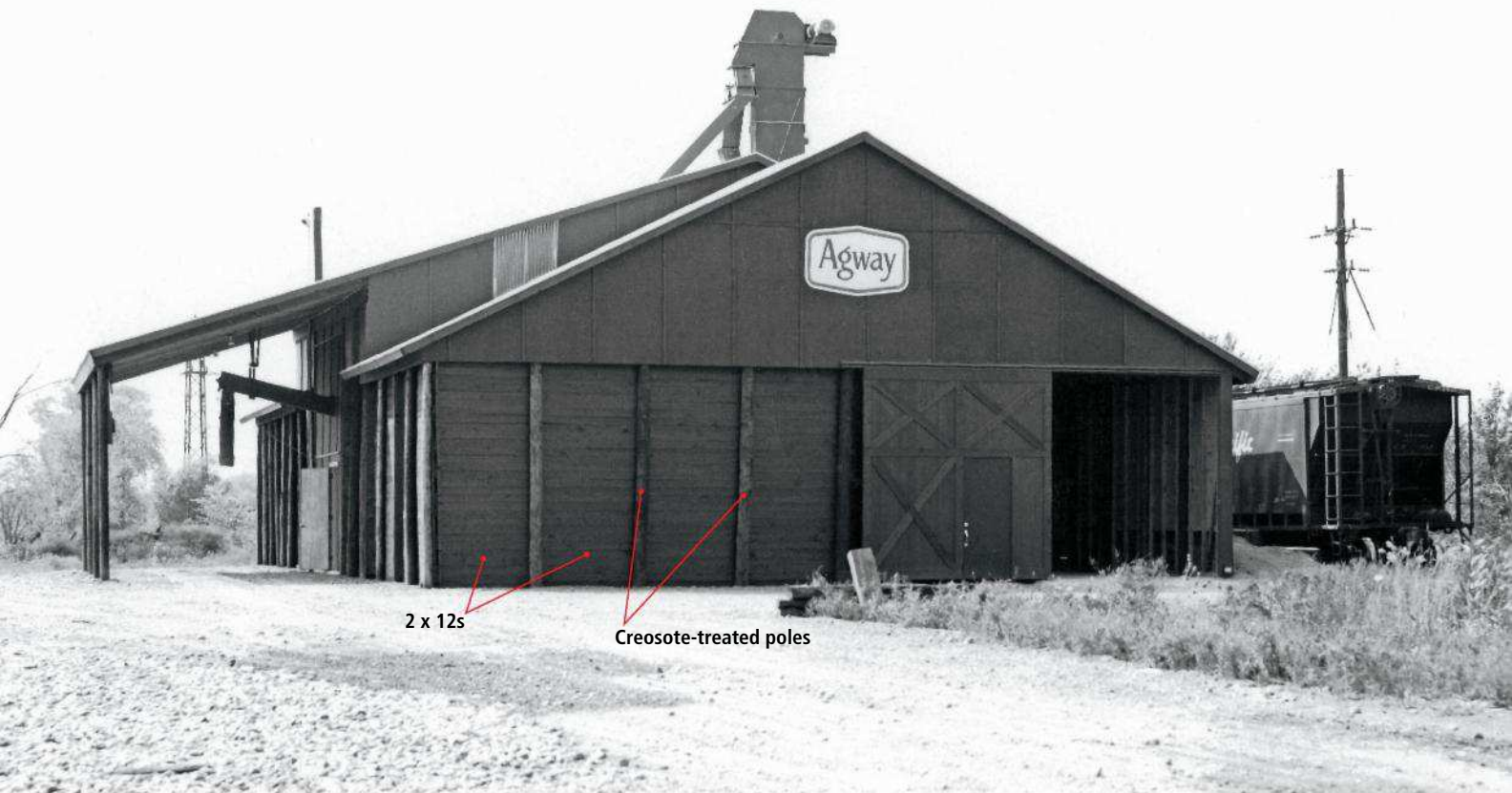
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Model Railroader, February 1951

Plans for a fertilizer blend plant



The Agway fertilizer blend plant in Auburn, N.Y., was built in 1964. This view shows creosote-treated poles on the exterior with stained 2 x 12s attached to the interior. Rich Cobb photo

A rail-served rural industry that provides fertilizer for area farmers

By Rich Cobb • Illustrations by Harold W. Russell

The development of granular fertilizer in the 1950s led to plant-to-field shipment that became popular in the 1960s and continues today. Agway, formed in the mid-1960s mergers of Grange League Federation, Eastern States Cooperative, and Pennsylvania Farm Bureau Cooperative, operated more than 50 fertilizer blend plants in the Northeast.

Since the company was formed through mergers, there were a variety of plant designs. One of the more common styles, including the Auburn, N.Y., plant, featured pole-barn construction with bins for material storage. The Auburn plant had seven bins for fertilizer storage, with blending and receiving equipment in the center. An auger under the tracks brought materials into the plant, where it was lifted by a bucket elevator to a movable conveyor over the storage bins.

Materials were taken out of the bins with a skid-steer loader and weighed in a hopper. Finished batches were processed through a blender, similar to a cement mixer. An auger took the finished product to the spreader truck.

The plant was a one-man operation, as the spreader trucks were owned and operated by a contractor. Most materials were received in 100-ton covered hoppers cars, though dump-style trailers were used occasionally.

Materials came from Florida, New Mexico, and Canada, as well as a nitrogen plant Agway owned in Olean, N.Y. Covered hoppers from a variety of railroads could be seen in Auburn (a slab-side Canadian Pacific covered hopper is shown above). The Auburn plant shipped about 4,000 tons per year, with the majority of business in the spring months. It wasn't uncommon for the Lehigh Valley RR to switch the plant once a day.

From plan to model

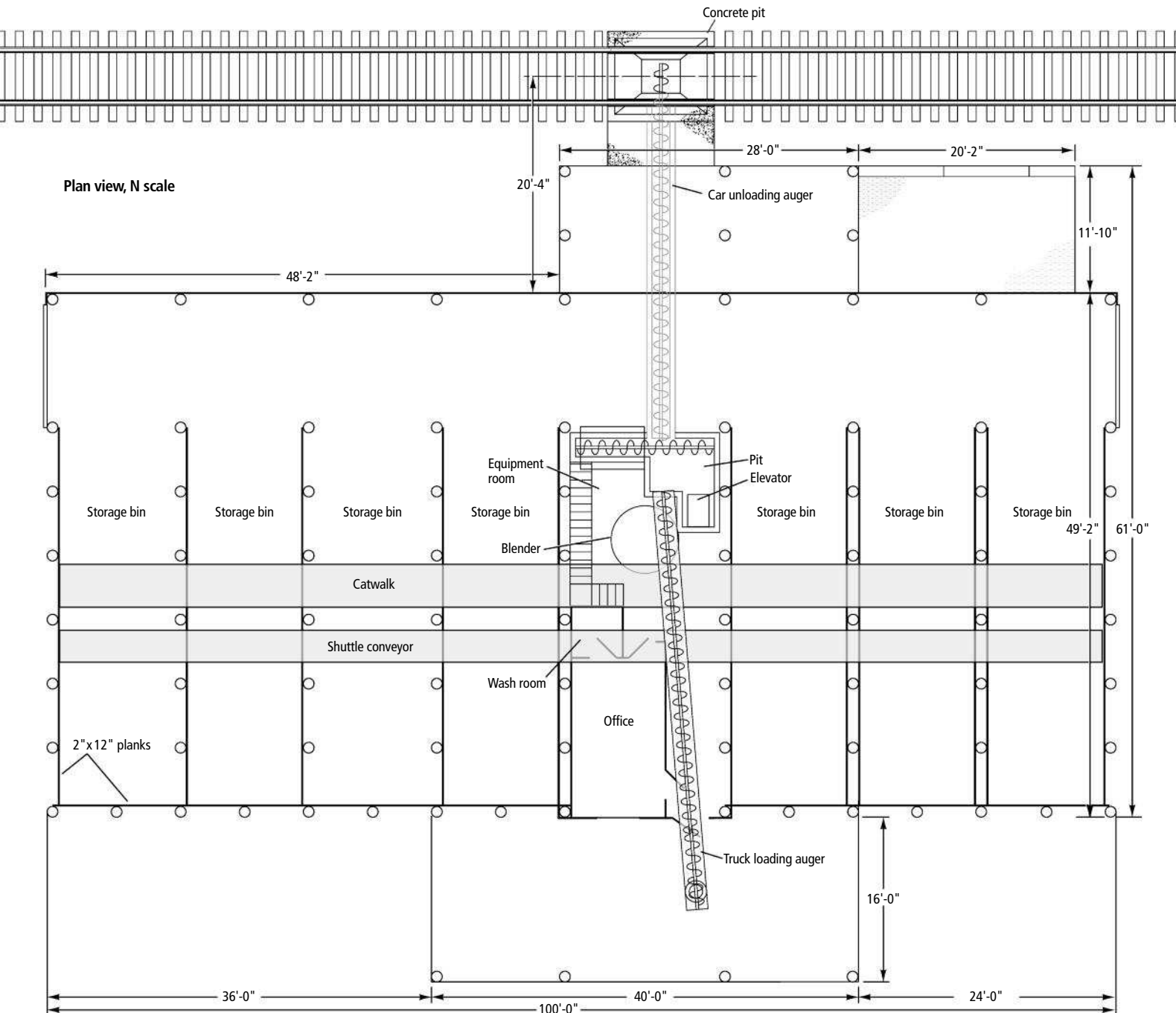
In constructing the model, you have two choices. As built, the poles were on the exterior of the plant, with 2 x 12 planks on the inside forming the bins. The poles were soaked in creosote, and the planks were stained a dark color.

In 1972, the exterior of the plant was covered with 4 x 8-foot sheets of plywood. The idea was to cut down on moisture in the plant, as well as improve the looks of the facility. The remodeled plant was originally painted dark gray. Later, it was repainted white with red trim.

I modeled the post-1972 version of the plant. I used Northeastern scribed wood with the blank side facing out to simulate the plywood. I covered the "seams" with scale 2 x 4 furring strips. The prototype had 1 x 2 strips, but they'd be all



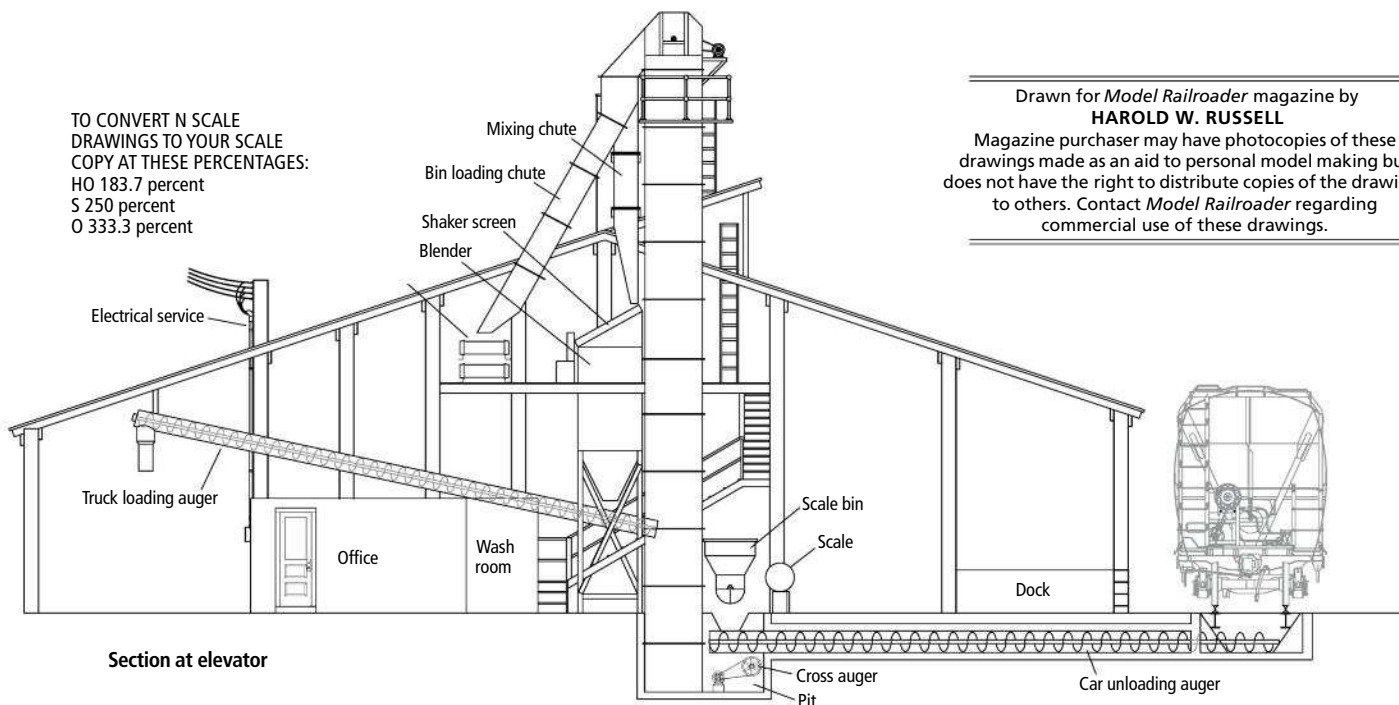
This image shows the plant after it was remodeled in 1972. After being remodeled, the plant was painted dark gray. The structure was later repainted white with red trim. Rich Cobb photo



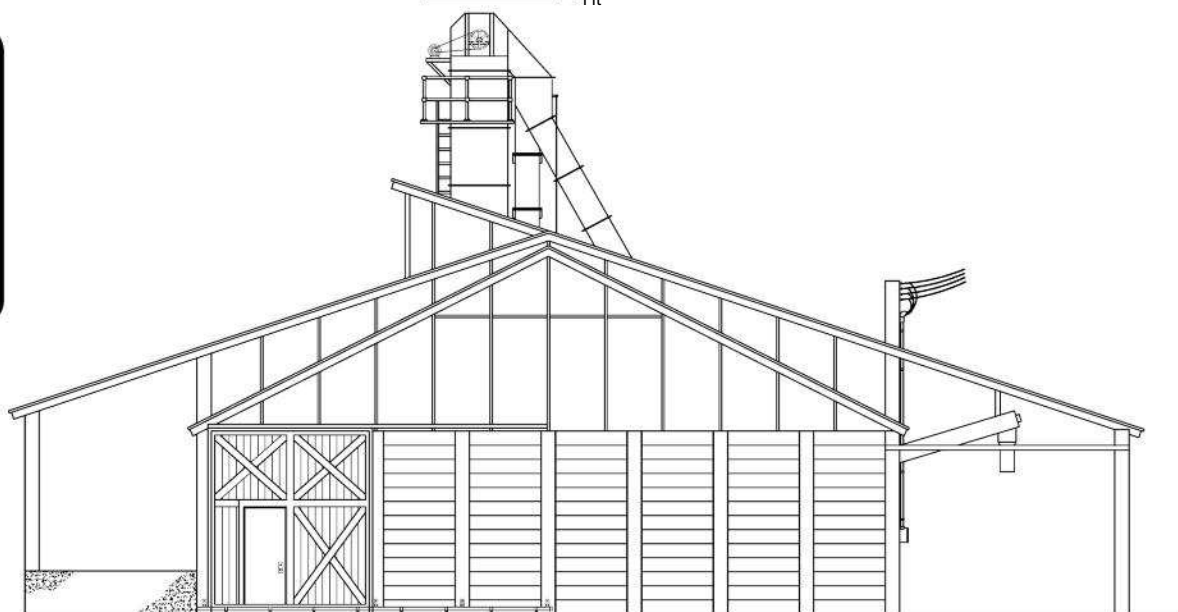
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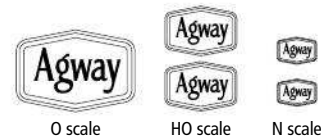
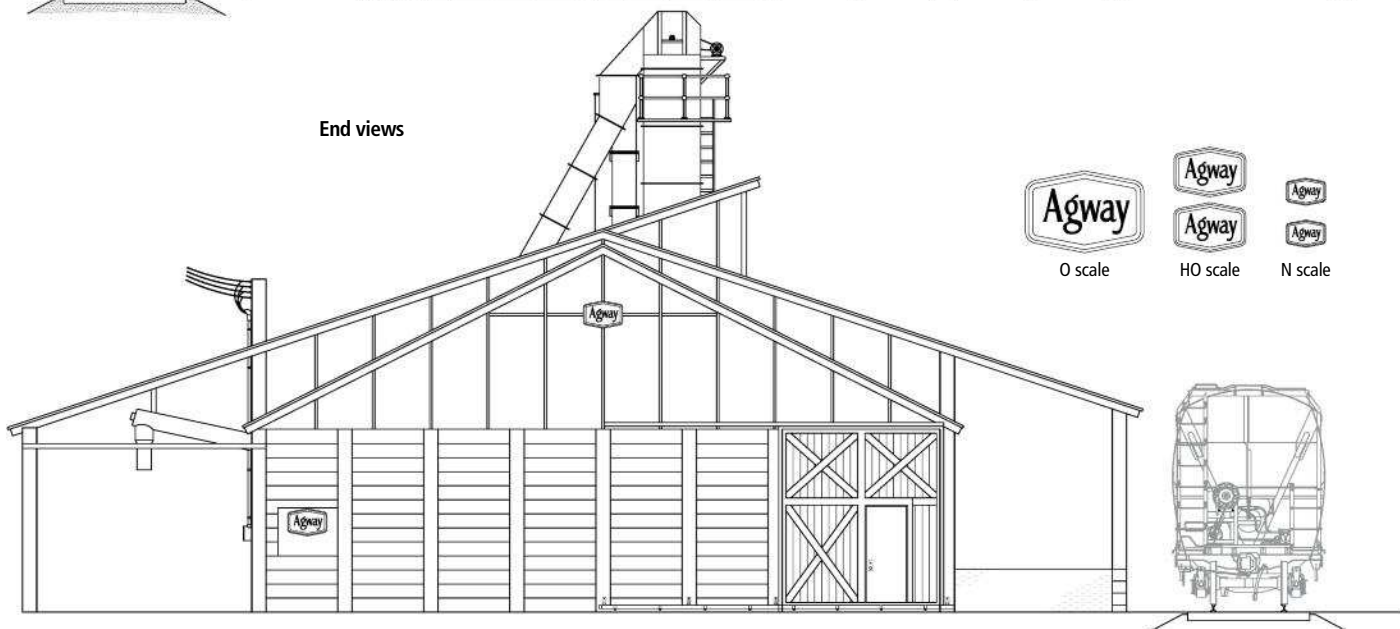
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Section at elevator



End views



but invisible on an HO scale model. I covered the roof with strips of gray sandpaper to simulate the tar paper roof.

I built a cement pad around a section of track. Then I painted a scale 2-foot-wide strip of paper a rust color to simulate the steel cover over the unloading auger.

Since I modeled the plant with the end doors open, I added fertilizer bins to the interior. I used sand, painted cream, light and dark gray, and red to simulate granular fertilizer.

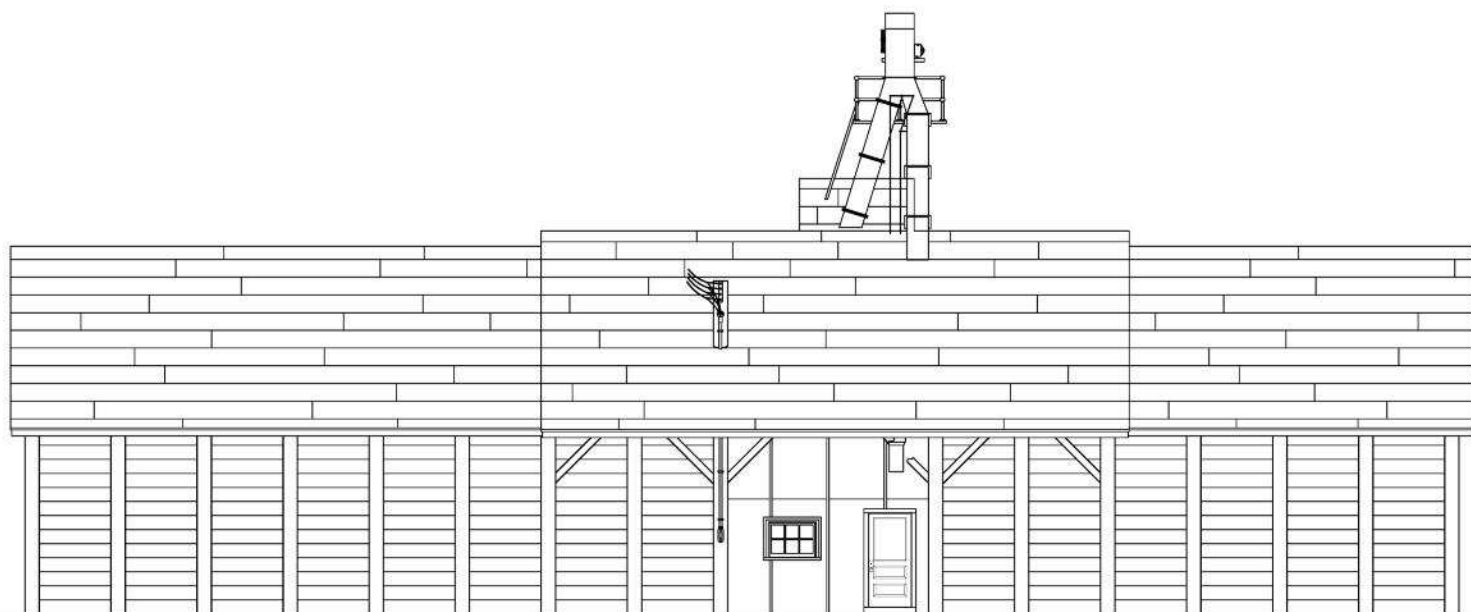
The elevator leg sticking out of the roof is a modified Walthers kit. The skid-steer loader is a GHQ white-metal kit. The trucks are kitbashed and similar to those used by Agway.

Though this Agway fertilizer blend plant was in New York, it could easily be modified to represent similar structures found in other parts of the country. [MR](#)

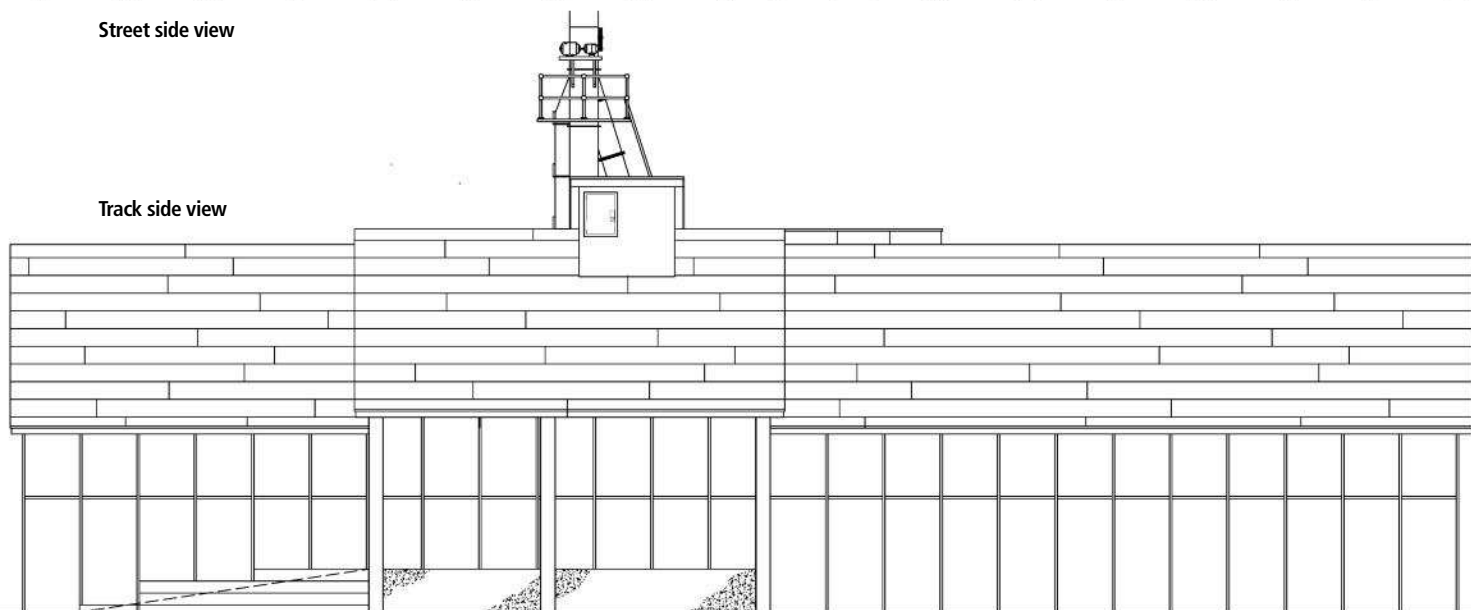
Rich Cobb worked in fertilizer blend and manufacturing plants for more than 20 years. He is a volunteer ambulance driver. Rich's wife has "put up" with his hobby for 50 years. They have two sons that, though not into model trains, attend train shows.



Rich built two HO scale versions of the Auburn fertilizer blend plant using assorted sheets and strips of scale lumber. The trucks are similar to full-size versions that were used by Agway. Rich Cobb photo



Street side view



Track side view

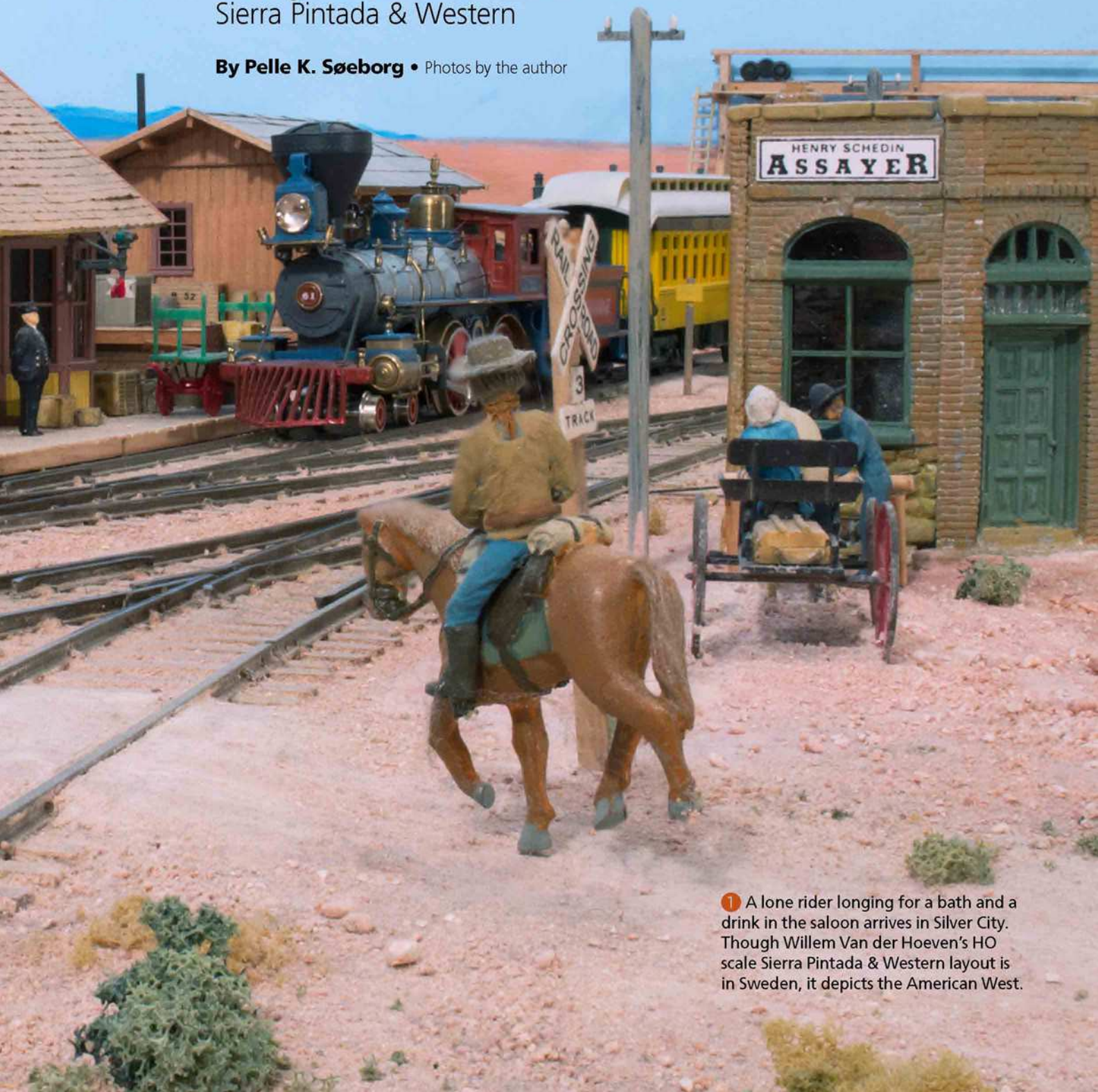
A small piece of Arizona in



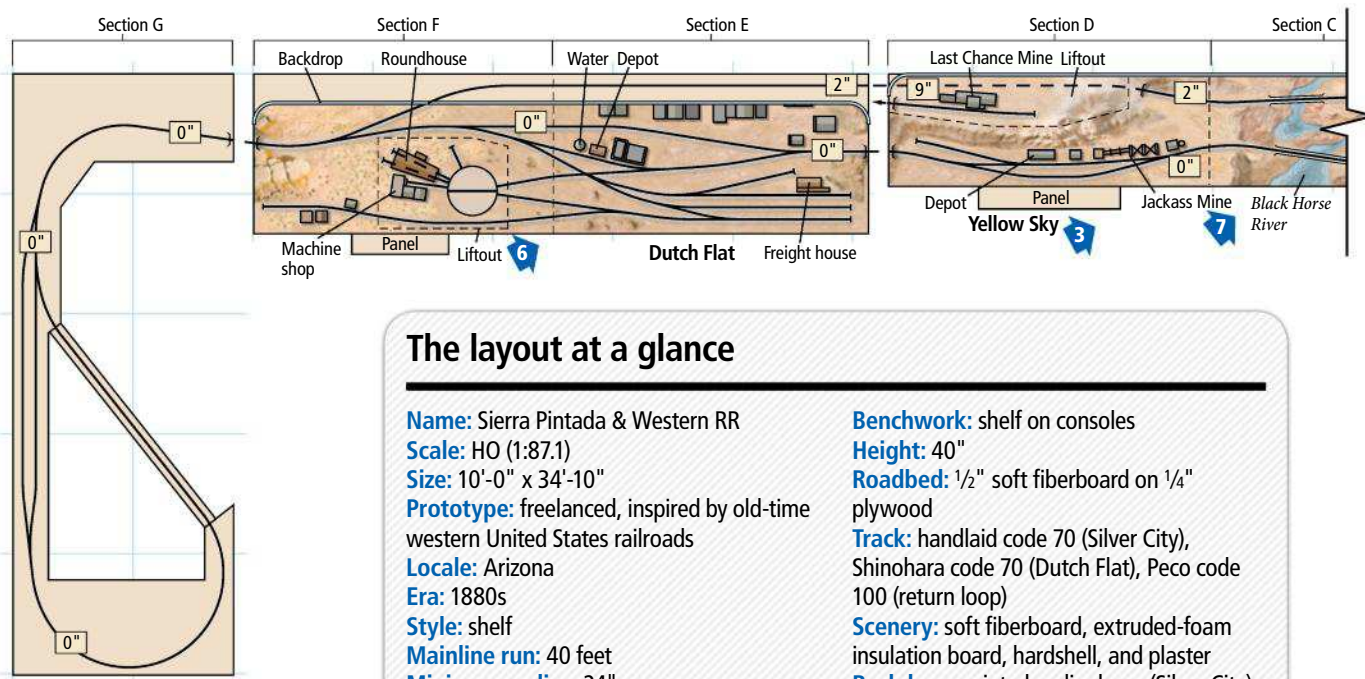
wedern

Visiting the HO scale
Sierra Pintada & Western

By Pelle K. Søbørg • Photos by the author



① A lone rider longing for a bath and a drink in the saloon arrives in Silver City. Though Willem Van der Hoeven's HO scale Sierra Pintada & Western layout is in Sweden, it depicts the American West.



The layout at a glance

Name: Sierra Pintada & Western RR

Scale: HO (1:87.1)

Size: 10'-0" x 34'-10"

Prototype: freelanced, inspired by old-time western United States railroads

Locale: Arizona

Era: 1880s

Style: shelf

Mainline run: 40 feet

Minimum radius: 24"

Minimum turnout: no. 4

Maximum grade: 2 percent

Benchwork: shelf on consoles

Height: 40"

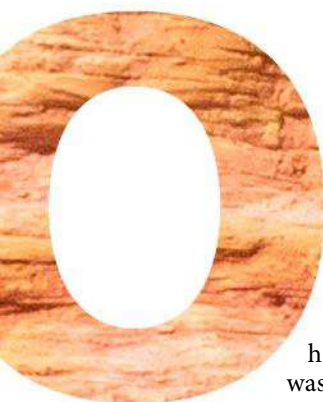
Roadbed: 1/2" soft fiberboard on 1/4" plywood

Track: handlaid code 70 (Silver City), Shinohara code 70 (Dutch Flat), Peco code 100 (return loop)

Scenery: soft fiberboard, extruded-foam insulation board, hardshell, and plaster

Backdrop: painted on linoleum (Silver City), Walthers mural on linoleum (Dutch Flat)

Control: direct current

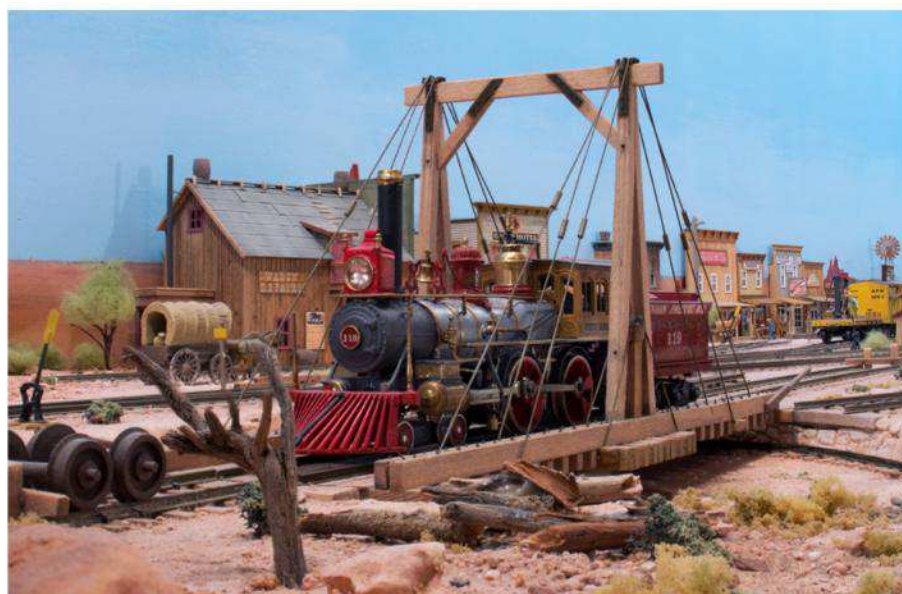


On a cold November day I went to the suburbs of Stockholm to visit Willem Van der Hoeven. Willem has been a model railroader most of his life. In 1940 he was given a Märklin O scale train set. Sixteen years later, in 1956, he bought his first copy of *Model Railroader* magazine, which sparked his interest in North American railroads.

But it wasn't until 1964, when he bought a house with a full basement, that he could fulfill his wish to build a U.S.-style layout and start construction of the Sierra Pintada & Western, a fictional railroad set in Arizona in the 1880s. The choice of modeling the 1880s was influenced by Willem's passion for Western movies.

The visible part of the layout is in two rooms in the basement, representing the Silver City and Dutch Flats divisions. A hidden return loop is located in a storage room.

The layout is built in sections no bigger than can fit through a doorway. That way Willem can take the layout, or parts of it, with him if he moves. The sectional concept proved its worth when the



② The turntable in Silver City is an excellent example of Willem's scratchbuilding skills. The 4-4-0s are kept in pristine condition, as was customary in the 1880s.

basement was flooded due to a water leak and parts of the layout had to be moved.

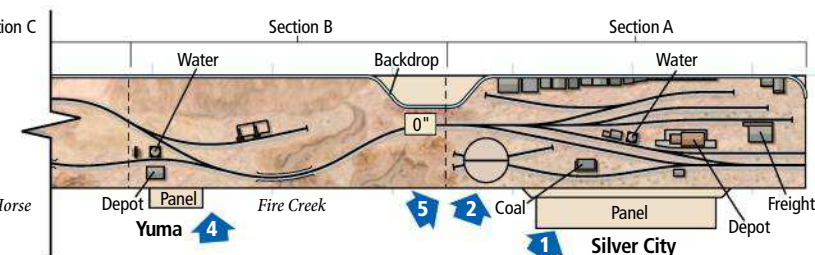
The railroad hauls freight and passengers between Silver City and the mining town of Dutch Flat. The layout was built with operations in mind, enough to keep several people busy, and Willem had imagined he could host operating sessions for his friends. However, none of them showed any serious interest in model railroading or operating the layout.

To Willem it wasn't a big loss, as he enjoys building more than operating the

layout. He turned his attention to kit-bashing and scratchbuilding the many structures on the layout.

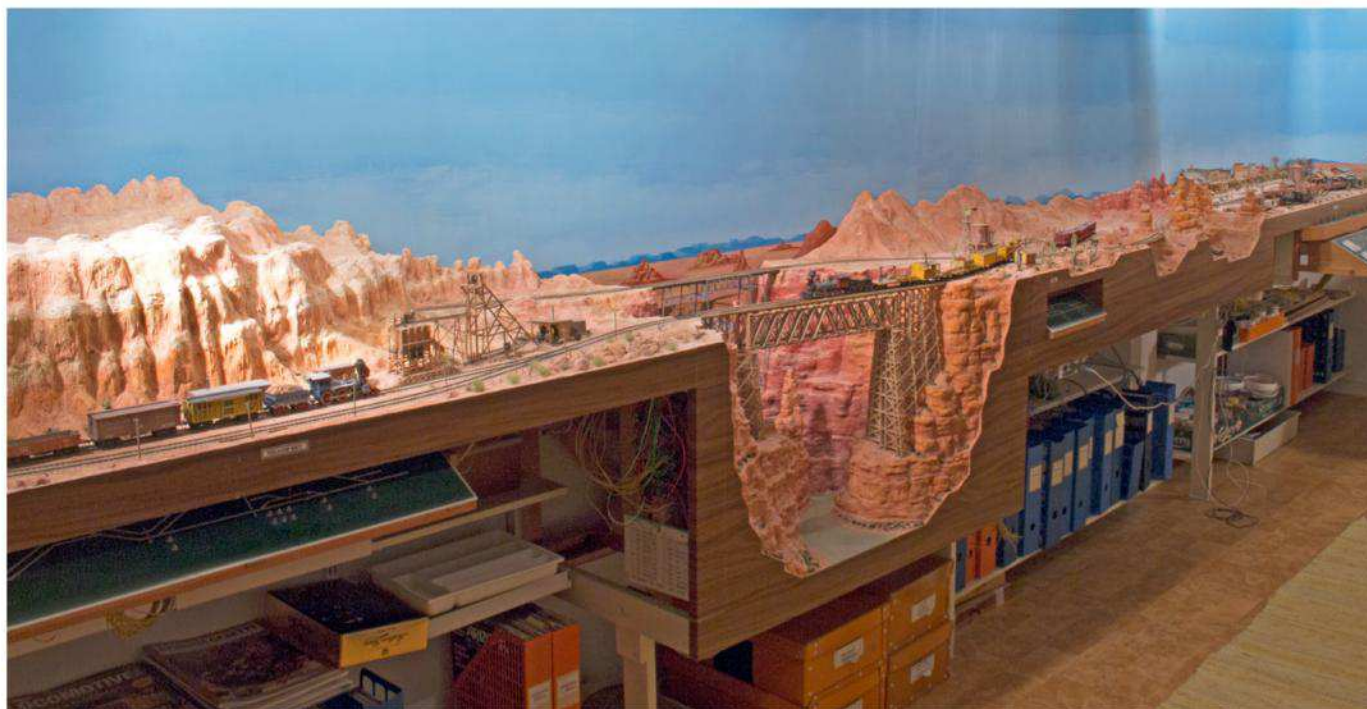
Scenery and structures

When Willem started construction of the Sierra Pintada & Western, extruded-foam insulation board was not a commonly used material, so for parts of the basic terrain he used 1/2" soft fiberboard covered with plaster. Soft fiberboard is similar to Homasote but a little softer. [Similar products are used as



Sierra Pintada & Western

HO scale (1:87.1)
 Scale of plan: $\frac{1}{16}$ " = 1'-0", 24" grid
 Numbered arrows indicate photo locations
 Illustration by Kellie Jaeger
 Find more plans online in the
 ModelRailroader.com Track Plan Database.



3 The Silver City division and its Black Horse Canyon is what meets the eye when you enter Willem's basement.

underlayment on flat roofs in North America. – Ed.] He also used the soft fiberboard as roadbed for the track, as it has a sound-deadening effect.

The classic hardshell and plaster method was also used for parts of the terrain. In a few places, Willem used rock castings, but most of the rock work is hand-carved.

Willem colored the plaster with stains made of dry powdered pigments mixed with water. "It is easiest to control the intensity of the rock color if you apply the color as many light stains instead of one or two heavy coats," Willem says.

Willem's scenery techniques were featured in the March 2009 issue of *Model Railroader*, where he describes how he built his spectacular Black Horse Canyon. To achieve a feeling of greater distances, Willem visually separated sections of the scene from each other. He also used forced perspective to intensify the illusion of great distance on a narrow shelf.

Willem scratchbuilt cactus either from balsa or brass wire, which he soldered together. He then sprayed the armatures with glue and covered them

with Woodland Scenics fine turf. He also used commercial products for some of the many cactuses on the layout.

Willem painted the backdrop behind the Silver City division on linoleum. For the backdrop behind the Dutch Flat division, he used a commercial desert scene backdrop from Walthers.

Most structures on the layout are either kitbashed or built from scratch.

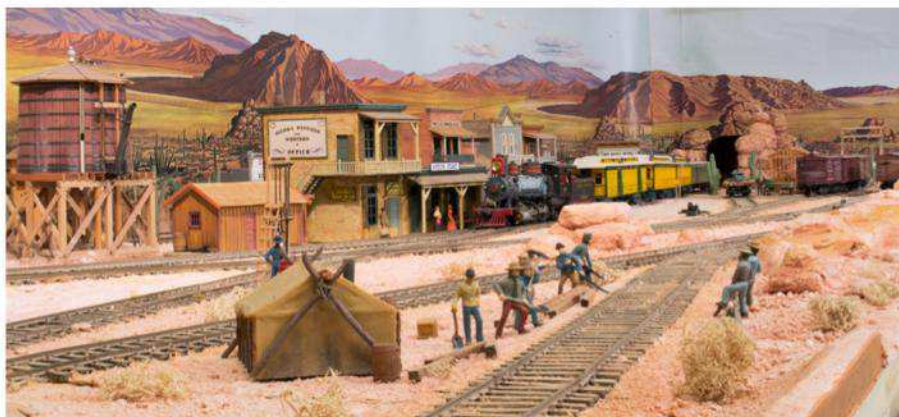
They're based on photographs Willem found during his research, or on drawings published in *Model Railroader* and *Narrow Gauge & Short Line Gazette*. The careful attention to each of the details, then the painting, and finally the weathering shows that creating authentic-looking buildings and bridges is among one of Willem's absolute favorite pastimes.



4 Two cowboys drive a herd of longhorns toward the stock pens at Fire Creek so the cattle can be shipped the rest of the way to the receiver by rail. The longhorns are ordinary cows from Preiser that Willem modified with longer horns.



5 The morning is quiet on Silver City's main street, but it won't last. Frontier towns were notorious for their rowdy nightlife.



6 A work crew is toiling in the heat to replace some rail outside Dutch Flat. The track in Dutch Flat is Shinohara code 70 flextrack.

Locomotives and rolling stock

The locomotive roster includes both brass and plastic models. Four of the brass models, a Balboa set and a Pacific Fast Mail set, are models of Union Pacific's Centennial locomotive no. 119 and Central Pacific's *Jupiter*. The best running of Willem's 4-4-0 engines is a rebuilt Bachmann *Jupiter*.

After 40 years Willem took his old Tyco *General* 4-4-0 out of storage, and it still ran. Willem replaced the original motors in a number of brass engines with can motors and flywheels to make them run better.

Like the prototypes, Willem's 4-4-0s are painted in bright colors and maintained well. The prototype's boilers were covered with Russia iron, a shiny metal often with a bluish hue, and all the brass was kept polished.

The rolling stock features 60 freight and passenger cars and includes models from companies such as Central Valley, International Hobby Corp., Rivarossi, Associated Hobby Manufacturers, Mantua, Roundhouse, Westerfield, and GEM. Many of them have been modified to match specific prototypes from the era.

With the highly detailed scenery and structures, plus the period-correct motive power and rolling stock, Willem feels he has accomplished his goal of re-creating the atmosphere of the 1880s western desert railroading that played an important role in the expansion of the United States. **MR**



Meet Willem Van der Hoeven

Willem Van der Hoeven is a retired government economist. He and his wife, Monica, live near Stockholm, Sweden. Willem has two grown sons. Besides model railroading, Willem also enjoys cycling and studying history and architecture.

Handlaid track

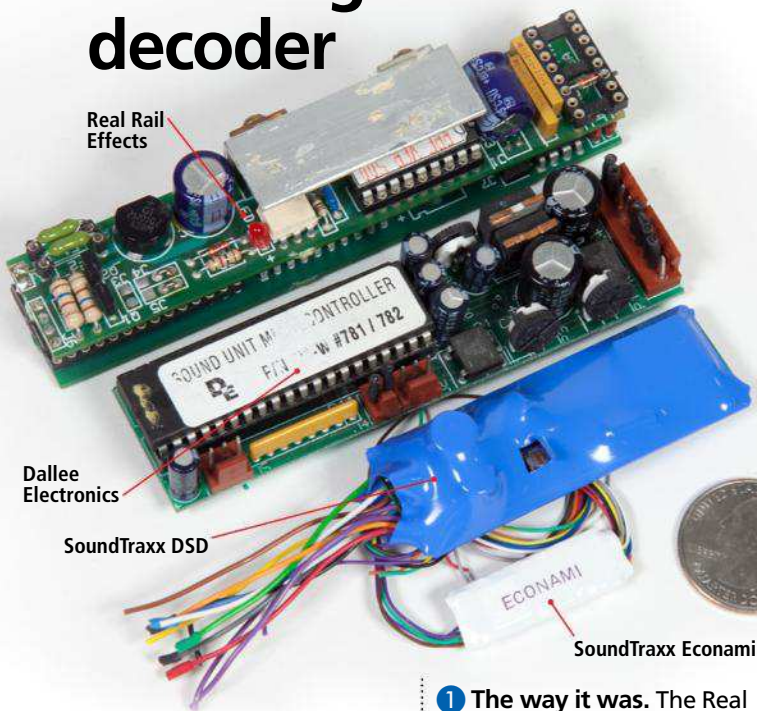
All track on the Silver City Division is handlaid. Willem used chemically weathered code 70 rail on wood ties. He first built stub switches for this section, but because of problems with derailling rolling stock, he later modified them to conventional switches.

On the Dutch Flat Division, Willem used Shinohara code 70 flextrack and turnouts he painted and weathered. Willem used an extra layer of 1/4" extruded-foam insulation board below the track on this section for extra sound-deadening. With the exception of a few manually operated turnouts close to the edge of the layout, the turnouts are lined with Lemaco and Pacific Fast Mail Fulgurex switch motors operated via control panels attached to the fascia.

7 The spectacular Black Horse Canyon, with its scratchbuilt bridge, is the signature scene on Willem's layout. The scene was featured in the March 2009 issue of MR.



Selecting a sound decoder



Sound decoders have

grown in popularity over the last few years both as factory- and user-installed options. At the same time, selecting sound decoders has become an increasingly complex matter, so let's take a look at some of the factors to consider when selecting one and planning an installation.

First, you need to find a decoder that will fit your locomotive. Over the last 20 years decoders have shrunk in size and increased in power and functionality **1**. I remember the problems I had just trying to install the Dallee and Real Rail Effects sound units into dummy locomotives. The SoundTraxx DSD decoder was the exception, slipping neatly into a steam locomotive tender.

Sound decoders are available in a range of sizes and configurations, from the traditional shrink-wrapped rectangle often called HO scale, to very small units referred to as N or Z scale **2**. There are flat circuit board versions often

1 The way it was. The Real Rail Effects and Dallee units from 1995 to 1997 were so large they only fit in a dummy HO diesel locomotive, and required a separate motor decoder. The SoundTraxx DSD decoder from the same period was a bit smaller. It's now much easier to find room for sound with compact decoders like the SoundTraxx Econami ECO-100.

called "AT," since they were originally designed to replace the lighting circuit boards in Atlas models.

Some manufacturers now offer their decoders on a small 21-pin board. However, these require a compatible motherboard in the locomotive to which they can be mated. Consequently, the only size problem you may face is finding a decoder small enough for some small HO scale switchers or N scale locomotives.

In the past, we often had to consider the current draw or stall current of the model's motor when selecting a decoder. Because of increased motor efficiency, it's unusual

to find a new model that pulls more than .5 amps, while most decoders now can handle 1 to 2 amps. However, very small decoders may only support .75 amp. So current draw typically is only a concern when working with older models and those with open-frame motors.

As modelers have become more conscious of the fact that different locomotives actually sound(ed) different, it has become more important to find a sound decoder that can offer prototypically accurate sounds.

Manufacturers have responded with sound packages for most steam and diesel locomotives, recorded from preserved and current locomotives.

Because different manufacturers produce different steam and diesel sound packages, you'll need to do some research to find a match for your needs. In most cases the common Alco, Electro-Motive Division, and General Electric diesel locomotive sounds are readily available from most manufacturers.

However, once you branch out into Fairbanks-Morse, Baldwin, and other obscure prototypes, your choices may be more limited. SoundTraxx has an excellent page on its website listing numerous locomotive types and the diesel engines used in them (www.soundtraxx.com/choose).

On another page is a list of the common types of air horns used by various railroads.

The various manufacturers also differ in how they package their sounds. Train Control Systems (TCS) includes all of its various steam or diesel sound files in either a steam or diesel WOWSound decoder.

SoundTraxx, on the other hand, offers several different diesel sound collections, each on different decoders. For example, the EMD sounds are on one version and the Alco and GE are on another.

Electronic Solutions Ulm (ESU) LokSound decoders have sounds for a single locomotive type. Using the company's LokProgrammer software and interface, you can download and install replacement sound packages. Digitrax also offers the ability to download new sound packages to its sound decoders.

Another consideration is the brand of decoder being used by model locomotive manufacturers. For example, Atlas has been installing LokSound decoders in its locomotive models for several years. So if you're partial to Atlas models, you may want to purchase LokSound decoders to install in your Atlas models that are not decoder-equipped.

I know of modelers who are replacing all the decoders in their fleets and standardizing on just one brand. This is an expensive option, but they feel it's important to have a common set of sounds and functions in all their locomotives. And that brings up another consideration when selecting sound decoders: function assignments and operations.

Although Digital Command Control (DCC) is a standard that guarantees interoperability of decoders with different



systems, it doesn't extend to how the various functions perform and what buttons they're assigned to.

For example, the default brake function button on a SoundTraxx Econami decoder is F11, and on TCS WOWSound it's F7. You could easily move the Econami brake function to F7, but there's an additional problem. The WOWSound decoder uses F7 to turn on the brakes and F6 to turn them off, whereas on the Econami decoder F11 is an on/off toggle, so they really aren't directly compatible.

This creates issues when attempting to combine locomotives having different decoders into consists, since they may respond differently to the same command. One work-around is to make up consists of locomotives having the same type decoders, which many modelers do.

Having a fleet of locomotives with several different brands of decoders inter-mixed can confuse engineers during operating sessions. This is complicated by the fact that the National Model Railroad Association standard recognizes functions F0-F28, so there's potentially a lot of mix and match to be done.

Even if you go to the trouble of remapping the functions in all your decoders to a standard set, you still face the problem of differences in how they operate. Eventually these differences devolve to operators using only the most basic set of functions, such as the horn and bell, essentially letting all the time, effort, and money you've invested in those fancy sound decoders go to waste.

Speaker selection can be a critical factor in a sound installation. At one time we were limited to the traditional round speaker. Then ovals came along, making installations in narrow hoods

easier ³. More recently, "sugar cube" speakers, offered in a range of sizes, have made previously impossible installations possible.

Along with the increased choices in speakers have come an array of enclosures ⁴. Streamlined Backshop (www.sbs4dcc.com) recently released a series of enclosures for its selection of sugar cubes designed for out-of-the-way locations. The curved enclosures are particularly useful, fitting inside a cab roof and making the installation all but invisible.

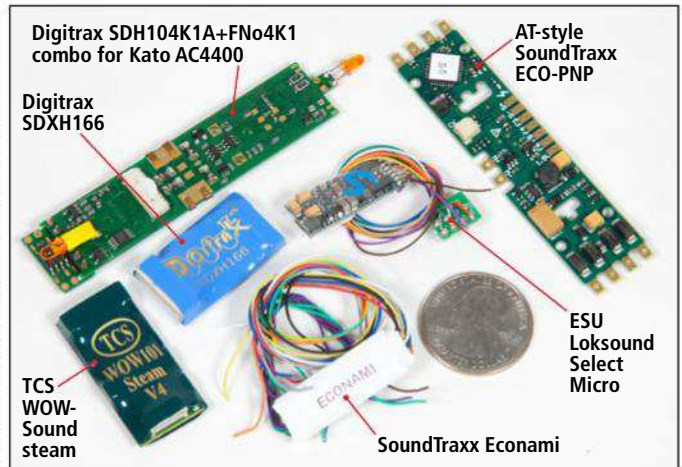
In addition to all I've discussed, there's the choice of doing the installation yourself or sending it out. If you decide to do it yourself, and it will be a first time for you, then start with an easy installation.

For example, some new locomotive models come with motherboards with sockets into which you can plug a decoder. When you select a decoder, make sure its plug or socket is compatible with the one in the locomotive. TCS sells kits that include model-specific motherboards, speakers, and a sound decoder.

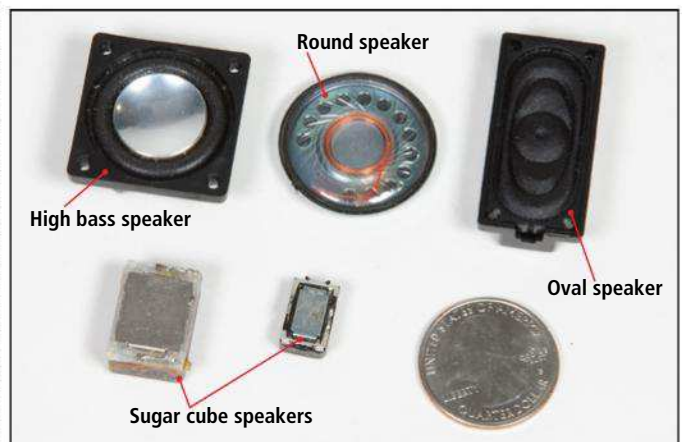
Some decoders, such as the standard configuration Econami and Tsunami2, come only with bare wires, so you'll need to add a plug as I showed in a video on my website (www.dccguy.com).

If you decide to send out the job, then the question is, will it be to a local modeler, or one of the many companies that sell DCC equipment and also do installations? No matter which option you choose, make sure the installer is knowledgeable about your decoder choice. Here's where references are a good idea.

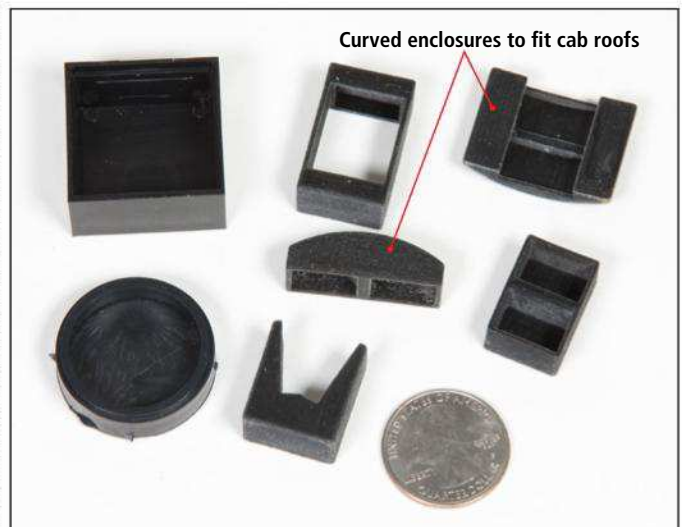
I've written several articles showing sound installations, so dig out your back issues of *Model Railroader* and see what might be involved with your project. **MR**



2 Big sound, little packages. Most manufacturers of sound decoders offer a range of sizes and configurations.



3 Round, oval, and sugar cube. In addition to the traditional designs, the introduction of "sugar cube" speakers in sizes as small as 8 x 12mm allows even more options. The high bass speaker with its metal cone offers improved sound.



4 Perfect fit. Streamlined Backshop and others offer many shapes and sizes of enclosures for sugar cube speakers, designed to fit in locomotive boilers, cabs, and bodies. Some accommodate two speakers for improved sound.



Atlas HO scale General Electric U33B diesel

The Rock Island was a mighty fine line, but by the time General Electric's U33B locomotives were delivered in the late 1960s, the Rock was in a hard place. The 3,300hp diesels were designed for fast freight, but the Chicago, Rock Island & Pacific was a granger road full of slow orders and weed-grown track.

It doesn't have to be that way in your train room, though. All you need is a new, sound-equipped Atlas HO scale U33B and you can create the glory days that never were. The direct-current or ESU LokSound-equipped diesels are also available in Penn Central and Reading & Northern paint, and the externally identical U36B comes in Auto Train and Seaboard Coast Line colors.

The prototype. General Electric built 137 U33Bs between September 1967 and August 1970. This wasn't the only four-axle locomotive in GE's catalog at the

time. Production of the 3,000hp U30B and the 3,600hp U36B overlapped the U33B, selling from May 1966 to March 1975, and from May 1970 until December 1974, respectively.

All three locomotive models used GE's 16-cylinder FDL diesel engine. The higher-horsepower U33s and U36s had oversized radiators at the end of their long hoods to handle their higher cooling requirements.

Three railroads purchased new U33Bs. New York Central, and then Penn Central, had the most, with 83. Seaboard Coast Line received 29, all riding on traded-in and rebuilt EMD Blomberg trucks. The Rock Island rostered 25 U33Bs. The Penn Central locomotives were picked up by Conrail, and SCL's U-boats ended up in CSX paint. The non-SCL locomotives had AAR type B trucks.

U33s built before January 1968 had fairings in front of their radiator wings,

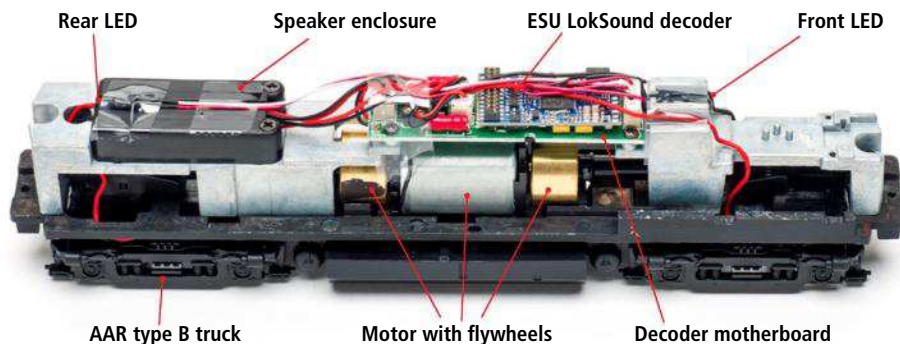
but later locomotives didn't. The first two New York Central U33Bs, 2858 and 2859, and 15 Seaboard Coast Line U33Bs, nos. 1719 to 1734, had the fairings. U33s and U36s appear identical from outside. The extra 300hp is the result of tuning modifications to the engine.

A few U33Bs were sold second-hand, mostly ex-Conrail, ending up with Georgia Central; Guilford-owned Boston & Maine, Delaware & Hudson, and Maine Central; and Reading, Blue Mountain & Northern.

The model. Atlas is offering its model decorated as either a U33B or U36B. Our sample represents Rock Island no. 197 in its as-delivered paint scheme, one of 10 locomotives (numbered 190 to 199) built in May 1969. It was the last of three orders, with the first 10 built between July and September 1968 and five built in January 1969. The first two orders were numbered 285 through 299.

The maroon and yellow paint is opaque, with sharp separations between the colors. The maroon may be a little too brown, but the color varies considerably in prototype photos depending on age and lighting. The large ROCK ISLAND lettering on the long hood is clear and sharp, with only a few voids where it crosses the door latches.

Metal grab irons are installed on the ends of the unit, and the handrails are made of flexible plastic. Road-specific details include the firecracker antenna on the cab roof, but cab sunshades that



A can motor with brass flywheels is centered in the die-cast metal frame. Metal weights screwed to the frame help with traction. All wheels are powered.

appeared in multiple online photos of Rock Island locomotives are missing. They wouldn't be difficult to add. Etched-metal radiator grills add extra detail to the top of the model.

The side windows on the cab have silver-painted frames to simulate the movable sash, and the fixed windows and number box covers have black-painted simulated rubber gaskets. The model measures within scale inches of drawings published in the November 1999 *Railroad Model Craftsman*.

Under the hood. To remove the shell I first removed the draft-gear boxes, then released plastic latches above the front and rear trucks. A die-cast metal frame holds a center-mounted can motor with brass flywheels. All eight wheels are powered and conduct electricity.

Our Digital Command Control (DCC)-equipped model has an ESU LokSound Select decoder mounted to a motherboard with a 21-pin connector. The motherboard is screwed to the metal weights, above the motor. An oval speaker in a plastic enclosure is mounted facing down above the rear truck. Light-emitting diodes (LEDs) mounted at the rear of the locomotive and behind the cab transmit light to the model's headlights through molded plastic light tubes. There is a slight glow in the cab from the headlight LED.

Painted crew figures are mounted inside the cab, which snaps onto the battery box and walkway casting. Black-painted shields hide the mechanism from view through the windows. The yellow paint on the short hood was also visible inside the cab. It could use a bit of black paint to conceal it.

On the test track. Atlas locomotives with ESU LokSound decoders generally run well, and this model was no exception. I started testing on DC power, and found the model needed 6V for sounds to come on. At 7.2V, the locomotive started to move at 1 scale mph. At 12V, the model reached 75 scale mph, giving it a prototypical speed range.

Drawbar pull was 3 ounces, equivalent to 43 HO freight cars on straight and level track. On DC power, all sounds are automatic. They consist of a startup sequence when the locomotive first receives enough power, then the sounds of the engine speeding up and slowing down to

ATLAS HO SCALE U33B CHARTS	
DRAWBAR PULL	3 ounces
	43 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
7.2	1
8	4
9	16
10	31
11	49
12	75
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	1
7	15
14	39
21	69
28	69

simulate the eight notches of a diesel locomotive. Other sounds, such as the air compressor and "spitter" valves, play at random intervals. The headlights are illuminated in the direction of travel, starting off dim when the locomotive is stopped, then turning bright as it starts to move.

On DCC, I had much more control of the sound and lighting features. Of course, I could sound the bell and horn with function buttons 1 and 2, and turn on the headlight with F0. The headlight operates the same in DCC as it does in DC. The same LED illuminates the headlight and the number boxes, so the number boxes get dim and bright, too. Function 12 allows manual control of headlight brightness.

Atlas specifies a reasonable amount of momentum in the decoder's programming. The factory default setting was 80 in a range of 0 to 255, so I left that alone.

I got a surprise with the features on the decoder. Atlas has included ESU LokSound's Full Throttle files, so the function keys operate a little differently than what's outlined in the quick start guide packed with the locomotive.

I went to the ESU LokSound website (www.esu.eu/en/start/), navigated to the DOWNLOADS tab and clicked on INSTRUCTION MANUALS. Then I chose DIGITAL DECODERS, and finally downloaded the LokSound Quick Start Guide Date: 01.05.17, Version: 1. Edition. This had the correct function key assignments.

The Full Throttle package includes a few different sound controls. Function 9 toggles the Drive/Hold feature on and off. This allowed me to set the speed of the locomotive, then vary the sound of the diesel engine with the throttle buttons. The locomotive – or independent – brake is set and released with F10. I find this is

Facts & features

Price: \$169.95 (DC no sound, bicentennial scheme \$189.95); \$279.95 (DCC sound, bicentennial scheme \$299.95)

Manufacturer

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

Era: 1967 to 1980 as decorated

Roadnames: U33B: Rock Island (maroon and yellow), Penn Central, and Reading & Northern (two road numbers). U36B: Auto Train and Seaboard Coast Line (American Revolution Bicentennial scheme in one number, and yellow and black). Four numbers per scheme unless noted; undecorated models also available.

Features:

- AAR-B or Blomberg trucks, as appropriate
- Blackened metal wheels, in gauge
- Five-pole skew wound motor with dual brass flywheels
- Direct-current model with eight-pin socket for Digital Command Control decoder
- Directional lighting with golden-white LEDs
- ESU LokSound Select dual-mode decoder on DCC-equipped models
- Plastic knuckle couplers, at correct height
- Weight: 14.8 ounces

more useful during switching maneuvers than when running a road locomotive, but a U33B could've had some local switching duties later in its life.

I took the locomotive to the *Model Railroader* staff layout, the Milwaukee, Racine & Troy, for further testing. I matched its lugging ability against the 3 percent ruling grade, and the U33B pulled eight freight cars without slipping. The independent brake feature made it fun to switch the yard at Bay Junction, and the Rock Island U-boat looked right at home among the tall grain silos on that part of the layout.

These four-axle U-boats fill a niche for modelers of the 1970s. Whether you want to model an era of slow orders, or fast-freight piggyback traffic, Atlas' U33B and U36B can supply reliable service to the customers on your layout. – *Eric White, associate editor*



Athearn Ready To Roll HO scale SD40-2

Although it's part of Athearn's value-priced Ready-To-Roll series, this SD40-2 bristles with enough roadname-specific detail to satisfy most prototype-savvy modelers. The SD40-2 also marks a big upgrade for Athearn RTR locomotives. Instead of the SoundTraxx RTR decoder with limited functionality found in previous Athearn RTR releases, this new SD40-2 is available with a fully featured SoundTraxx Econami decoder.

The prototype. The SD40-2 is General Motors Electro-Motive Division's best-selling locomotive of all time. Produced between 1972 and 1986, the SD40-2 featured a 3,000 hp turbocharged 645E diesel engine, modular electronic components, and high-adhesion HT-C trucks.

Beginning in 2010 and continuing through 2011, the Union Pacific RR modernized many of its SD40-2s with upgrades that included new emission

control equipment and a NEXSYS computer control system. This latter feature also led to the locomotives being classed SD40N. On the UP these units are numbered 1550 to 1782, as well as some units in the 1800 and 1900 number series.

The model. Our review sample models UP no. 1616, an SD40N upgraded in 2011. The locomotive began its career in early 1977 as SD40-2 no. 3351.

The model's overall dimensions match prototype drawings in *Model Railroader Cyclopedia: Vol. 2, Diesel Locomotives* (Kalmbach Books, out of print). The model includes the prototype's extended short hood or "snoot" that was meant to house remote-control equipment that allowed the locomotive to be used as an unmanned helper.

The model has a scale 123" long short hood, which is correct for snoots built after 1977 for other roads. All UP snoots,

regardless of built date, had 116" short hoods, according to author Don Strack (utahrails.net) and other sources.

I find that the scale 7" difference is hardly noticeable. All other details on the model match prototype photos. Prototype-specific details include a cab air conditioner, correctly positioned Nathan K-3 air horn, and a GPS dome on the cab roof. The model also has a separately applied brake wheel on the short hood that's correct for no. 1616.

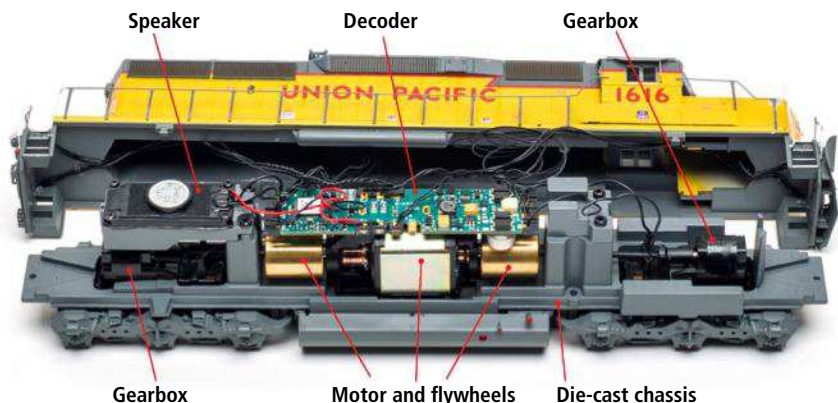
All grab irons are separately applied. Handrails and stanchions are scale profile and made of flexible acetal plastic that resists breaking. There's also a package of user-installed detail parts for modelers who want to add some additional piping around the fuel tank.

The lettering and heralds are clearly printed and properly placed. Small stencils are legible under magnification, including "SD40N" under the road number on the sides of the cab.

Mechanism. After removing the couplers I easily lifted off the plastic body shell. Be careful during this process, as the leads to the headlights and ditch lights remain attached to the shell. All lighting is provided by constant 1.5V incandescent bulbs.

The motor and flywheels are mounted in the center of the die-cast metal frame. Driveshafts transfer power from the motor to truck-mounted gearboxes.

On our DCC-equipped review sample, the SoundTraxx Econami decoder is attached to the chassis above the motor. The decoder is connected to a



A die-cast metal chassis provides much of the HO locomotive's weight. Leads run from the decoder to 1.5V bulbs that illuminate the headlights and ditchlights.

PERFORMANCE TESTS	
DRAWBAR PULL	2.4 ounces 34 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
9 (start)	1
10	14
11	30
12	40
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	4.5
7	36
14	60
28	73

downward-facing rectangular speaker mounted above the rear truck gearbox.

All-wheel electrical pickup kept the lights and sounds steady as the SD40-2 crawled through no. 5 yard turnouts. During the hill climb test, the SD40-2 pulled a 10-car train up a 3 percent grade without slipping.

DCC operation. As shown in the charts above, the Athearn SD40-2 accelerated to a prototypical top speed of 73 scale mph. Setting the decoder's speed steps to 128 allowed for finer slow speed control, including a 1 scale mph starting speed in step 1. All other aspects of the locomotive's performance, including setting up speed tables and adding acceleration and deceleration momentum, are adjustable via programmable configuration variables (CVs). A free user manual is available at www.SoundTraxx.com.

I could also use CVs to adjust the overall volume level and the individual volume level of each sound effect.

The Econami decoder provides more user-triggered functions than the previous RTR sound decoder. In addition to the bell, horn, and headlight, there's manual notching up and down as well as a coupler sound. The dynamic brake function turns on the dynamic brake fan sounds and drops the engine rpm, just like on a real locomotive.

I especially appreciate that the Econami has a working brake function. Following the instructions in the manual, I set up function 9 to trigger brake sound effects and stop the locomotive regardless of the throttle setting.

The Econami decoder also includes SoundTraxx's Flex-Map technology, which is also found on the firm's top-of-the-line Tsunami2 decoder. Flex-Map makes it easy to map functions to any available throttle key. Using Flex-Map

Facts & features

Price: \$184.98 (DCC sound), \$134.98 (DC no sound)

Manufacturer

Athearn

1600 Forbes Way, Suite 120

Long Beach, CA 90810

www.athearn.com

Era: 2011 to present (as decorated)

Road names (multiple road numbers):

Union Pacific, Canadian National, Illinois Central, Milwaukee Road, Missouri Pacific, and Soo Line

Features

- All-wheel drive and electrical pickup
- Dual-mode SoundTraxx Econami decoder (DCC version)
- Five-pole skew-wound motor with dual brass flywheels
- Minimum radius: 18" (22" recommended)
- Plastic McHenry scale knuckle couplers, at correct height
- Quick Plug supports 8- and 9-pin DCC decoders (DC version)
- RP-25 blackened metal wheels, in gauge
- Weight: 14.8 ounces

and the decoder's Hyperlight controls, I set up the locomotive's headlights and ditch lights for non-directional control. I find manual locomotive lighting control to be much more realistic than directional lighting.

In addition to setting up the model's address to match its locomotive number (1616), I set up an advance consist with two other DCC-equipped SD40-2s. The decoder supports consist function control, which comes in handy when m.u.-ing locomotives.

DC operation. The decoder-equipped SD40-2 ran smoothly on our direct-current (DC) test track, but required a lot of voltage to get moving, as shown in the charts above. The 40 scale mph top speed at 12V is lower than the prototype.

All sound effects in DC are automatic. The engine rpm increased and decreased with the throttle setting. I also heard the sound of squealing brakes when I decreased the throttle.

Upgraded with a SoundTraxx Econami decoder, the Athearn Ready-To-Roll HO scale SD40-2 is a winning combination of detail and performance.

— Dana Kawala, senior editor

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Model Railroader April 2018



Bachmann HO flashing rear-end device

Flashing rear-end devices, or FREDs, started taking the place of cabooses on trains starting in the 1970s. The small rectangular boxes are now a ubiquitous part of modern-era railroading. Bachmann Trains is offering a light-emitting-diode (LED) illuminated HO scale FRED that works on direct-current (DC) or Digital Command Control (DCC) track power.

Also called an End-Of-Train Device (ETD or EOT device), modern FREDs not only mark the end of a train with a flashing light, but also monitor brake pressure and feed other information to a Head-Of-Train Device (HTD or HOT device), colloquially called a “Wilma.”

Bachmann’s FRED is available installed on a ready-to-run HO scale

American Car & Foundry 50-foot exterior-post boxcar, or in a user-installed version that includes a Barber 100-ton S-2 freight truck

Either version comes attached to the knuckle of a non-operating plastic Bachmann E-Z Mate coupler. The FRED measures HO scale 9.5" x 9.5" x 34", which is close to the dimensions of a typical prototype device.

The FRED is controlled by an unobtrusive circuit board attached to the top of the truck. Current is picked up by the blackened metal wheels on both sides of the truck and conducted by metal plates behind the truck’s sideframes. The truck is exceptionally free-rolling, and on the version installed on the boxcar, the short, flexible wires connecting the circuit board to the FRED didn’t interfere with the pivoting of the truck. The boxcar had no problems negotiating the 18" curves and no. 5 turnouts on our Beer Line project layout.

I tested the FRED-equipped truck on DC and DCC layouts. The red LED started flashing at 6V DC, and blinked continuously on a DCC-powered track. The FRED doesn’t contain a decoder, so it can’t be controlled by a DCC throttle.

The 50-foot American Car & Foundry exterior-post boxcar is the same Silver

Facts & features

Price: User-installed, \$24; installed on 50-foot exterior-post boxcar, \$52

Manufacturer

Bachmann Industries

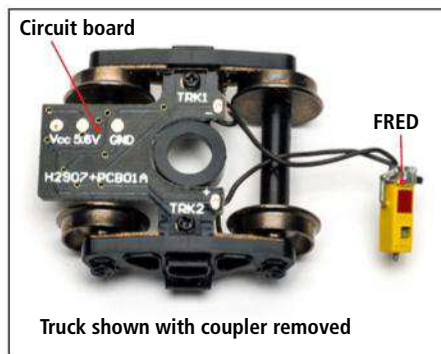
1400 E. Erie Ave.

Philadelphia, PA 19124

www.bachmanntrains.com

Era: 1970s to present

Road names: Railbox, Burlington Northern, Canadian National, CSX, and Greenville & Northern (FRED also available separately with truck)



Circuit board

FRED

Truck shown with coupler removed

Series model that’s been sold by Bachmann for many years. Our Railbox review sample matched dimensions on a prototype diagram in the 1980 *Car Builder’s Cyclopedia* (Simmons-Boardman). The body shell was molded in yellow plastic, rather than being painted Railbox Yellow. The car’s lettering was crisp and opaque, the wheels were in gauge, and the couplers were mounted at the correct height.

Bachmann’s FRED makes it easier for HO scale railroaders to model an important aspect of modern prototype practice. – *Steven Otte, associate editor*

QUICKLOOK

Woodland Scenics HO trailer homes

Price: \$74.99

Manufacturer

Woodland Scenics

P.O. Box 98

Linn Creek, MO 65052

www.woodlandscenics.com

Versions: Sunny Days, Grillin' & Chillin', and Double Decker trailers

Era: 1950s to present

Comments: Modelers looking for downscale housing for their trackside towns should check out this Landmark Structures offering from Woodland Scenics. The company is selling three compact trailer homes, each factory-wired for light-emitting-diode (LED) illumination using Woodland's proprietary Just Plug system.

Travel trailers have been around for longer than there have been automobiles to pull them, but it wasn't until housing demand skyrocketed

in post-World-War-II America that manufacturers started building larger, boxier trailer homes intended for more permanent installation on a home site. Initially, trailer homes were 8 feet wide and could be towed behind a typical car; in 1956, manufacturers started selling 10-foot-wide trailers. All three of Woodland's trailers are 9 scale feet wide, but unless your visitors tend to take scale rules to your layout, you could use them any time from 1950 on.

The styrene models come with numerous details, both attached and separate, such as awnings, stairs, picnic tables, TV antennas, and propane tanks. The windows have printed paper curtains or blinds, but some are clear, giving a view of the printed paper interiors. Since there are limited viewing angles inside, this is effective.

The trailers are each wired with two LEDs for interior illumination. Though

in some cases the LEDs are glued to the trailer floor, they do a good job shining through the printed paper window treatments. In one model, the Double Decker Trailer (above), instead of illuminating the living room, the second LED is attached to a flicker circuit and installed behind a simulated TV screen. This effect is hard to see unless the layout room is dark.

Woodland's trailer homes would make interesting scenes on a transition-era or later model railroad, either singly or grouped in a small trailer park. The boxy Sunny Days trailer, with its awnings removed, would also make a good prefab office for a freight yard or construction site. — Steven Otte, associate editor



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QUICKLOOK

Lowell Smith N scale sleepers

Price: \$54 each

Manufacturer

Lowell Smith Signature Series

P.O. Box 219

Gresham, OR 97030

www.lowellsmith.net

Car names: *Death Valley* and *Grand Canyon*

Era: late 1940s to early 1950s

Comments: The Lowell Smith Signature Series has launched a new line of N scale passenger cars, the Pullman Park Series. The first two cars in the line are Atchison, Topeka & Santa Fe Ry. 12-section, 1-drawing-room sleepers *Death Valley* and *Grand Canyon*. The cars are custom decorated for Lowell Smith by Micro-Trains Line Co.

Pullman 12-1 sleepers were assigned to the Santa Fe, but there were no cars named *Death Valley* or *Grand Canyon* (Santa Fe did have a 10-section

observation lounge name *Grand Canyon*). The manufacturer named the cars after parks served by or associated with the ATSF.

The models follow Pullman Plan 3410A, which had four-tread vestibule steps. The layout of the blue one-piece plastic interior matches drawings in *Sleeping Cars of the Santa Fe* by Michael W. Flick, Dennis J. Kogan, and Terry W. Lehmann (Santa Fe Railway Historical & Modeling Society, 2012).

The cars are painted in Santa Fe's shadow-line scheme, which was used from the late 1940s through the early 1950s. The labor-intensive scheme involved painting stripes on smooth-side cars, then feathering gray paint below the stripes to simulate fluted siding. The effect was well rendered on our samples.

The models' dimensions closely follow drawings for a plan 3410 car in the

January/February 1981 issue of *Mainline Modeler*. The cars weigh 1.3 ounces each, which is .1 ounce too light per National Model Railroad Association Recommended Practice 20.1. The plastic wheelsets are correctly gauged. The body-mounted Magne-Matic couplers are at the correct height.

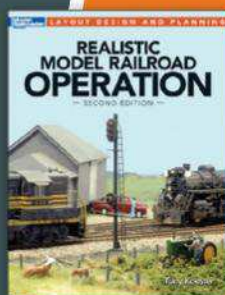
I tested the cars on our Salt Lake Route layout. The cars navigated the no. 6 turnouts and the 12¾" double crossover without incident. The cars will run on 9¾" radius curves, but they'll look better on broader curves.

Though these cars aren't named after real Pullman 12-1 sleepers assigned to the Santa Fe, the realistic paint and lettering make them look plausible. Pair these cars with lightweight fluted-side equipment and you'll have a realistic looking mid-century train. — Cody Grivno, associate editor

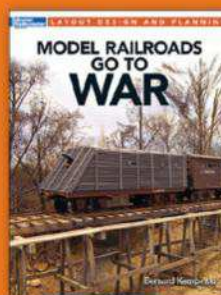


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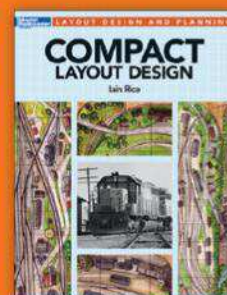
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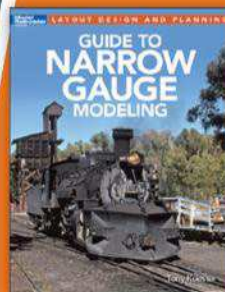
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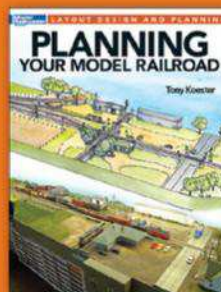
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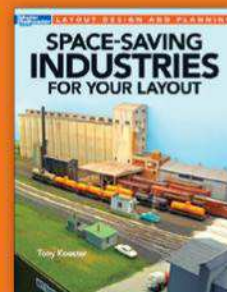
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Dispatching with verbal authority

Authority to occupy track is a fundamental of railroading that's been around even longer than George Westinghouse's invention of the air brake in 1869. It's as essential today as ever, and it's just as suited to a model railroad as it is to the prototype.

The principle is that a train can't occupy a track without the authority to do so. This compares with air traffic control. An aircraft can't depart its gate, take off, fly a route, and land without a controller's permission. Similarly, a train must have permission to use a track. Safety requires this; collisions have dire consequences.

Today, all decision-making and authority for movement on a main track rests with a dispatcher, unlike the earlier timetable-and-train-order system, which allowed crews some decision-making. The dispatcher may employ methods like track warrants or Form D's and, on certain signaled track, Centralized Traffic Control. Movements on other tracks can come under verbal authority of a dispatcher or yardmaster, much like an air traffic controller's.

Certain areas of a railroad might use a combination of methods. A given area might contain a main track with a passing siding, yard tracks and a branch, each with its own system of authority. Its timetable would then specify which form of authority applies.

The diagram at above right is loosely based on a

nearby regional railroad where I often watch trains, the Delaware-Lackawanna (D-L). This railroad operates on "dark," or unsignaled, track. It makes a good example for choosing methods of authority for layout operations following Northeast Operating Rules Advisory Committee (NORAC).

Note the forms of authority referenced in the diagram. Rules 97 and 98 require movement at restricted speed, which means a speed that allows stopping in half the distance that can be seen. This prevents two trains approaching in opposite directions from colliding. Each must be able to stop in less than half the distance to the other.

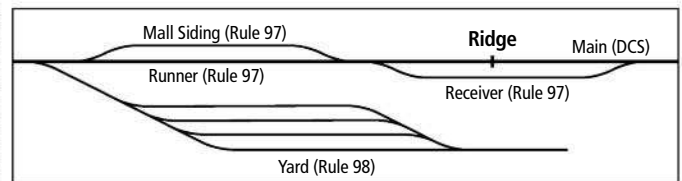
Rule 97 also requires dispatcher permission, which can be given verbally. Form D Control System (DCS) territory east of Ridge requires a written Form D, transmitted by the dispatcher, copied and repeated by the crew.

Let's follow PT-98, a road job from Scranton, Pa., to D-L's interchange with Norfolk Southern near Portland, Pa. The crew comes on duty and contacts the dispatcher (DS), who radios permission to work in the yard at 8:02 a.m. Putting together the train requires use of both the Runner and the Mall Siding. Both are Rule 97 territory, which DS radios at 8:30 a.m. These are verbal authorities, both in the yard and on the two tracks.

A local switch job now goes to



Dave Crosby, Delaware-Lackawanna train dispatcher and frequent *Trains* magazine contributor, keys up the mike with a verbal authority. Samantha Kuczynski photo



work, receiving permission in the yard at 8:59 a.m. It has cars to move from the yard to the Receiver.

The dispatcher keys his mike. "D-L Dispatcher to PT-98, over."

"PT-98 answering, over."


In the exchange that follows, DS confirms that PT-98 is on the Mall Siding and instructs the train to remain clear of the Runner. This allows DS to authorize the switch job on the Runner and the Receiver at 9:30 a.m. Again, these movements follow Rule 97 and are authorized verbally, by radio.

Note that the Main and its DCS territory begin at Ridge. Rule 97 governs the Runner and the entire Receiver, which extends past Ridge. The switch job's permission allows it to move freely anywhere on the Receiver, but it can't use the Main.

Meanwhile, PT-98 completes its air brake test. It

needs a Form D to enter the main track and DCS territory. After a similar exchange with the switch job to confirm that it's clear on the Receiver, DS dictates the Form D at 10:15 a.m. and verbally OKs the train on the Runner. PT-98 starts to roll, columns of thick black smoke erupting from the exhaust of its six-axle Alco road units. One more radio transmission completes the sequence: "PT-98 entering DCS territory at Ridge at 10:20 a.m."

A model railroad operation can easily adapt this example of present-day prototype practice. It needs only a simple diagram designating the forms of authority that govern. A layout owner hosting an operating session can double as dispatcher. The operators and dispatcher can simply speak out loud, though using hand-held FRS radios adds realism.

"Dispatcher, out." 



CERTAIN AREAS MIGHT USE A COMBINATION OF METHODS. ... [THE RAILROAD'S] TIMETABLE WOULD SPECIFY WHICH FORM OF AUTHORITY APPLIES. — JERRY

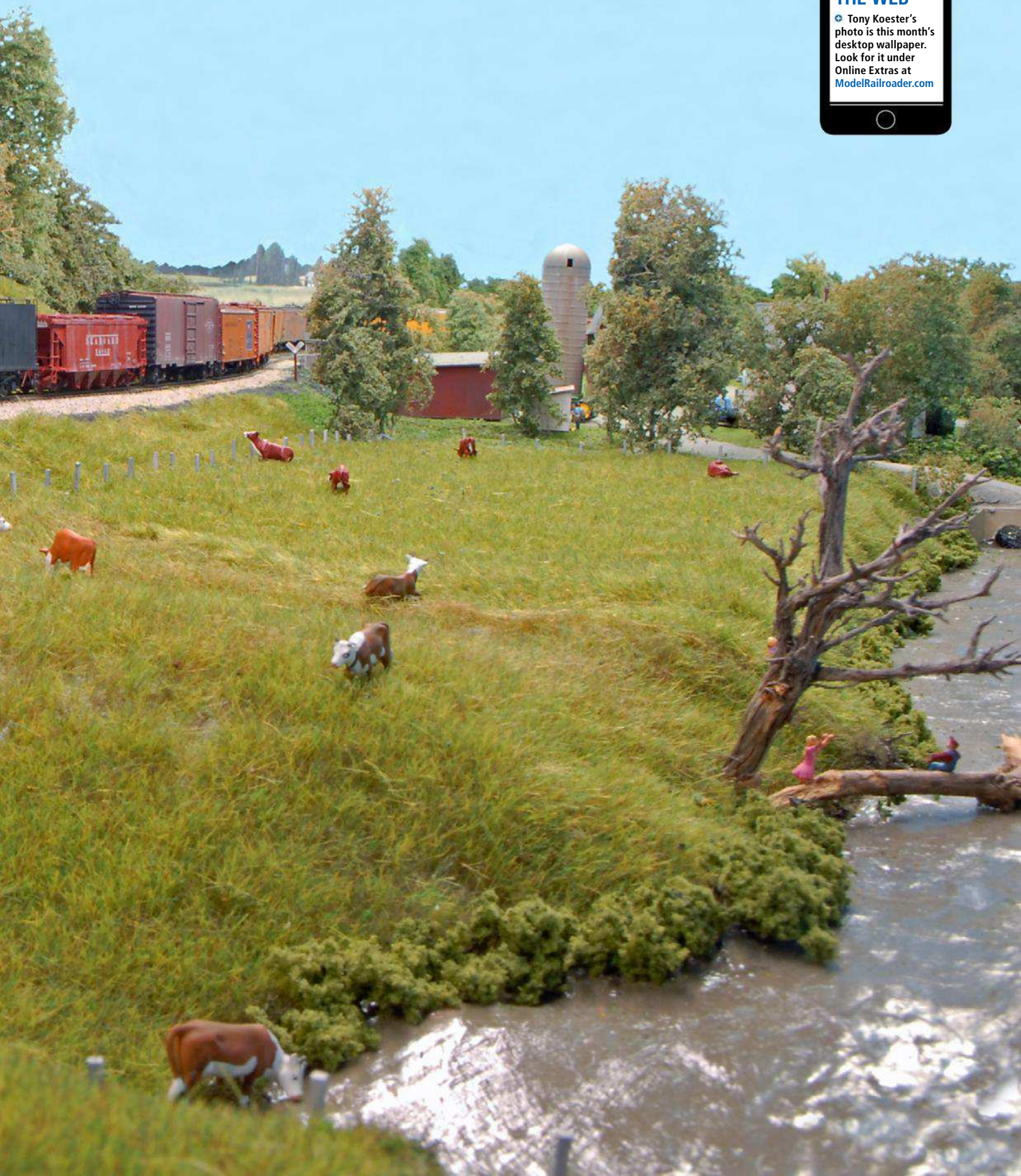
Trackside Photos



The Nickel Plate Road's first Berkshire, Alco-built no. 700, accelerates west out of Frankfort, Ind., with fast freight No. 47 in tow in the fall of 1947. *Model Railroader* contributing editor Tony Koester shot the action on his HO scale NKP St. Louis Division. The Berkshire is a Division Point import lightly weathered with PanPastels. Read about Tony's weathering techniques in his article "Weathering a steam locomotive in 7 minutes" in the Nov. 2013 MR.

MORE ON THE WEB

© Tony Koester's
photo is this month's
desktop wallpaper.
Look for it under
Online Extras at
ModelRailroader.com





Despite its short train, Baltimore & Ohio light Pacific no. 5207 is working hard as it climbs the 2 percent grade in Martinsbend, W.Va. Mike Tricker of London, England, whose triple-deck B&O layout spans from the New Jersey waterfront to the Appalachians, took the photo. Mike's layout was featured in the June 2013 *Model Railroader*.



Canadian National GMD1 no. 1028 works Potemkin Yard in the summer of 1956. David Barker of Lake Country, B.C., Canada, photographed the scene on his HO scale layout, which models a fictional CN subdivision in rural British Columbia. The locomotive is manufactured by Rapido Trains.

Send us your photos

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



The crew at Koldaz Ice Co. prepares to stock the bunkers of a Bearcreeks reefer. Dan Flanagan of Fishers, Ind., scratch-built the industry based on W.W. Loveland's "HO Gauge Icing Station" article, published in the October 1956 *Model Railroader*. Dan also took the photo on his HO scale Great Northern Pacific RR layout.

MORE ON THE WEB

Lee Marsh's HO scale Great Northern photo on page 70 is this month's free wallpaper. Get it at ModelRailroader.com



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Five years ago, associate editor Cody Grivno brought the **MR Video Plus** crew into the workshop while he shared modeling tips and techniques. Based on popular demand, this subscriber favorite is returning with all of the helpful step-by-step instruction for painting, weathering, modeling, and detailing you've come to expect from a master at his craft. No matter what freight car, locomotive, or structure project interests you, Cody's got a tip or trick to share!

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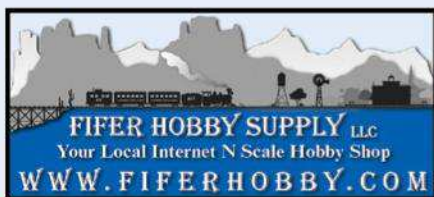
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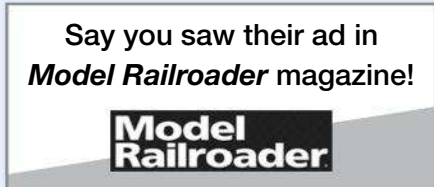
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CLOSING DATES: Jan 2018 closes Oct. 20, Feb. closes Nov. 13, March closes Dec. 19, April closes Jan. 22, May closes Feb. 19, June closes Mar. 19, July closes Apr. 23, Aug. closes May 18, Sept. closes June 22, Oct. closes July 23, Nov. closes Aug. 17, Dec. closes Sept. 24.

Schedule of Events

CO, COLORADO SPRINGS: Train Expo Colorado (TECO) hosts its next model train show at Chapel Hills Mall Events Center, April 28-29, 2018. Saturday 10:00am-5:00pm and Sunday 10:00am-3:00pm. Admission: \$6.00/person or \$9.00/family. Senior and military discounts. Contact Mike, 719-640-2076 or <http://www.tecoshow.org>.

FL, DELAND: 63rd FLORIDA RAIL FAIR. Volusia County Fairgrounds (Tommy Lawrence Arena), 3150 E. New York Ave. (SR44 and I-4). Saturday, April 14, 2018. 9:00am-4:00pm. Adults: \$8.00 (under 12 free). Operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. E-mail: rrshows@aol.com

FL, LARGO: Suncoast Model Railroad Club Train Show/Open House, April 7, 2018. SHOW- Minnreg Hall, 6340 126th Ave. N., Largo. Saturday 9:00am-3:00pm. Admission: \$7.00, Children \$2.00 and under 11-free. Free parking. Food/snacks. OPEN HOUSE- Clubhouse, 12355 62nd Street N, Unit A. Visit www.suncoastmrrc.com Contact: irvatten@yahoo.com

FL, PINELLAS PARK: Regal Railways Presents a Toy Train, Collectible and Hobby Show/Sale. Lopez Hall, 7177 58th St. North, Saturday, April 21, 2018. 9:00am-2:00pm. Adults \$5.00. Vendors, videos & operating layout. Serving lunch items. Contact Joe: 727-244-1341 or visit www.regalrailways.com for more information.

FL, PLANT CITY: H.B. Plant Railroad Historical Society Train Show and Swap Meet. John Trinkle Building, Plant City Campus, Hillsborough Community College, 1206 North Park Rd., Zip: 33563. March 17, 2018. 9:00am-3:00pm. Adults \$7.00, under 12 free w/adult. Contact: Gilbert Thomas, 863-412-3090. E-mail: Thomas_12399@msn.com Website: www.hbplantrr.org

IL, GREENVILLE: American Heritage Railroad Train Show @ American Farm Heritage Museum 1-70 @ IL Rt. 127 (Exit #45). Saturday, June 9, 2018. 10:00am-4:00pm. Admission: \$4.00, under 12 FREE. Train ride with paid admission. Operating layouts. Dealers welcome \$15.00 per table. Contact Jim @ 217-825-6230.

IL, JOLIET: Will County Model Railroad Club Swap Meet & Open House. Stone City VFW, 124 Stone City Drive. Saturday, April 14, 2018. 9:00am-2:00pm. Admission \$4.00 per person, children under 12 free. Dealers Welcome. Contact: Mike at 708-308-9036 or visit: www.wcmrra.org

IL, URBANA: Midwest Central RR Club 37th Annual Train Show. Urbana Lincoln Square Village, 100 S. Vine St. in downtown Urbana. April 7-8, 2018. Saturday 10:00am-6:00pm and Sunday 11:00am-4:00pm. No Admission, selling trade, operating layouts, handicap accessible. Contact Rick, 217-552-6514 or rickschrol@gmail.com

IN, FRANKLIN: Central Indiana Division-NMRA Train Show. NEW Location-Johnson County National Guard Armory, Saturday April 21, 2018. 10:00am-3:00pm. Admission, \$3.00 adult, \$5.00 family. Operating Layouts, Vendors, Clinics, Contests, Food, Dealer Tables 6 foot \$12.00. Info gtwfan@bluemarble.net or 812-876-6799. CID website <http://cidnmra.org>.

MA, BRIDGEWATER: HUB Division NER/NMRA SPRING TRAINING CLINICS/TRAIN SHOW: Saturday April 14, 2018: 10:00am-4:00pm; Bridgewater, St. Thomas Aquinas Parish Center: 103 Center Street. Admission \$5.00. Children under 12-FREE. Featured clinician Cody Grivno, Associate Editor Model Railroad Magazine. More Information and Clinic Details visit website, www.hubdiv.org

MI, WYOMING (GRAND RAPIDS): Grand River Valley Railroad Club Spring Train Show. Saturday, April 14, 2018. Home School Building, 5625 Burlingame Avenue SW. 10:00am-3:00pm. Adults \$5.00, 12 and under free. 210 vendor-display tables. Food. Free parking-Door prizes. Vendor tables \$16.00 each. Contact Ken Skopp, 616-667-9680, kwskopp@gmail.com. www.grandrivervalleyrrc.org.

MN, WOODBURY: Newport Model RR Club Flea Market & Train Show. Woodbury High School, 2665 Woodlane Drive, Zip: 55125. April 7, 2018. 9:00am-2:00pm. Admission \$5.00. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Ed, 651-233-3310

NJ, EAST RUTHERFORD: METCA/NYSME Train Show, St. Joseph's School, 120 Hoboken Road, Zip: 07073. Saturday, April 7, 2018 METCA/NYSME members 8:00am, Public 9:00am-2:00pm. Admission: \$5.00 Adults 16+, FREE for METCA families. NYSME Club layouts open FREE to attendees. Info: www.METCA.org; Bob Amling, Secretary@METCA.org - 718-541-8619 or contact@modelengineers.org

NY, KINGSTON: Kingston Model Train and Railroad Hobby Show. Murphy Midtown Center, 467 Broadway. Sunday, March 18, 2018. 10:00am-4:00pm. Adults \$7.00, kids under 12 \$2.00. 11,000 sq. ft. Operating layouts, dealer, vendor tables, Thomas the Tank engine and LEGO trains. Information: www.kingstontrainshow.com or e-mail kingstonmmts@aol.com

OH, BUCYRUS: 32nd Annual Bucyrus Model Railroad Assoc. Train Show & Swap Meet. Crawford County Fairgrounds, 610 Whetstone St. Saturday, April 14, 2018. 10:00am-4:00pm. Adults \$5.00, children 12 and under free. Club layout open, videos, memorabilia, model train parts. Food by Katering Kountry Style. Contact: Dave Moore 419-642-5035.

OH, COLUMBUS: The 10th Ohio N Scale Weekend. "For N-Scalers by N-Scalers" Franklin County Fairgrounds. Hilliard, Ohio. Presented by Central Ohio N-Trak. May 19-20, 2018. Saturday, 10:00am-5:00pm and Sunday 9:00am-3:00pm. Set-up Friday May 18th, 1:00pm-8:00pm. Event registration \$10.00. Event info www.centralohiontrak.org or e-mail ohionscaleweekend@yahoo.com

OH, COLUMBUS: 63rd BUCKEYE MODEL TRAINS & RAILROAD ARTIFACTS SHOW. Ohio Expo Center (Lausche Bldg.), 717 E. 17th Ave. Saturday, April 21, 2018. 9:00am-4:00pm. Adults \$7.00 (under 12 free). Operating layouts. 300+tables. Miller: 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. www.rrshows@aol.com

OH, KIRLAND: Railfest 2018. Lakeland Community College (AFC), 7700 Clocktower Dr., Zipcode: 44094. NMRA MCR Div. 5. March 17-18, 2018. Saturday and Sunday 10:00am-4:00pm. All Gauge Train Show with over 400 tables. 440-357-8890. www.Railfest.org

OH, MONTEPELIER: Montpelier Trackside Modelers RR Club Train Show/Swap Meet. Quality Inn Convention Center, 13508 State Rt. 15, Exit 13 Ohio Turnpike. Sunday, May 20, 2018. 10:00am-3:00pm. Adults \$5.00, under 12 free. Layouts, Test Track, Tables available. Jim McPike, jimcpike@gmail.com 419-298-2441

PA, HAWLEY: Model Train Show & Sale. Hawley Fire Department, 17 Columbus Ave. Sunday, April 29, 2018. 9:00am-3:00pm. Admission \$3.00, under 12 free with adult. Bill Delling, 618 Fern St., Hawley, PA 18428. 570-226-3206.

SC, CHARLESTON: Charleston Area Model Railroad Club Annual Train Show, Danny Jones Armory Park, 5000 Lackawanna Blvd. North Charleston. April 28-29, 2018. Saturday 9:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$5.00. Active military and family's are Free. Children under 12, Free. Table rentals information, contact trainshow@chamrc.com or www.chamrc.com

TX, NEW BRAUNFELS: Annual Model Railroad Jamboree. New Braunfels Civic Center, 390 S. Seguin Ave. April 14-15, 2018. Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults (over 14) \$8.00, children (5-13) \$2.00. 300 vendor tables, layouts including Legos, silent auction, refreshments, museum open house. Info: www.nbrmm.org Jim Edmondson 830-629-2071

UT, OGDEN: 29th Annual Hostlers Model Railroad Festival. Historic Union Station, 25th St. & Wall Ave., March 2-4, 2018. Friday 3:00pm-8:00pm; Saturday 9:00am-6:00pm; Sunday 9:30am-3:00pm. Admission \$6.00, 12/under free. Layouts all scales, many vendors, LEGO layout, scouting program. Biggest train show in the West. Information: 801-394-4952. www.hostlers.info

WA, CHEHALIS: Lewis County Model Railroad Club. Annual Spring Model Railroad Swap Meet and Show. Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 N. National Ave., Zip: 98532. April 7-8, 2018. Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Admission \$5.00. Free parking. Contact information: Ted, 360-985-7788 or tedstrees@lewiscounty.com

WI, LA CROSSE: La Crosse & Three Rivers Railroad Club's 37th Annual Model Railroad Show: NEW LOCATION: Omni Center, 255 Riders Club Road, Onalaska, WI. March 17-18, 2018. Saturday 9:00am-5:00pm, Sunday 10:00am-4:00pm. Adults \$7.00, \$6.50-non-perishable food item, children 11 and under free w/adult. Ed Lundberg 608-790-3864

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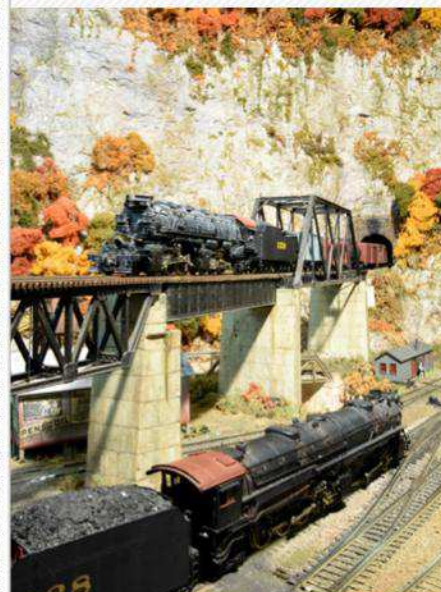
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Look to the prototype to enhance operations

In the October 2012 issue of *Model Railroader*, I discussed some of the aspects of modeling grades. This month, let's take a slightly different tack and look at using helper locomotives to get up those grades.

The accompanying photo makes a strong visual statement about the problems some railroads faced as they struggled to get tonnage up a steep grade. The grade may have been on a branch, as in this case, or it may have presented an obstacle to all mainline movements in one or both directions.

So what are the modeling implications? Most of us have more locomotives than we can rationally put to work, so here's a chance to rectify that situation. On the Western Maryland coal train in the photo, there are two huge 2-8-0 Consolidations up front, three more 2-8-0s midtrain, and another pair shoving on the rear of this 78-car train in May 1952. Using seven examples of your motive power fleet to move each coal train ought to keep the rust off the wheels for a while. If your roster is a bit more limited, a pair up front and another pair on the rear would do quite nicely.

And just think of all the "fun" and whistle signals required to stop to take water in all of those locomotives halfway up the grade! It will add a new dimension to your crews' use of sound decoders. And no fair consisting them all together.

The battle with gravity didn't end when the diesels showed up. I remember riding up this grade from Elkins to Thomas, W.Va., in the cab of an Electro-Motive Division F7 on the head end and later in an RS-3 helper in the early 1970s, and each train took quite a few of EMD's



It took seven beefy Consolidations to move a 78-car coal train up the steep grade and around the sharp curves between Elkins and Thomas, W.Va., on the Western Maryland Ry. Ed Theisinger photo, Kalmbach Publishing Co. collection

and Alco's finest working at the limit to overcome gravity and friction.

Such experiences, as well as a growing friendship and partnership with Allen McClelland of Virginian & Ohio fame, led to the construction and operation of my HO scale Allegheny Midland, which graced my basement from 1973 to around 2000. After some tests, I set the grades at 2.5 percent, which – in conjunction with the 30" curves – worked very well.

To my surprise, that gradient was also about the maximum that my 1970s-era locomotive fleet could manage well going down the hill. Anything steeper than that, especially with long hopper trains loaded with "loose" coal, and the engines could surge. There were fixes, but it was easier and cheaper to avoid the problem in the first place.

I also discovered that we had no problems when using helpers as long as the train actually required helpers to move uphill. Engineers who shoved trains up and around the Pennsylvania's (now

Norfolk Southern's) famous Horseshoe Curve told me they got the train started, opened the throttle to Run 8, and took a long nap.


Similarly, AM steam or diesel helper crews would shove until they stalled, and the road engineer would then open his or her throttle until the train moved at the desired speed while the helper engine remained wide open.

In the days when wood cabooses were common, there was more than one occurrence of the mighty pusher engines splintering the caboose. Some states then passed laws stating that only steel or steel-underframe cabooses could be placed between the pusher and the train. Riding the "hack" must have been quite an experience – somewhat deafening, no doubt.

Some railroads prohibited pushing against a caboose of any type. This opens up more operational opportunities for us modelers, as cutting off the caboose to position it behind the pusher engines requires several extra moves at the bottom and top of the grade.

It was usually easier to tack an engine on the head end to help a train over a grade. This was especially common with passenger trains. Standard

practice in the steam era was to have the smaller engine leading, which for model railroad operation may require some extra maneuvering and time for an air test.

Whether or not we need to use helpers or pushers, the lesson here is that looking to the prototype can enhance our operations, often without having to spend a single extra dollar. 



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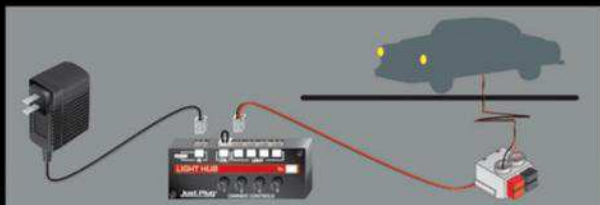
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