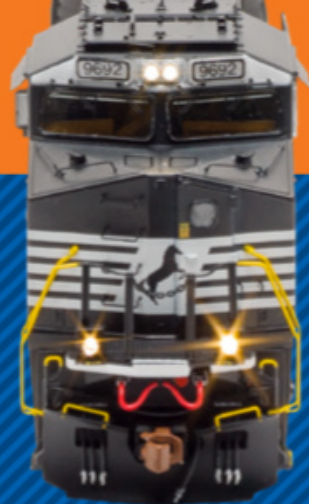


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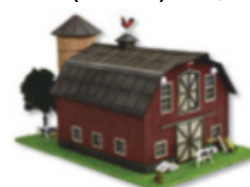
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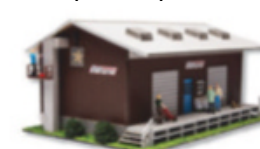
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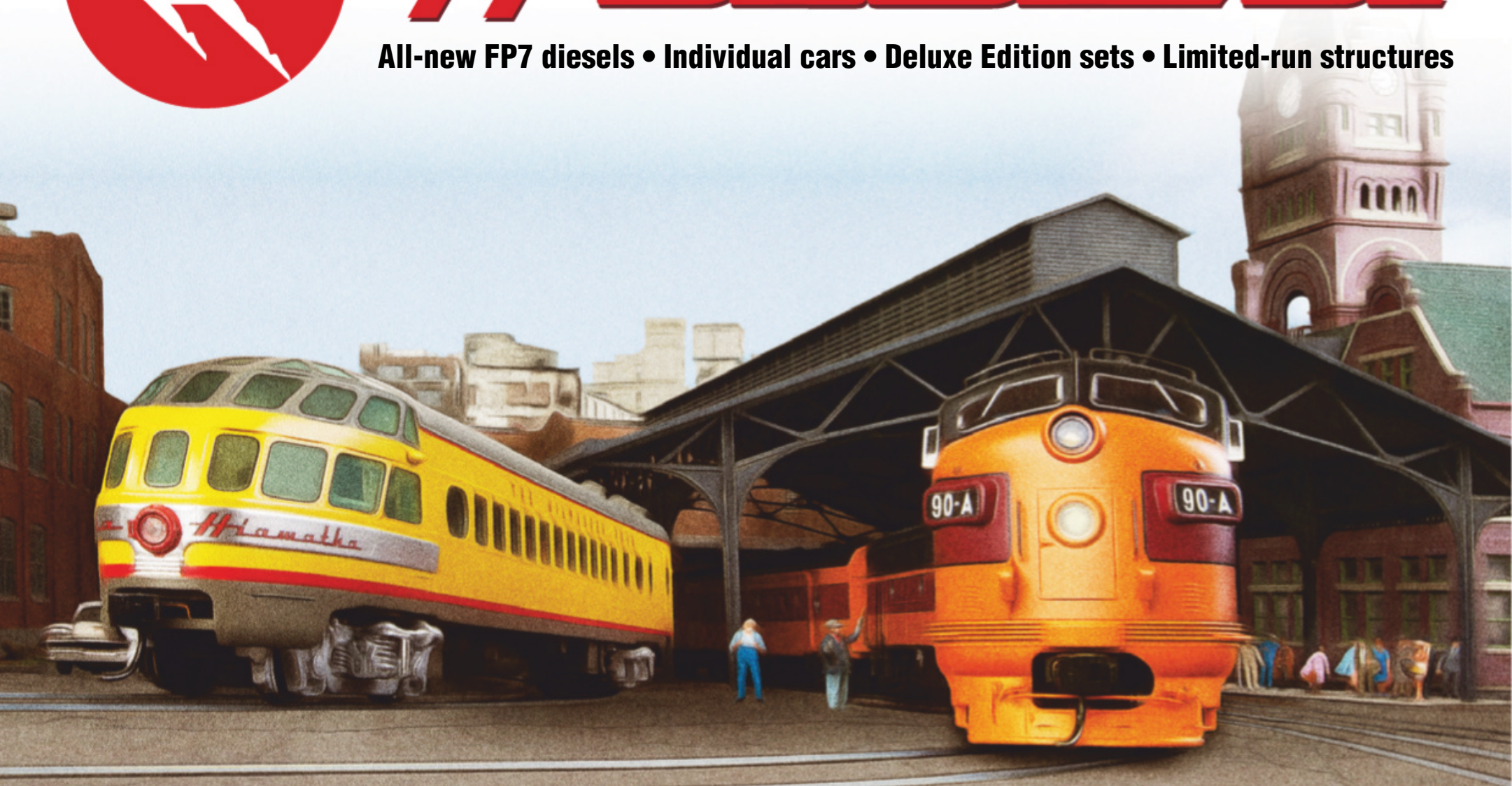
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On the cover: Howard Gallagher's steel mill layout is one of three compact model railroads in this month's issue. Howard Gallagher photo



Next issue

In July, we compare DCC starter systems in our buyer's guide. Also: visits to two compact layouts, a grain hopper roundup, fixing cracked locomotive gears, and more!



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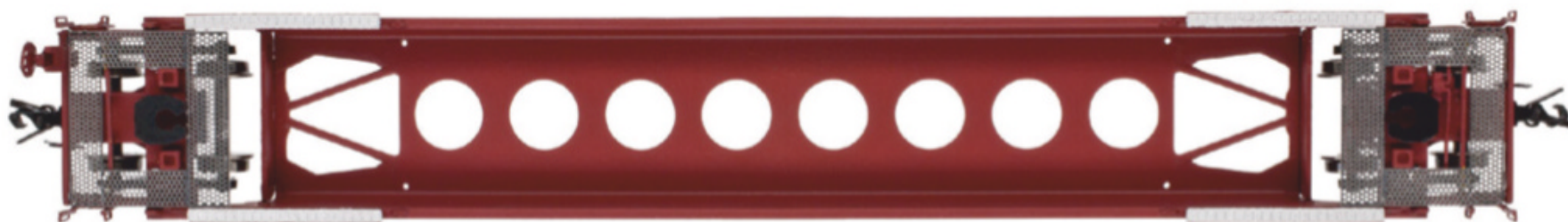
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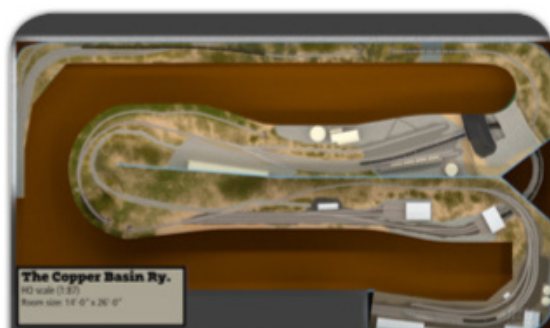
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3-D track plans: Take a virtual tour of the HO scale Copper Basin Ry., which is also featured in *Model Railroading: The Ultimate Guide 2019*. MRVideoPlus.com/Copper



Spaces Into Places: Follow Gerry Leone as he continues work on his Bona Vista RR. This time Gerry shows how to add roads and highways to a scene. MRVideoPlus.com/Spaces



MRVP Insider: Check out this visit with contributing editor Kathy Millatt on the set of the British TV show *The Great Model Railway Challenge*. MRVideoPlus.com/Insider

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Ben Lake,
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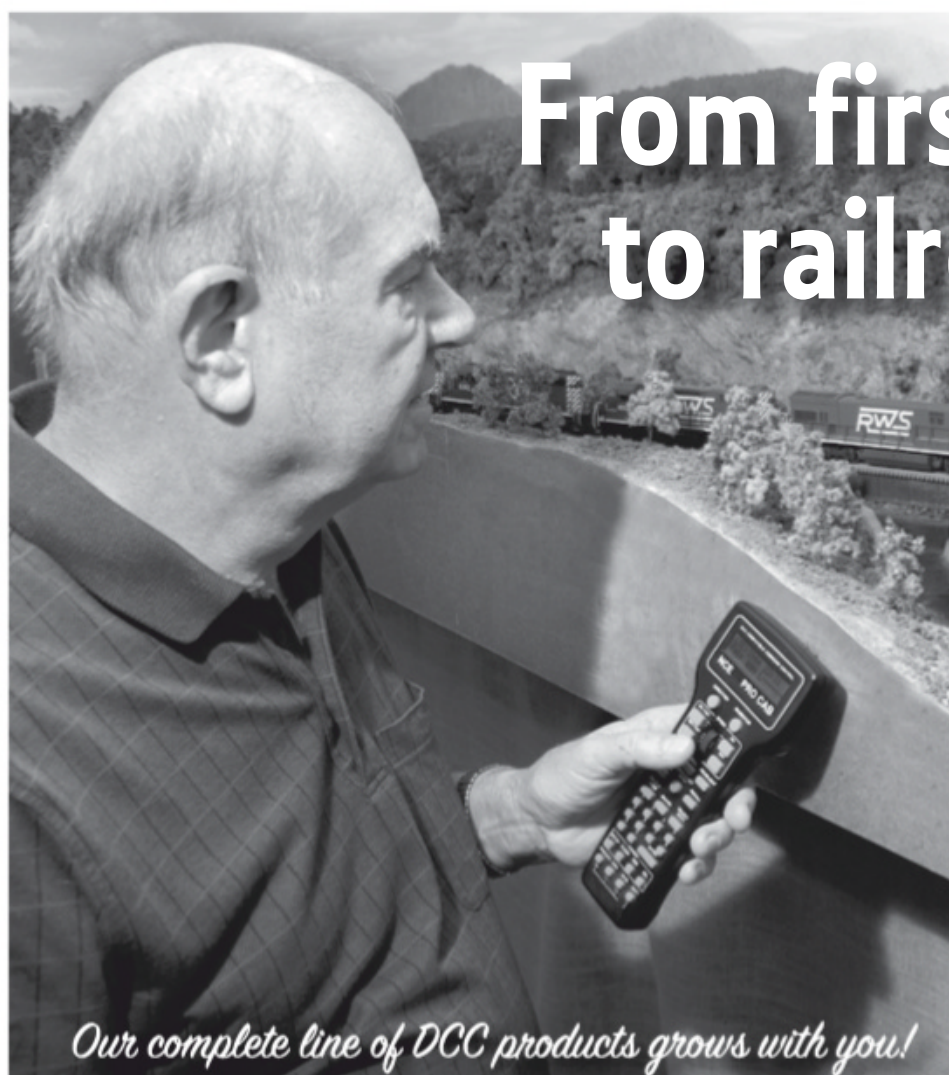
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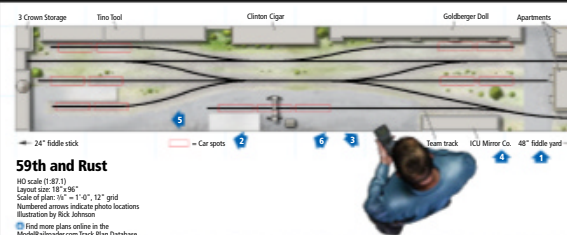
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Bonus layout gallery

Howard Gallagher's HO scale Atlantic & Southern RR fills an 11 x 13-foot spare bedroom with scenes of heavy industry and mainline railroading. You'll find a full article on the A&S, including the track plan on page 38. Howard also models many freight cars with unique open loads. Check out a gallery of bonus photos of scenes along the A&S, including some of Howard's custom painted and detailed locomotives and rolling stock.

ONLINE EXTRAS



Track plan database

Subscribers have access to an exclusive searchable database of track plans previously published in *Model Railroader* and select *Great Model Railroads* and other special issues. Don't miss this invaluable resource for layout ideas.



What's in a photo?

Historical photos can provide a treasure trove for model railroaders looking to capture every last detail of the prototype. Check out this vintage 1958 photo and detailed descriptions courtesy of *Classic Trains* magazine. Find the link under Online Extras at www.ModelRailroader.com.



Don't miss another bonus!

Sign up for the free *Model Railroader* e-newsletter, and you'll be the first to learn about new online bonuses, new hobby products, and more! You'll also get access to the online reader forums.



Wallpaper and a video

In this month's trackside photo section, you'll find the above image from contributing editor Lou Sassi's On30 Sandy River & Rangeley Lakes model railroad. Visitors to ModelRailroader.com can download the image sized appropriately to use as a computer screen background. Want to see the rest of Lou's layout? Subscribers can also watch an exclusive video tour.

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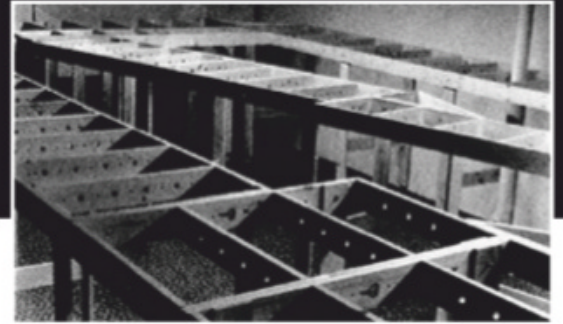
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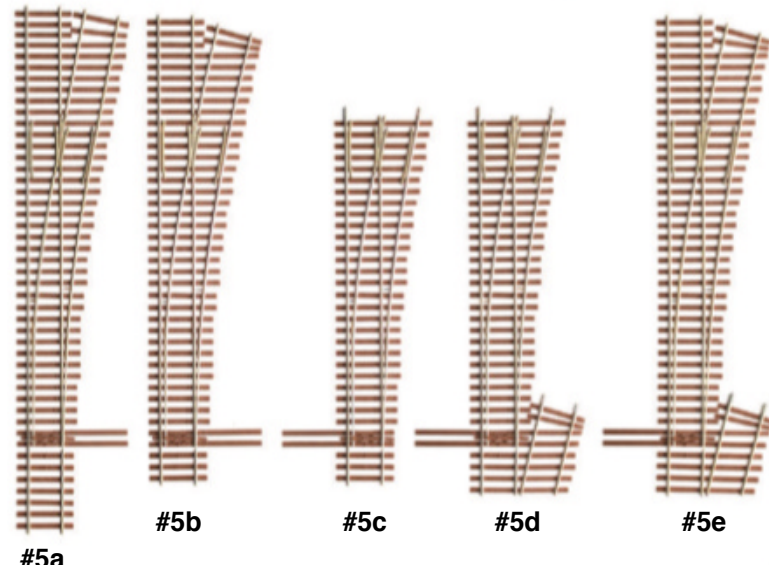
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Compact is beautiful these days



Layouts like the 3 x 8 Winston-Salem Southbound were a novelty a couple of decades ago. Not anymore. Bill Zuback photo

Once upon a time, it seemed like almost all hobbyists wanted a grand model railroad empire. As you've seen in the pages of *Model Railroader* over the decades, many actually built them.

They spanned entire basements and attics and bonus

rooms and other rooms, sometimes even into and through bathrooms.

Some are still being built.

There appears to be a trend, however, toward more compact projects. Some even challenge the traditional definition of the word "layout."

There are a lot of reasons for the shift. One is quite a number of the folks who built those big layouts years ago are today downsizing into smaller homes. They want to continue the hobby, but in less real estate.

More broadly, other reasons include less time, more expense, and varying interest levels among hobbyists.

There's another theme to consider. For some time, many modelers have worked on one or maybe two big layouts for decades, sort of a life's work.

Now, there's a school of thought that says you could have many smaller layouts throughout your "hobby lifetime." They could be connected or radically different. It's really up to you as the builder. With the information that's available digitally, we can model at the "micro" level today more than ever.



This month MR brings you three layouts that fit into a bedroom or less. It's pretty amazing what can fit into this kind of space.

Whether you like heavy industry, short lines, or just industrial switching, with a little creativity you can fit it into the space you have.

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specific details, light-emitting-diode headlights, and Proto-Max couplers. Direct-current models retail for **\$199.98**. Versions with a dual-mode ESU LokSound Select Digital Command Control and sound decoder sell for **\$299.98**. Wm. K. Walther's Inc., 414-527-0770, www.walthers.com

Athearn announces Genesis 2.0 line



These preproduction samples wear the four paint schemes the Athearn Genesis 2.0 SD90MAC-H will initially be offered in.

Athearn Trains announced the Genesis 2.0 line in late March. The first model in this new line will be the HO scale Electro-Motive Division (EMD) SD90MAC-H. The model will be based on the Phase II version of the road locomotive.

The Genesis 2.0 model, scheduled for release in March 2020, will feature all-new tooling with etched-metal see-through steps, illuminated number boxes, and ground effect lighting.

Athearn will offer the SD90MAC-H decorated for Union Pacific, Fortescue Metals Group, EMD demonstrator, and Canadian Pacific. Direct-current models will sell for \$249.98. Versions with a dual-mode SoundTraxx Tsunami2 sound decoder with EMD 265H diesel engine sounds will be priced at \$339.98.

For more information, visit www.athearn.com.

HO scale locomotives



• **Alco Century 424 and 425 diesel locomotives.** Re-issues. C-424 (Phase II): Morristown & Erie (two road

numbers). New numbers. C-424: Green Bay & Western (Phase I and II, two numbers each), Delaware-Lackawanna (Phase II, one number), Erie Lackawanna (Phase I, three numbers), and Minnesota Commercial (Phase II, three numbers). C-425 (Phase II): BC Rail (three numbers) and Delaware-Lackawanna (two numbers). Also available undecorated

(Phase I and II C-424 and Phase II C-425). Wire grab irons, crew figures, and Accumate couplers. Direct-current model with 8-pin plug for Digital Command Control decoder, \$169.95; with dual-mode ESU LokSound Select sound decoder, \$279.95. Third quarter 2019. Classic Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



- **Pennsylvania RR class K4s 4-6-2 steam locomotive.** Pre- and post-war versions (three road numbers with regular tender, one road number with long tender). Die-cast metal body with die-cast metal chassis, can motor, and separately applied detail parts. Features dual-mode Paragon3 sound decoder with Rolling Thunder transmitter. \$499.99. Broadway Limited Imports, 386-673-8900, www.broadway-limited.com

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Conducted by Cody Grivno

HO scale



Assorted freight cars. The latest kits from Accurail include a Pacific Fruit Express (Western Pacific) 40-foot double-sheathed refrigerator car, **\$19.98**; Delaware, Lackawanna & Western Association of American Railroads 50-foot riveted-side boxcar, **\$18.98**; Nashville, Chattanooga & St. Louis 40-foot six-panel single-sheathed boxcar with wood ends, **\$18.98**; Wabash 36-foot Fowler boxcar, **\$18.98**; Great Northern 41-foot steel gondola, **\$18.98**; and New York, Susquehanna & Western United States Railroad Administration 55-ton two-bay hopper, **\$17.98**. Accurail, 630-365-1173, www.accurail.com

herald), Delaware & Hudson (ex-Reading Co.), Norfolk & Western (interim scheme and wood-chip loading), Pennsylvania Power & Light (Reddy Kilowatt scheme), Pennsylvania RR (keystone herald and yellow ball), Soo Line (ex-Western Pacific with blue or white rotary ends), Southern Ry. (billboard lettering), Union Pacific (oxide red with billboard lettering), and Western Maryland (gray). Four numbers per scheme unless noted. Roller-bearing trucks, 36" metal wheels, and interior and slope sheet braces. \$28.95. December 2019. Bowser Manufacturing Co. Inc. 800-327-5126, www.bowser-trains.com

N scale locomotives



- **Electro-Motive Division GP35 diesel locomotive.** New paint schemes: Illinois Central Gulf (orange and white); Electro-Motive Division demonstrator (red and white); Gulf, Mobile & Ohio (black and white); Penn Central (black with red "P", one road number); Seaboard Coast Line (black and yellow); and Union Pacific (Armour Yellow and Harbor Mist Gray). New numbers: Atchison, Topeka & Santa Fe (blue-and-yellow warbonnet);

Canadian Pacific (maroon and gray with script lettering); and Penn Central (one number). Two numbers per scheme unless noted; also available undecorated in four body styles. Direct-current model with factory-installed speaker, \$129.95; with ESU sound decoder featuring Full Throttle, \$239.95. Third quarter 2019. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com



- **Electro-Motive Division F40PH diesel locomotive.** Metra (modern paint scheme with ditch lights [*Village of Schaumburg* and *Fox River Grove*] and blue scheme with ditch lights [*Ravinia*]). Directional golden-white light-emitting-diode headlights, clear window glazing, illuminated number boxes with factory-printed number boards, and body-mounted couplers. Direct-current model, \$120 to \$130; with non-sound Digital Command Control decoder, \$190 to \$200; and with ESU LokSound Digital Command Control and sound decoder, \$300 to \$310. Kato USA, 847-781-9500, www.katousa.com

Multiple scales



Static grass. Woodland Scenics has released a new line of static grass as part of its Field System. The static grass is available in dark green, medium green, light green, and straw. Each color offered in 2mm, 4mm, 7mm, and 12mm lengths. Each package is priced at **\$4.99**. Woodland Scenics, 573-346-5555, www.woodlandscenics.com

N scale freight cars

- **50-foot waffle-side boxcar.** Chessie System (dark blue with Baltimore & Ohio reporting marks), Chicago & North Western (Boxcar Red), Denver & Rio Grande Western (orange with black ends), Green Bay & Western (yellow), Louisville & Nashville (dark blue), and

Rock Island (Boxcar Red). Three road numbers per scheme. Screw-mounted trucks and McHenry couplers. \$22.98. January 2020. AthearnN. Athearn Trains, 800-338-4639, www.athearn.com

- **General American 4,180-cubic-foot-capacity Airslide covered hopper.** Gulf, Mobile & Ohio (gray and black); Rock Island (gray and black);

Southern Ry. (gray and black); St. Louis-San Francisco (Frisco, gray and black); and Westvaco (black and blue). Four road numbers per scheme; also available undecorated. Injection-molded plastic body with high-mounted brake wheel and etched-metal running boards. Based on 1965-1966 body style. \$36.95. Third quarter 2019. Master Line. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

N scale passenger cars

- **Amtrak passenger equipment.** Heritage baggage car, Amfleet II coach, and Viewliner I sleeper. One road number per body style. Injection-molded plastic with window glazing, metal wheels, and Kato knuckle couplers. All models painted in phase 6 paint scheme. \$30 each. Kato USA, 847-781-9500, www.katousa.com

N scale details and accessories

- **Old West figures.** 3-D printed. Bison herd 40-pack (unpainted, \$59.95; painted, \$79.95). Longhorn cattle 40-pack (unpainted, \$44.95; painted, \$64.95). Lumberjack 28-pack with logging wagon (unpainted, \$35.95; painted, \$65.95). Native American 34-pack (unpainted, \$34.95; painted, \$54.95). Señores and señoras 20-pack (unpainted, \$35.95; painted, \$65.95). Wagons with horses and riders six-pack (unpainted, \$44.95; painted, \$64.95). Town folks and

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horses 100-pack (unpainted, \$79.95; painted, \$109.95). Old West Scenery, 817-301-8786, www.oldwestscenery.com

N scale structures



- **The House of Black Lands.** Laser-cut cardboard kit. Based on French architecture from the 1930s. Measures 2.56" x 2.76" x 2.17". \$43.02. Price may vary based on exchange rate. Minifer, www.minifer.fr/en

O scale freight cars



- **1937 Association of American Railroads 40-foot boxcar.** New paint schemes: Ontario Northland (green); Atchison, Topeka & Santa Fe ("The Scout

for Economy Travel West" slogan); Chesapeake & Ohio (black with "C&O for Progress" herald); Great Northern (Vermillion Red with *Empire Builder*-style lettering); and Pittsburgh & Lake Erie (brown with New York Central herald). New road numbers: Monon (gray and red) and Southern Pacific (Overnights). Two numbers per scheme; also available undecorated. Factory-painted and installed wire grab irons, die-cast metal ladders, and etched-metal running boards. \$84.95 (undecorated, \$74.95). Third quarter 2019. Master Line. Atlas O, 908-687-0880, www.atlasrr.com

Z scale locomotives

- **Electro-Motive Division SD70M diesel locomotive with flared radiators.** Union Pacific ("Building America" scheme with American flag on long hood). Two road numbers. America Z Line standard printed-circuit board, upgraded directional light-emitting diodes, and AutoLatch couplers. American Z Line, 614-764-1703, www.americanzline.com

Track

- **Printed-circuit board ties for turnouts.** FR4 fiberglass ties gapped and drilled with pre-tinned lands for soldering. Compatible with Fast Tracks jigs. N and HO scales. \$1.95 per set; five sets, \$7.95; and 10 sets, \$11.95. Voltscooter, 413-532-4306, www.voltscooter.com

Z scale



Assorted track. Atlas has expanded its Z scale track line with no. 6 turnouts (right and left, \$19.95 each) and a 19-degree crossing (\$14.95). The turnouts feature a die-cast metal frog with power contact for optional powering, a built-in wire spring for holding turnout points, and die-cast metal points. All track has code 55 nickel silver rail. Atlas Model Railroad Co., 908-687-0880, www.atlasrr.com

Glues

- **Styrene Tack It II plastic welder.** Bonds styrene in 5 to 8 seconds, acrylic in 10 to 12 seconds. Add xylene (10 to 50

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- 1 Ford C tractor and box van.** Athearn Trains offers these HO scale vehicles in multiple color schemes. The tractor (\$22.98) and box van (\$29.98) feature a cab interior with separate steering wheel and clear window glazing. Athearn Trains, www.athearn.com
- 2 Pacific Car & Foundry 50-foot insulated boxcar.** This HO scale Walther's Mainline car (\$27.98) is



- decorated for American Refrigerator Transit, Burlington Northern, Chessie System, Fruit Growers Express, Milwaukee Road, and New York Central. Wm. K. Walther's Inc., 414-527-0770, www.walther.com
- 3 Decal setting solution.** The Kalmbach Hobby Store now carries Microscale Micro Set and Micro Sol. Individual bottles are \$6 each; a two-pack (one of each) is \$10. Kalmbach Hobby Store, KalmbachHobbyStore.com
- 4 Thrall 2,743-cubic-foot capacity gondola.** Atlas

- offers three new road numbers per scheme on models decorated for Dakota, Minnesota & Eastern; BNSF Ry.; Chicago Freight Car; Norfolk Southern; and Union Pacific. The N scale Master Line car is priced at \$23.95. Atlas Model Railroad Co., www.atlasrr.com
- 5 Johnstown America Autoflood II five-bay hopper.** Union Electric Co.'s "Honoring Ameren's Military Veteran Employees" is one of the paint schemes offered on ExactRail's latest N scale



- model. The hopper (\$29.99) 100-ton trucks, 36" metal wheels, and Micro-Trains no. 1015 couplers. ExactRail, www.exactrail.com
- 6 Soccer team.** Preiser offers this HO scale figure set in five uniform versions. The set (\$27.99) includes a referee, goalkeeper, 10 outfield players, and a ball. Paul M. Preiser GmbH, www.preiserfiguren.de

percent) to slow curing time. One fluid ounce bottle, \$5.50; 12-pack, \$55. JM Hobby Supply, www.jmhobbysupply.com

Scenery



- Roomettes interiors.** Ashby Auto Parts (\$31.95), Arlington Hotel (\$49.95), Banfield Street (nos. 1 and 3, \$20.95 each), The Bookworm (\$23.95), Bradley Firehall (\$22.95), Mongillo Jewelers (\$20.95), Ohio Shipping (\$25.95), The Paint Pros (\$22.95), and Signal Brewery (\$23.50). Factory-printed laser-cut interiors designed to fit Woodland Scenics/Design Preservation Models HO scale structures. Fold-and-glue assembly. Kits contain between three and eight laser-cut rooms and three to 10 warm white light-emitting diodes with JST plugs. Select kits include exterior, store, or window signs; cargo crates; shelves; and service counters. Light-emitting

diodes are compatible with Woodland Scenics Just-Plug and NCE lighting systems. The Electric Wallpaper Co., www.roometteslighting.com



- Assorted trees.** Deciduous trees: six-pack (5.51" to 7.09"), \$19.53; eight-pack (3.94" to 5.51"), \$18.38; and 16-pack (1.57" to 3.94", \$22.98; 3.94" to 5.51", \$34.47). Fir trees: six-pack (5.51" to 7.09"), \$14.93; eight-pack (3.94" to 5.51"), \$14.93; and 16-pack (1.57" to 3.94", \$19.53; 3.94" to 5.51", \$27.58). Mixed forest: three each deciduous trees and firs (5.51" to 7.09"), \$17.23; four each deciduous and firs (3.94" to 5.51"), \$17.23; and eight each deciduous trees and firs (1.57" to 3.94", \$21.83; 3.94" to 5.51", \$31.02). Fourth quarter 2019. NOCH GmbH & Co. KG, www.noch.com

Decals

- Raised surface detail decals.** HO scale. Belt rail double-row rivets, hopper

car rivets, and tank car double-row offset rivets. Raised cast resin applied on clear decal film. Apply like regular decals under paint. \$15.95 each. Produced by Archer Fine Transfers, available from Kalmbach Hobby Store, www.KalmbachHobbyStore.com

Club offerings



- Hudson Coal Co. 55-ton fish-belly hopper.** Custom-decorated Bowser (HO scale) and RGS Trains (O scale) car produced for Endless Mountains Model Railroad Club. Model is decorated for Hudson Coal Co. of Scranton, Pa. (affiliated with the Delaware & Hudson). HO scale, \$20 plus \$7 shipping; O scale, \$60 plus \$14 shipping. Money orders only. Endless Mountains Model Railroad Club, 7837 SR 29, Montrose, PA 18801



Train No. 18, *The Plainsman*, arrives at the Rock Island station in Des Moines, Iowa, on Mike Armstrong's HO scale Rock Island Lines. The station was scratchbuilt by Mike's friend Olaf "Ole" Melhouse. Mike Armstrong photo

Fine handiwork

I'm delighted that Mike Armstrong exercised modeler's license and included the Des Moines, Iowa, depot in his model railroad ["Rock Island in the 1960s," March]. You can compare the handiwork of his friend Olaf "Ole" Melhouse to the current state of the original depot by entering its address, 33 SW 4th St., Des Moines, on Google Maps.

While the depot was on the east-west line, Mid-Continent Route passenger trains called there by making a 2.2-mile backup move – with the flagman on the brake pipe – from Short Line Junction. You can find Short Line at 1999 Dean Ave. While the tower is long gone, Iowa Interstate RR (ex-Rocky Mountain Rocket line) is single-track, and one of the four wye legs has been abandoned, Short Line Yard is an active Union Pacific facility. Dispatchers for the Des Moines Division (north and west of Des Moines), who sent orders to the Nevada agent that Mike saw being hooped up, shared offices on the second floor of the depot with dispatchers for the Central Division (south and east), who sent orders for me to hoop up in 1966 during one of two college summers as a railroader.

Barry Ancona
New York City

and destroy glue joints on wood models. If your washer has a gentle cycle, I'd also recommend that. This product will be a great boon to all modelers.

May I also recommend the purchase of a bridge in New York City?

Bob Carlson
Mount Angel, Ore.

Wireless routers

In the February DCC Corner ["Using cell phones as throttles with DCC"], Larry Puckett states that a downside of using JMRI for wireless throttle control involves the necessity of using your home WiFi network. Not so. I purchased a cheap wireless router and set it up as a dedicated server for my railroad. The house router doesn't figure in the operation at all. This is a more secure way to have guests run my railroad. They just need to log on to the proper router.

Assuming you have an available computer, I find using JMRI is the least expensive option for cell phone control. The program is free, but you must purchase an interface. I use Digitrax, so the Loco-Buffer USB works just fine. I understand the new DCS240 Digitrax booster includes this feature, rendering the Loco-Buffer USB unnecessary.

Bill Rooke
Plattsburgh, N.Y.

The idea of purchasing a separate dedicated wireless router to be used for model railroad operations is a valid alternative and eliminates the concern some may have that it opens their personal computers to hackers. Unfortunately, it has its own cost and necessitates purchasing yet another interface to allow DecoderPro on a personal computer to communicate with the DCC system.

Using one of the WiFi interfaces discussed in the column eliminates the security issue and the need for purchasing the additional interface. Also, some folks may prefer not to have to deal with setting up the computer program and its interface each time they want to run trains with WiFi throttles. The dedicated WiFi devices discussed in the article provide the necessary interface without the need for dealing with a computer program. – Larry Puckett

Wishy-washy advice

Thank you for mentioning Wishy Washy 3-in-1 Weathering Powder Paks [News & Products, April]. Got to get me some of that.

Ninety minutes is much quicker than the method I've been using. I place my structures and rolling stock in a secluded spot in our backyard for several months. I can't tell you how fantastic the results are!

For grimy locomotive weathering, I place the engines near the exhaust from my BBQ smoker. Three cookouts is

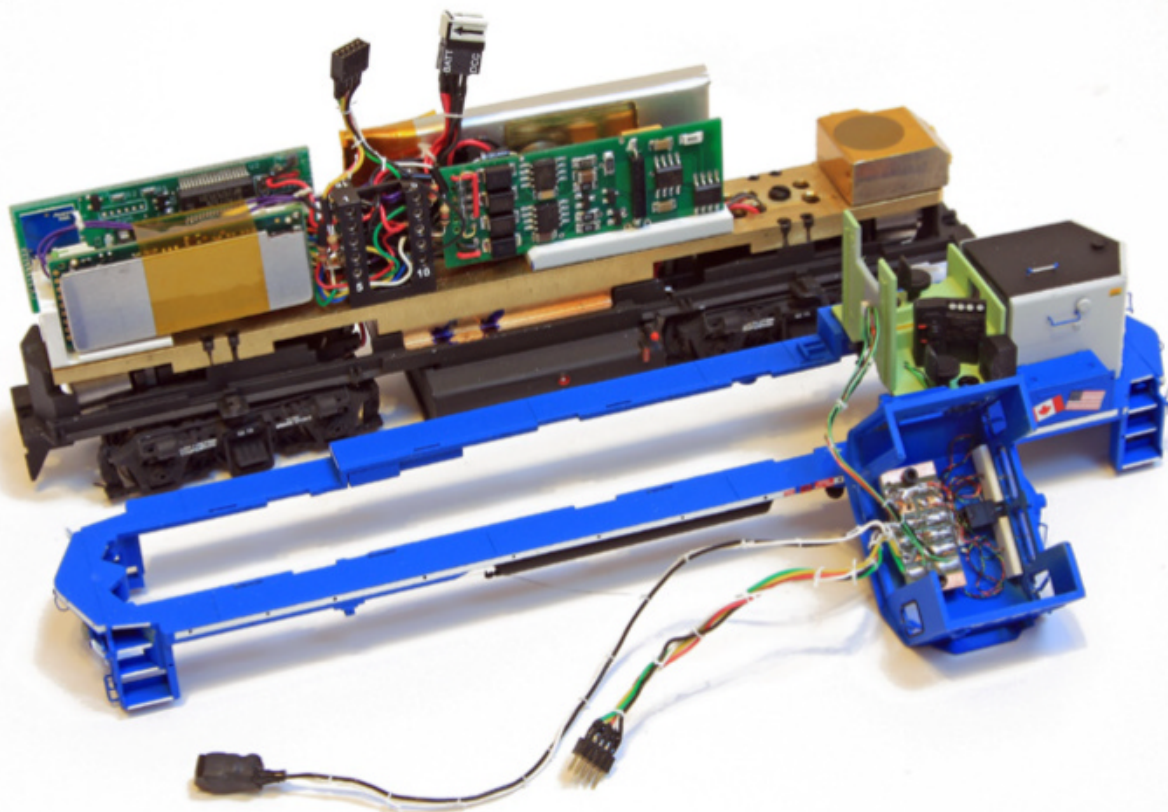
usually sufficient to get a good buildup, and the charcoal odor is an extra plus.

Allan Andres
Plano, Texas

I'm still in the doghouse for melting down my wife's old gold jewelry last year ["Extreme rail gleaming," April 2018], and now you want me to foul the dishwasher? Surely, you jest!

Dan Hulitt
Waconia, Minn.

I'd advise readers to use only cold water; hot water may warp plastic models



Installing onboard power with radio control (sometimes called "dead rail") in an HO scale locomotive is possible, but it will likely require significant modifications to the engine's guts. Larry Naus photo

Is onboard power feasible in HO scale?

Q I thoroughly enjoyed your 85th anniversary edition [January 2019], including the article "20 innovations that changed the hobby." The battery-powered operating system [item 20] caught my eye, as layout wiring and track cleaning are two of my least enjoyed aspects of the hobby. I'm finding a few options on the internet, but are there any commercially available battery powered systems that don't require a lot of modifications to the engine? I model in HO.

Sandy Hadsell, Wooster, Ohio

A There are a few commercially available battery-power products on the market, but I'm afraid that, as a rule, they all require major modifications to the locomotive. Assuming you're starting with a non-decoder-equipped DC locomotive, the power pickup wires have to be disconnected from the motor; the motor has to be connected to the radio-control board, which must also be connected to the battery unit and possibly a speaker; and room for all these components must be found under the shell, which sometimes requires not only cutting away much of the frame, but sometimes even relocating the motor. See Larry Naus' article "Battery power without compromises" in our June 2016 issue for an idea of what such a conversion can involve.

Converting a locomotive from rail power to onboard power is by nature a major modification. However, if you consult with the manufacturer of the battery-power unit or ask around at your local hobby shop, you might find a someone willing to do the installation for you.

Q I'm back in the hobby after some years, using older locomotives and rolling stock, some of which dates to the '70s. I have a question about the old-style couplers on my equipment vs. the knuckle couplers on newer cars. Are these couplers interchangeable, or do

I need to run newer cars and locomotives? Please let me know.

Mike Thomas, Auburn, Calif.

A The old X2F or "horn-hook" couplers aren't interchangeable with today's magnetic knuckle couplers in the sense that

the two kinds would couple with each other. They won't. But generally, they're interchangeable in the sense that you could probably remove the old couplers fairly easily and change them out for new-style ones. Knuckle couplers of whatever brand usually work and play well together, and are often sold in bulk quantities to make changing out your entire fleet more economical. If you don't think you can change out your whole fleet at once, change your locomotives first, and equip a buffer car with an X2F on one end and a knuckle coupler on the other so you can haul both kinds. Just make the change; you won't regret it.

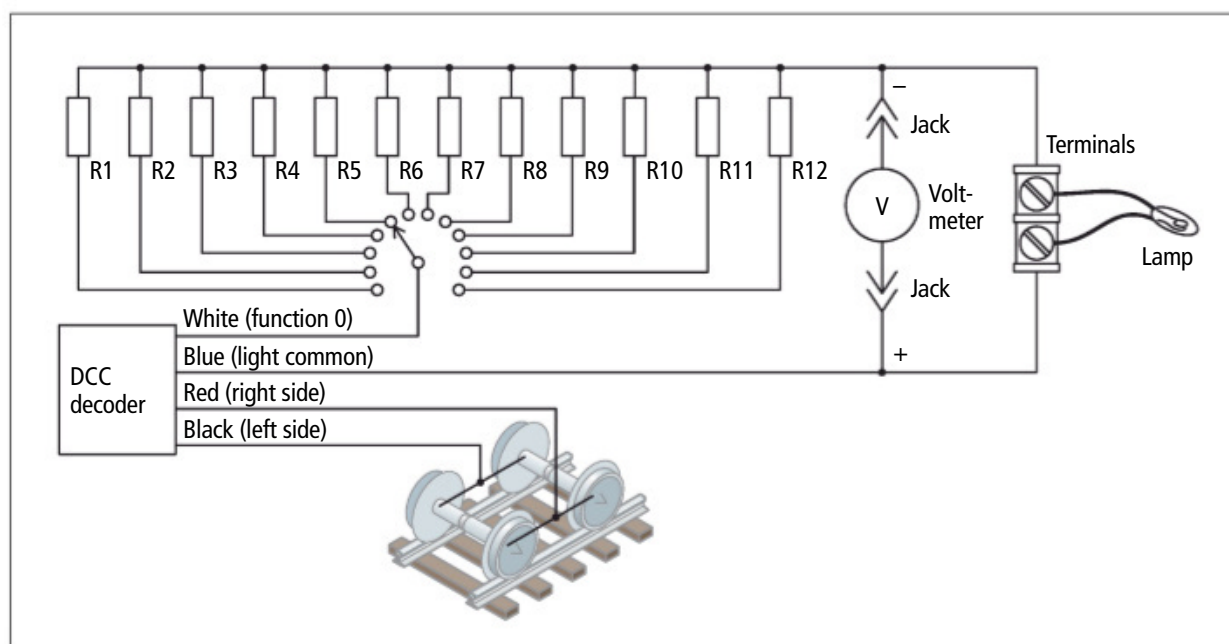
Q My tabletop is about 2½" thick (¼" cork roadbed, ¼" plywood, 2" extruded-foam insulation board). The stock actuating rods that come with my Tortoise by Circuitron switch motors won't make it all the way through to the turnout if I mount the Tortoises under the foam. Who makes longer wires and what mounting changes have to be made to compensate for the longer wires?

Pete Terwilleger, Tryon, S.C.

A You'll need an actuating wire that's not only longer, but stiffer than that provided with the Tortoise by Circuitron switch motor. You can cut your own to length from tempered steel wire, sold in hardware and big-box stores as "music wire" or "piano wire." Note that the music wire we're talking about isn't the braided or stranded kind you'd see on a guitar; this is a single solid strand, usually sold in a bundle of 3-foot lengths. If it's sold in a coil, it might not be rigid enough for your purposes. Also, you'll want a heavy-duty, tempered-steel cutting plier or a cutoff wheel in a motor tool to cut it; using regular wire cutters or rail nippers on music wire is a good way to ruin them. (Ask me how I know.)

As for mounting the switch motor, I'd use foam-safe adhesive caulk to glue a 4 x 4-inch panel of ¼" plywood to the bottom of the foam, and attach your Tortoise to that with screws. Lance Mindheim explained how to do that in his article "Bench tops made easy with foam" in our July 2012 issue.

Q A couple years ago I saw a project using a rotary switch and resistors to determine what resistor would be the best match for a light-emitting diode



This device, built by Bob Kosc and described in an article in the February 2002 *Model Railroader*, lets the user select from a range of resistors to determine the most suitable value to use with a particular light-emitting diode (LED).

(LED). Could you help me find that wiring diagram?

Earl Gaumer, Cumberland, Md.

A In our October 2014 issue, DCC Corner columnist Mike Polsgrove wrote about “Choosing headlight resistors,” but

that column didn’t discuss building a testing device, nor did it include a diagram. The article you’re thinking of was more than a couple years ago. “Build a lamp resistance tester” by Bob Kosc appeared in February 2002, accompanied by the wiring diagram above. If you

don’t have that particular issue in your stash, subscribe to our online Archive at www.ModelRailroader.com/archive.

Q Is there a good way to spread rail joiners so they slip onto rail ends, instead of being forcibly smashed on? Lately, it seems the HO code 70 metal rail joiners I use (Micro Engineering or Shinohara) come with too little gap for the base of the rail I use (again, code 70 Micro Engineering or Shinohara). I’ve lanced many a finger trying to get the joiner on. I’ve tried working in small screwdrivers, needles, and probes with varying degrees of success. Any ideas?

Karl Strauss, Valencia, Calif.

A If you’re using the same brand of rail joiner as rail, they should fit correctly. That said, variations in manufacturing can make even the right rail joiner a bit reluctant at times. The best tool to make a tight rail joiner fit the rail is the rail itself. Take a scrap of rail, about 3" long, and make a handle for it by drilling a snug hole in a piece of dowel and tapping

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it in with a hammer. Then file the base of the rail, just enough to remove any burrs and give the tip a slight bevel. Push it into a tight joiner to spread it just enough to fit snugly on the rail. You don't want it too loose, or it will do a poor job both at holding the rails aligned and conducting electricity. Solder your rail joints to make them more secure.

Q I have a mix of direct-current and Digital Command Control locomotives. I have both DCC and DC controllers connected to the layout through a double-pole double-throw (DPDT) switch, so I can use one or the other. Will it damage a DCC-equipped engine to be parked on the track while the layout is being run by the DC power pack? I know not to park a DC locomotive on a DCC layout, but haven't seen a discussion of the opposite.

Jim Nigriny, Chesterfield, Va.

A Depends on how old the decoder is. Most Digital Command Control decoders made in the last decade or more are

“dual-mode,” meaning they will function under direct current as well as DCC. So odds are you're safe to park your DCC engine on a DC layout. (Check your locomotive's paperwork to be sure.) Just don't be surprised when it starts rolling – dual-mode decoder-equipped locomotives respond like DC engines do on a DC layout.

Q I'm building a new layout and will be using Digital Command Control for the first time. I hear and read a lot about shorts and the need to be able to easily locate them. Are they more common or critical on a DCC layout vs. a direct-current layout? What's the best method for DCC short isolation?

Caleb Metzger, Germany

A Short circuits are troublesome on Digital Command Control-powered layouts, but they are on direct-current layouts, too. A short on either one will bring your trains to a stop. If anything, shorts are less dangerous on DCC, because a DCC base station will detect a

short and shut down rather than allowing current to keep flowing, potentially damaging locomotives.

Likewise, wiring a layout for DCC is no more complicated than wiring it for DC. In fact, some would say it's easier, since you don't need to separate the track into blocks for control purposes.

However, there are other reasons you might want to create isolated, separately powered sections of track (which in DCC are referred to as “power districts” rather than blocks). One reason is to add power boosters, which are useful if you intend to run a lot of locomotives or have a large layout. But the other reason has to do with short circuits. If your DCC layout is all one power district, a short anywhere will shut the whole thing down. But if you've divided it into power districts, only the district with the problem will shut down. This can make it easier to locate the source of a troublesome electrical gremlin. **MR**

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



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Geared locomotives got their due

In the logging world with its light, cheaply built track, uneven roadbed, and steep grades that twisted and wound through rugged territory, side-rod locomotives had difficulty maneuvering loads as they struggled along the tracks. Something different was needed. Ephraim Shay thought a geared-truck locomotive might be more practical, and went to Lima (Ohio) Machine Works with a design idea to solve the problem.

The first attempt was basically a vertical boiler with a pair of vertical cylinders on a two-truck flatcar. From that beginning evolved the Shay locomotive, with vertical cylinders to one side and a horizontal boiler offset to the other to maintain balance.

The vertical cylinders drove a longitudinal shaft powering bevel-gear axles on four-wheel trucks. Lima produced 2,770 Shays between 1880 and 1944. Slower-moving geared locomotives provided better stability with weight spread over two or three four-wheel trucks, a definite improvement over pound-

ing drivers fighting tight curves and steep grades.

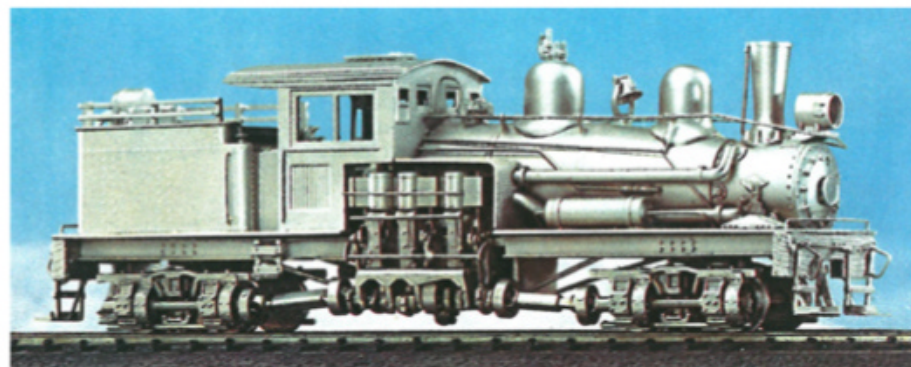
Pacific Fast Mail, one of several brass model locomotive importers, catalogued HO geared models produced by United Models from the mid-1950s into the 1970s. It sold several different classes of two-truck B-2 and three-truck B-3

Shays, even offering HO_{N3} trucks for the B-2 if desired, as the two-truck Shays were the most widely used.

Canadian Pacific Ry. received three heavy three-truck models in 1900 for mine spurs in lower British Columbia; New York Central had three two-truck Shays for New York City 10th Avenue Manhattan operation. Western

Maryland took possession of the last Shay in 1944 for operation on a branch line with 9 percent grades.

Shays weren't the only solution. Climax Manufacturing Co. of Corry, Pa., devised several designs and built 1,100 geared locomotives between 1888 and 1928. The most common had a pair of inclined



Pacific Fast Mail was a prolific importer of brass locomotives from the mid-1950s into the 1970s. Its popular two-truck Shay was available with optional HO_{N3} trucks for the narrow-gauge crowd.

cylinders aft of the smoke box driving a transverse shaft geared to axles through skew-beveled gears. The model shown below has an optional dummy coal tender.

Heisler Locomotive Works of Erie, Pa., devised another solution, with two cylinders in vee formation under the boiler that drove central longitudinal shafts to power one axle of each truck with exterior side rods powering the other axle. Over time it produced 600-plus locomotives to this design.

Geared locomotives are much a part of our hobby, though in far fewer numbers than mainline steamers. What makes them interesting is their diminutive sizes compared to larger mainline locomotives.

Pacific Fast Mail's B-2 Shay was 5³/₄" long; the Climax two-truck model less tender, 5¹/₂"; the Heisler,

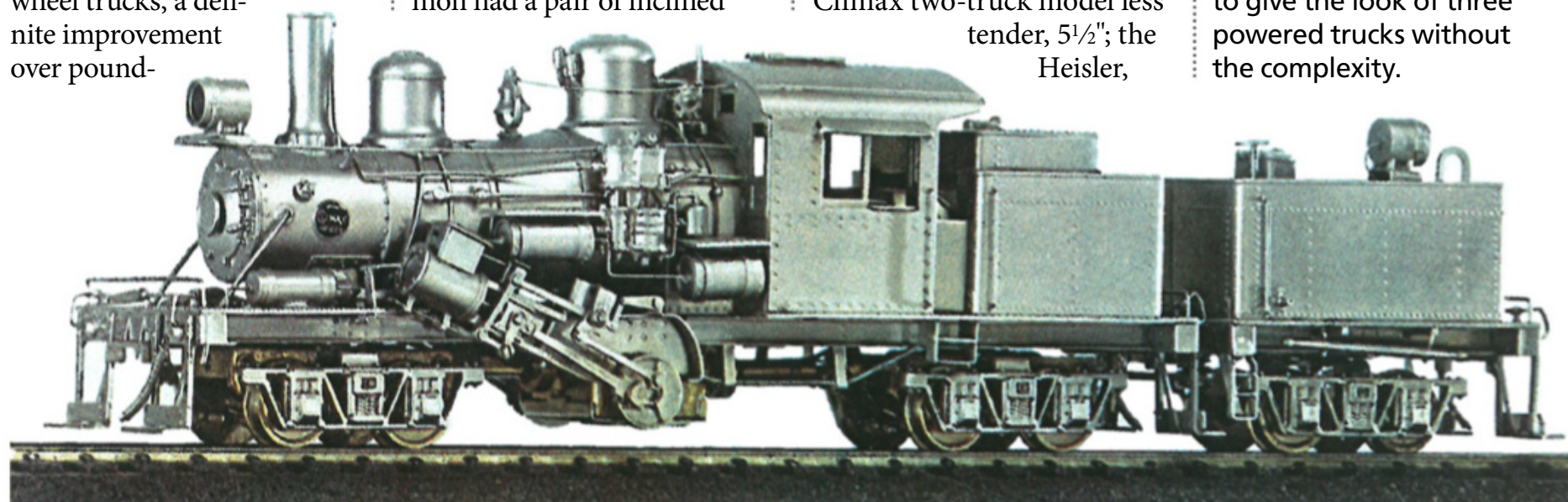
6¹/₄". All were designed to operate on 15" radius curves. Pacific Fast Mail's Southern Ry. Ps-4 class 4-6-2 Pacific was 12³/₈", double the geared steamers' lengths and requiring 18" minimum radius.

The models represent an era when geared locomotives ruled the wild country until the 20th century, when diesels relegated them to scrap. Models such as these re-create what was once important to the logging industry, and with them, a lost romance restored in miniature.

To give readers an idea what one paid for the three, PFM's 1964 price list showed the two-truck B-2, two-truck Climax and two-truck Heisler, \$54.95 each, the same price as the larger Ps-4! **MR**

This Climax is shown with an optional dummy tender to give the look of three powered trucks without the complexity.

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Spruce up a scene with static grass

2019 marks the 30th anniversary of our in-house staff layout, the HO scale Milwaukee, Racine & Troy. In those three decades, much work has been done on the model railroad. But after 30 years, some areas need sprucing up, including the scenery around the Montgomery Feed Supplies Inc. elevator.

After thinking of different ways to refresh the scene, I selected static grass. The rayon-based fibers stand vertically when applied with an electrostatic grass applicator. Cool? Yes. But static grass

applicators aren't necessarily a one-size-fits-all tool.

In the elevator scene, there's a ditch, some gently rolling terrain, and tight areas where the building and bins are glued down. Fortunately, there are applicators that work for each situation.

If you're looking to spruce up the scenery on your model railroad, try static grass. You can put the fibers over existing ground foam, adding new colors and textures to the scenery on your model railroad. **MR**



▶ Watch David Popp use the Peco applicator on the Olympia On30 layout. Check out the video at MRVideoPlus.com.



Static grass applicators come in a variety of shapes and sizes. Many of them are powered by batteries (typically 9V). Some use a wall-wart-type adapter.



The Peco Pro Grass Precision Applicator makes it possible to get into tight spaces around buildings. The applicator features a press-fit lid.



The GrassTech USA GrassTech I applicator has a bowl-shaped sieve. The applicator fit neatly into the ditch in front of the siding for the elevator.



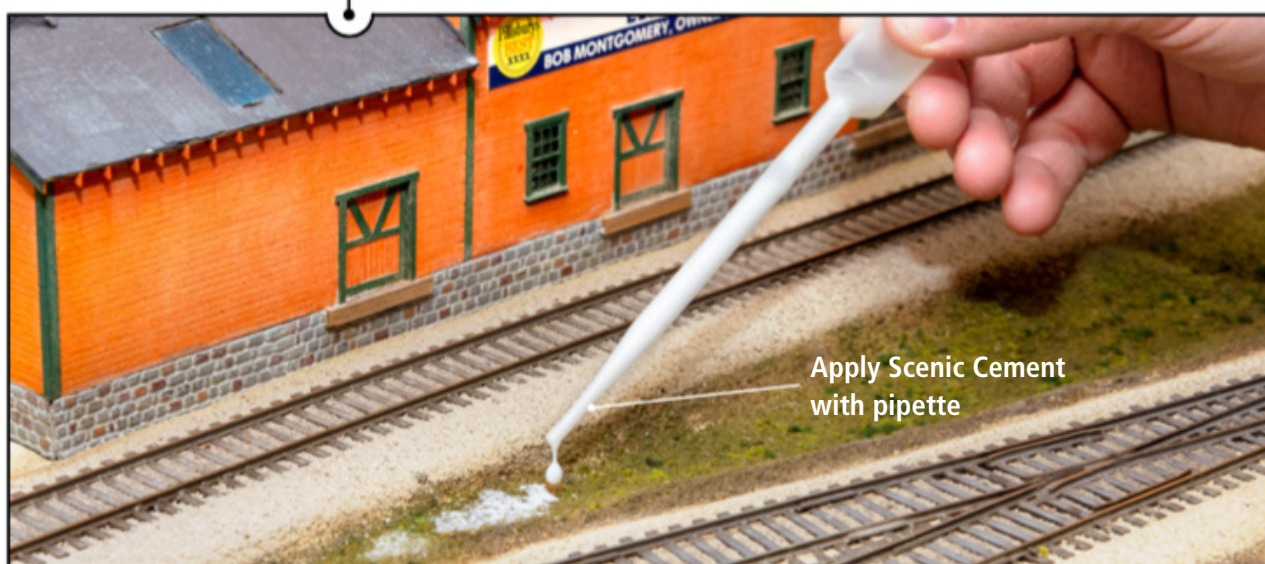
Woodland Scenics Model-Vac

Static grass has a tendency to get everywhere. The Woodland Scenics Model-Vac collects loose fibers in the cylinder so they can be used again.



Hold applicator 1/4" above surface for best results

Applicators with flat sieves, such as the Noch Gras-Master, are ideal for flat or gently rolling terrain. Most come with multiple screw-top lids.



Apply Scenic Cement with pipette

I wet the ditch with 70 percent isopropyl alcohol. This made it easier for the Woodland Scenics Scenic Cement to soak into the ground foam.

A modern



The 11'-6" x 21'-0" HO scale
Twin Cities & Western features
a variety of agriculture-related industries

By Don Ball • Photos by the author

When Alan Saatkamp moved from a house with a basement-sized layout in Harrisburg, S.D., to a townhouse in Shawnee, Kan., a few years ago, he was faced with a dilemma. He still wanted to enjoy running a modern-era layout that could support an operating crew. However, the only space Alan had available was an 11'-6" x 15'-0" basement bedroom. But with a bit of ingenuity, Alan was able to build an 11'-6" x 21'-0" model railroad re-creating a portion of the Twin Cities & Western (TCWR), a Minnesota-based

Minnesota short line



shortline railroad serving communities through the south-central part of the Gopher State.

Alan became interested in the TCWR while living in Minnesota. To get a better understanding of the railroad, he studied timetables, watched railfan videos, and read magazine articles and books on the line.

Alan followed up his prototype research by interviewing people who worked for the TCWR and its on-line customers to get first-hand accounts of how the full-size railroad operates. The information obtained during these

interviews proved helpful when designing the layout and its operating scheme.

Narrowing the focus

With research completed, Alan's next step was to select the portion of the TCWR he was going to model. The full-size railroad runs on 229 miles of ex-Milwaukee Road track from the Minneapolis-St. Paul metropolitan area to Milbank, S.D. The line, once part of the Milwaukee's Pacific Extension, hosted such trains as the *Olympian* and the *Columbian*.

① Diesels from Twin Cities & Western (TCWR) and sister road Red River Valley & Western are gathered in front of the enginehouse in Glencoe. The scene takes place on Alan Saatkamp's HO scale layout based on the TCWR in 2010.

Many of the more than two dozen towns served by the TCWR are farming communities, and the traffic base reflects that. Grains, vegetables, soybeans, and commodities related to ethanol and sugar beet production are a major part of the railroad's traffic base. The TCWR also handles plastics, lumber, and farm implements, among other items.



2 Alan used every inch of space he could to model the TCWR. Ruebel is shown at right. On the other side of the two windmills is Montevideo.

The modern TCWR locomotive fleet consists of Electro-Motive Division GP38-2 and GP39-2 road switchers; Generation II Locomotives Inc. GP15C, GP20C, and GP30C diesels with Caterpillar engines; and a CF7 slug. In addition, the railroad rosters nearly 700 leased and owned covered hoppers, insulated boxcars, and gondolas.

Alan chose to model the TCWR between Glencoe and Montevideo, Minn. Glencoe was a natural choice, as it's the railroad's headquarters and a division point. The towns along the 82-mile segment between Glencoe and Montevideo provided a good mix of industries in 2010, including grain elevators, a sugar beet plant, an ethanol plant, and scrapyards.

Along the line

When you enter the layout room, the first town you see is Glencoe. The division point features a small yard, railroad offices, and an enginehouse.

The town has two rail-served customers. Seneca Foods ships canned goods in 53-foot insulated boxcars and frozen vegetables in 64-foot mechanical refrigerator cars. Hutchinson Iron ships out scrap metal in gondolas.

The next town west of Glencoe is Buffalo Lake. A mix of homes and businesses line Main Street. The community is also home to South Central Grain & Energy. The industrial complex includes



3 Twin Cities & Western GP10 no. 405 waits in the hole as a Canadian Pacific ES44AC leads a loaded coal train through Hector. The GP10 is an InterMountain model; the ES44AC is from the Athearn Genesis line.

a grain elevator, fertilizer blend plant, and a propane distributor.

Minnesota State Highway 4 separates Buffalo Lake and Hector. Tallow is shipped and received at Agri Trading, grain is shipped from the Hector Farmers Elevator, and seed is trans-loaded from railcars to trucks at Seneca Transfer. South Central Grain & Energy has a liquid fertilizer plant at Hector.

Ruebel is home to the sprawling Southern Minnesota Beet Sugar Cooperative. Inbound products include packaging supplies, coal for the industry's power plant, and limestone for sugar production. Bulk sugar, molasses, and beet pulp pellets (used for horse feed) are shipped outbound.

In front of the sugar beet plant is a four-track yard with a runaround. Cars in this yard are destined for Granite Falls and Montevideo.

Another major industry is the Granite Falls Energy ethanol plant. Though corn is typically delivered by truck to ethanol plants, the Granite Falls facility receives its corn by rail from on-line elevators. Dried Distillers' Grains (DDG) – a by-product of the ethanol production process that's used for poultry and livestock feed – and ethanol are shipped from here.

On the prototype, the rails continue west to Montevideo. Alan had to include a switchback to cross the BNSF Ry. to reach the western end of the railroad.

④ Canadian Pacific ES44AC no. 8743 pulls empty coal hoppers from the sugar beet plant in Ruebel. Once through spotting the loaded cars, the train will return to the Twin Cities staging yard.



Montevideo is a compact scene. This part of the railroad is reached via a doorway to Jack-and-Jill bathrooms located in a hallway outside the train room. Rail-served customers include Friendship Homes, a modular home manufacturer that receives lumber; Montevideo-Granite Falls Co-op grain elevator; Birkey Scrap; and a loading dock for shipping implements used in cotton harvesting.

Small towns, big operation

Despite the small size of each town, Alan can run seven or eight trains during an operating session with a three-member crew. Each session lasts 2½ to 3 hours. The jobs are designed so that operators aren't working in the same aisles, which is important on a small layout.

When the session starts, the Glencoe Turn consist from Twin Cities staging is waiting on the two tracks adjacent to Seneca Foods. The Utility Job classifies these cars, works local industries, and makes up the Ruebel Turn.

The Utility Job then travels to Ruebel, leaving cars destined for points west and



⑤ Twin Cities & Western GP39-2 no. 2300 pounds the diamond as it crosses the BNSF Ry. at Montevideo. The locomotive will make a runaround move in Granite Falls before taking its train back to Ruebel.

picking up eastbound cars in the yard. On the return trip to Glencoe, the train takes care of industrial switching in Buffalo Lake as trailing-point moves.

The Ruebel Turn travels to its namesake, switching industries in Hector along the way. After finishing switching

duties at the Southern Minnesota Beet Sugar Cooperative, the train returns to Glencoe.

The West End job starts at Ruebel. It handles cars billed for Granite Falls and Montevideo. Power for this job is left at Ruebel.



The Twin Cities staging yard, hidden behind a backdrop, connects with the “on stage” part of the railroad at Ruebel. The staging yard is for cars destined for Ruebel and points west.

There are five trains that originate and/or terminate in Twin Cities staging. The Aggregate Extra serves the L.G. Everist quarry in Ortonville. Since the quarry is west of the modeled portion of the railroad, the train is staged in Montevideo. The through train travels east to Twin Cities staging. In alternate operating sessions, the empty Aggregate Extra runs west from the Twin Cities.

The Grain Shuttle starts in staging. The train travels to Montevideo, switches the Montevideo-Granite Falls Co-op, and returns.

The Ethanol Extra job runs from staging to Granite Falls Energy and back. The train is either empty DDG covered hoppers or empty tank cars.

The North Star Intermodal originates in Montevideo and travels to the Twin Cities. But this isn't your conventional intermodal train. The containers on the flatcars are filled with cattle feed.

The Coal Extra is led by Canadian Pacific diesel locomotives and runs

from the Twin Cities to Ruebel. The train delivers coal for the power plant at the Southern Minnesota Beet Sugar Cooperative.

Maroon and gold

Alan's locomotive fleet consists of 11 locomotives, including three InterMountain GP10s, two Atlas Trainman Electro-Motive Division (EMD) GP39-2s, and an Athearn Ready-to-Roll CF7 all factory lettered for the TCWR.

The balance of the roster consists of Atlas EMD GP38s and an Atlas Trainman EMD GP38-2 custom-painted for the TCWR and sister railroad Red River Valley & Western. In addition, Alan has a Proto 2000 model painted and detailed to represent Minnesota Prairie Line GP10 no. 404. Alan thanks his friends Eric Carlson, Jeremiah Rindahl, and Tim Smith for their locomotive painting and detailing efforts.

Alan uses about 80 freight cars on the railroad, a roughly equal mix of kits and ready-to-run models. The full-size TCWR has many hand-me-down freight cars still painted for their original

6 Ruebel is a busy location on Alan's layout. At left is a small yard for cars destined for points west on the railroad. The sprawling industry in the background is the Southern Minnesota Beet Sugar Cooperative.

owners but with TCWR or MPLI reporting marks. To capture that look, Alan used Microscale decal trim film to cover the reporting marks and/or road numbers on factory-decorated models. Then he used assorted decal letters and numbers to reflect the change in ownership.

Benchwork, track, and scenery

Alan used open-grid benchwork for his layout. He covered the frame with 2"-thick extruded-foam insulation board. He designed the benchwork in sections so the layout could be easily disassembled should he move again.

The track is code 83 and 100 flextrack with no. 6 (mainline) and no. 4 (industries) turnouts. He used topper tape for the roadbed. The trains are controlled with a Digitrax Digital Command Control system.

Alan used a variety of products to scenic the layout. The grass and shrubs



7 A cut of covered hoppers is being loaded at the South Central Grain & Energy elevator in Buffalo Lake. On the adjacent track, a covered hopper filled with potash waits to be unloaded at the fertilizer blend plant.

are various colors of Woodland Scenics ground foam. The ballast is by Arizona Rock & Mineral. The trees are Woodland Scenics products and custom-made by Russ Hayden.

The streets and roads are styrene sheet. Alan cut the material in 22-scale-foot-wide strips and painted it with dark gray and black acrylics. He used dry transfers, decals, and stickers for the road markings.

The backdrops are a mix of painted hardboard and .040" styrene sheet, the latter an idea Alan gleaned from fellow modeler Mike Porter. Alan added photos to the backdrops at some locations, including Granite Falls Energy, to add depth to the scenes.

Structure variety

The structures on Alan's layout are kit-built, scratchbuilt, and kitbashed. The enginehouse in Glencoe is a Pikestuff kit, the farm-related industries in Hector are

Walthers and Rix kits, and the buildings along Main Street in Buffalo Lake are assorted commercial offerings.

Alan turned to kitbashing for other structures, including Seneca Foods in Glencoe, the South Central Grain & Energy annex in Buffalo Lake, and the loading dock in Montevideo.

The Southern Minnesota Beet Sugar Cooperative complex in Ruebel is a mixture of kitbashed (Great West Models and Walthers) and scratchbuilt structures. Alan used PVC pipe for the storage silos. He made the low-relief buildings from styrene sheet and strip, foam board, hardboard, and commercial detail parts.

To add realism to the buildings, Alan photographed prototype signs, scaled them down, and printed them on cardstock. Examples of these signs can be found on many buildings throughout the layout.

TCWR, version 3.0?

Alan's 11'-6" x 21'-0" Twin Cities & Western layout features six stations and more than a dozen industries. The model railroad provides plenty of operation for a crew of three.

Alan started modeling the TCWR when he was living in South Dakota. Shortly after photographing version 2.0 of his layout shown here, Alan announced he was moving again, this time from Kansas to Illinois. I'm happy to report that version 3.0 of the TCWR is well underway. [MR](#)

Don Ball is a regular contributor to Model Railroader. His article "A camera car for the railroad" appeared in our February 2019 issue.

Meet Alan Saatkamp

Alan Saatkamp and his wife, Jan, live in Normal, Ill. He retired from the Veterans Administration in 2000 and the Minnesota State Veterans Home in 2005. Alan has been modeling Midwestern shortline and regional railroads over the past quarter century.



THE STATE OF FREIGHT

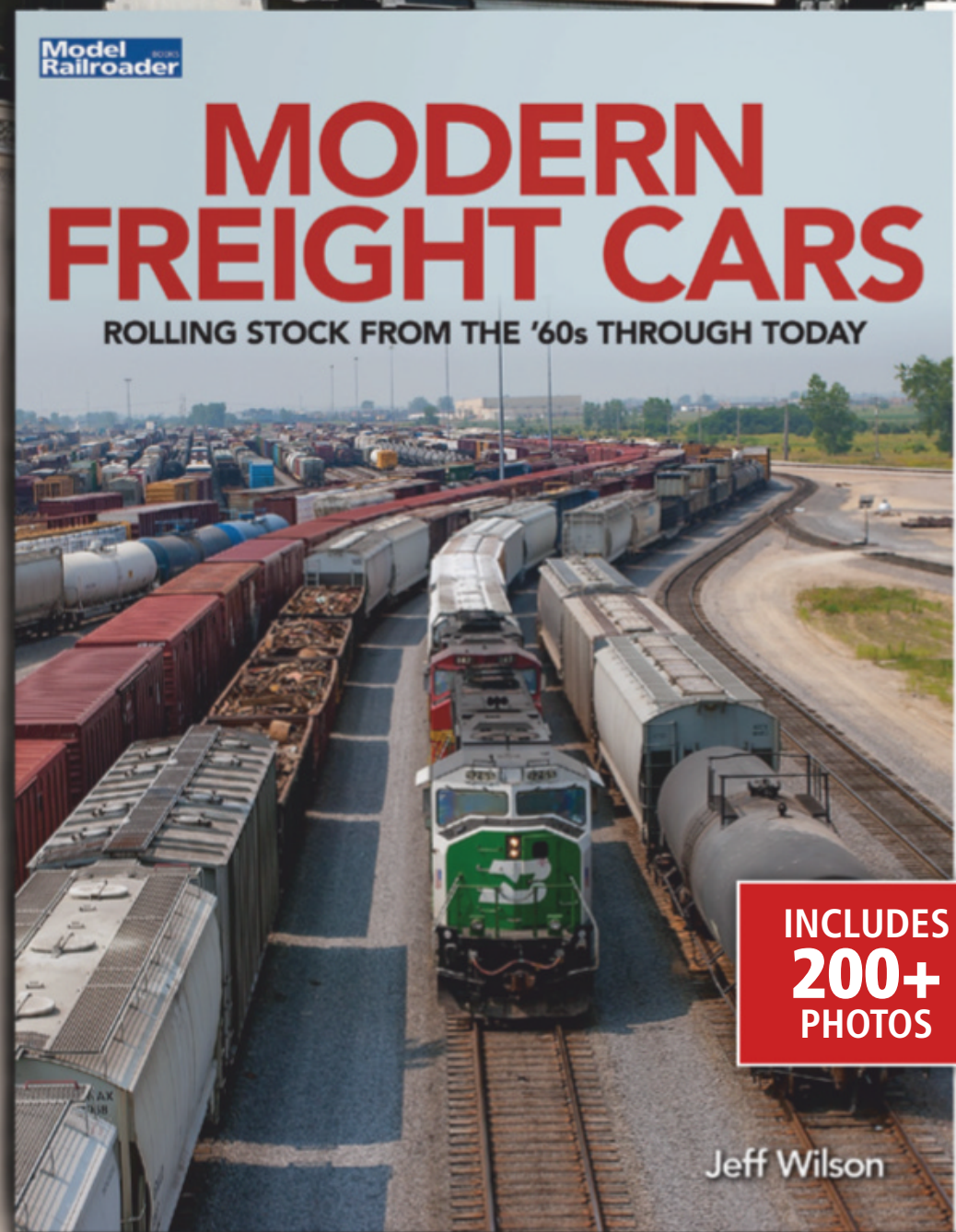
Modern Freight Cars, a new book by Jeff Wilson, provides an excellent overview of freight cars from the 1960s through today. The book features more than 200 photos and covers various types of cars (boxcars, hoppers, gondolas) and how they evolved, as well as new car types, including intermodal cars and 89-foot auto racks.

In addition, the book explains how different industries use freight cars, when various cars entered service, and the dates when a variety of rules and restrictions took place.

Other topics include:

- Freight car evolution (size and weight increases; new car types).
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Getting the LOCOMOTIVE you want

Alan Mende wanted a model of this Alco RS-3 and used a pair of out-of-production Stewart body shells to build it. The prototype still runs out of Scranton, Pa., under the ownership of the Anthracite Railroads Historical Society.

Modify a Stewart Alco RS-3 to create Jersey Central no. 1554

By **Alan Mende** • Photos by the author

Not only have I been a lifelong Alco fan, I'm particularly fond of the Alcos rostered by the Central RR of New Jersey (CNJ). The CNJ bought its first RS-3s in 1950, and many of them lasted into the Conrail era.

Alco RS-3 no. 1554 is owned by the Anthracite Railroads Historical Society and operates on the Delaware-Lackawanna RR out of Scranton, Pa. Being a Jersey Central modeler, I wanted to build a replica of no. 1554 as it appeared in the 1950s.

Stewart Hobbies made a nice model of a Phase IIA Alco RS-3 some years ago. It had carbody air filters instead of louvers in the long hood doors. The body kit was available from Bowser as item no. 2075. You may be able to find one on eBay. It can be adapted to current powered mechanisms. [Athearn, Atlas, Bowser, and Stewart have all made RS-2s and -3s in HO scale. – Ed.] To build a model of CNJ 1554, you'll need two body kits.

Body modifications

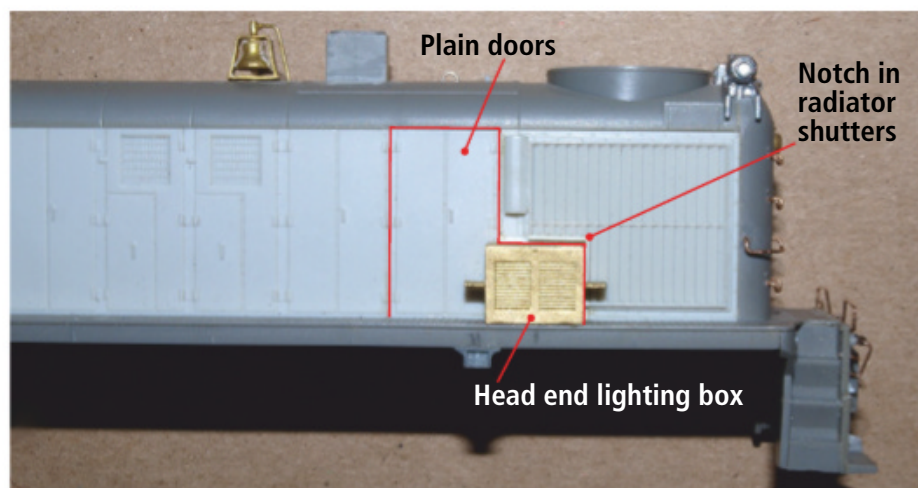
Begin by cutting and splicing the long hood sides as shown in ① on the opposite page. Remove the first pair of doors on the

engineer's side that have a carbody air filter. They're right behind the radiator shutters. Replace them with a pair of blank doors. You'll also have to cut a section out of the radiator shutters to accommodate the Custom Finishing head end lighting box.

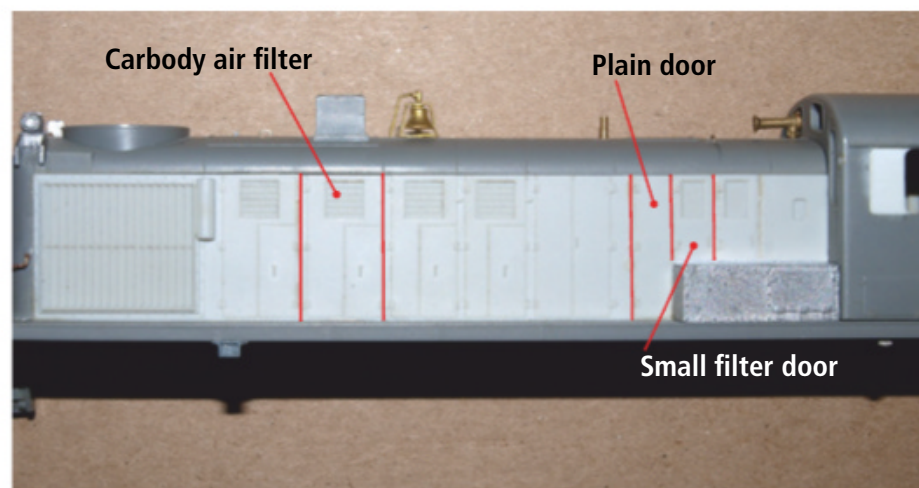
On the fireman's side of the long hood, remove the blank pair of doors between the first and second carbody air filters. Replace them with the last pair of doors that have a carbody air filter in them. They're the ones closest to the cab. You'll also need to add one door with the rectangular carbody filter and a full height blank door as shown in ②.

On the fireman's side of the cab, fill the first part of the cab window as shown in ③. Also shown is a Gingerbread Stop auxiliary box in front of the cab. Since this part is no longer available, a Shortline Model Products SMP-112 equipment box for Alcos can be substituted.

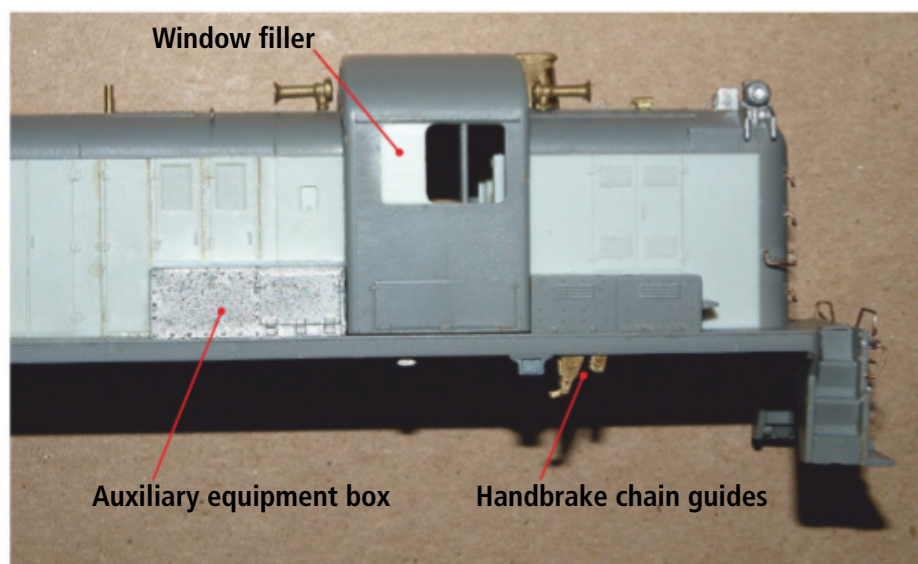
I carved off the molded grab irons from both nose castings so I could replace them with individual wire grabs. Note in this photo I've attached the nose grab irons. This was a big mistake, because they interfere with the striping on the model. Drill the holes, form the grab irons, and then set them aside!



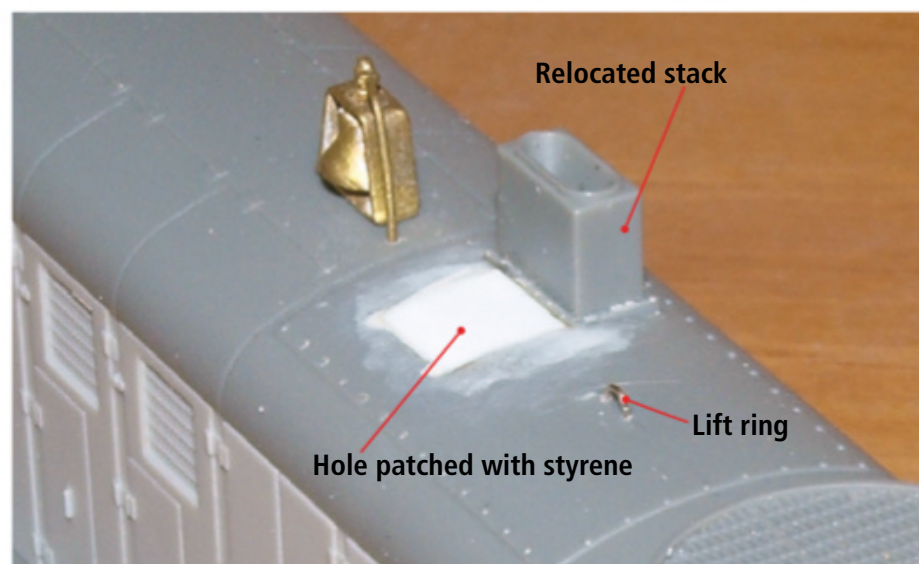
1 The doors, part 1. The red lines show where Alan removed a pair of doors with a carbody air filter and replaced them with a pair of blank doors. He also notched the radiator shutters to clear the head end lighting box.



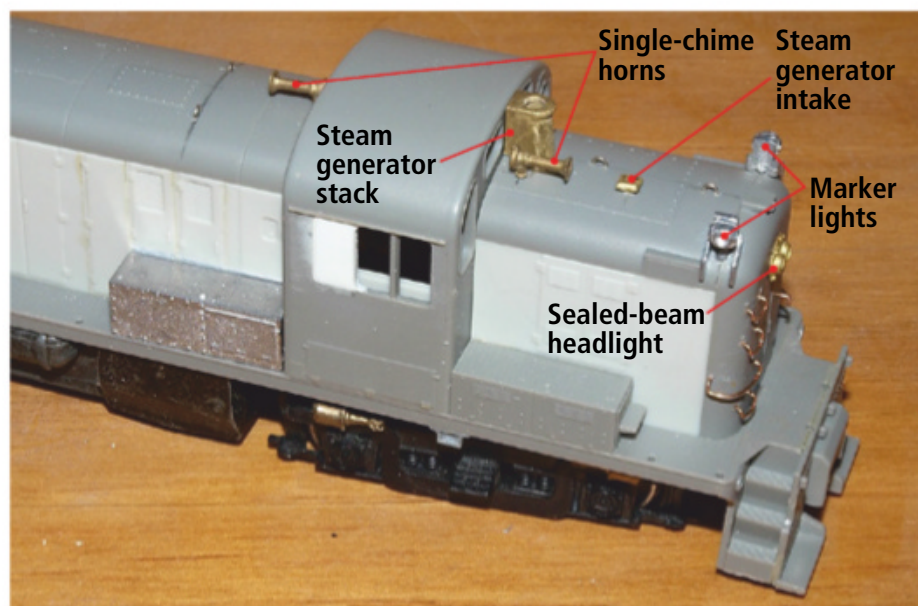
2 The doors, part 2. On the other side, Alan removed a pair of blank doors and replaced them with a pair with a carbody air filter. Note also the additional door with the small filter in front of the cab, and the plain door ahead of it.



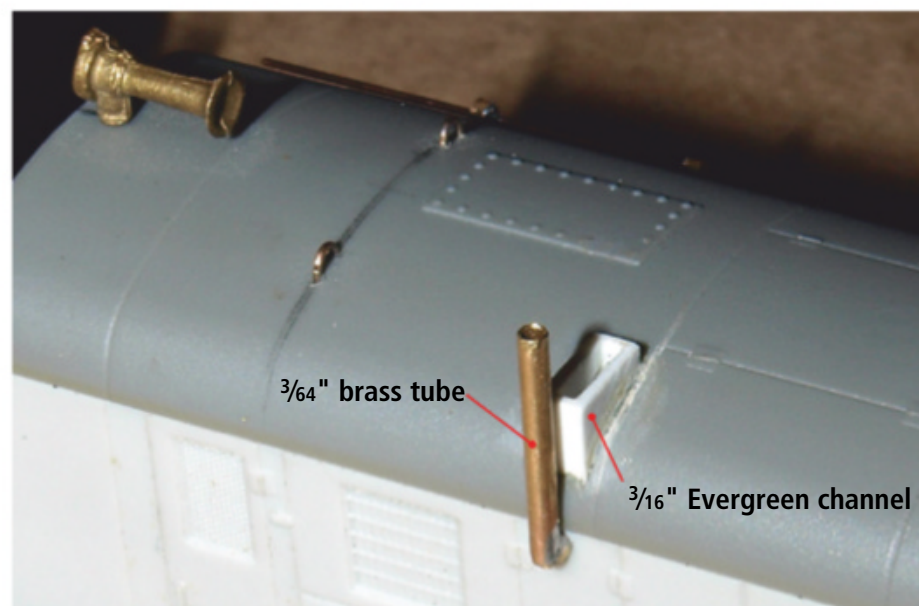
3 Fireman's side details. On the fireman's side of the cab, fill in the front third of the window. Also shown is the auxiliary equipment box.



4 Exhaust relocation. The stack was repositioned to replicate an air-cooled turbocharger-equipped engine. The Details West bell is just ahead of it.



5 Short hood details. Alan added steam generator details from Custom Finishing along with Details West horns and other details.



6 Short stack. Alan made the small stack on the engineer's side of the long hood from Evergreen $\frac{3}{16}$ " channel and closed it off with a bit of sheet styrene. The pipe next to it is $\frac{3}{64}$ " brass tubing.

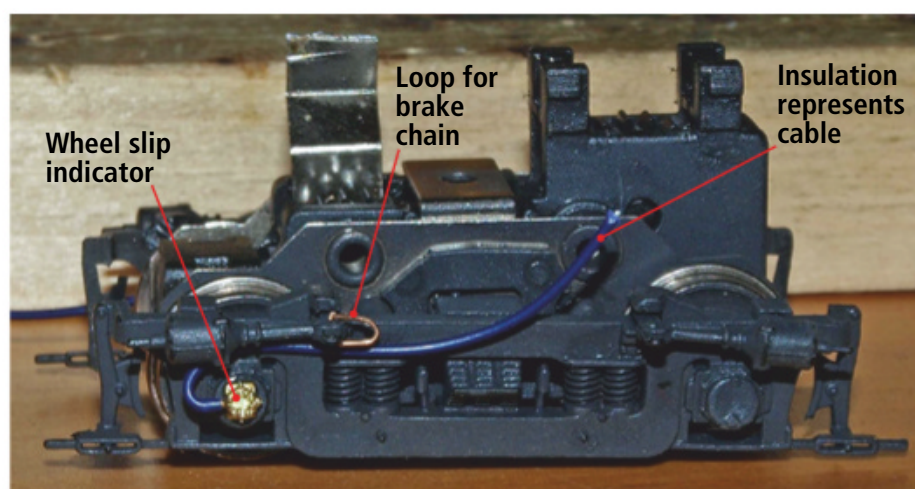
On the top of the long hood, reposition the stack as shown, **4**. It represents an air-cooled turbocharger installation. (Depending on the period you model, you may not need to reposition the stack, as the air-cooled turbocharger was eventually replaced with a water-cooled turbo with a transverse mounted stack.) Also shown is the placement of a Details West bracketed diesel bell.

I applied additional details to the body **5** including a pair of Details West Blat-type, single-chime air horns; Custom

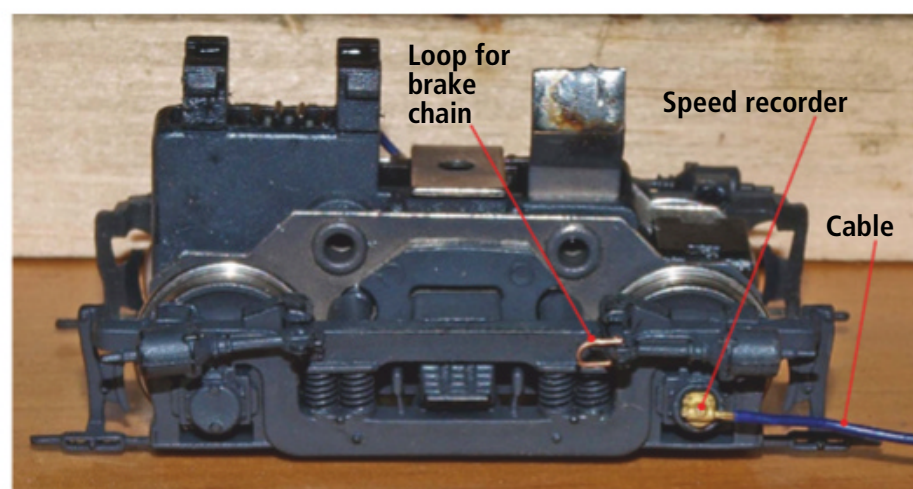
Finishing Alco steam generator intake; Alco steam generator stack; RS underframe handbrake chain guides (shown in **3**); Detail Associates Alco lift rings; and Cal-Scale Pyle National sealed beam headlights.

I used Kitbits marker lights for CNJ RS-3s, but they're hard to find. Cal-Scale no. 190-433 marker lights or Shortline Model Products no. SMP-103 marker lights would also work.

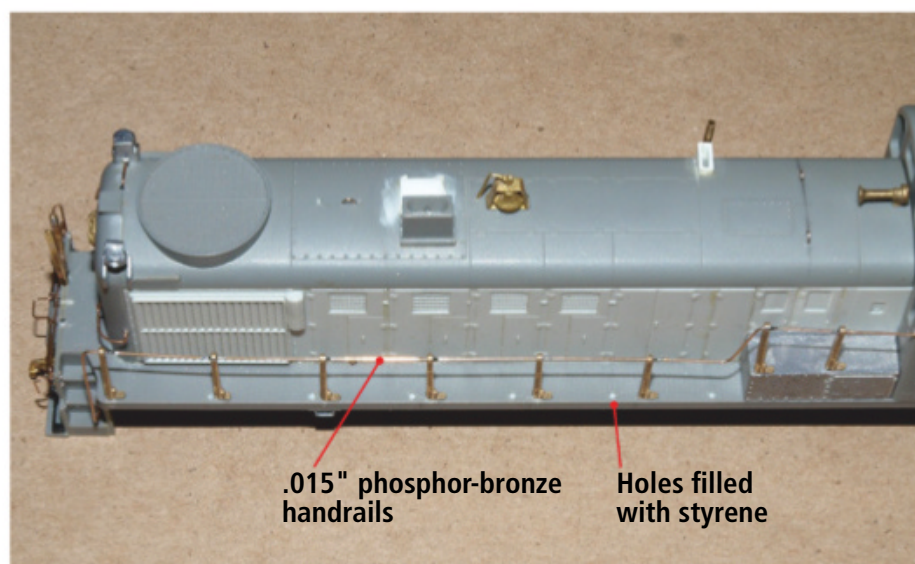
The small stack on the engineer's side of the long hood was missing **6**, so I made it from Evergreen $\frac{3}{16}$ " channel and



7 New trucks. Alan used Proto 2000 trucks from an Alco FA-2 because of their better detail. A Utah Pacific wheel slip indicator, along with a loop of wire that will later hold the handbrake chain, were added to the fireman's side.



8 Engineer's side. A Utah Pacific speed recorder and brake chain loop adorn the opposite side of the rear truck. The cable for the speed recorder drive is represented by a bit of insulation from fine-gauge wire.



9 New stanchions. Alan used Precision Scale Alco handrail stanchions spaced a scale 4'-6" apart on the fireman's side. He filled the original holes with .035" styrene rod.

closed it off with a bit of sheet styrene. The pipe next to it is $\frac{3}{64}$ " Special Shapes brass tubing.

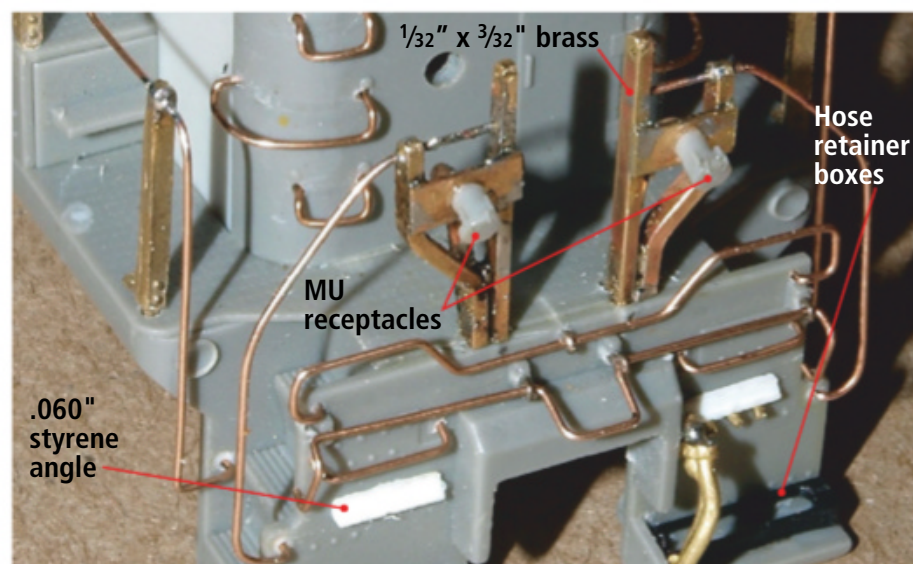
Frame and truck modifications

I added some details to the frame on my model. These include four Precision Scale Alco jacking pads, Details West engine step lights, Custom Finishing RS cooling coils, RS underframe handbrake chain guides, and Detail Associates fuel tank fittings, many of which are visible in the photo on the opposite page.

I didn't like the cast-on brake cylinders or the open journal bearings on the trucks that came with the Athearn/Stewart frame, so I replaced the truck assemblies with a spare set I had from a Proto 2000 Alco FA-2. Not only do they have separately applied brake cylinders and journal bearing caps, they also have the correct wheelbase.

I did, however, have to reverse the sideframes on the rear truck so the bearing caps with small circles on them would be at the front of the truck. That's where I drilled holes for a Utah Pacific axle wheel slip fitting and the speed recorder drive. The former is on the fireman's side **7**; the latter is on the engineer's side **8**.

On the front brake levers on both sides of the rear truck, I added small homemade loops for attaching the handbrake chains. When I did the final assembly of the engine, I used insulation from some fine gauge wire for the wheel slip and speed recorder drive cables. I drilled small holes in the engine's metal frame to hold the insulation in place.



10 End details. Alan added a wealth of detail to both ends of the engine. Drop steps and the 40-links-per-inch chain across the center handrail stanchions were installed after painting.

Grab irons and handrails

The handrails and grab irons are formed from Tichy .015" phosphor-bronze wire. There are fewer handrail stanchions (Precision Scale Alco handrail stanchions) on the fireman's side of the long hood than holes in the Stewart frame **9**. I filled the holes with .035" Evergreen rod and drilled new holes a scale 4'-6" apart.

The end railings are scratchbuilt from K&S $\frac{1}{32}$ " by $\frac{3}{32}$ " brass rod **10**. I used the RS-3 plans that appear in *Model Railroader Cyclopedic: Vol. 2, Diesel Locomotives* (Kalmbach Books, out of print).

I fabricated the uncoupling levers and the grab irons, and added Cal-Scale air and signal hoses, Detail Associates m.u. receptacles, and hose retainer boxes cut from DA pilot footboards. I drilled holes for the m.u. hoses beneath short bits of Evergreen .060" angle. Even though the m.u. hoses are made from a slippery, flexible plastic, they break easily, so I clipped them shorter and inserted the ends in the hose retainer boxes on the footboards. After painting the model, I added scratch-built drop steps and 40-links-per-inch chain across the center handrail stanchions.

Paint, decals, and weathering

With all the details added, I thoroughly washed all parts in water with dish soap added. When everything was dry, I air-brushed everything with Tru-Color TCP-256 primer. When the primer was dry, I sprayed the striping area with Tru-Color

Materials list

A-Line

29201 short windshield wipers

Builders in Scale

250 40-links-per-inch scale chain

Cal Scale

190-320 air and signal hoses

190-395 Pyle National sealed beam headlight

190-433 marker lights Erie Lackawanna RS
(or Shortline Model Products SMP-103)

Custom Finishing

147 RS underframe hand brake chain guides

151 Alco steam generator stack

152 RS cooling coils

206 Alco steam generator intake

212 head end lighting generator box

Detail Associates

1106 Alco lift rings

1507 m.u. receptacles

1508 m.u. air hoses

2208 pilot with footboard metal type

3102 fuel tank fittings

Details West

151 bracketed diesel bell

172 engine step lights

173 Blat-type single chime air horn

Evergreen Scale Models

266 .188" channel

291 .060" angle

K&S Precision Metals

815025 1/32" x 3/32" brass flat bar

MV Lenses

300 clear 4 1/2"

301 red 4 1/2"

Precision Scale

3911 Alco jacking pads (plastic)

39063 Alco handrail stanchions

Shortline Model Products

SMP-103 marker lights (or Cal-Scale 190 433 marker lights)

SMP 112 equipment box for Alco

Special Shapes

TT-61X 3/64", .006" wall brass tubing

Tichy Train Group

1102 .015" phosphor bronze wire

Tru-Color Paint

TCP-009 Grimy Black

TCP-010 Black

TCP-089 Light Imitation Gold

TCP-233 CNJ Deep Sea Green

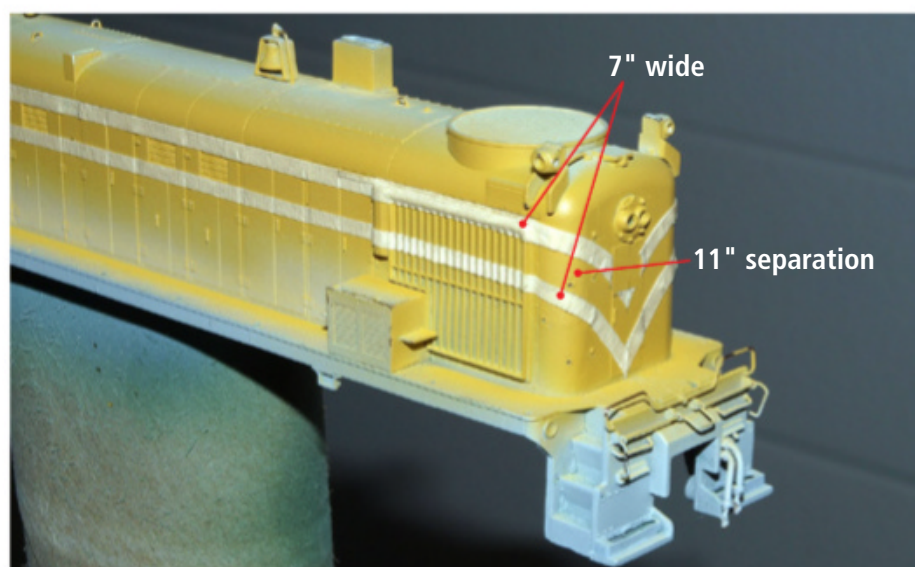
TCP-256 primer

TCP-311 Safety Yellow

Utah Pacific

SR-61 speed recorder drive

WS-65 axle wheel slip fitting



11 Masking gold stripes. After spraying the model with Tru-Color primer and Light Imitation Gold, Alan masked off the stripes in preparation for TCP-233 CNJ Deep Sea Green.

TCP-089 Light Imitation Gold. Then I masked off the stripes **11**. The stripes are 7" wide with an 11" separation. (Masking tape curves much more easily than decal stripes.)

I then sprayed the body and cab with Tru-Color TCP-233 CNJ Deep Sea Green. I used Tru-Color TCP-010 Black on the truck sideframes and on the metal fuel tank and frame. I brush-painted all the car body air filters with Tru-Color TCP-009 Grimy Black. The ends of the handrails I painted with Tru-Color TCP-311 Safety Yellow.

When all the paint was dry, I decaled the model using an old set from The Gingerbread Stop. Since these are no longer available, you can use set CNJ-4 road switchers green w/stripes from Raritan Bay Hobbies (P.O. Box 4231, Metuchen, NJ 08840; 732-494-2932; dbtakep@aol.com). I used Raritan Bay's CNJ-5 number boards set and some old Walthers black stripe material for the four numberboards.

After decaling and paint touch-up, I gave the model a light spray of Testor's Dullcote and weathered the model.



12 Off to work. This view shows some of the details Alan added to the fuel tank area of the frame, including the Custom Finishing RS cooling coils just behind the air tank.

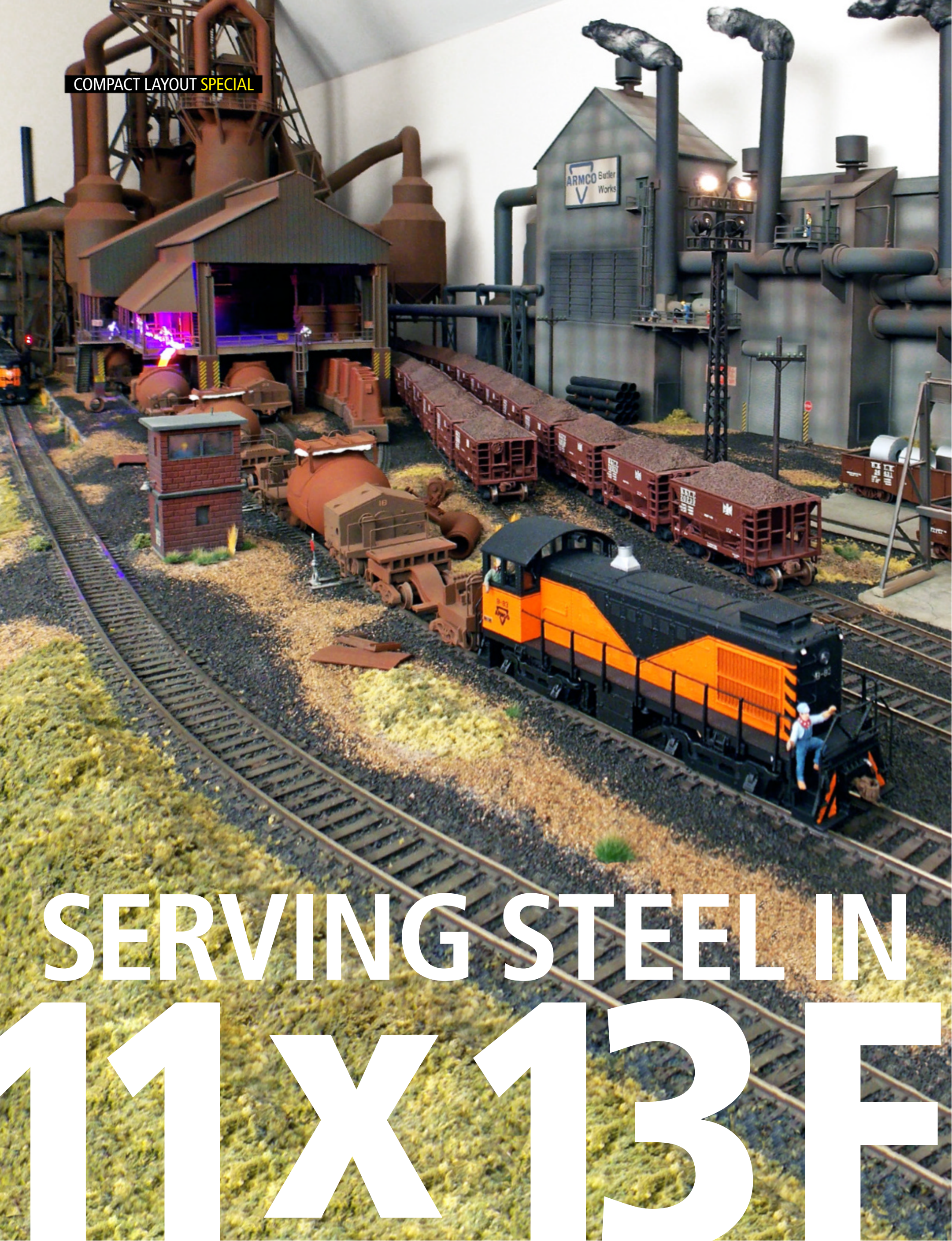
I particularly like powdered pastels and light sprays of diluted Grimy Black, Dust, and Grime paints. The glazing in the cab windows is .010" clear styrene. I drilled small holes for the A-Line short windshield wipers.

Lastly, I installed a Model Rectifier Corp. no. 1651 four-function decoder in the model with yellow-glow light-emitting diodes for headlights.

With that, the model was finished and ready for its beauty shots **12**. Now all I need to do is finish the basement and rebuild the layout I was forced to dismantle when we moved to a new house. 

Alan is retired from a major electronics company, where he was a standards engineer. Since 1980, he's been writing stories for the model railroad press, including "How to kitbash your favorite steam locomotive" in the March 2010 issue of MR. He's been a model railroader and model builder since before he could read the instructions.

COMPACT LAYOUT SPECIAL



SERVING STEEL IN 11X13F

The HO scale Atlantic & Southern fills a spare room with heavy industry

By Howard Gallagher

Photos by the author

① Armco no. B-83, an Alco S-4, hauls loaded bottle cars to the rolling mill, while in the background blast furnace workers coax hot metal into another cut of cars. A sprawling steel mill complex and other western Pennsylvania scenes highlight Howard Gallagher's HO scale Atlantic & Southern RR.

Thirteen feet of furnaces, rolling mills, and other steel mill scenes greet visitors when they open the door to my 11 x 13-foot train room. My HO scale Atlantic & Southern RR is inspired by memories of growing up in Butler, Pa. The town was home to a Pullman-Standard railcar plant as well as an Armco Steel facility, where my dad worked for 37 years. Although the layout is freelanced, I strove to capture the flavor of steel country in the steam-to-diesel transition era.

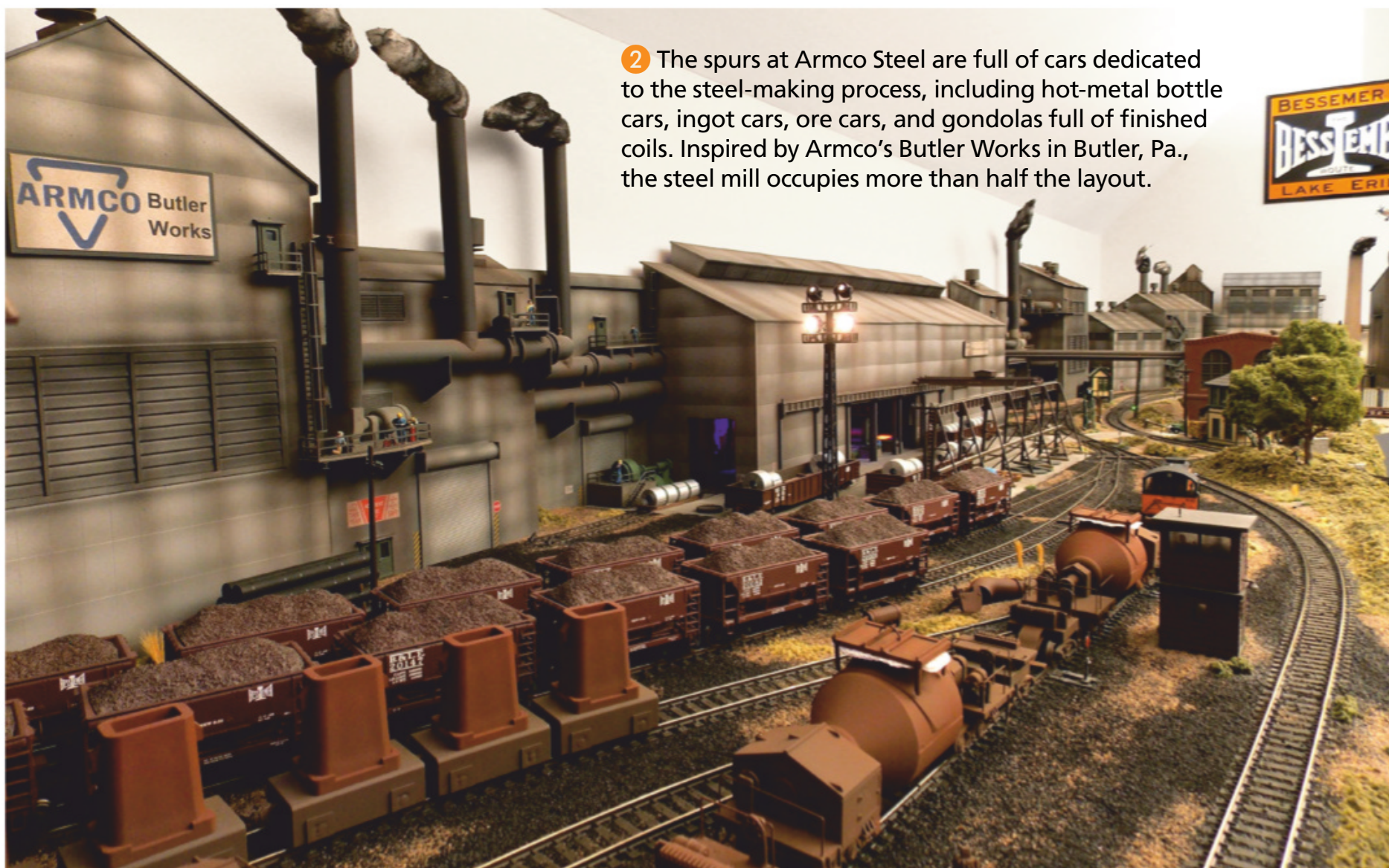
Evolving plans

The original concept of the freelanced Atlantic & Southern RR was that of a transition-era merger between the Atlantic Coast Line (ACL) and the Southern Ry. (SOU). At the time, my friend John Pepper and I were avid fans of those two roads, yet we wanted the freedom of modeler's license offered by a freelanced layout. John designed the herald for the "The Black Diamond Route," and I designed the paint schemes for motive power and rolling stock.

Ten years later, a job change and relocation reduced my layout space from a basement to a spare bedroom. I wouldn't have the space to model a freelanced mega-merger railroad. Instead I adjusted the layout's concept to reflect the western Pennsylvania settings and railroads that I remembered from my youth.

Instead of an ACL/SOU merger, the new concept for the A&S was that of an independent Class 1 railroad transporting coal, ore, and various other raw materials from the Great Lakes region to the Atlantic Coast and points south. The railroad is divided into two divisions: the Atlantic Division links the railroad's northwestern terminal at Cleveland to Baltimore, and the Southern Division runs from Baltimore to Atlanta, the railroad's southernmost point.

From Cleveland to New Castle, Pa., the A&S Atlantic Division parallels the Baltimore & Ohio RR (B&O) and the Pennsylvania RR (PRR). At New Castle, the A&S branches off to Butler, the modeled part of my layout. From Butler, the railroad continues southeast of Pittsburgh through



2 The spurs at Armco Steel are full of cars dedicated to the steel-making process, including hot-metal bottle cars, ingot cars, ore cars, and gondolas full of finished coils. Inspired by Armco's Butler Works in Butler, Pa., the steel mill occupies more than half the layout.



3 A Walthers bascule bridge lengthened to 3 feet spans the doorway to the train room. Featuring a counterweight full of BBs and horizontal box channels reinforced with $\frac{1}{8}$ " steel wire, the bridge is easily raised and lowered by hand.

Greenburg, Somerset, and Hagerstown, before terminating at Baltimore.

The A&S is a collection of modeling elements taken from several prototype railroads. My favorite prototype railroad, the Bessemer & Lake Erie RR, is represented as a Class 1 carrier in western Pennsylvania that links the Great Lakes with the Pittsburgh steel industry. The A&S interchanges with the B&LE as well as with the B&O, PRR, and Western Maryland (WM), adding operational variety to the layout.

To further add variety, I set the layout in 1957, near the end of the steam-to-

diesel transition era in the United States. In addition to justifying limited steam operation on the A&S, this time period would let me plausibly use multiple paint schemes for diesel locomotives and rolling stock.

Building the layout

The layout is a walk-in, around-the-walls design. The shelf benchwork consists of seven open-grid modules topped with $\frac{1}{4}$ " plywood, which adds rigidity and provides an anchor surface for switch motors and other electrical com-

ponents. The grids vary in width from 18 to 30 inches.

On top of the plywood I glued two layers of $\frac{3}{4}$ " extruded-foam insulation board to serve as a scenery base and track subroadbed. The foam is easy to carve and lets me add visual interest by varying the elevations of the landscape. After I glued down the cork roadbed and laid the Atlas code 100 flextrack, the foam helped deaden the sound of metal wheels rolling over the rails.

All the curved flextrack joints are soldered and staggered to prevent kinking rails. All turnouts are controlled by

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Builders In Scale SwitchMaster switch motors. I wired the layout for direct-current (DC) cab control using two Model Rectifier Corp. 5-amp power packs and Peco power-routing turnouts to isolate the electrical blocks.

I installed Oregon Rail Supply signal bridges and dwarf signals with red/green light-emitting diodes (LEDs) wired to indicate turnout positions. I also added operating grade crossing signals to provide some trackside animation.

Setting the track height at 55" made it easy to scenic the layout and permitted all under-the-layout wiring to be accomplished from the comfort of a rolling office chair. With the layout at that height, the room is still usable as an office, lounge, or spare bedroom.

The 37" wide entranceway to the room is spanned by a modified Walthers bascule bridge that satisfied my number one design requirement – no duckunders. My previous two layouts had

duckunders that didn't get favorable reviews from visitors.

For about four years, the bridge was motorized, but after the plastic gears wore out, I converted it to manual operation. To make the bridge easy to raise and lower, I filled the counterweight with BBs and reinforced many of the

horizontal plastic structural members with 1/8" steel wire.

At 36" long (more than 260 HO scale feet), the bridge is an engineering impossibility in real life. However, the bridge's functionality outweighs the need for complete accuracy. It's also a dramatic conversation starter for visitors.

The layout at a glance

Name: Atlantic & Southern RR

Scale: HO (1:87.1)

Size: 11 x 13 feet

Prototype: freelanced

Locale: western Pennsylvania

Era: September 1957

Style: walk-in, around-the-walls

Mainline run: 30 feet

Minimum radius: 25"

Minimum turnout: no. 5 (main line and transfer yard), no. 4 (mill yard)

Maximum grade: none

Benchwork: open-grid

Height: 55" (main level)

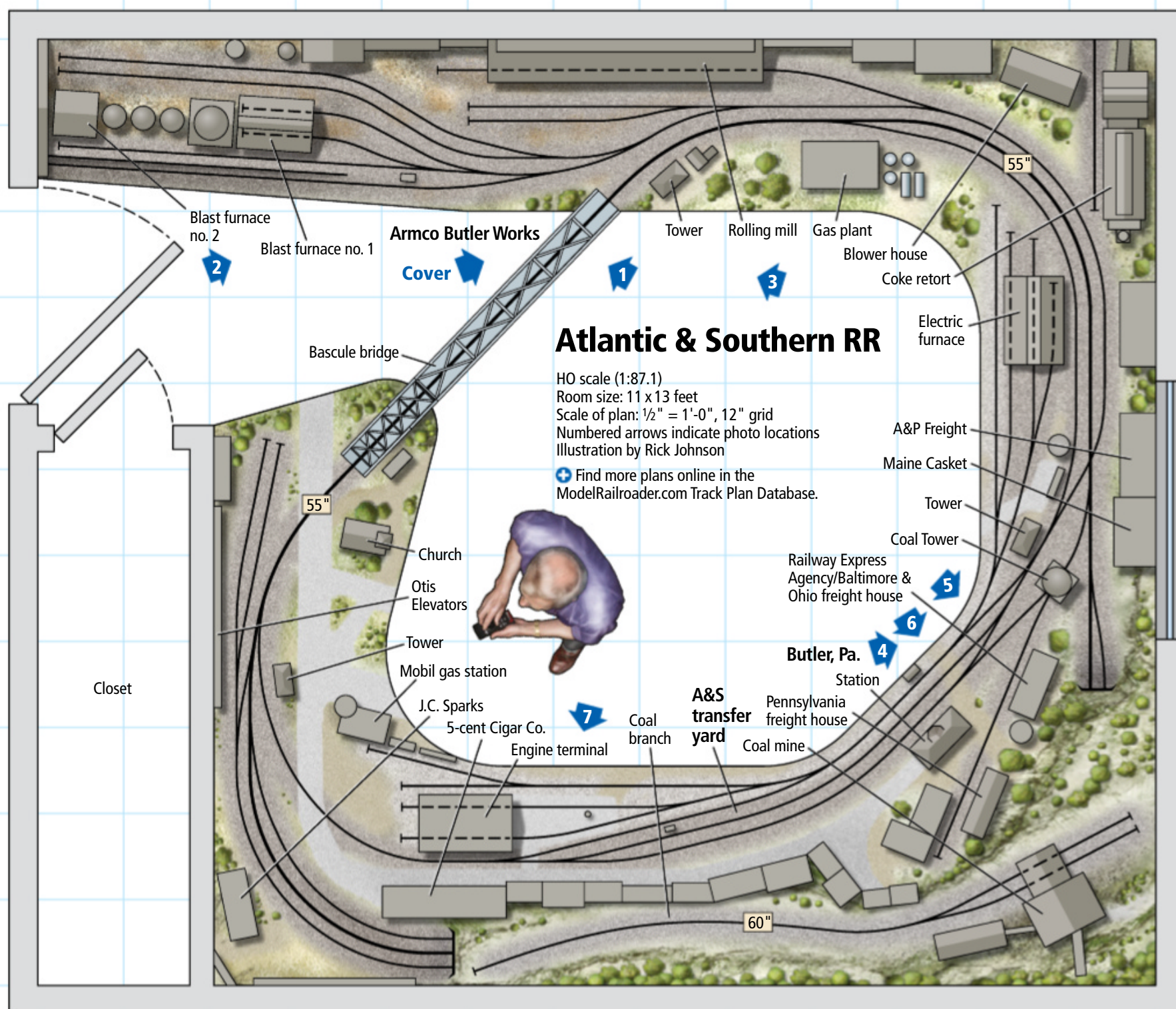
Roadbed: cork

Track: Atlas code 100 flextrack

Scenery: extruded-foam insulation board with commercially available ground cover

Backdrop: commercial backdrop mounted on Gatorboard

Control: direct-current cab control



Steel and other industries

The longest wall in the room is home to the Armco Steel Butler Works, manufacturer of high-grade stainless and specialty steel. The Armco complex consists of two blast furnaces, a rolling mill, a blower house, an electric furnace, a gas plant, and a coke retort. I built the structures from Walther kits. I also used two Plastruct steel mill front kits to bracket the rolling mill.

The blast furnace features mill workers in protective suits loading hot metal cars, as shown in the photo on page 38. To make the molten metal realistically glow, I painted it with fluorescent orange paint that's illuminated by overhead

ultraviolet "blacklight" LEDs installed in the furnace's loading area.

The other industries served by the A&S include a Mobil fuel-oil distributor, the Otis Elevator Co., and Sherwin-Williams Paint Co., among others. There's also PRR and B&O Railway Express Agency freight houses.

All the structures are kitbashed or modified kits that fit a specific area. For the warehouses I used Walther and Woodland Scenics (formerly Design Preservation Models) modular components. All the downtown structures are also Woodland Scenics (DPM) kits.

The ground cover is sifted dirt from my backyard combined with various commercially available ground foam

products. The streets and sidewalks are cardboard pieces cut to fit and painted with Floquil Concrete. After the paint dried, I used a hobby knife to carve cracks and expansion joints in the paved surfaces, followed by an India ink wash to bring out the detail.

A modified Walther's New River Mine kit is the focus of the upper level coal branch. I built the base for this branch line using another layer of 3/4" foam board. The rock outcroppings are cast from Hydrocal using Woodland Scenics rock molds. I made the forest canopy using clumps of green poly fiber covered with ground foam. An application of hairspray kept the ground foam in place.



4 Cosco Tower is a busy place as Alco RS-11 no. 716 leads a heavy equipment train past the caboose of a departing local freight. The Alco wears the A&S as-delivered scheme, designed and painted by Howard.



5 At the transfer yard, A&S no. 667 works a flatcar loaded with crated engines past the Railway Express Agency freight house. The Alco RS-1 wears the railroad's simplified paint scheme, which was inspired by that of the Illinois Terminal RR.



Railroad operations

The A&S main line is the outer loop of the track plan, with two staging tracks hidden under the coal branch. Because of space limitations, the upper level coal branch doesn't connect to the lower level. A focal point of A&S operations is the transfer yard, which includes a small engine terminal. This yard also provides a connection between the railroad and the steel mill.

The layout can comfortably support two operators. A typical operating session begins by moving empty coal or iron ore hoppers from the Armco steel mill yard to the A&S transfer yard. From there, the unit train of empties will move off the layout via the hidden staging tracks.

From hidden staging, an A&S or a B&LE unit coal or ore train will deliver loads to the transfer yard. An A&S switcher then sets out the loads as appropriate at the steel mill. The maximum train length is two or three locomotives with 22 to 23 cars and a caboose.

Other trains include passenger service provided by the B&O and Pittsburgh & Lake Erie railroads, running to and from hidden staging. A local freight switches the industries in Butler.

The steel mill is the largest customer on the layout and can keep an operator busy during an entire operating session. The steel mill crew moves bottle cars from the blast furnace and electric furnace to the rolling mill, as well as hauling gondolas full of scrap from the transfer yard to the electric furnace.



6 Pulling a cut of coal hoppers past the station, A&S no. 215, a 2-8-8-2 articulated, is the last steam locomotive on the Black Diamond Route.



7 Shop personnel finish overhauling Electro-Motive Division SD7 no. 1507. Howard modified the Proto 2000 model with a Walther's 567 diesel engine kit, scratchbuilt cab interior, and lighting from grain-of-wheat bulbs.

A freelanced fleet

For me the most enjoyable part of model railroading is painting motive power and rolling stock. I developed two distinctive paint schemes for the A&S locomotive fleet.

During the 1950s, railroads were looking for cost-saving measures. One way to save money was to eliminate the often elaborate, multi-color delivery paint schemes on diesel locomotives in favor of simplified, one-color liveries. The A&S was no exception and introduced a simplified paint scheme in 1957.

The black-and-green "as-delivered" A&S paint scheme is a modified version of a Southern Ry. design. I based the simplified 1957 repaint scheme on the solid lime-green livery worn by Illinois Terminal Ry. diesel locomotives.

For motive power, the A&S rosters a variety of Electro-Motive Division (EMD) and Alco diesels. The EMD GP7s, F7s, and SW7s and most of the Alco RS-1s and RS-11s wear the black-and-green, as-delivered scheme. Some Electro-Motive SD9s and Alco RS-1s wear the simplified lime-green scheme.

I use the engine terminal to display my custom work, including a shop crew changing out the prime mover on an SD7. This unit features a detailed and illuminated cab interior and engine compartment. I also used Hi-Tech Details

kits to convert two hood units with cab damage into cabless B-unit boosters.

I've painted freight cars in A&S livery, as well as paint schemes that support various rail-served customers along the A&S. All my freight cars have been upgraded with metal wheelsets and metal Kadee knuckle couplers.

Epilogue

My dad got me my first model train, an Athearn HO scale F7A and B passenger set, more than 55 years ago, and we built several 4 x 8 "plywood Pacific" layouts during my childhood. In my teen years, my interests switched to cars and girls. More than 30 years ago I got reintroduced to the hobby and have built three model railroads since then.

Model railroading is an art form that can be enjoyed at any age and provides the opportunity to learn a variety of skills, including historical research, layout design, woodworking, electrical, and model building, among others. I've especially enjoyed developing my own freelanced railroad, taking inspiration from my favorite prototypes.

With this hobby there's always a new project on the horizon or a new challenge to be mastered. My layout was mostly finished by 2008, so I focused on developing operations, detailing scenes, and building models.

In mid-December 2018, my wife and I sold our home to downsize for my upcoming retirement. This meant that I had to dismantle the A&S.

Even though this layout is gone, I've already drawn up plans for the A&S version 2.0. The new layout will have a larger steel mill and more coal mines. I just can't get enough of this great hobby. 



Meet Howard Gallagher

Howard has worked in the aviation industry for more than 45 years, most recently in technical operations for American Airlines. He and his wife, Debbie, have two grown children, Sean and Caitlyn, as well as two Yorkie pups, Pork Butt and Boo Boo. Howard's other hobbies include listening to classical music, drag racing, and building model aircraft.

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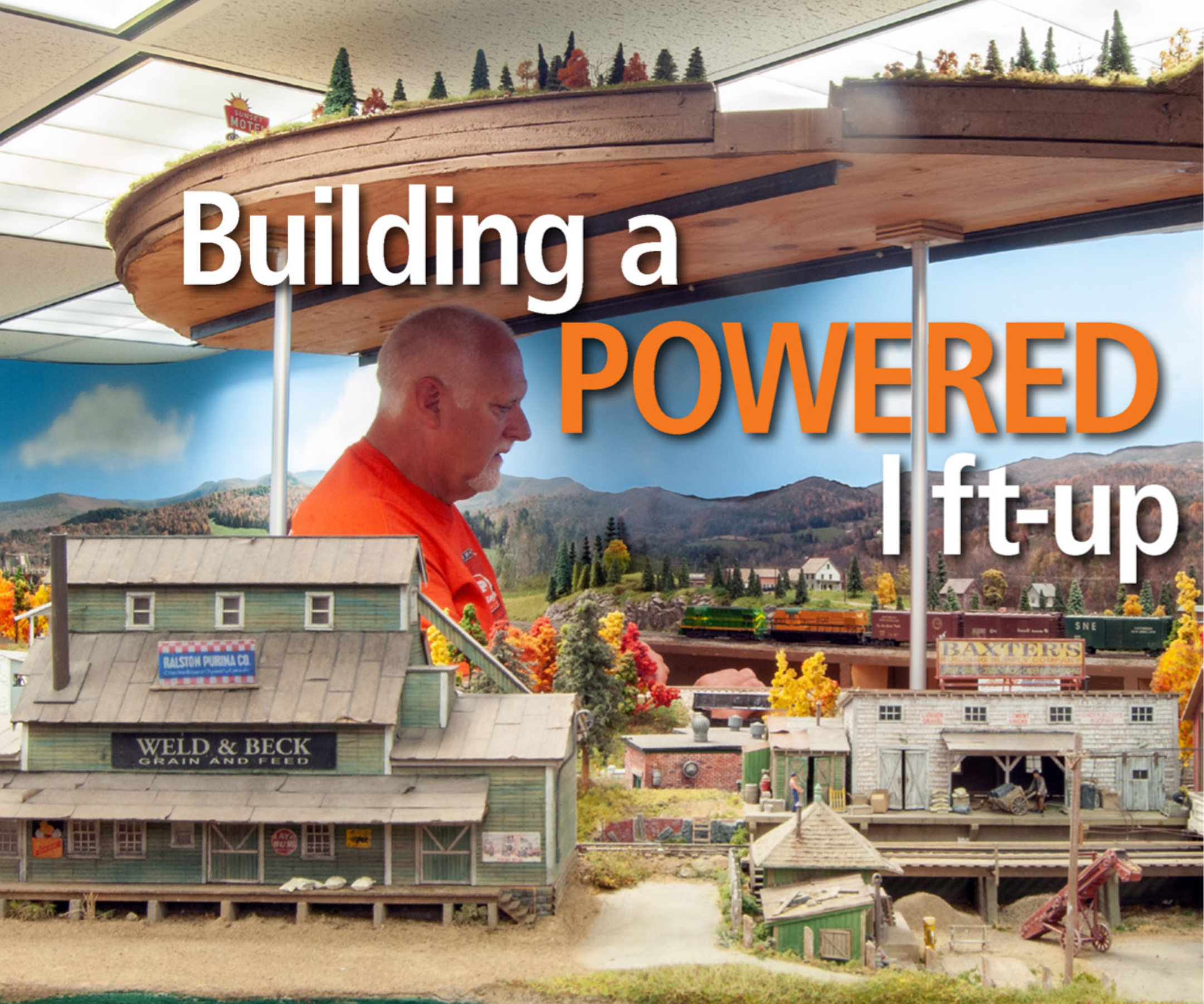
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Building a POWERED Lift-up

Linear actuators solve access problems on a wide layout peninsula

By Jason Fontaine • Photos by Lou Sassi

I encountered a tricky situation when expanding my HO scale Southern New England RR layout [featured in the July 2010 *Model Railroader* – Ed.]. I was building a peninsula that's 9 feet deep and 12 feet wide, which made it almost impossible to reach into for scenic or track work. The center and back were always out of my reach.

So I came up with a solution: a lift-out section. I'd seen many liftouts on other model railroads, but I wanted to be

able to handle it myself, rather than hand it to another person to set aside.

What I needed was to make it automatic. I considered running cables from the liftout to the ceiling to lift it, but that would detract from the scenery. My solution was to lift the section from below.

On the internet I found a site that sold low-voltage linear actuators, Firgelli Automations (www.firgelliauto.com). Linear actuators are electrical motors that extend like hydraulic cylinders,

Jason Fontaine stands under the self-lifting access hatch he built into his HO scale Southern New England RR. The hatch, which gives access to the back of a 7 x 12-foot section of his layout, elevates automatically.

rather than rotating. I wanted the liftout to raise up high enough that I could stand under it, so I ordered three Classic Rod Linear Actuators (part no. FA-35-S-12-XX), which have a 2-foot travel.

Building the section

I didn't want any track to be split when the section lifted, so I built a scenery-only area, approximately 3 x 7 feet, between two sets of tracks. There



section

are also no electrical connections on this section, which means there are no wires.

I screwed two pieces of $\frac{3}{4}$ " angle iron onto the underside of the $\frac{1}{2}$ " plywood base to give it rigidity. I attached the actuators to three points underneath.

For the scenery base, I used 1" thick extruded-foam insulation board. I glued layers together because I didn't have a single piece big enough to cover the entire area.

I didn't glue the foam terrain to the plywood; it simply rests on top. When the scenery gets dusty, I can lift the section up halfway and slide the terrain off the lifting section for cleaning.

I cut the edges of the foam to be the same size and shape as the plywood so it would fit flush against the adjoining terrain. To hide the seam in the front and back, I glued a $\frac{1}{2}$ " lip of styrene around



Jason blended the scenery on the lifting section so the seams are virtually invisible when lowered. A lip around the edge rests on the layout when lowered.



The hatch rises on three electric linear actuators Jason bought online. Each has a 2-foot travel, giving enough headroom for Jason to stand upright beneath it.

the edge of the foam, leaving an overhang that abuts the roadbed on both sides. That way, when I lower the section, the lip lies flat against the plywood sub-roadbed of the permanent layout.

I scenicked the foam section all around with ground cover. (Where it adjoined track, I used ballast and dirt).

On the sides, the section cuts through a hillside. I made that seam flush. For that I placed poly fiber and ground cover on the liftout section so when it comes down into place, the seam virtually disappears into the scene.

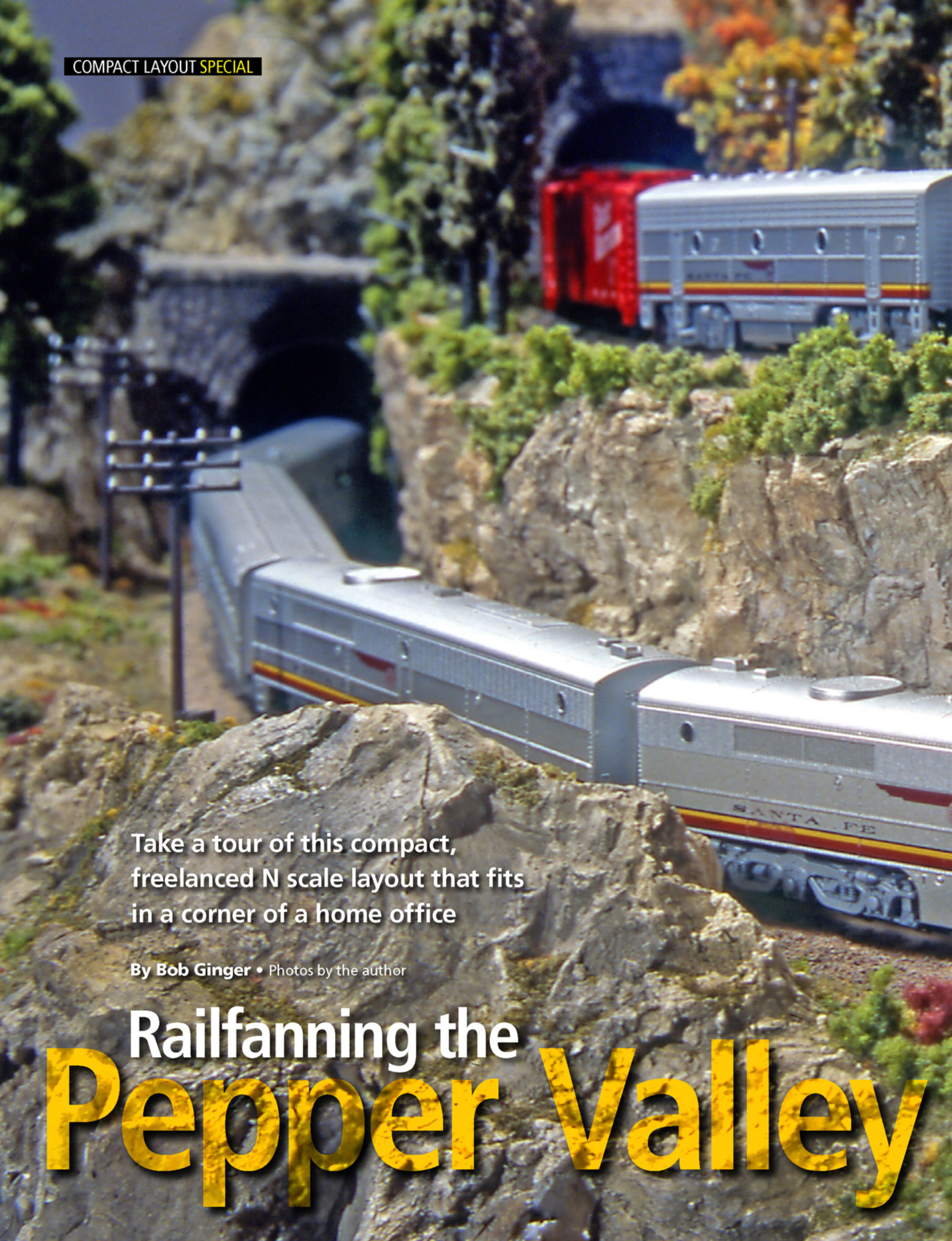
An uplifting experience

I was thrilled with the end result. Many visitors ask how I can possibly

reach the back to work on the layout. The lifting section blends so well with the adjoining scenery that unless they already know about it, they don't notice it until I activate it. Then when I power the actuators, there are many surprised and excited reactions as the section lifts up electrically.

I flip a toggle switch, and the section begins to rise up out of what looks like solid ground, which looks pretty amazing. Since it rises 24" from the posts that I secured the actuators onto, it allows me, at 6'-3" tall, to stand up straight under this section.

This has been a great conversation piece on my layout and has brought many smiles to people who experience it for the first time. 

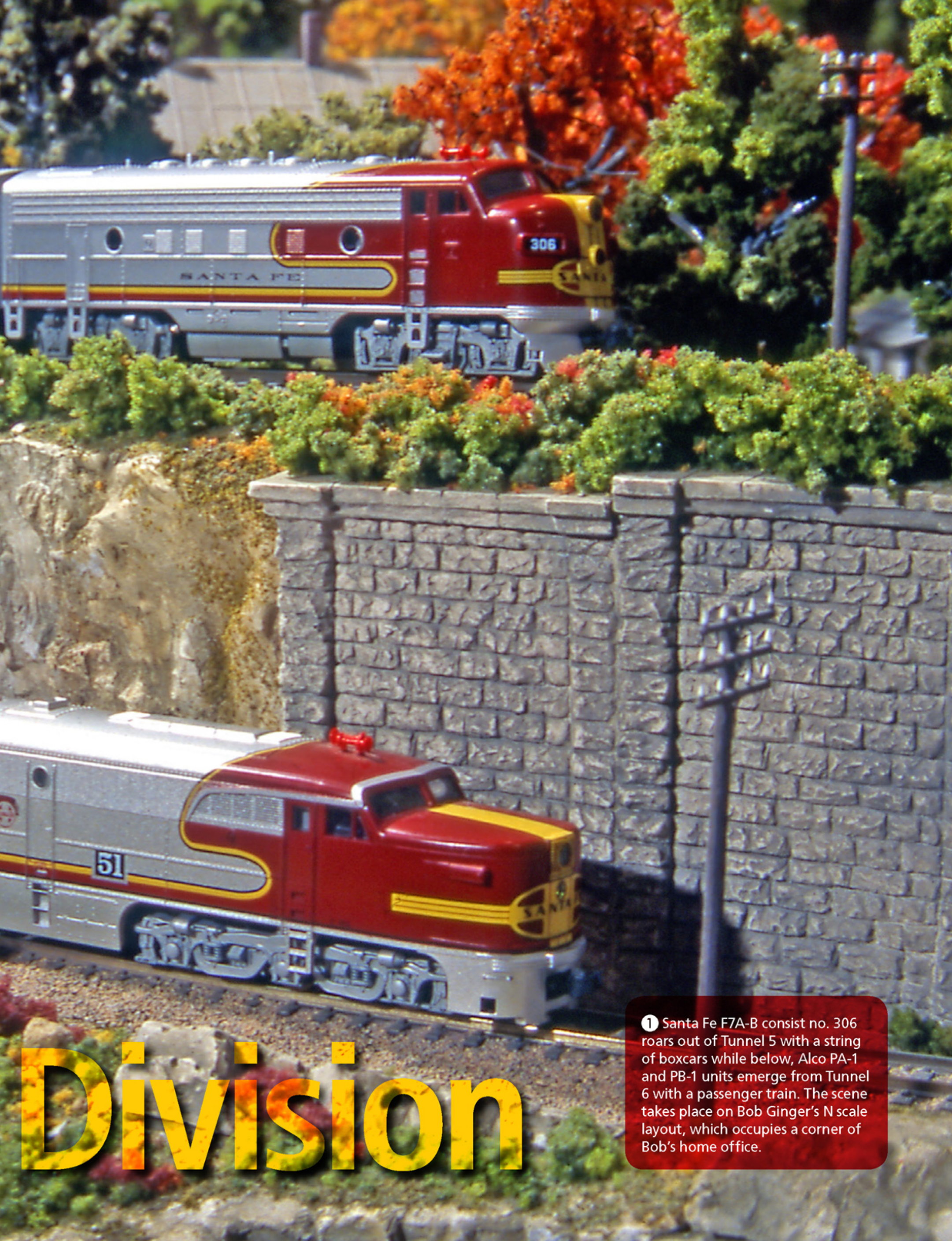


COMPACT LAYOUT SPECIAL

Take a tour of this compact, freelanced N scale layout that fits in a corner of a home office

By Bob Ginger • Photos by the author

Railfanning the Pepper Valley



Division

① Santa Fe F7A-B consist no. 306 roars out of Tunnel 5 with a string of boxcars while below, Alco PA-1 and PB-1 units emerge from Tunnel 6 with a passenger train. The scene takes place on Bob Ginger's N scale layout, which occupies a corner of Bob's home office.



② Leased Santa Fe 4-6-2 Pacific no. 1372, on point of local freight No. 14, waits patiently on the siding as the *Empire Builder* thunders toward Coyote Springs.



③ Bob uses drywall joint compound, painted with Woodland Scenics pigments, to pave the roads on his layout.

Paving and painting roads

I've often been asked how the roads on my layout were made. First I lay down two layers of Woodland Scenics paving tape to make the border for the pavement. Using a small putty knife, I fill this form with drywall joint compound. It generally takes three layers to achieve a uniform surface without cracks. After the compound has cured, I sand the surface with 100-grit sandpaper. After vacuuming up any dust, I rub the surface with fingers dipped in water to make a smooth finish, shaping and contouring the shoulders as I go.

Once the surface has dried, I paint on two coats of Woodland Scenics Asphalt coloring. After this has completely dried, I mix one part Asphalt with five parts Concrete coloring in a container. I liberally brush this mixture on the roadway in sections no more than 18" long. There will be a magical point when the color mixture is almost dry and I can vigorously rub my fingers along the roadway to create a weathered asphalt surface. Finally, I use an airbrush or drybrush technique to simulate oil staining down the middle of each lane with Testor's Model Master Grimy Black water-based acrylic paint. – *Bob Ginger*

October mornings around the Pepper Valley Division (PVD) are always bustling with activity with winter just around the corner. On the other hand, Dick, Dennis, and I have a leisurely day of fishing and railfanning ahead of us.

Our morning begins with a hearty breakfast of sausages and flapjacks smothered in maple syrup at Shirley's Diner in Coyote Springs, where conversation quickly turns to the Pepper Valley.

Both the Atchison, Topeka & Santa Fe and Great Northern operate freight and passenger trains over the N scale Pepper Valley, in the shadow of the Big Rock Mountains. Steam along the Pepper, as the locals call it, is already an endangered species, with both roads running a colorful mix of steam and diesel.

Both freight and passenger trains move over the division through the towns of Bellows Falls, Roseville, and Coyote Springs. Those few folks from the boonies of Bellows Falls and nearby logging and mining camps gather at Herb's General Store for supplies and gossip. Downtown Coyote Springs draws locals and out-of-towners with its passenger station, shops, and mouth-watering meals served at the Old Town Inn.

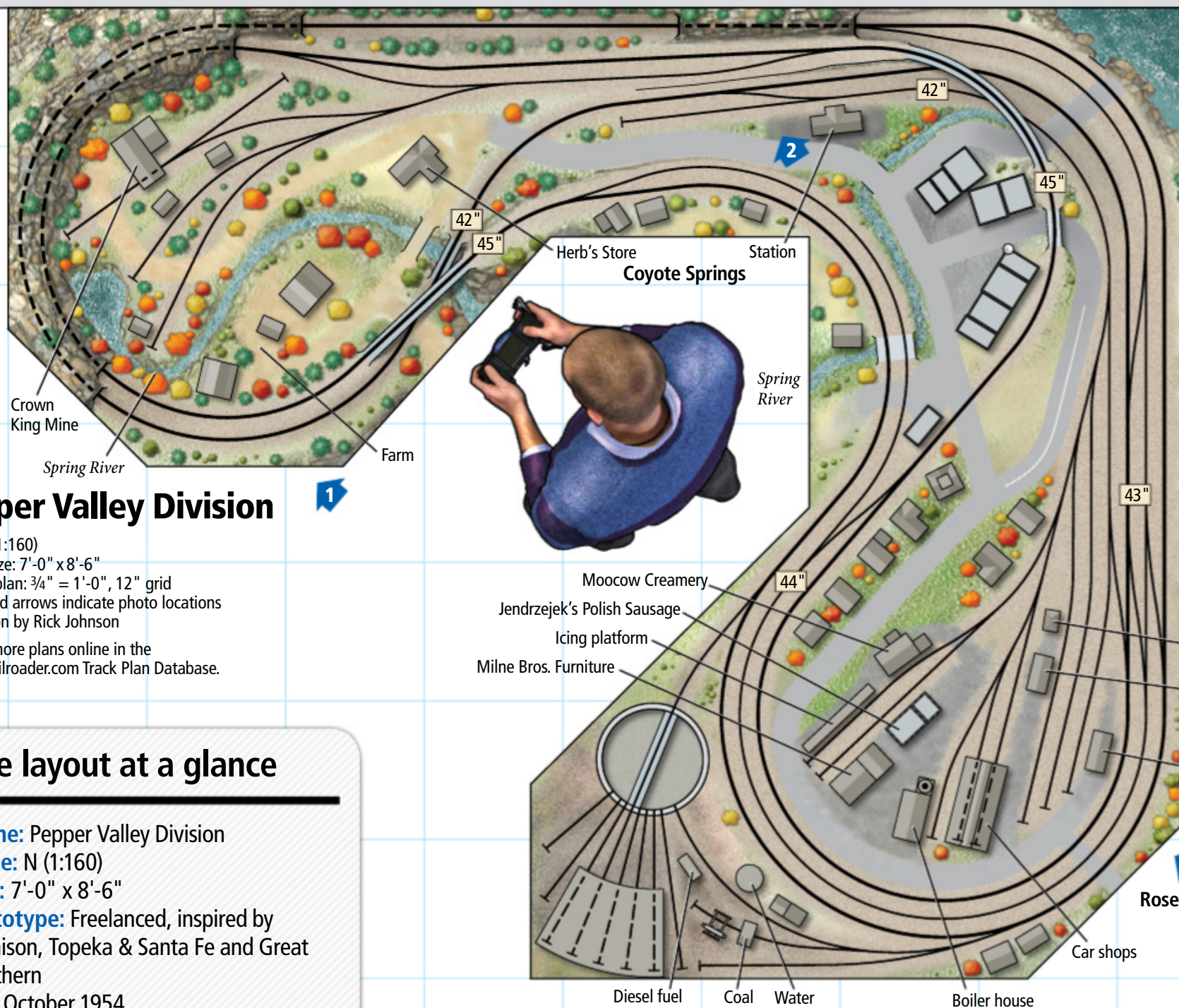
The division's freight yard and car shops are located on the very edge of Roseville, bordering Coyote Springs. Industries including Jendrzek's Polish Sausage Factory, Milne Bros. Furniture, MooCow Creamery, and an icing platform keep crews busy six days a week.

We pile into the '51 Hudson Hornet and drive a few miles out of town to find local freight No. 14, pulled by Santa Fe 4-6-2 Pacific no. 1372, waiting patiently as the *Empire Builder* thunders toward Coyote Springs. By late afternoon, train No. 14 will be cut out at various industries in Roseville.

After snapping off a few pictures, we continue on to Herb's General Store in Bellows Falls for the hot coffee and cider donuts Herb is famous for. We approach the crossing in front of Herb's in time to catch a fast reefer train flying by, pulled by Great Northern 2-8-2 Mikado no. 3219. The warm aromas and the potbelly stove in Herb's store offer a welcome respite from the frosty morning air.

Layout construction

The Pepper Valley was built at the urging of my wife, Gail, after the two of us constructed a 24 x 48-inch N scale layout together several years earlier. That



Pepper Valley Division

N scale (1:160)
Layout size: 7'-0" x 8'-6"
Scale of plan: $\frac{3}{4}$ " = 1'-0", 12" grid
Numbered arrows indicate photo locations
Illustration by Rick Johnson

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

The layout at a glance

Name: Pepper Valley Division

Scale: N (1:160)

Size: 7'-0" x 8'-6"

Prototype: Freelanced, inspired by Atchison, Topeka & Santa Fe and Great Northern

Era: October 1954

Style: walk-in

Mainline run: 61 feet

Minimum radius: 12"

Minimum turnout: no. 6

Maximum grade: 2 percent

Benchwork: Modified L girder, open grid

Height: 42" to 45"

Roadbed: cork over Homasote

Track: Peco code 55 flextrack with Electrofrog turnouts

Scenery: plaster gauze over extruded-foam insulation board and cardboard

Backdrop: none

Control: Digitrax Digital Command Control

layout now resides at the Arizona Model Railroad Society (AMRS) and is a hit with kids at public events and schools.

My current Pepper Valley measures roughly 7'-0" x 8'-6" and shares space in my home office. I have solved many a mental problem by taking a break to run a train over the road.

The main line is a folded dogbone configuration with two reverse

crossovers, industry spurs, a yard, and an engine terminal. An autumn theme forms the basis of the scenery on the freelanced plan, which has been under construction for about six years.

Recently I ripped up and replaced a section of main line between Bellows Falls and Coyote Springs in order to increase curve radius and lengthen the lead track into the Roseville Yard. An apparently simple track change and eliminating two turnouts has generated a host of new operating possibilities, especially in the yard.

Several more sidings are planned to increase the switching possibilities. Three operators will have their hands full during a session of road operations and switching tasks.

The benchwork is of modified L-girder construction, built in two sections. These sections were assembled in my garage and then combined in the train room. Structural legs and cabinet countertops support the layout, and the

whole unit is designed to move back and forth for maintenance access and photos.

Peco code 55 flextrack and turnouts are laid over cork roadbed glued to a Homasote base and foam risers. Terrain is two layers of plaster cloth coated with Hydrocal for extra strength. Foam risers for tracks are also covered with plaster cloth and a coating of joint compound. The plaster provides strength when the foam is carved out under a turnout to make room for switch machines.

All turnouts feature Peco switch machines activated by Team Digital eight channel DCC decoders controlled through Digitrax throttles. To achieve better reliability, I modified all of the Peco Electrofrog turnouts so the frog polarity is controlled by the switch machine contacts instead of contact with the stock rails. An extra set of contacts is wired for future detection circuits that will display routing state on a computer monitor. I already have the track schematic drawn in AutoCAD.



4 Bob builds most of his trees with weathered plastic armatures.

Building N scale trees

It seems that one can never make enough trees. But creating detailed trees and shrubbery can be a challenge in N scale. I feel realism is best achieved by using a variety of scenic materials and textures. The hundreds of late-summer to mid-autumn trees on the Pepper Valley are scratchbuilt using a variety of techniques.

Weathered armatures from Woodland Scenics and Accurail are great for making deciduous and pine trees once they're textured and painted. The first step is to cut any plastic mold nubs and flash from the trunks, then use 100-grit sandpaper to create rough bark texture. Then brush-paint each armature with a mix of Aged White, Dirt, and Railroad Tie Brown acrylic paints.

Once the paint has dried completely, grab your worst brush to drybrush streaks of Grimy Black followed by CSX Gray onto the trunks. The rougher the brush, the better the results.

I mix ground foam of varying colors from multiple manufacturers to simulate the shades found in nature. For example, medium green and olive green give the appearance of the bright and dull green leaf colors. For N scale, a mix of underbrush foam, coarse turf, and fine turf textures look good glued to tree armatures. I also built trees with Woodland Scenics fine foliage pulled apart into small pieces, dusted with coarse and fine turf foam. Other trees were made from weeds, poly fiber, and other materials. – Bob Ginger

On the road again

Approaching our fishing spot at the bottom of Bellows Falls, we wave to a track crew working at the nearby section house. Shortly after we drop our lines in the water, aging Santa Fe 2-8-0 Consolidation no. 1955 drifts by to drop off a cut of cars on a nearby spur. A couple hours later, with only two fish between the three of us, Dick suggests visiting our old friends at the Whispering Oaks Farm across the river.

Heading down the old gravel road, we cross the Spring River at the wooden bridge and drive up toward the farm. We arrive just as Grandma Nelson steps on the porch to call everyone to dinner. She

insists we join them for a delicious fried chicken dinner. With taste buds jumping for joy in anticipation, we instantly accept her gracious offer.

The farmhouse sits just across the tracks leading into the Big Rock mountains. After stuffing ourselves, we hike over to the rails just in time to see Santa Fe Electro-Motive Division F7A and F7B consist no. 306 roaring out of the tunnel, pulling a string of boxcars toward Coyote Springs.

Suddenly, two big Alco PA-1 and PB-1 units emerge from Tunnel 6 with a shiny passenger consist. The afternoon begins to wane, and Bob suggests driving to the Roseville Yard for more photo opportunities. So saying our goodbyes to



Grandpa and Grandma Nelson, we once again hop in the car and head out.

Scenery and structures

Real dirt, ground foam, twigs and a variety of gravel and talus make up the ground cover on the PVD layout. Rock formations, cast in place or in molds, are colored with Woodland Scenics dyes. Visual depth was achieved by spraying an India ink and alcohol mix into the colored rock crevices. To complete the effect, I drybrushed white highlights onto the rock outcroppings.

Dirt and differing textures of ground foam dusted over the rock outcroppings finish the scene. For an added scenic touch, rock castings covered with scenery texture form the layout fascia.

I modeled the rural, small-town feel of the late 19th century through the 1940s with scratchbuilt, kit-built, and factory-built structures along the PVD. Paint, weathering, and details make even plastic built-up structures look good.



I enjoy scratchbuilding coaling towers, sand bins, water towers, and other steam engine support buildings. Individual pieces of scale stripwood, metal castings, and plastic detail parts are my favorite scratchbuilding materials.

After experimenting with a number of weathering techniques, I settled on Brick Mortar Formula by Robert's Products for mortar lines on painted plastic brick structures. The product achieves a realistic appearance, providing a faded finish over the painted brick.

I create the painted red brick effect with a base coat of Polly Scale Oxide Red drybrushed with varying textures of Boxcar Red, Tuscan Red, Roof Red, Dirt, and other earthy colors. [The Testor Corp. has discontinued the Polly Scale line of acrylic paints. Many similar colors are available in Testor's Model Master line. – Ed.] Wait until the paint has dried for a couple days before applying a liberal coating of the mortar. As it begins drying, vigorously rub the building walls to remove excess material.

5 Pulled by Great Northern 2-8-2 Mikado no. 3219, a freight train passes Roseville Yard while an SD7 switches cars in the background. Though the Pepper Valley Division is freelanced, GN and the Santa Fe have trackage rights.

End of the day

At 4 p.m., we pass the car shops rounding the corner into the Roseville Yard and its adjoining industry spurs. A Great Northern SD7 is busy breaking up train No. 14 while two freights thunder by in opposite directions.

With our film supply exhausted, we spend the last daylight chewing the fat with the car shop crew winding up the day's labor. Suppertime approaches, and it's time to head home to eat and gather around the new Philco television.

Bidding our farewells, we begin the drive back to town just as the golden streaks of sunlight recede into the dark blue October sky. We may have forgotten about those two fish in the trunk, but for now, it was the perfect end to the day. **MR**



Bob Ginger

Bob and his wife, Gail, live in Phoenix and are active in the Arizona Model Railroad Society (AMRS). At the age of 7, he found his father's American Flyer trains under the Christmas tree, followed two years later by an N scale set. He built the B&H RR featured in the Student Fare section of the November 1974 *Model Railroader*. Now Bob and Gail are dreaming of a large scale garden railroad.

Add a dedicated programming track



An interchange track like this one in Larry Puckett's Charlottesville yard on his Piedmont Southern layout would make an excellent isolated programming track. This month, he shows you how to isolate and wire one.

Although I do much of my Digital Command Control (DCC) decoder programming using operations or ops mode programming (also known as programming on the main), I still prefer to use service mode for initial setup and testing.

For one thing, service mode allows you to safely power up a newly installed decoder on a track with limited current, which will protect the decoder in case of a short. It also means you can read the initial factory settings and save them to your computer.

No matter if you use just your throttle, or a computer program like DecoderPro, when it comes to programming decoders, there are several different options for

adding a programming track to your layout.

Service mode programming requires an isolated track because the commands are written to all decoders accessible to the command station. I know a lot of folks simply lay out a piece of track on a workbench with a pair of wires running to the command station.

While this is simple and easy, it does have its downside. For one thing, it means you have to pick up your locomotive to move it to the programming track, then again to carry it to the layout, which brings with it the risk of damage, scratched paint, or smudged weathering effects. For this reason, as well as simple convenience,

I prefer an installation on the layout.

The easiest option for adding a programming track on the layout is a single electrically isolated piece of track such as a garden track at the roundhouse or a similar setup. (To electrically isolate a section of track, you must cut gaps in both rails of the track.)

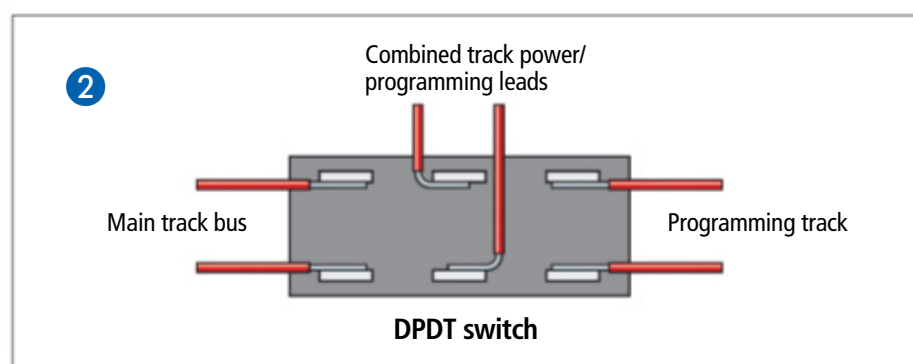
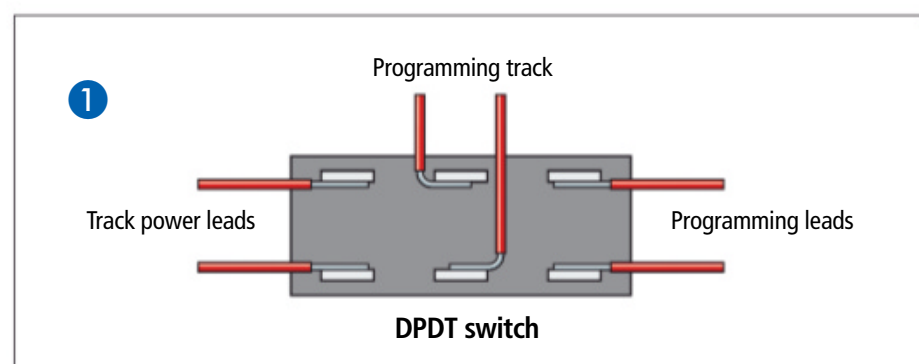
You could also use your turntable. This way you can drive the locomotive onto the turntable bridge, connect to the command station's programming leads (more on that in a minute), and go to it. Once you're done, you can switch back to power mode, test your changes, then move off. This option means you don't have to touch the locomotive in the process.

Another option for the layout is to electrically isolate a section of track as long as your longest locomotive in a yard or a siding (be sure to gap both rails at both ends of a siding). Staging yards are a good choice for these, especially if they're near your computer. With this track wired to a switch, you can drive the locomotive onto the track, throw the switch, and begin programming.

As with the previous method, you can then test your changes and drive off. This approach has the advantage of allowing you to program a pair of locomotives in a consist by simply stopping them so only the one to be programmed is on the isolated programming track. When it comes to three or more locomotives, you may have to uncouple them so as to isolate the one to be programmed.

If you do choose to install a programming track in the middle of a section of track as I described, it's a good idea to mark its location prominently. You could install a pair of wooden posts at each end or paint the ties at each pair of gaps a different color.

The idea is to make sure it's obvious where the rail gaps are so that no one leaves a set of wheels bridging those gaps during programming. If the gaps are bridged, then the programming commands can travel through the locomotive's electrical pathway, and you can end up program-



ming all your locomotives on the layout.

To provide added protection against damaging equipment by inadvertently parking a locomotive across the programming/main gap, you could also include two additional isolated track sections on each side of the programming track. Instead of a DPDT switch, this arrangement requires a four-pole double-throw (4PDT) switch, so when the programming track is selected, the two buffer sections on each side receive no track power.

OK, that should give you some ideas for how to set up a section of programming track. Now let's talk about ways to wire it.

Basic systems have a single set of terminals providing both track power and programming functions, and only one function can be active at a time. Systems like this were fairly common in the early days of DCC, but are rare now.

The more typical command station today has a pair of terminals for track power, as well as a pair for the programming leads, both of which can be used at the same time. Let's start with those.

First, let's assume you've isolated a section of track and soldered a pair of feeders to it. You're going to need a way to switch between the track power and programming feeds coming from your command station. The way I do this is to install a double-pole double-throw (DPDT), center-off switch in the fascia in front of the programming track.

I connect the track power wires

to one pole and the programming wires to the other. I then connect the wires from the programming track to the center pole of the switch ①.

Throw the switch to the power leads and you can drive your locomotive all the way onto the programming track. Then throw the switch to the programming leads and you're ready to program. When you're done, throw the switch back to the track power leads, and off you go.

I use a label maker to install "Power" and "Program" labels on the fascia so I don't have to remember which way to throw the toggle. Also, to prevent power drops from interfering with programming, I use 16-14AWG wire, and keep wires from the command station as short as possible. A programming booster such as the SoundTraxx PTB-100 may also be necessary to guarantee reliable programming and read-back.

Now let's take a look at the basic command station setup. Command stations like the Bachmann E-Z Command, NCE PowerCab, several older discontinued Digitrax systems, and possibly others I'm not familiar with, only have a

single pair of wires for both track power and programming.

This arrangement means you can't wire them the same way as I described above. Instead you install the DPDT switch backward. Let me explain that.

First, connect the command station's combined track power/programming wires to the center pole of the DPDT switch ②. Then



③ Fooling Murphy. The NCE Auto SW is basically a double-pole double-throw (DPDT) switch that senses programming commands and automatically switches the programming track leads from power mode to programming mode.

connect one pole to the main track power bus and the other pole to the isolated programming track. When you want to run trains, simply throw the switch to the track power side, then to program a decoder, set the switch for the programming track. You won't be able to run your locomotive all the way onto the programming track with this setup; you'll need to nudge it over once the last set of pickup wheels cross the rail gaps.

As I said, these systems only allow you to either run trains or program them, but not both at the same time. It also means that if you forget to throw the DPDT switch to the programming track, you'll reprogram every decoder-equipped locomotive on your layout. I'm a firm believer in Murphy's law, which basically says that if something can go wrong, it eventually will. So if I can find a way to prevent this eventuality, I'm all for it.

Fortunately, NCE has developed a workaround for

human fallibility, the Auto SW ③. This device is essentially an automated DPDT switch. It replaces the DPDT switch shown in ②.

On the Auto SW, the track power/programming leads are attached to the DCC-in screw terminals. On the other side of the circuit board there are four screw terminals, one pair for the track power leads and another pair for the programming track leads.

In its default state, the track power leads are active. However, once you begin programming, the Auto SW senses this and switches the track power leads off and the programming track leads on.

You don't have to remember to throw any switches, and Murphy will never get involved. This device will work with any DCC system that produces NMRA-compliant programming commands.

A dedicated programming track adds both convenience and practicality to your layout, and streamlines your programming workflow. 



I USE A LABEL MAKER TO INSTALL "POWER" AND "PROGRAM" LABELS ON THE FASCIA SO I DON'T HAVE TO REMEMBER WHICH WAY TO THROW THE TOGGLE.
— LARRY



ScaleTrains.com HO scale GE C44-9W diesel

With its myriad roadname- and roadnumber-specific detail variations, this HO scale General Electric C44-9W diesel-electric locomotive from ScaleTrains.com ensures that there's plenty for all the "rivet counters" out there to scrutinize. And they won't be disappointed.

For this review I tested a Rivet Counter-series model that came factory-equipped with an ESU LokSound v.5.0 dual-mode decoder. Like other ScaleTrains.com models, a lesser detailed, value-priced Operator series version is also available.

Prototype. Between 1993 and 2004, General Electric produced more than 3,500 Dash 9 series locomotives. Most of the Dash 9s were designated C44-9W with a 7FDL16 4,400 hp engine and a safety cab. Other major variations included the 4,000 hp C40-9 and C40-9W, equipped with a standard or safety cab, respectively. These were built for Norfolk Southern. The railroad has since uprated these locomotives to 4,400 hp and re-classed them accordingly.



The Rivet Counter series model includes many separately applied parts, including see-through air intake screens and radiator detail.

General Electric ended Dash 9 production when it introduced its Evolution series locomotives in 2004. However, most of the Dash 9 fleet still soldiers on in Class 1 service.

The model. The HO scale Dash 9's dimensions match a prototype diagram in the 1997 *Car & Locomotive Cyclopedia* (Simmons-Boardman). All molded and separately applied details match the model's prototype, NS no. 9692, which was originally built as a C40-9W in 2001.

The model's paint scheme matches the prototype after it was repainted in 2016. By this time it had also been uprated to 4,400 hp. Lettering, herald, and stencil placement all match prototype photos, including the correct D9-44CW classification under the locomotive number on each cab side.

The plastic body shell features well-defined molded detail, including engine access doors, door latches, and grills. The side air intake grills are see-through with separately applied radiator detail visible behind them. Flexible plastic handrails and stanchions are securely attached to the sills. Other separate detail parts include all grab irons, uncoupling levers, and m.u. hoses.

The Hi-Ad truck sideframes are especially well-done and include separate brake cylinders, piping, and rotating bearing caps.

Prototype-specific details include the communications antenna array on the cab roof, the Graham-White E-Bell on the front of the fuel tank, and black "eyebrow" grab irons above the windshield. The model also features a brass casting of the Nathan K5LAR24 airhorn.

The detailed cab interior includes seats and desktop-style controls. There are no crew figures, but they could easily be added by the modeler.

Mechanism. After removing the front and rear coupler draft-gear boxes, I could lift off the body shell. A can motor with dual brass flywheels is mounted in the center of a die-cast metal chassis. All axles are powered and all the metal wheels pick up track current.

The ESU LokSound v.5.0 decoder is plugged into a 21-pin socket on the main printed-circuit (PC) board. There are two cube-type speakers inside a die-cast metal enclosure over the rear truck. An additional die-cast metal weight is mounted over the front truck.

All lighting is provided by surface-mount light-emitting diodes (LEDs). The front headlight, number boxes, and walkway LEDs are mounted on the chassis. Rather than wires, contacts on the end lighting boards transmit electricity to additional LEDs mounted in the body shell.

PERFORMANCE CHARTS	
DRAWBAR PULL	3.7 ounces 52 HO scale freight cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
8.5 (start)	1.5
9	6
10	24
11	44
12	66
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	1
7	20
14	53
21	64
28	66

DCC operation. As shown in the chart below, the model accelerated smoothly from 1 scale mph to 66 scale mph in our DCC speed test. The prototype has a top speed of 70 mph. The model's decoder can also be set to 128 speed steps for finer slow speed control.

Our Rivet Counter model came equipped with an ESU PowerPack. These two super capacitors kept the sounds, lights, and motor running for up to 3 seconds without any track power. This provides more than enough time to get the locomotive over a stretch of dirty or problematic track.

Also shown in the charts, the model achieved nearly a quarter pound of drawbar pull, which is equivalent to 52 HO freight cars on straight and level track. During a hill climb test on our staff layout, the Milwaukee, Racine & Troy, the Dash 9 hauled a 17-car freight up a long 3 percent grade without slipping or stalling.

DCC sound. Pressing F8 begins an engine startup sound sequence and turns on the number box and walkway lights. The model's mechanism was virtually silent even at the slowest speeds – no motor hum to get in the way of the sound effects.

There are a total of 15 horn and two bell sound file options. On our NS sample, the default Nathan K5LA horn and Graham White E-Bell sounds match the prototype.

Other user-triggered effects include a headlight dimmer, radiator fan, and a realistic dynamic brake sound sequence. All the supported functions and some programming tips are listed in a printed user manual.

In addition to the button-controlled independent brake, my favorite function is DRIVE/HOLD. Pressing F9 kept the speed

constant while I used the throttle knob to manually notch the engine sounds.

Function 6 turns on the directional ditch lights, which flash when the horn is sounded. Out of the box, the ditch lights appeared to flash faster than prototype videos that I found. However the flash rate was easy to adjust using CV112.

Decoder programming was made even easier using an ESU LokProgrammer decoder/computer interface (sold separately). I also added some additional acceleration and deceleration momentum, changed the headlights to non-directional control, and changed the address to the locomotive cab number.

I advance consisted the Dash 9 with a ScaleTrains.com NS SD40-2. Both models support CVs 21 and 22, so I could set up function control under the consist address, which is convenient for m.u. operation.

DC operation. Sound and lighting effects are more limited on DC layouts, but the Dash 9 was still fun to operate. Sound and lights started at 7V. The model crept along smoothly at 1.5 scale mph after I advanced the throttle to 8.5V. It attained a 66 scale mph top speed at 12V.

I appreciated that there was some momentum built in. With a little practice I could start, stop, and change the direction of the locomotive without any interruption in sound. Under DC, the headlights and ditch lights are directional. Sounds are limited to the engine rpms that increase or decrease with throttle position. Quick deceleration causes a brake squeal to sound.

With its exceptionally high level of detail and optional prototype-specific sound decoder, this HO scale Dash 9 from ScaleTrains.com lives up to its Rivet Counter moniker. – Dana Kawala, senior editor

Facts & features

Prices: Rivet Counter version: \$264.99 (DCC sound), \$174.99 (DC, no sound). Operator version: \$189.99 (DCC sound), \$124.99 (DC, no sound). \$29.99 (detail kit for Operator versions)

Manufacturer

ScaleTrains.com Inc.
7598 Highway 411
Benton, TN 37307
www.scaletrains.com

Era: 1993 to present (2016 to present as detailed and decorated for NS no. 9692)

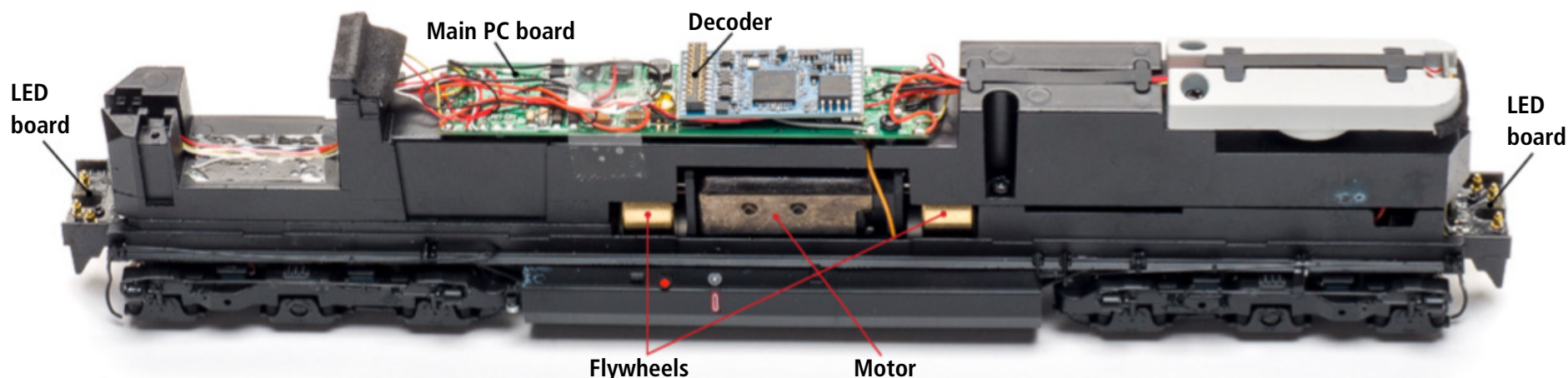
Road names (multiple numbers)

Rivet Counter line: Norfolk Southern; Atchison, Topeka & Santa Fe; Burlington Northern Santa Fe (Heritage II scheme); and Union Pacific.

Operator line: BNSF Ry. (Heritage I scheme), Chicago & North Western, Norfolk Southern, and Union Pacific.

Features

- All-wheel drive and electrical pickup
- Chemically blackened metal wheels in gauge
- Dual-mode ESU LokSound V.5.0 (Rivet Counter) or Essential (Operator) dual-mode decoder with cube-type speakers and two ESU PowerPack capacitors
- Five-pole, skew-wound motor with dual brass flywheels
- Light-emitting diode (LED) headlights, ditch lights, and illuminated number boxes
- Minimum radius: 18", 22" recommended
- Operates on codes 70, 83, and 100 rail
- Metal (Rivet Counter) or plastic (Operator) semi-scale type E knuckle couplers at correct height
- Rivet Counter version also has LED walkway lights and factory-applied, prototype-specific detail parts
- Weight: 1 pound, 7.5 ounces



The locomotive features a die-cast metal chassis with plenty of weight over the trucks for impressive tractive effort. On our Rivet Counter sample, the ESU decoder is plugged into a 21-pin socket on the main printed-circuit (PC) board.



Broadway Limited Imports N scale PRR T1 4-4-4-4

I recently reviewed two N scale diesel locomotives from Broadway Limited Imports (BLI) featuring Paragon3 Digital Command Control (DCC) decoders with Rolling Thunder (March and May 2019). Now, BLI's floor-shaking subwoofer system comes to N scale steam power, with the Pennsylvania RR class T1 4-4-4-4. The prototype locomotive cut a stylish figure on the tracks but suffered from maintenance and traction issues that sidelined it after only a few years. The BLI version, on the other hand, runs as good as it looks, with smooth DCC operation, realistic sound, and impressive pulling power.

An idea whose time never came. The duplex drive seemed like a good idea on paper. Proposed by the Pennsylvania's locomotive-building partner Baldwin in the early 1930s, the duplex drive bypassed the physical and practical limits of eight- and ten-coupled locomotives by splitting the engine into two independent units. With this design, it was theorized, cylinders could be smaller, mechanical stresses could be lessened, and side rods could be lighter, reducing hammer action. Baldwin was eager to prove the idea's viability, as the company was facing fierce competition from Alco's three-cylinder design, Lima's Super-Power concept, and the growth of electric and diesel-electric locomotives.

There were problems right from the start with the two prototypes delivered in spring 1942. Futuristically streamlined by designer Raymond Loewy, the T1 was intended to pull the Pennsy's flagship passenger trains. However, it had design problems – wheel slippage, repeated valve failures, and that long, rigid wheelbase – that weren't solved by the tweaks made when Pennsy ordered 50 production T1s in 1945 and 1946.

The futuristic-looking T1 was supposed to be the ultimate steam engine, but it fit that description only in the sense it was the Pennsy's last. In 1948, the Pennsy's governing board decided to put diesels on point of its top name trains. The T1s were relegated to secondary trains. By 1949, most of them were in storage; the last was scrapped in 1953. None survive.

The model. With its pointed prow and porthole-accented pilot, Loewy's prototype T1 design was a triumph of Mid-Century Modernism. Practical considerations took over for the production units, and the first batch delivered in 1945 had a more rounded nose and narrower skirts for better access to the valves. The 1946 batch replaced the streamlined pilot with a taller, boxier version without portholes and moved the PRR keystone onto the nose. This is the version depicted by BLI's model.

Broadway Limited Imports' N scale version closely resembles photos published in *Model Railroader Cyclopedia: Vol. 1, Steam Locomotives* (Kalmbach Books, out of print). The model's dimensions likewise measured up to the diagrams printed in that book, including the wheelbase and the driver diameter. That's a feat for N scale, a scale in which wheel flange depth often requires accommodations in this area. (It helps that the middle two sets of drivers are "blind," or flangeless, to make the engine better take sharp curves.)

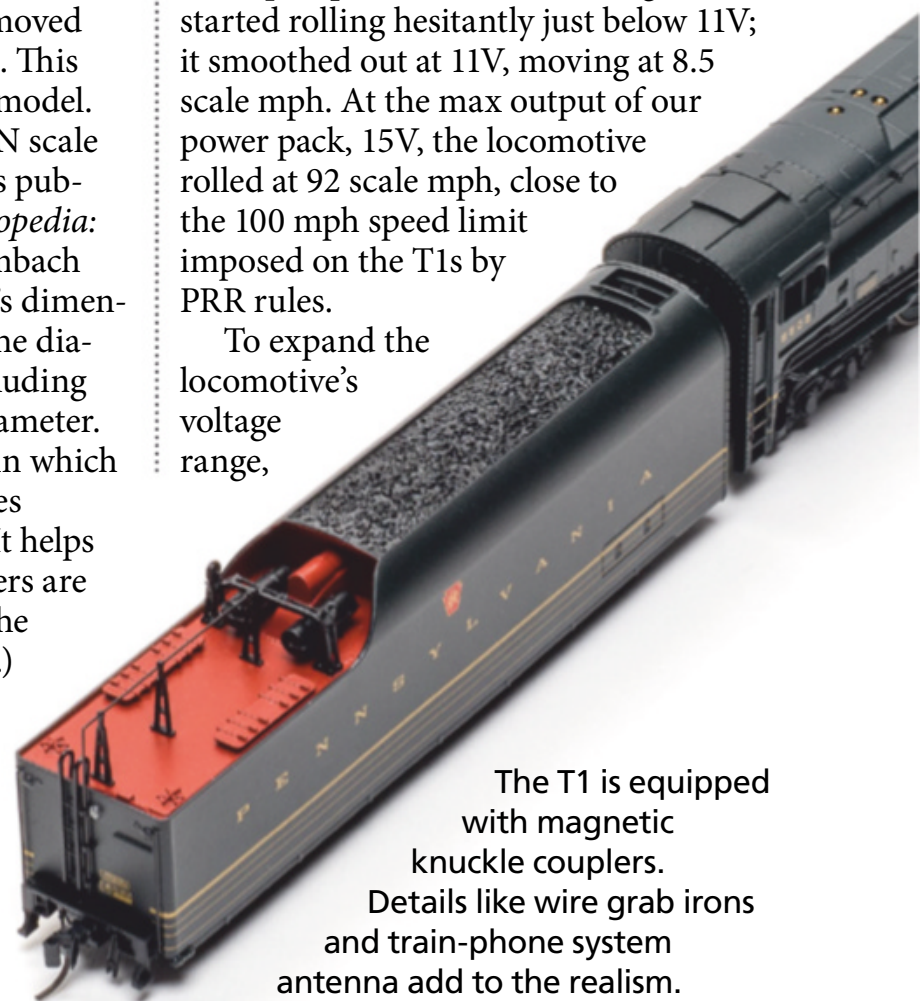
The model's paint scheme also matched published photos. The Dark Green Locomotive Enamel (an almost-black shade of green some call Brunswick Green) was smoothly and evenly applied, and the Dulux Gold

striping on the tender was crisp and straight. The lettering and numbers were likewise sharp. The tiny builder's plates printed on the skirting weren't quite legible under magnification.

Firing it up. As the Paragon3 sound decoder is dual-mode, the locomotive works both under direct current and DCC. I tried it first under DC, using a Model Rectifier Corp. Tech7 power pack and a BLI DC Master (sold separately). This latter device is wired between the power pack and the track to provide access to some DCC functions.

Sound-decoder-equipped engines take a lot of voltage to get moving, and BLI's T1 is no exception. As I turned up the track voltage, the sound of a fireman shoveling coal into the firebox began a startup sequence at 9.5V. The engine started rolling hesitantly just below 11V; it smoothed out at 11V, moving at 8.5 scale mph. At the max output of our power pack, 15V, the locomotive rolled at 92 scale mph, close to the 100 mph speed limit imposed on the T1s by PRR rules.

To expand the locomotive's voltage range,



The T1 is equipped with magnetic knuckle couplers. Details like wire grab irons and train-phone system antenna add to the realism.

I used our DCC system to lower the value of Configuration Variable (CV) 252, Direct Current Voltage Minimum (DC Vmin), to 80. This allowed the locomotive to start rolling at 8.5V.

Each engine featured four exhaust chuffs per revolution. The amount that the exhaust sounds go in and out of phase can be adjusted with CV194, using either the DC Master or a DCC system. A brake squeal played when I quickly reduced the engine's speed.

Rolling Thunder is Broadway Limited's subwoofer sound system. A receiver picks up signals sent by a Rolling Thunder-capable decoder and plays the deep bass tones through the subwoofer, enhancing the sensation of standing trackside. The system worked well, vibrating the floor with each chuff.

Next, I tested the locomotive under DCC, which allowed more control over the sounds, letting me trigger the air pumps, coupler clank, and other effects. The decoder's back-electromotive-force

PERFORMANCE CHARTS

DRAWBAR PULL 3 ounces
24 N scale passenger cars

SCALE SPEED (DC)

VOLTS	SCALE MPH
11	8.5
12	28
13	46
14	74
15	92

SCALE SPEED (DCC)

SPEED STEP	SCALE MPH
1	4
7	22
14	38
21	68
28	98

(back EMF) system automatically made the steam chuffs heavier or lighter depending on the load on the engine. I was pleased to find that I could also control that effect manually when running the locomotive, using function keys F5 and F6. (When stopped, those keys trigger the boiler blowdown and tender water sequence, respectively.)

The macro feature, triggered by function F27, records a sequence of operations like throttle changes and sound effects, then plays them back upon pressing F26. I tried it by pressing F27, executing several commands, then pressing F27 again to end recording. Backing up to my starting point, I pressed F26, and the engine went through its paces just as I'd done. You can set a CV to control how many times the sequence repeats. I can see this coming in handy when showing the layout at an open house or train show.

Finally, I hooked the engine up to our test bench force meter. With traction tires on its rear drive axle, the little engine mustered a muscular 3 ounces of pulling power. That's enough to haul 24 full-length N scale passenger cars on straight and level track.

A dream denied. Maintenance problems kept the T1 from delivering the steam-power revival the railroad and builder hoped it would. But the Pennsy's ultimate steam locomotive demonstrated that steam hadn't reached its upper limits, and if it weren't for the advent of cheaper-to-run diesels, who knows what might have happened? Though it didn't prowl the rails for long, the T1 did it in style. If you model the last days of Pennsy steam in N scale, let BLI's model prowl your scale rails. – *Steven Otte, associate editor*

Facts & features

Price: \$399.99

Manufacturer

Broadway Limited Imports
9 East Tower Circle
Ormond Beach, FL 32174
www.broadway-limited.com

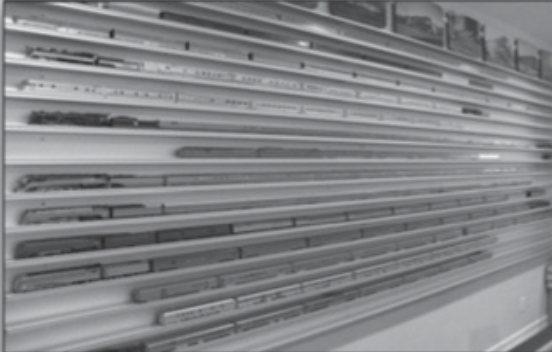
Era: 1945 to 1953

Road numbers: Pennsylvania RR nos. 5502, 5506, 5517, 5528, 5533, and 5539. Also available painted (Dark Green Locomotive Enamel) but unlettered.

Features

- Blackened metal wheelsets, in gauge; middle four driver axles are blind, rear two have traction tires
- Brass whistle and valve details
- Die-cast metal body
- Electrical pickup on six drivers and all tender wheels
- Flywheel-equipped can motor geared to first and fourth axles; side rods transfer power to other drivers
- Magne-Matic couplers front and rear, at correct height
- Paragon3 dual-mode sound decoder with Rolling Thunder
- Recommended minimum radius 9¾"
- Weight: 6.1 ounces (engine and tender), 4.1 ounces (engine alone)
- Wire grab irons and other detail parts

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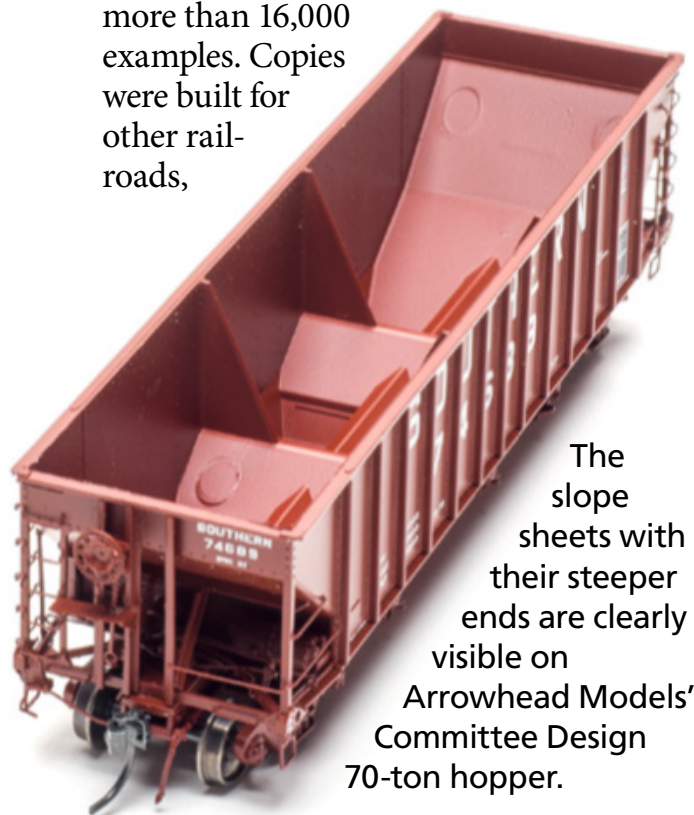


Arrowhead Models HO scale 'Committee Design' hopper

Design by committee isn't usually a ringing endorsement, but these new HO scale 70-ton coal hoppers from Arrowhead Models could certainly turn the tide.

The committee in question included Pennsylvania RR, Chesapeake & Ohio, and Norfolk & Western freight car engineers with the goal of developing a standard 70-ton coal hopper. Each railroad built a prototype car in its own shops in 1958 after the design was developed so it could be tested.

The N&W decided that a 70-ton car was too small after all, and never built another copy. The C&O liked the design enough to build 500 cars total. But it was the PRR that fell in love, commissioning more than 16,000 examples. Copies were built for other railroads,



The slope sheets with their steeper ends are clearly visible on Arrowhead Models' Committee Design 70-ton hopper.

including Denver & Rio Grande Western, the original Norfolk Southern Ry., and Western Maryland. The NS hoppers eventually found their way to the Southern Ry. when that road acquired NS in 1974.

The steel cars had 13 exterior posts and were of riveted construction. One part that did become a standard of sorts was the corner casting with a roping hold – used to attach cables for moving the cars at loading and unloading facilities – and an integral buffer block on the end. These castings were used by multiple railroads. Chesapeake & Ohio's cars had peaked ends, as did the PRR and N&W prototypes.

The cars were built from 1959 to 1966. Most lasted into the mid-1980s, with a few still around in the early 1990s.

Arrowhead Models' HO scale rendition matches published drawings to within scale inches, including the interior dimensions. Our sample was painted for the Southern Ry.

The oxide red paint is smoothly and evenly applied, and the lettering is sharp, opaque, and clearly legible. This model is equipped with roller-bearing trucks with turned metal wheels and separate brake beam detail. Kadee scale knuckle couplers grace the well-detailed draft-gear boxes, and are mounted at the correct height.

The models abound in separately added detail parts. All grab irons are wire, as is the brake piping and rigging. The slope sheet supports are exceptionally fine, as are the hopper door locks.

Facts & features

Price: \$48.95

Manufacturer

Arrowhead Models
P.O. Box 723
Sheridan, WY 82801
arrowheadmodels.com

Era: 1974 to mid-1980s, based on paint scheme

Road names: Southern Ry.; Denver & Rio Grande & Western; and Pennsylvania RR. Available as undecorated kit for \$48.50.

Features

- Kadee metal scale couplers, at correct height
- Railroad-specific hand brake, hopper door lock, and other details
- Turned metal wheelsets, in gauge
- Weight: 2.9 ounces, .76 ounce less than National Model Railroad Association Recommended Practice 20.1

The hopper locks and hand brake details are railroad specific, as are the trucks and myriad other details.

A convincingly molded coal load fits tightly in the interior of the car, and die-cast metal weights fill the voids between the hopper bays under the car. The car weighs 2.9 ounces, .76 ounce below the National Model Railroad Association Recommended Practice 20.1. Testing on our Wisconsin & Southern project layout went smoothly, with the car being noticeably free-rolling.

If you need the ultimate "Committee Design" hopper, be sure to track down Arrowhead Models' new offering.
– Eric White, associate editor

QUICKLOOK

Walthers Cornerstone HO scale American Bungalow kit

Price: \$29.98

Manufacturer

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

Era: 1910s to present

Comments: The American Bungalow is the latest addition to the Walthers Cornerstone series. The HO scale plastic kit measures 3⁵/₈" x 6¹¹/₃₂".

Introduced more than a century ago, the compact bungalow design has been popular in cities, where lot space is at a premium.

The kit consists of four walls, separate windows, doors, and main roof. The porch is a multi-piece sub-assembly. Other details include railings, stairs, downspouts, and utility meters.

The included instructions are easy to follow. The parts are crisply molded, requiring only minimal cleanup.

The kit's design makes it possible to paint most of the parts prior to assembly. I masked the fascia, bargeboards, and gutters before painting the shingles on the main roof. I also masked the clapboard siding before painting the trim on the walls.

The kit includes clear window glazing and printed paper window treatments. The latter makes it easy to add curtains, venetian blinds, or roller shades, preventing viewers from seeing through the structure. To avoid



damaging the clear acetate, attach the window treatments with white glue or clear tape.

If you're modeling an American city in the last 100 years, this kit is a must-have structure. Walthers also offers the Updated American Bungalow kit (no. 933-3791) with an enclosed porch and dormers. Pair these houses up and you have the start of a neighborhood. – Cody Grivno, Group Technical Editor

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P35432

QUICKLOOK

Bachmann HO scale test weight car

Price: \$39

Manufacturer

Bachmann Trains
1400 East Erie Ave.
Philadelphia, PA 19124
www.bachmanntrains.com

Era: 1930s to present

Road names: Burlington Northern, Baltimore & Ohio, Canadian National, and Union Pacific. Also available painted black but unlettered.

Comments: Used for calibrating track scales, test weight cars (also called scale test cars) provide a vital function for railroads and rail-served businesses. Bachmann Trains has released an accurately detailed HO scale test weight car, based on a design that's been used for several decades.

Test weight cars were simply spotted on track scales to ensure the scale's accuracy. These cars usually don't have train

brakes, just a simple hand brake, so the car weight doesn't change as the brake pads wear down. A test weight car would be placed at the rear of a freight train ahead of the caboose or last car (or cars, depending on a specific railroad's rulebook) equipped with train brakes.

The Bachmann model matches a prototype drawing of an 80,000-pound scale test weight car published in the September 1960 issue of *Railroad Model Craftsman*.

Our review sample is decorated for Burlington Northern no. 979006. The model's details and lettering match prototype photos, including the handling instructions on the placards.

The Bachmann model has a die-cast metal body with molded grab irons, running board, side hatches, and other

details. The handrail, placards, and brake staff and brake wheel are separately applied flexible plastic parts.

The chemically blackened, scale 36" diameter wheels are correctly gauged. The E-Z Mate Mark II knuckle couplers are mounted at the correct height.

The car weighs 2.5 ounces, which is .5 ounce heavier than National Model Railroad Association RP-20.1. The test weight car rolled freely during a run on our staff layout.

This car would make an eye-catching addition to an HO freight train and would be a fun way to enhance operation of a grain elevator or other track-scale-equipped industry on a model railroad. – Dana Kawala 



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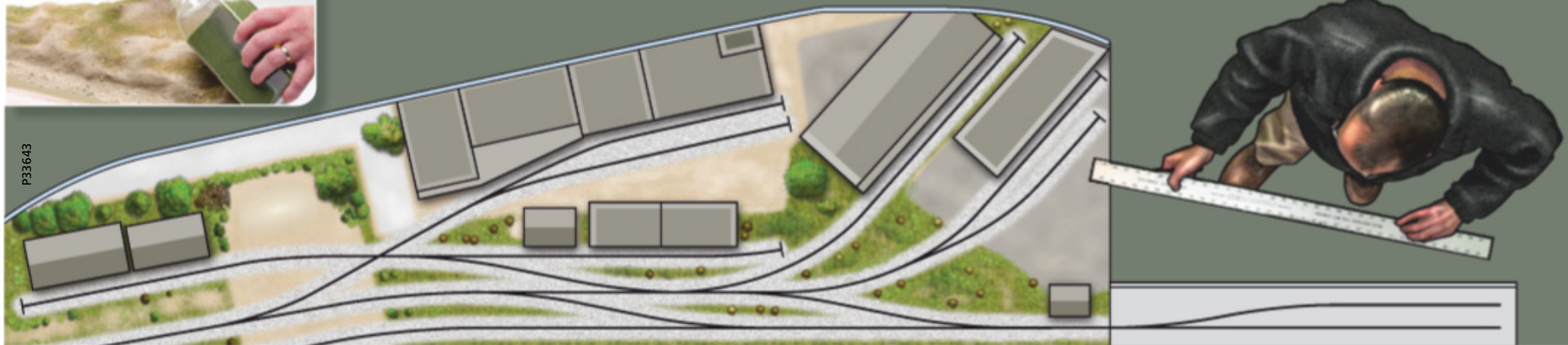
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The mother of invention

Today's Direct Traffic

Control (DTC) is a next-generation form of the timetable-and-train-order (TTTO) system. It answered challenges railroads faced in the late '70s and early '80s.

Railroading was desperate at the time. Losses from passenger service led to the formation of Amtrak in 1971. Penn Central's bankruptcy cascaded into the failures of other northeastern railroads, wreckage from which Conrail emerged in 1976. Chicago, Rock Island & Pacific ("the Rock") was abandoned in January 1980.

Railroads tore up infrastructure, especially on lines with medium- and low-density traffic. Lines were single-tracked and passing sidings ripped out. Train order offices closed, compromising a TTTO system that depended on operators along the line to relay communication between dispatcher (DS) and crews. Those offices that remained open were more distant from one another, making it difficult to adjust train movements affected by delays. On the other hand, radio technology had become highly reliable.

The Louisville & Nashville RR

seized the opportunity in 1979, adapting manual block system rules (see the August 2018 "On Operation") to radio communication direct from DS to crew. It implemented the system on its line from Flomaton, Ala., to Chattahoochee, Fla., formerly part of the *Gulf Wind's* route between

New Orleans and Jacksonville and recently in the news as a CSX spinoff.

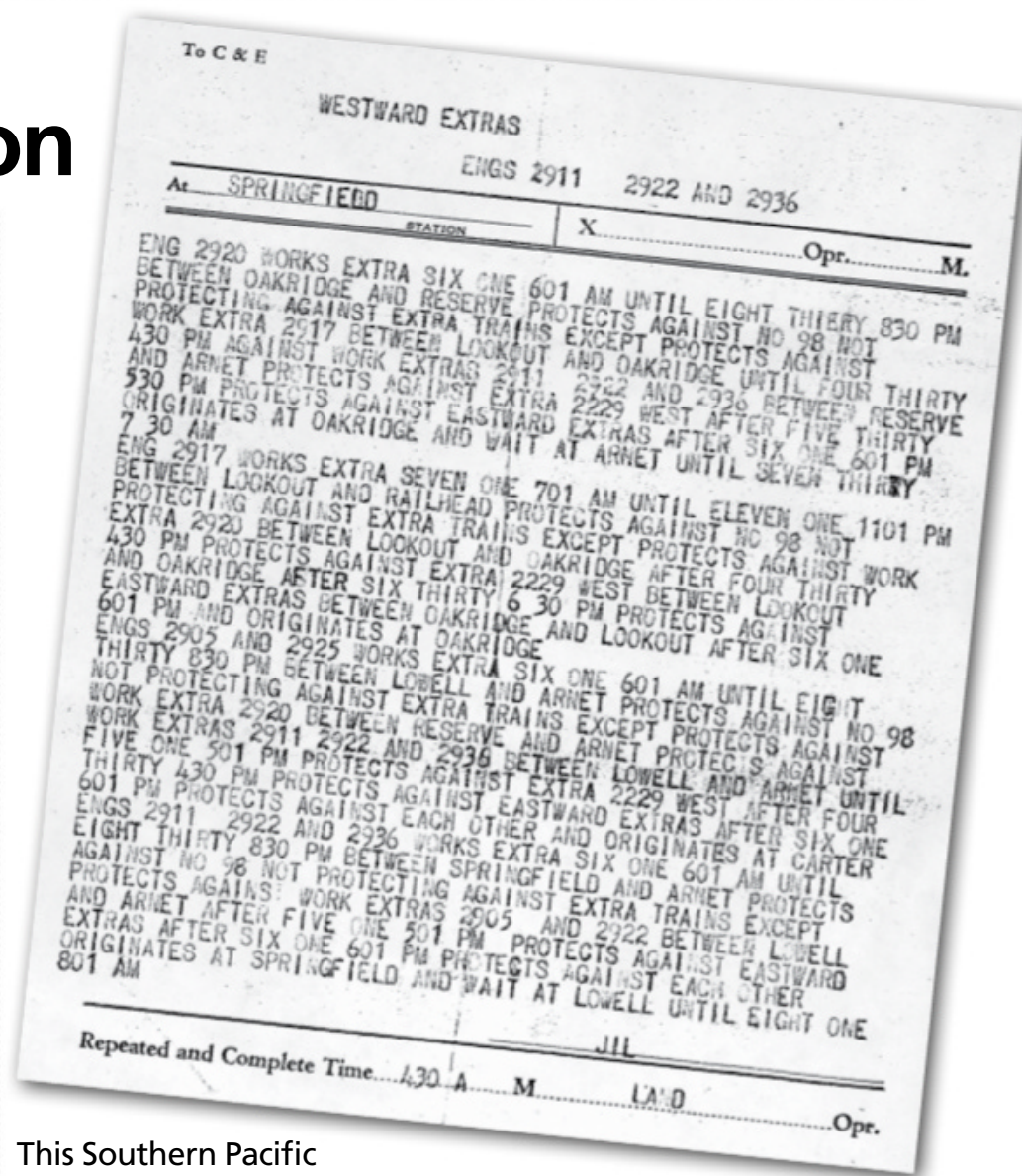
Frank Bryan's article "Farewell to the Train Order" in *Trains*, November 1986, explained how two L&N dispatchers, J.G. Lachaussee and D.H. Dean, developed a large panel displaying a track schematic on which they tracked train movements with pegs. I know several model railroads whose dispatching relies on similar panels, though magnetic tags identify the trains rather than pegs.

A perfect storm hit Southern Pacific's Carrizozo Subdivision in New Mexico between its namesake and Tucumcari in 1984. Rebuilding decrepit ex-Rock trackage on the El Paso-Kansas City route, failing motive power, and heavy traffic created a massive logjam that fried train order dispatchers. An SP veteran I know remembers the situation was so desperate that dispatchers with seniority knew better than to bid on jobs there. Given a train order example like the one shown above, crews felt the heat, too.

DTC helped SP relieve Carrizozo Sub congestion. Within months, SP installed DTC on its busiest remaining TTTO main, the Coast Line between Los Angeles and San Francisco.

What is DTC?

Sure, it's wireless, unlike telegraph or telephone. At its core, however, it greatly simplifies TTTO's point-to-point method and rules with block-by-block



This Southern Pacific train order would challenge even the most experienced railroader, making a strong case for Direct Traffic Control. John R. Signor collection

measure. In DTC territory, DS authorizes train movements from block to block just as air traffic controllers direct planes from airspace to airspace. It's well suited to lines where traffic levels don't justify an investment in Centralized Traffic Control.

Let's divide a railroad's line into arbitrary segments 10 miles long. We'll name three the Anna, Bess, and Cloy blocks, in order from west to east. Trackside signs mark the block boundaries, such as "END ANNA BLOCK ENTER BESS BLOCK." DS authorizes one train at a time to use a block, and the train's crew releases the block to DS when it no longer occupies it.

The block includes only main track; a passing siding isn't part of it. To meet two trains at Bess, DS gives the eastbound the Bess block and directs it into the passing siding there. The eastbound releases the Bess block after

completing these moves so the dispatcher can give Bess to the westbound.

Communications are written down and repeated just like train orders. Only after DS answers a repeat with "That is correct" may a train act on instructions.

Contemporary railroading continues to depend on DTC, which the *General Code of Operating Rules* describes in detail. It adapts to model railroad operation readily. Divide your railroad into blocks and name them. Connect DS and crews with inexpensive two-way radios. Have DS record authorities in a composition book; crews could use simple scratch pads.

As much as model railroading draws innovators, who will quarrel if your layout adopts DTC a decade or more before it reached your prototype? Necessity is the mother of invention. **MR**

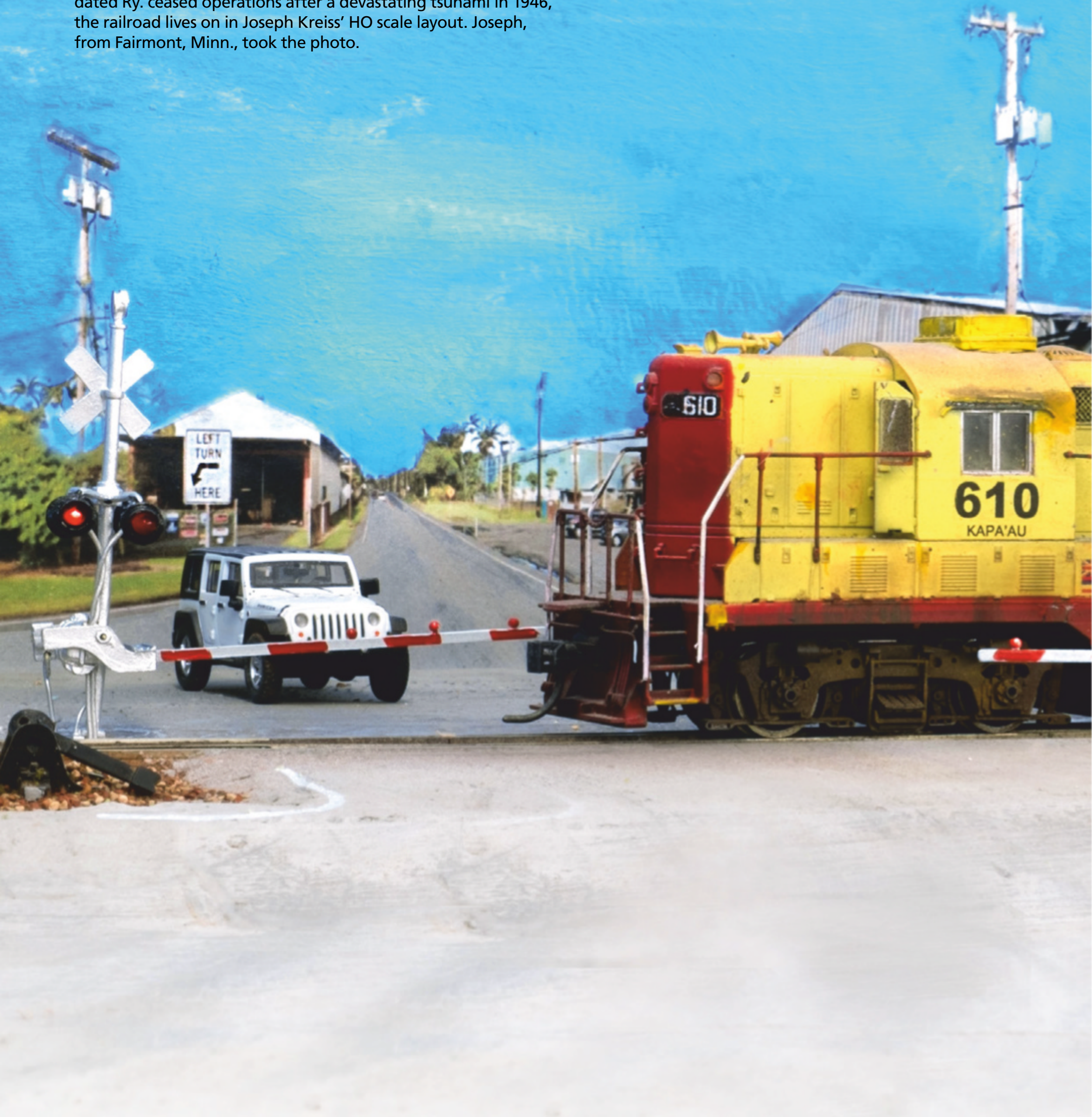


IN DTC TERRITORY, DS AUTHORIZES TRAIN MOVEMENTS FROM BLOCK TO BLOCK JUST AS AIR TRAFFIC CONTROLLERS DIRECT PLANES FROM AIRSPACE TO AIRSPACE.

— JERRY

● Trackside Photos

A group of tourists in a rented Jeep have to wait a bit longer to get to the beach as Big Island Rail no. 610 crosses Kalanianaʻole Avenue with the sugar mill turn. Though the Hawaii Consolidated Ry. ceased operations after a devastating tsunami in 1946, the railroad lives on in Joseph Kreiss' HO scale layout. Joseph, from Fairmont, Minn., took the photo.





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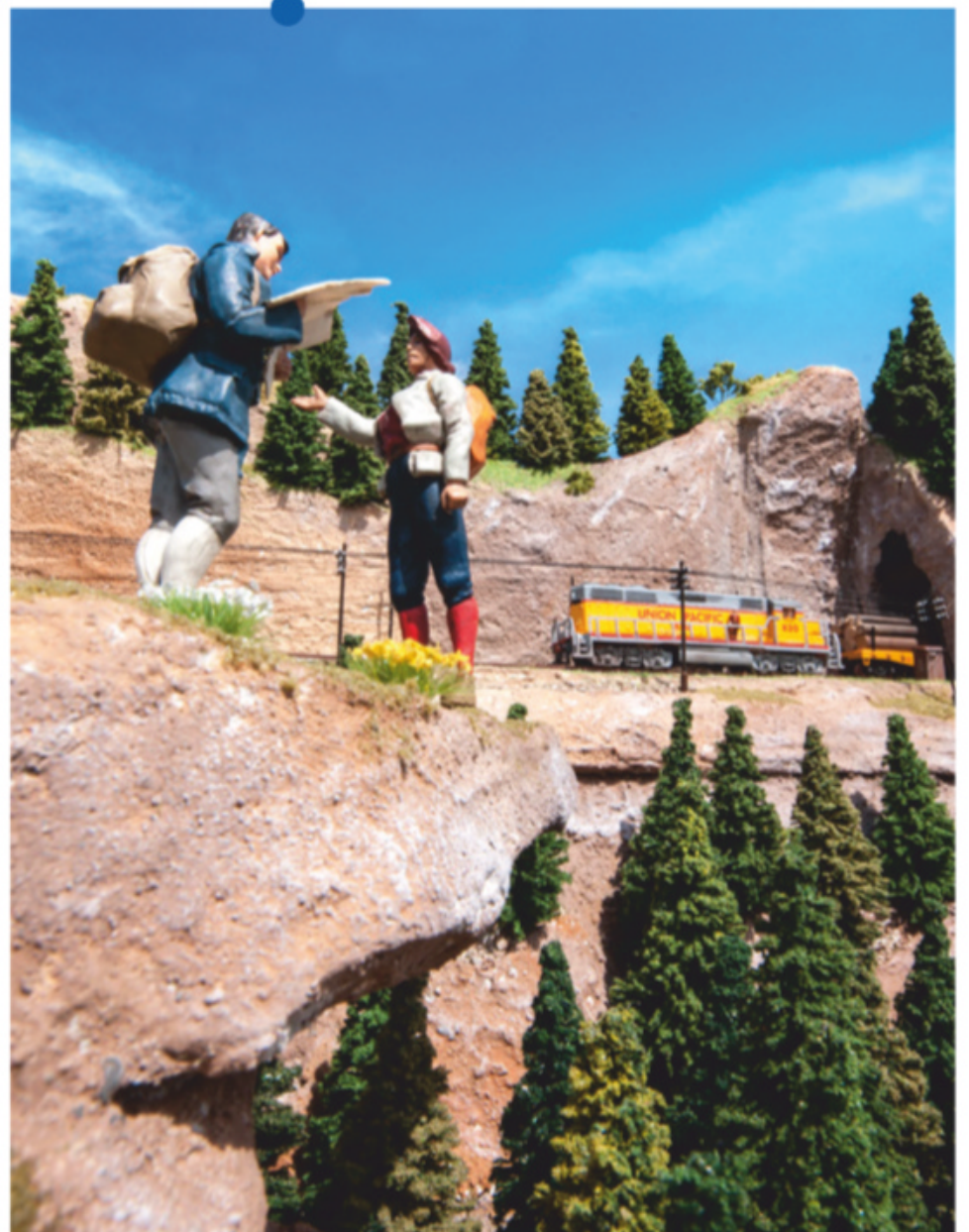




Engineer Ed West checks ahead as he eases his outside-frame Baldwin 2-8-0 – a recent acquisition of the Sandy River & Rangeley Lakes – and its local freight up to the platform at Strong, Maine. *Model Railroader* contributing editor Lou Sassi photographed the Bachmann engine on his On30 SR&RL layout. Lou's friend Jerry Strangarity modified the tender as well as painting, lettering, and weathering the model.



"Now will you believe we're lost?" The gift of two 1:32 scale mountain climber figures inspired Davide Raseni of Trieste, Italy, to stage this forced-perspective scene on his N scale diorama. He photographed the scene under natural light. The Union Pacific GP40 helper engine is an Atlas model.



An Electro-Motive Division GP40-2 leads a CSX local freight past the fertilizer dealer near Doswell, Va. Malcolm West of Qualicum Beach, B.C., photographed the scene on his N scale CSX Piedmont Division layout. The locomotive and cars are Atlas models, and the trees are SuperTrees from Scenic Express.

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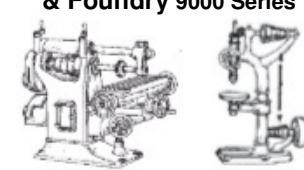
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Send your submissions to: *Model Railroader* — Classifieds 21027 Crossroads Circle, P.O. Box 1612 Waukesha, WI 53187-1612 Toll-free (888) 558-1544 Ext. 440 Fax: 1-262-796-0126 E-mail: onlineclassads@kalmbach.com. **All ads must be prepaid and pertain to the subject of model railroading.**

Schedule of Events

AZ, GLENDALE: ARHS Model Train Swap Meet. Glendale Christian Church, 9661 North 59th Ave. Saturday, May 11, 2019, 9:00am-1:00pm. Admission \$5.00. Tables \$25.00 to sign up send stamped envelope, check or money order to ARHS, PO Box 5816, Glendale, AZ 85312-5643. Contact: Craig Faris 623-340-3529.

CA, FREMONT: Niles Depot Historical Foundation & Tri-City Society of Model RR Club invites you to the Open House. Niles Depot Museum, 37592 Niles Blvd in the Niles Plaza. June 22-23, 2019. Saturday, 10:00am-5:00pm and Sunday, 10:00am-4:00pm. Two layouts in operation. http://www.nilesdepot.org

FL, OCALA: Lions Semi-Annual Train Show. First Christian Church, 1908 SE Fort King St. Saturday, June 8, 2019, 9:00am-3:00pm. Adults \$5.00, children 12 and under free w/ adult. Bring two canned goods and receive \$1.00 off admission. Information: Bob 352-694-6381 or cell 352-208-5284

FL, TAMPA: 21st TAMPA MODEL TRAIN SHOW. Florida State Fairgrounds (Special Events Center). Saturday, June 1, 9:00am-5:00pm and Sunday June 2, 10:00am-4:00pm. Adults: \$9.00 good for both days. (under 12 free). Large award-winning operating layouts. Miller, 106 N. Rochester St., Arlington, VA 22213. 703-536-2954, www.rrshows@aol.com

IL, COLLINSVILLE: 13th Annual St. Louis Railroad Prototype Modelers meet. Gateway Convention Center. July 26-27, 2019, Friday 9:00am-9:00pm and Saturday 9:00am-5:00pm. Admission: \$25.00 for both days; \$20.00 for Saturday only. For information, Google: STL RPM or Contact: John Golden at golden1014@yahoo.com or Lonnie Bathurst at Bathurst@litchfieldil.com or 217-556-0314

IL, GREENVILLE: American Heritage Railroad Train Show @ American Farm Heritage Museum 1-70 @ IL Rt. 127 (Exit #45). Saturday, June 8, 2019, 10:00am-4:00pm. Admission: \$5.00, under 12 FREE. Train ride with paid admission. Operating layouts. Dealers welcome \$15.00 per table. Contact Jim @ 217-825-6230.

IL, ST. CHARLES: 43rd Annual Kane County Railroadiana and Model Train Show. Kane County Fairgrounds, 525 South Randall Rd. Sunday, June 9, 2019, 10:00am-3:00pm. Admission: \$6.00 w/tax. Tables \$60.00. For information: 847-358-1185, RussFierce@aol.com or www.RRShows.com

IN, FORT WAYNE: Garrett Model Railroad Club & RxR Mania - Model Train & Toy Show and Sale at 2000 N. Wells Street, Zip 46808. (Old YWCA) Saturday October 19, 2019, 9:00am-3:00pm. Adults \$5.00, under 12 free. \$20.00 per table, 5+ tables \$15.00 each. Info: www.RxRMania.com or 260-715-2519.

KS, HUTCHINSON: Center of the Nation Model Railroad Expo, Kansas State Fairgrounds, Sunflower North Building. June 1-2, 2019, Saturday 9:00am-5:00pm and Sunday, 10:00am-3:00pm. Adults \$6, under 12 free w/paid admission. Contact, Don Phillips, 620-662-5906 or don2013p@gmail.com or www.kansascentralmodelrailroaders.org

KS, KANSAS CITY AREA: Turkey Creek Division Train Show/Swap Meet. SM North HS cafeteria, 7401 Johnson Dr. Overland Park, Zip 66202. Saturday, July 27, 2019, 8:00am-3:00pm. Layout tours 3:30pm-8:30pm. Vendors registrants contact Larry Diehl 816-804-0152, ldiehl066@gmail.com or www.tcnmra.org

MS, GULFPORT: 615 Pass Road, Zip: 39507. November 9-10, 2019. Saturday 9:00am-5:00pm, Sunday 10:00am-5:00pm. 2 Days with 20,000 sq. ft. Indoor Display Space, 20,000 sq. ft. of Outdoor Trains. www.MCMRCM.org, 228-284-5731.

NC, SPENCER: Model Train and Railroadiana Show at the North Carolina Transportation Museum. May 18-19, 2019. Saturday 9:00am-5:00pm. Sunday 12:00pm-5:00pm. Dealers, layouts, clinics, train rides and more for the whole family! Details: nctrans.org or 704-636-2889 ext. 251.

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

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

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

TN, JOHNSON CITY: George Carter Railroad Museum Train Show. East Tennessee State University MINIDOME, 1081 John Robert Bell Drive. May 31, & June 1, 2019. Friday Noon-6:00pm and Saturday 10:00am-4:00pm. Admission \$6.00, under 12 free. Free garage parking. Vendors, working layouts, live steam. Contact Roger Tienart 423-791-4937.

TX, AUSTIN: Austin Area Train Show, Williamson County Expo Center, 5350 Bill Pickett Trail, Taylor, TX (by Dell Diamond). May 4-5, 2019, Saturday 10:00am-5:00pm, Sunday 10:00am-3:00pm. Admission: \$7.00, children under 12 free. Vendors, model and lego railroads, home tour included. For more info, visit https://austinrailway.org/trainshow.html

WA, PORT ANGELES: North Olympic Peninsula Railroaders' 20th Train Show & Swap Meet. Clallam County Fair Grounds. September 21-22, 2019. Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. FREE Admission & Parking. Several operating layouts. Scales Z to G & beyond welcome. Tables \$20.00 Contact stevenstripp@juno.com

WI, LA CROSSE: Rail Fair, Copeland Park, Rose & Clinton Streets. July 27, 2019, 10:00am-4:00pm. Admission \$5.00, under 12 free. Railroad Show, Sale & Exhibition. Model Toy & Antique Trains & Memorabilia, Railroad Exhibits & Displays. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383

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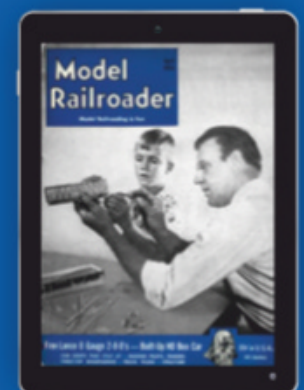
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Still hard at work after all these years

Back in 1973, the Allegheny Midland model railroad was born. The idea may have developed farther back than that, but the original track plan is dated March 1973, and I did the artwork for the custom decals that year.

I'm not certain when the AM was dismantled in my basement; it was either December 1999 or December 2000. But it had a good run while it lasted. Yes, there are times when I miss the railroad, especially now that there are really good sound systems. I did have good steam exhaust sound, thanks to Power Systems Inc. (Dynatrol), but when the railroad was set in more recent times, I never had a chance to hear a trio of Alco Century 636s chug up Cheat River Grade.

Every so often, I'm reminded that the Allegheny Midland, which I usually referred to as the Midland Road, still exists. Allen McClelland includes AM units in his Virginian & Ohio consists, and several manufacturers have produced rolling stock and even locomotives lettered for the Appalachian Lines-era Midland Road. The accompanying photo reminded me of several things I learned along the way from concept to relative completion of the Allegheny Midland. But first, a little history.

Years ago, the Hobby Industry Association of America had its big annual trade show in Chicago. I was then editor of *Railroad Model*



An Allegheny Midland boxcar continues to generate ton-miles on the continent's rail system, here paying a visit to Richard Deuso's Lamoille Valley. Richard Deuso photo

Craftsman. One evening, Ted Krasel of Microscale Decals asked me whether I thought Microscale should expand their line of military decals into the model railroading field. I thought that was a good idea and urged him to do so.

Ted later thanked me for my strong support by offering to do a run of custom decals, should I ever need some. I got busy on the artwork – it's easier to do your own artwork than you might think at 8x HO scale – and Ted followed up on his promise.

Over the years, some of those decals have found their way into friends' hands, including those of Richard Deuso, who used them to letter the AM boxcar shown above. Seeing his well-constructed model in an Appalachian setting – albeit northern Appalachia rather than the AM's central-Appalachian

home – brought back some wonderful memories.

If you've ever tried to weather a yellow freight car or locomotive, you'll readily appreciate Richard's fine work. It's far too easy to wind up with something that just looks dirty as opposed to weathered.

Those of you who've followed my modeling over the decades will recall that I was a bit of an era shifter. I started to model the end of steam in the 1950s but soon discovered that steam locomotives of the desired quality and price weren't available. So the era quickly shifted to second-generation diesels.

That period also marked the debut of the Appalachian Lines, following a discussion about railroad mergers that Allen McClelland initiated. Atlas's early Electro-Motive Division GP38s, GP40s, and SD35s provided many of the horsepower-hours for my Allegheny Midland and Allen's Virginian & Ohio. I also had units lettered for Steve King's Virginia Midland. Steve, the third member of the AL trio, models in N scale.

As better brass steam became available (mainly thanks to Key Imports in the early 1980s) and relatively more affordable as my career advanced, the era finally shifted back to 1957. I'm still not certain that would have happened had high-quality SD45s and similar power been available with today's diesel sound systems; a trio of 45s attacking a grade with turbos singing is a sound to behold!

Another lesson to take away from the AM's developmental period is to get a head start on any "paperwork." This especially includes custom decals, which are not only critical for freelancers but may be needed for those who model a specific railroad. Those of us who model the Nickel Plate Road, for example, found that a lot of needed lettering was either not available or inaccurate.

As your track plan starts to take 3-D form, time for such amenities will be sorely lacking. If you're sure of your future modeling plans, it pays to get ahead on all painting and lettering chores. **MR**



YES, THERE ARE TIMES WHEN I MISS THE RAILROAD, ESPECIALLY NOW THAT THERE ARE REALLY GOOD SOUND SYSTEMS. – TONY

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