SPECIAL ISSUE • ALL NEW PROJECT RAILROAD p.52

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January 2024
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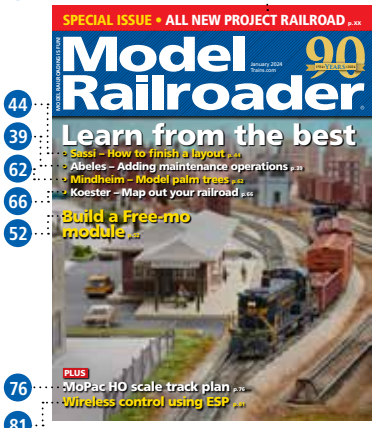

On the cover: Turn to page 52 for a first look at Freemont Mills, our 2024 project railroad. Photo by Connor Bruesewitz/Saturn Lounge

Next issue

In February, our project module gets benchwork, track, and wiring. Plus, visit an O scale Pennsy layout, span a yard with a bridge, use LEDs to light a layout deck, and more!

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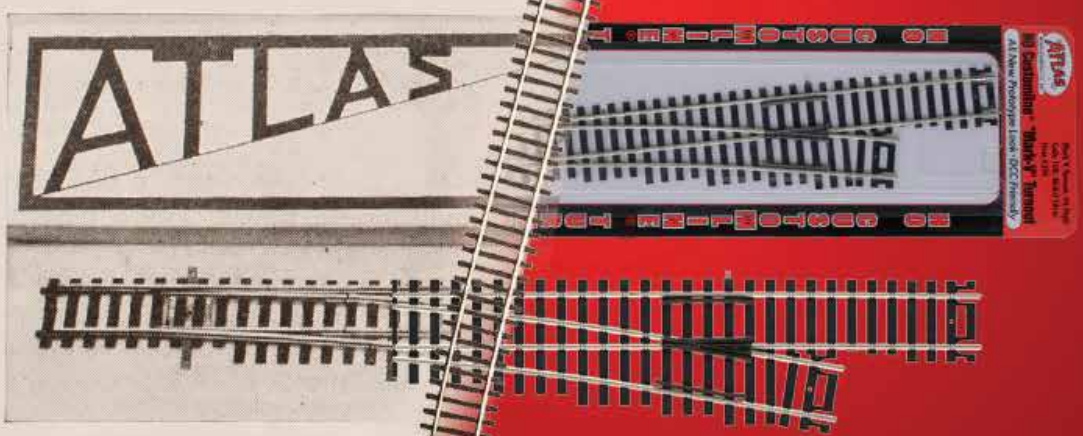

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You Tube

Handlaying track on the Hills Line

Join host James McNab as he explores methods for handlaying track on his portable HO scale Hills Line module. He will demonstrate spiking rail, using adhesives, and pinning. He shares his experiences and challenges with each method, helping viewers find the best approach for their own projects. The episode also offers insights into the art of tracklaying. Scan the attached QR code with a smartphone camera or tablet to watch the video and the rest of the Hills Line series!

Meet Dominic Bourgeois

Meet the *Model Railroader* and *Model Railroad Planning* contributor who loves the Delaware & Hudson so much that he wrote a two-volume book about it. The successful modeler is always chasing elusive information and rare models produced many years ago in order to model prototypically. To Dominic, prototype modeling is addictive. Learn his rationale behind that belief, and the upbringing in the hobby that shaped his modeling philosophy today.

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By Eric White

Celebrating 90 years of *Model Railroader*!

Nine decades ago, Al Kalmbach and two apprentice printers boarded a streetcar with their new prize, the first issues of *The Model Railroader*. From a little concrete block print shop in West Allis, Wis., the publication has grown to be distributed around the world, reaching hobbyists both in print and on the web.

In our 90 years, we've published more than 1,000 issues (we passed that milestone in April 2017), and shared tens of thousands if not hundreds of thousands of ideas to help hobbyists build the best model railroads they could.

We've covered a lot of change in the hobby. When Al and his buddies started this magazine, building a gondola out of sheet metal and copper rivets was standard procedure. Many early model railroaders were machinists because those skills were necessary to make the parts they needed to build their models.

Getting a train to operate was an achievement. Building a layout with working signals was a pipe dream.

But we've seen that dream come to pass, along with precision manufactured, ready-to-run models that took the place of the once unimaginable plastic kits.

Power systems have gone from an array of automobile batteries to a tiny wall-wart power supply that runs the computers in your locomotives.

And it's not just the trains that have evolved. Scenery techniques have grown leaps and bounds from asbestos-impregnated plaster and dyed sawdust to ground foam and static grass. What we're building today sometimes looks realistic enough in photographs to be confused with the real thing.

But we're not done yet! We'll keep bringing you stories to help you build the layout you've dreamed of and featuring the modelers who will push the hobby forward. We'll be looking at that right here in this issue. Check out a project inspired by track-planning guru John Armstrong on page 28, electronics stories on pages 33 and 81, and map tips from Tony Koester starting on page 66.

We're also addressing a hole in the model railroad universe by inaugurating a Model Railroader Hall of Fame. We'll nominate our picks each month, then direct you to a poll online where you can weigh in. At the end of the year, we'll induct our inaugural class.

One last bit of looking back. You might have noticed for the first time in decades, we're not publishing a column about

Digital Command Control in the magazine. Our most recent DCC columnist, Allan Gartner, retired with the December issue, as he mentioned at the end of that column. When we started DCC Corner in 2003, DCC was still unfamiliar to many readers. As that's no longer the case, we decided it was time to retire the column, as well.

Model Railroader

Model railroading is fun!

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N scale

Whitcomb 65-ton diesel locomotive. PIKO America's first N scale model of this locomotive is available decorated for Atlantic Coast Line and U.S. Army Transportation Command in one road number per scheme. The model has separately applied air horns, grab irons, exhaust stacks, and metal handrails. Direct-current models are priced at $189.99. Versions featuring DCC and sound sell for $299.99. PIKO America, 619-280-2800, piko-america.com

Atlas celebrates 100th anniversary

Stephan Schaffan Sr. founded Atlas Tool Co. in 1924 as a general machine shop in New Jersey. His son, Stephan Schaffan Jr., joined the business in 1933. By 1947 the two had their first factory built in Hillside, N.J., producing the first practical rail joiners, pre-assembled turnouts, and flextrack. Atlas Tool Co. Inc. was officially incorporated as a New Jersey company on Sept. 30, 1949.

Today, the Atlas Model Railroad Co. product range includes much more than track. The business produces an assortment of locomotives, freight cars, signals, lighting, structures, and accessories from Z through O scales.

To commemorate its centennial, Atlas has partnered with New Jersey Transit to wrap full-size Bombardier ALP-45DP locomotive No. 4503 in 100th anniversary artwork. After the official unveiling ceremony, date to be announced, the locomotive will be in revenue service on NJ Transit routes.

Modelers will be able to operate their own version of NJT No. 4503. The HO scale direct-current model is priced at $179.95, and the version featuring DCC and sound is $289.95. The N scale direct-current model is priced at $159.95, and the version featuring DCC and sound is priced at $269.95.

NJ Transit No. 4503 will be available in both N and HO scale to match the full-size locomotive that will be wrapped thanks to a partnership between the railroad and Atlas Model Railroad Co.

In addition to models of the locomotive, matching multi-level trailer cars and cab cars will be available.

For more information on this project, visit shop.atlasrr.com.

Rapido holds annual U.S. dealer open house

Rapido Trains held its annual U.S. dealer open house on Monday, Oct. 16, 2023 at the Valley Railroad in Essex, Conn. Dealers who participated in the event were treated to a ride behind New Haven Mikado No. 3025 and on a riverboat down the Connecticut River. A meet and greet was held in the same location the day before for the general public.

The event was headlined by a wealth of new announcements from Rapido, with a popular one being the new HO scale Electro-Motive Division SD7s, SD9s, and SD10s. The models will be painted for multiple roads including Bessemer & Lake Erie, Denver & Rio Grande Western, Burlington Northern, and Milwaukee Road. Conditional releases of the SD10 are Dakota, Minnesota & Eastern and Soo Line.

Passenger modelers were excited to learn about the conditional release of the Northern Pacific Day-Night lightweight coach in HO. Paint schemes will include Northern Pacific (in both Loewy and Streamline schemes) and Northern Pacific/Chicago, Burlington & Quincy (Loewy scheme).

Two new HO freight cars were also announced, the Enterprise covered hopper and Pennsylvania RR H21 coal hoppers, both in multiple class options.

To see all of the new announcements, visit Trains.com.

Dakota, Minnesota & Eastern is one of two conditional schemes announced for Rapido's new SD10. The locomotive was announced during the company's U.S. dealer open house.

HO scale locomotives

• **Alco RS2 diesel locomotive.** Chicago, Indianapolis & Louisville (Monon); Belt Railway of Chicago; Chicago Great Western; Delaware & Hudson; Green Bay & Western; and Lehigh Valley. Two or four road numbers per scheme. Also available undecorated. Revised tooling with air- or water-cooled exhaust stack as appropriate. Available with sound. Direct-current model, $164.98; with DCC and sound, $214.98. WalthersMainline. Wm. K. Walthers Inc., 414-527-0770, walthers.com

• **Electro-Motive Division SD7, SD9, and SD10 diesel locomotives.** SD7: Bessemer & Lake Erie, Denver & Rio Grande Western, Electro-Motive Division, and Southern Pacific. SD9: Baltimore & Ohio; Burlington Northern; Chicago & North Western; and Chicago, Burlington & Quincy (Colorado & Southern sublettering). SD10: Milwaukee Road; Soo Line; and Dakota, Minnesota & Eastern. Multiple road numbers per scheme. Road-specific details. Light-emitting diode lights as appropriate. Direct-current model, $239.95; with DCC and sound, $349.95. Rapido Trains Inc., 905-474-3314, rapidotrains.com

HO scale

Pullman-Standard PS-1 40-foot boxcar. To celebrate *Model Railroader*'s 90th anniversary, a limited-edition PS-1 boxcar is now available. The model is decorated for the Milwaukee, Racine & Troy and is available in one road number. The kit ($27.99) features a one-piece body with a factory-installed brake wheel and running board. Two styles of doors are included. Modeler-installed parts include the air reservoir, control valve, and brake cylinder assembly. The boxcar, produced by Accurail, is available from the Kalmbach Hobby Store, KalmbachHobbyStore.com

HO scale rolling stock

• **National Steel Car ballast hopper.** Amtrak, BC Rail, Canadian National, Canadian Pacific, CSX, Herzog, Milwaukee Road, and Union Pacific. Multiple road numbers per scheme. Also available unlettered in silver, yellow, or orange. Separately applied uncoupling levers, air hoses, and metal grab irons. Removable ballast load. Single car, $54.95; six-pack, $329.70. Rapido Trains Inc., 905-474-3314, rapidotrains.com

• **International Car Co. caboose.** Burlington Northern; Fort Worth & Denver; Northern Pacific; and Spokane, Portland & Seattle. Multiple road numbers per scheme. Also available as four different undecorated kits. Road-, era-, and number-specific body and cupola

HO scale

Northeastern caboose. Rapido's all-new model is painted for Lehigh Valley, Central RR Co. of New Jersey, Chessie System, Conrail, Lehigh & New England, Reading Co., and Western Maryland. Each caboose features railroad-specific trucks, steps, sides, end walls, and running boards. Optional parts include window blanks, etched-metal window frames and screens, tool boxes, and more. The interior is fully detailed and illuminated with light-emitting diode lighting. $99.95. Rapido Trains Inc., 905-474-3314, rapidotrains.com

Club offerings

• **Ventura Grain American Car & Foundry three-bay covered hopper.** Accurail HO scale kit produced for the Old Colony Model Railroad Club. Decorated for Ventura Grain's centennial (modeler-applied 100 year decal is included). Unnumbered with decals for the 14920-14929 series. $34 each plus $11 shipping (one car) or $17 shipping (two to nine cars). Old Colony Model Railroad Club, oldcolonyrailroadclub.com

style and details including running boards, smokejacks, axle drive generators, and end railing/marker light options. Road-specific detailed interior including chairs, bunks, desk, refrigerator, oil bunker, and heater. Light-emitting diode interior lighting. $119.95. Tangent Scale Models, 828-412-3886, tangentscalemodels.com

HO scale passenger equipment

- **Pullman-Standard Comet commuter cars.** Connecticut DOT; MARC; MBTA; Metro North; Montreal AMT; and SEPTA. Multiple road numbers per scheme. Also available painted but unlettered. Full interior detail. Tinted windows. All-wheel electrical pickup. Light-emitting diode marker lights and interior lighting. Single coach, $119.95; single cab coach, $129.95; three-car set, $369.95. Add $10 per car for MBTA and SEPTA models. Rapido Trains Inc., 905-474-3314, rapidotrains.com

N scale locomotives

- **General Electric AC6000CW diesel locomotive.** CSX, BHP Iron Ore, General Electric, Roy Hill Mining, Southern Pacific, and Union Pacific. Multiple road numbers per scheme. Factory applied details including handrails, grab irons, bell, and more. Prototypical light operation including light-emitting diode headlight, rear light, cab light, number boxes, and ditch lights. Die-cast metal chassis and all-wheel electrical pickup. Direct-current model, $179.99; with DCC and sound, $279.99. Broadway Limited Imports, 386-673-8900, broadway-limited.com

N scale rolling stock

- **Berwick bathtub gondola.** Wisconsin Public Service Corp., Conshohocken Rail LLC, CWPM LLC, David J. Joseph Co., Pacific Rail Leasing Corp., Salt River Project, Union Pacific, and Utility Fuels. Seven road numbers per scheme (one single car and two three-packs per scheme). Body-mounted McHenry couplers. Metal wheels with RP-25 contours. Minimum radius, 9¾"; recommended radius, 11". Single car, $31.99; three-pack, $84.99. Add $5 per car for Primed for Grime. Athearn Trains, 800-338-4639, athearn.com

In Memoriam

John R. Greene, 1938-2023

John Greene, 85, died on August 29, 2023. John owned and operated Bethlehem Car Works in Telford, Pa., for the past 35 years. After graduating from high school in 1956, John served in the U.S. Army through the late 1950s.

Throughout his life, he was a member of the Hatfield Jaycees, the Hamburg Train Association, and was a former Hatfield Township Commissioner.

He is survived by his wife, Elaine, of 20 years, as well as many children, grandchildren, and great-grandchildren.

F. Raoul Martin, 1935-2023

F. Raoul Martin, 88, passed away on September 9, 2023. Raoul founded NorthWest Short Line in 1958, importing brass models from Japan and eventually Korea. By the early 1970s, Raoul was exploring building brass models in the United States of America. As a result of these efforts, he developed and marketed a line of wheelsets, precision gears, motors, tools, and many other associated items useful to model railroaders.

Also involved with the preservation and restoration of prototype railroad equipment, Raoul was one of the founders of the Northwest Railroad Museum in 1957.

Rapido Trains HO scale GE U25B

A newly tooled General Electric U25B has joined the Rapido Trains HO scale locomotive lineup. The model, offered in high- and low-short-hood versions, features railroad-specific details.

Our sample is decorated as Union Pacific 627, one of 16 U25B rostered by the railroad. The UP had 11 units with high short hoods (625 through 632 and 634 through 636) and five with low short hoods (633 and 637 to 640).

The full-size 627 went into service on August 11, 1961. In *Diesels of the Union Pacific: The Classic Era – Volume 1* by Don Strack (Withers Publishing, 1999), it notes the 627 was involved in a wreck on November 23, 1968 in Aikens, Kan. Union Pacific retired the unit in August 1970 and traded it to General Electric in August 1971. The balance of UP's U25B fleet was retired in September 1972.

The Rapido Trains GE U25B has a mix of injection-molded plastic, die-cast metal, and etched-metal construction. The sills, walkways, pilots, and steps are a single unit. The long and short hoods and cab are separate pieces.

Details on the high-short-hood version we received include factory-installed and painted wire grab irons, printed number boards with illuminated number boxes, and working classification lights. The light-emitting-diode headlights aren't directional. Function (F) 0 controls the front headlight, F13 the rear.

The cab on the UP model is well detailed, with cab sunshades, arm rests, and wind deflectors. Separate, factory-applied windshield wipers are mounted above the end cab windows. A round vent is at top center of the cab. The interior is detailed with seats and a control stand with illuminated gauges.

Etched-metal screens are located on the sides and top of the radiator section. Dynamic brake grids are visible through the screens on the side. A freestanding ladder is located on the brakeman's side of the long hood.

I compared the Rapido Trains U25B to a prototype drawing in the 1966 edition of the *Car and Locomotive Cyclopedia of American Practice* (Simmons-Boardman Publishing Corp.) The model's dimensions match or are within scale inches of published data.

The Armour Yellow and Harbor Mist Gray paint is smooth and evenly applied. The reporting mark, road number, and road name on the front of the short hood are a bit lower than what I saw in prototype photos of the 627.

Rapido offers the HO scale U25B in direct current or with an ESU LokSound V5 sound decoder; our sample has the latter. I tested our sample using an NCE PowerCab. At step 1, the model crawled along at less than 1 scale mph. At step 28, the locomotive clipped along at 69 scale mph. The top speed of the full-size engines ranged from 70 to 85 mph, depending on the gear ratio.

I then took the model over to our Milwaukee, Racine & Troy staff layout for further testing. The unit handled a freight train with no issues and muscled 13 50-foot boxcars up the 3% grade between Bay Junction and Skyridge.

The U25B was an important diesel in GE's history, and Rapido Trains has done a good job capturing the distinct lines of the prototype. The four-axle road locomotive would look right at home on the point of an HO scale freight train from the 1960s through the 1980s. – *Cody Grivno, senior editor*

Facts & features

Price: Direct current, $239.95; with ESU LokSound V5 sound decoder, $349.95

Manufacturer

Rapido Trains
500 Alden Rd., unit 21
Markham, Ontario, Canada L3R 5H5
rapidotrains.com

Era: Aug. 11, 1961 to Nov. 23, 1968 (as decorated)

Road names: Low short hood – Atchison, Topeka & Santa Fe; Erie Lackawanna; Great Northern; New York, New Haven & Hartford; and Penn Central. High short hood – General Electric demonstrator, St. Louis-San Francisco (Frisco), and Union Pacific. One to four road numbers per paint scheme.

Features

- Correctly gauged wheels
- Metal knuckle couplers at correct height
- Weight: 15.4 ounces

Atlas N scale EMD SD9 diesel locomotive

The Atlas N scale Electro-Motive Division SD9 is no stranger to the manufacturer's catalog. The latest release features a couple of firsts for the six-axle road locomotive, a factory-installed speaker in Silver Series (direct current) models and an ESU LokSound V5 sound decoder in Gold Series (Digital Command Control) versions.

Electro-Motive Division produced the SD9 from January 1954 through June 1959. The locomotives, rated at 1,750hp, were equipped with a 16 cylinder 567C diesel engine. During the course of the production run, 471 SD9s were built for railroads in the United States.

Our sample is decorated as Burlington Northern 6187. The prototype was built as Chicago, Burlington & Quincy 440 by EMD in August 1957. When the CB&Q; Great Northern; Northern Pacific; and Spokane, Portland & Seattle merged in March 1970, the road locomotive became part of the BN fleet.

The SD9 spent most of its career in BN's Chicago Region, working primarily out of the Clyde Yard in Cicero, Ill., a western suburb of the Windy City. Burlington Northern retired the 6187 in June 12, 1986.

The Atlas model has a multi-piece plastic body consisting of the sills/pilots, long and short hood, and cab. The pilot footboards, handrail, uncoupling lever, and m.u. hoses are molded.

The long hood features a mix of molded and separate parts. The dynamic brake fans, radiator fans, and exhaust stacks are molded, and small nubs represent the lift rings.

The model has a single- and two-chime air horns behind the cab on the long hood. Prototype images show the 6187 with two single-chime horns, one each on the long and short hoods.

The fuel and main air reservoir tanks are cast as a single piece that press fit over the die-cast metal chassis. The filler cap and sight gauges are picked in red on the BN model. The full-size 6187 had a single fuel tank.

Our sample is neatly painted in BN's Cascade Green and black scheme. The SD-9 and Clyde stencils on the sill, both added to the prototype late in its career, were only on the engineer's side on our sample. They were also on the brakeman's side on the prototype.

I compared the model to drawings found in the 1956 edition of the *Locomotive Cyclopedia of American Practice* (Simmons-Boardman Publishing Corp.) The Atlas EMD SD9 closely follows published dimensions.

To release the shell from the chassis, I held the fuel tank with one hand and wiggled the shell up with the other. The motor, framed by two flywheels, is centered in the chassis. The motherboard spans the motor and flywheels. The decoder is attached to the motherboard on the cab end. The speaker is located above the rear truck.

I tested our ESU LokSound V5-equipped model with an NCE PowerCab. At step 1 the model moved at 2 scale mph. The model achieved a top speed of 67 scale mph. The top-end speed for full-size SD9s ranged from 55 to 89 mph depending on the gear ratio.

I also ran the locomotive on our Milwaukee, Racine & Troy State Line Route layout. The SD9 led a freight over the main without incident.

The EMD SD9 has been a part of the Atlas Classic range for more than two decades. Though the model had a few detail discrepancies with the BN prototype, I was impressed at its realistic speed range straight from the box. The Atlas SD9 is a solid performer whether it's working the yard or in charge of a road freight. – *Cody Grivno, senior editor*

Facts & features

Price: Direct-current model with factory-installed speaker, $144.95; with ESU LokSound V5 sound decoder, $254.95. Subtract $10 for undecorated models.

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

Era: early 1970s to June 1986 (as decorated)

Road names: New road numbers – Burlington Northern, Conrail, and Southern Pacific. New paint schemes – Central of Georgia and Montana Rail Link. Two numbers per scheme. Also available undecorated with and without dynamic brakes.

Features
- Accumate couplers, at correct height
- Weight: 2.5 ounces
- Metal wheel stubs mounted on plastic axles, in gauge

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DCCconcepts Aegis upgrade for PowerCab

The NCE PowerCab Digital Command Control (DCC) system is popular for its ease of use, menu-driven prompts, and reliable programming capabilities. However, it does have a few limitations: It only has about 1.8 amps output; it doesn't have separate programming and main track power connections; and the PowerCab throttle must remain plugged in at all times while in use, limiting walkaround operations if only one throttle is available. DCCconcepts has just introduced the Aegis system to address these limitations and further enhance PowerCab performance.

The Aegis system maintains all of the functions of the PowerCab while providing increased track power, wireless throttle capability, and a range of other features. The basic Aegis system includes a base station; 24VDC, 5-amp power supply; and wireless transmitter, handset cap, and lanyard for the throttle. The NCE PowerCab throttle is *not* included with the Aegis system.

The base station contains a DCC booster which can provide track power of 14, 15, 17, or 18 volts at 5A continuously. And that 5A continuous rating means just that, not 3 amps under normal running and 5 amps for short peaks. This impressive power rating is made possible in part by the 24VDC, 5A regulated power supply. It also has output terminals for both main track DCC power and a service mode programming track.

On the panel's face are lighted push buttons to turn the system on and off, reset it when a short occurs, switch between programming and operations, issue an emergency stop command, and pair a wireless transmitter.

Three sockets are provided on the face for connecting the PowerCab for main track operations and programming, and to connect DCCconcepts Alpha products. There are additional sockets on the rear of the base station for connecting other devices and fascia panels.

The built-in circuit breaker is designed to protect against overloads and shorts on the layout. A manual reset switch located on the front of the base unit blinks red when a short or overload occurs, and power stays off until the problem is eliminated.

A wireless receiver unit built into the base station allows the PowerCab to communicate with it via the included portable transmitter. Once the transmitter is paired to the base and the Power Cab is plugged into it, the tethered throttle becomes a walkaround throttle. And while wirelessly paired to the base station, it still provides the DCC command station functions. ProCab and utility wired throttles can be used with Aegis by connecting them to the RJ-12 command bus, but they aren't compatible with the Aegis wireless transmitter due to design differences between them and the PowerCab. A PowerCab must be plugged into the base station for wired throttles to operate.

Though the PowerCab wasn't designed to program and operate trains at the same time, the Aegis system compensates by automatically switching between the main and programming output terminals when programming is switched on and off.

When programming is turned on, power to the main track is automatically shut off. When the main track is turned back on, the programming track is shut off and receives main power. Consequently, an isolated programming track can be located anywhere on a layout. Because the wireless system is unidirectional, the PowerCab throttle must be plugged directly into the programming socket in the base station when used for service mode programming. However, it can be used wirelessly for programming locomotives on the main.

The Aegis system seems an ideal solution for PowerCab owners looking for a way to get more power for their growing locomotive fleet or to operate an expanding layout. The ability to easily convert the PowerCab into a wireless walkaround throttle and the enhanced programming track operation both add to the appeal of Aegis. To see a video demonstration of the Aegis system, visit my YouTube channel "Model Railroading with the DCC Guy" and the *Model Railroader* website.
– *Larry Puckett, contributing editor*

Facts & features

Price: £416.63 ($505.33) for U.S. customers ordering direct from manufacturer. Price may vary based on current exchange rate.

Manufacturer
DCCconcepts Ltd.
Unit E, The Sidings
Settle BD24 9RP, United Kingdom
dccconcepts.com

North American sales
Iron Planet Hobbies,
ironplanethobbies.com
Kingston Locomotive Works,
locomotiveworks.ca

Features
- 24VDC, 5-amp power supply
- User-selectable 14, 15, 17, or 18V track voltage

Micro-Trains N scale mill gondola

A 65-foot mill gondola is the latest addition to the Micro-Trains Line N scale freight car lineup. The injection-molded plastic model features positionable drop ends, metal wheelsets, and body-mounted Magne-Matic couplers.

The Micro-Trains gondola is based on an Atchison, Topeka & Santa Fe class GA-47 prototype built by General American Transportation Corp. (GATC) in 1937. The gondolas in this class were numbered 170850 through 170874 and had a 1,777-cubic-foot capacity.

Our sample is lettered as Santa Fe 170902, part of the railroad's 170875 through 170924 series built by GATC in 1940. The class GA-48 gondolas were built to the same specifications as the class GA-47 cars.

The model uses plastic and die-cast metal construction. Most of the details, such as the grab irons, stirrup steps, and poling pockets, are molded. The tack board, located near the middle of the car, was omitted. This would be easy to add with an aftermarket detail part or strip of styrene. Modeler-installed uncoupling levers, made of engineering plastic in a color close to the paint on the body, are included with the car.

The gondola comes with a removable one-piece, cast-resin pipe load. If run empty, you can see the rivet detail and raised panels for the body bolsters and cross bearers on the car floor. Rivet and tie-down ring detail is missing from the sides of the interior, perhaps to make it easier to install and remove loads.

The Dreadnaught ends are separate, positionable pieces. To lower the ends, gently lift them straight up until the two corner tabs disengage from the slots in the car floor. Then, with a light touch, press the ends over the nubs on the car sides and lay them flat. The ends were lowered on full-size gondolas when loads, such as creosote-treated pilings, were longer than the car.

Though the model includes a load, I appreciated that Micro-Trains modeled the Dreadnaught detail on the inside and outside of the end pieces. Nicely done!

Since the gondola has drop ends, the brake wheel is located on the side of the car. The Micro-Trains model has a molded brake wheel housing, brake chain, and retainer valve. The brake wheel, installed at the factory, is molded in engineering plastic. Though the part is unpainted, the plastic closely matches the body color.

Underneath, the car features plastic and die-cast metal parts. The draft-gear boxes, body bolsters, bolster blocks, and roughly ¼" of the center sill on each end are plastic. There are four oval-shaped recesses around each bolster so the wheelsets don't rub on the underbody.

The portion of underbody between the trucks is die-cast metal. The center sills, cross members, brake appliances, support brackets, rods, and levers are all cast details.

Our sample is neatly painted Mineral Brown with white graphics. The lettering placement matches builder's photos of the full-size 170902 in *Santa Fe Open-Top Cars: Flat, Gondola and Hopper Cars 1902-1959* by Richard H. Hendrickson (Santa Fe Railway Historical and Modeling Society Inc., 2009). The WROT STEEL WHEELS stencil below the road number on the car ends was omitted.

The gondola has pin-mounted, solid-bearing trucks with correctly gauged 33" insulated metal wheelsets. The body-mounted Magne-Matic couplers are at the correct height. With the pipe load the gondola weighs 0.9 ounce, which is .35 ounce too light per National Model Railroad Association Recommended Practice 20.1. The empty car is .75 ounce too light. Because of the gondola's length, the manufacturer recommends operating the car on 15" or broader radius curves.

I was unable to find prototype drawings of the Santa Fe GA-48 gondola. However, I did find some dimensional information in the October 1947 *Official Railway Equipment Register*. The interior width is a scale 9" too narrow, which is typical of open cars because of molding limitations. Other dimensions closely followed published data.

The Micro-Trains N scale mill gondola is a well-executed model. The car, which measures 5" long, will certainly stand out in a freight train, whether loaded or empty. And those body-mounted couplers and metal wheelsets will be appreciated by N scale operators. – *Cody Grivno, senior editor* MR

Facts & features

Price: $32.95
Manufacturer
Micro-Trains Line Co.
P.O. Box 1200
Talent, OR 97540-1200
micro-trains.com
Era: 1940 to 1960s (as decorated)
Road name: Atchison, Topeka & Santa Fe in two road numbers
Features
- 33" metal wheelsets, in gauge
- Body-mounted Magne-Matic couplers, at correct height
- Minimum radius, 15"
- Weight: 0.9 ounce with load, 0.5 ounce without (.35 ounce and .75 ounce too light, respectively, per National Model Railroad Association Recommended Practice 20.1)

By Steven Otte

Are HOn3 models larger than HO scale?

Q What is HOn3 scale? If it uses HO scale track (1:87 gauge), it seems the rolling stock must be scaled wider and taller. Conversely, if I modify an HO scale/gauge locomotive for narrow gauge, I'll need to build new, narrower track. Help me understand this.

Mark Dice

Although the track gauge and equipment are smaller on a narrow gauge model railroad, the structures, figures, and other details are still the same size, as is seen by the oversized-looking cab on this On30 2-6-0 Mogul on Steve Fisher's Deep Run RR. Steve Fisher photo

A Hi, Mark. Your second guess is the right one. HOn3 is the same size as HO, except for the track.

It's easy to mix up the concepts of scale and gauge. (Our friends over in the toy train world who refer to their O scale trains as "O gauge" may have something to do with this.) The "HO" in HOn3 indicates that the trains are HO scale, which is a proportion of model to prototype of 1:87.1. This is the same no matter the gauge of the track.

The "n" in HOn3 stands for "narrow gauge." In other words, the track gauge is narrower – in this case, 3 feet between the railheads – than the standard gauge of 4 feet, 8.5 inches.

So while the motive power and rolling stock of an HOn3 railroad are slightly smaller than standard gauge HO scale equipment, that's because the equipment on the prototype was generally built slightly smaller than that of standard gauge railroads. It's the same proportion, though, and all other components of a narrow gauge model railroad – from structures to vehicles to figures – are the same size.

Narrow gauge was very popular around the turn of the last century, when it was widely believed that the narrower right-of-way and lighter equipment of narrow gauge would lead to lower costs on land purchases, lighter rail, maintenance, and operation. Though some narrow gauge railroads were notably successful – such as Maine's several 2-foot-gauge short lines and Colorado's Denver & Rio Grande – most soon discovered that the slight savings were more than offset by the cost of maintaining nonstandard equipment and the inability to interchange cars with standard gauge railroads. Most narrow-gauge railroads in the United States went bankrupt, converted to standard gauge, or were bought out by larger railroads. (The prototype I model, the Cincinnati, Lebanon & Northern, did all three.)

Narrow gauge railroads are popular with hobbyists for several reasons. Among them are the allure of modeling unusual equipment, like the Rio Grande Southern's Galloping Goose; the picturesque and dramatic scenery and terrain often traversed by these railroads; the romance of modeling an earlier era; and the ability to fit more model railroad into the same space than could be accomplished in standard gauge. (Narrow gauge trains can usually negotiate tighter curves and sharper turnouts than standard gauge equipment of the same scale.)

Pioneers of narrow-gauge modeling often selected their track gauge so they could use the locomotive mechanisms, track, wheelsets, and trucks of the next smaller scale. On30, for instance, was originally O scale models on HO scale track, which works out to just over 31" gauge, not 30". Today, though, modelers have a wide selection of commercial narrow-gauge products in numerous scale/gauge combinations like HOn3, On30, and Sn3.

If you think you might be interested in building a narrow gauge model railroad, look into Tony Koester's book *Guide to Narrow Gauge Modeling*, which is available in the Kalmbach Hobby Store.

Q I'm researching and modeling Jefferson, Ohio. There are a number of buildings in the area that are built from glazed block. I've seen hobby manufacturers make all kinds of brick, stone, and block sheet material, but I haven't found material that looks like this. Do you have any ideas?

Chuck Beargie

A There are three features you'll have to reproduce to model glazed block walls: the color, the shine, and the texture. Color is easy enough if you have an assortment of red and brown hobby paints. After painting the blocks in varied colors and applying a mortar wash, you can reproduce the shiny highlights with an overcoat of thinned gloss medium. Hobbyists often use gloss medium to model water, so you might already have a bottle of this in your supply cabinet. I would thin the gloss medium 2:1 or 3:1 with distilled water, since what you want is a subtle shine; a thick coat will make your building look like it's been covered in plastic wrap. You can always another coat of gloss medium if you want more shine, but if you put it on too thick to start with, trying to remove it will likely damage the paint underneath. Another option might be to spray or brush the material with a glossy lacquer like Testor's Glosscote, but the thickness of the layer of glaze might be hard to control.

Send questions to senior associate editor Steven Otte at AskTrains@Trains.com.

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The hard part will be reproducing the texture. Those blocks in your photo seem to have a rippled surface that reflects the light in waves and spots. I don't know of any commercial scale building material that has such a texture. However, in an internet image search, I found other glazed block walls that had a texture like cut stone. A cut stone wall material in a scale one step smaller than yours might work to model glazed block walls.

If reproducing the texture of the walls of the building in your photo is important to you, you might be able to simulate it by, before painting, texturing a styrene brick sheet with a material like spackling. Dab it with a wet sponge to give it a random texture, then after it dries, sand it lightly to round off any high points or sharp peaks. However, this runs the risk of filling in your mortar lines. And if you're working in N or HO scale, the texture produced may be too coarse to look realistic.

Another option is to soften the surface of styrene brick sheet with a brushing of liquid styrene solvent cement,

Structures made with glazed brick or block can be found all over the part of Ohio that reader Chuck Beargie is modeling. Chuck is seeking tips on how to model glazed block walls like these.
Chuck Beargie photo

then jab at it with the tip of a plastic-bristled disposable paintbrush. The risk here is a thin brick sheet can distort or disintegrate under aggressive treatment or too much solvent. (Not to mention the risk of inhaling all those glue fumes; wear a mask and do this in a well-ventilated area.)

A third option would be to spray your walls with a textured decor spray paint before brush-painting the individual blocks. The texture might come out a bit coarse and conceal your mortar lines, so test this technique on a piece of scrap material first. Maybe try spraying the wall sheet with regular red primer but hold the can farther back from the wall than you normally should. When I've done this accidentally, I sometimes end up with a pebbly finish that might be exactly what you're looking for.

But if none of these ideas produce the texture you're looking for, texturizing might not even be necessary. If you were to accurately scale down a block wall from its real world dimensions, the mortar grooves between the blocks would be barely perceptible. Model manufacturers exaggerate the width and depth of mortar lines on their structures to make them visible in smaller scales. The texture of these blocks might similarly be too small to see. Once you paint and glaze your block walls, they could look good enough to pass the three-foot test without texturing.

Good luck with your project, Chuck.

Q I'm planning on making steel slab, H-column, and I-beam loads for my run through freight trains. What are the dimensions of steel loads?

James Shepard

A Steel can be cast, milled, rolled, and machined to practically any shape and dimensions a customer might desire. If you're modeling these loads as run-through freight, rather than originating at or going to a particular industry on your layout, you can make them any size or shape you like. Pick out a few styrene structural shapes that look appropriate for your modeling scale, paint them, and assemble them into a load for your flatcar or gondola. Don't forget the blocking and banding to keep the load in place.

The question isn't how big those steel shapes might be, but how many of whatever size can be carried on a railcar. Steel is a very dense material, so it doesn't take much of it to reach the load limit of a typical car. The slab loads in the picture at right don't take up much space, but those flatcars are full to capacity.

Norfolk Southern train H2 moves to pick up a string of flatcars loaded with steel plate from Mittal Steel in Coatesville, Pa., in January 2007. Steel plate, coil, and structural steel loads make interesting loads for open-top cars. James Kusnierczyk photo

To calculate the weight of a particular size and shape of metal load, try GigaCalculator (gigacalculator.com/calculators/metal-weight-calculator.php). Choose the material (steel, aluminum, copper, and more) and shape, then input the load's scale dimensions, and the site will return the item's weight. Read the car's load capacity stenciled on its side, and make sure your load weighs less than that. You may have to guess at some of the dimensions if you don't feel like putting the calipers to every part of your styrene I-beams. But since we're dealing with a model, ballpark guesses can be close enough without worrying about your car's axles snapping under the load. It just has to look right.

Corrections

The Ask MR in November's issue conflated a track gate with a smashboard. Though their appearance and operation appear similar, a smashboard is a signal that would be controlled by a dispatcher, and a track gate is not.

The New York City-area terminal for Delaware, Lackawanna & Western MU cars was Hoboken, N.J., not Penn Station, as was misstated in November's Ask MR. The D&LW's service to New York City was via ferry. MR

How to choose your scale

One of the first things to figure out when you decide to build a model railroad is to choose a scale.

Since the beginning of the hobby, and even before, the scale of the models has been an important consideration. The first model railroads weren't built as hobby pursuits; rather, they were engineering studies. Figuring out how to build large bridges, climb mountains, or cross valleys was easier to do with a scale model than any other method before the advent of complex calculating machines.

Some of the scales were quite large – think of the ride-on trains that fill estates. This was a good size to work out the potential of a locomotive design before committing too much time and money building a full-sized prototype. This idea goes back at least to the wooden sailing ship days.

Once hobbyists got into the act, the models needed to be smaller so they'd fit into a more reasonable space. Early scales were numbered, with No. 1 and No. 0 being the smallest. We now know No. 1 as G gauge (1:8, 1:13.7, 1:20.3, 1:22.5, 1:24, 1:29, 1:32 proportions, representing both standard and narrow gauge). And No. 0 has morphed into O scale – note the numeral become a letter (1:48 proportion in the U.S., and sometimes 1:43 elsewhere).

Of course, G and O scale trains are still fairly large, and as technology made smaller motors and more precise manufacturing economical, smaller scales arrived, giving us S (1:64), HO (1:87.1), N (1:160), and Z (1:220) from the 1930s through the 1970s. In the 2000s, T gauge arrived, offering 3mm gauge rails and models at 1:450 proportion.

Model trains come in many sizes, called scales. The photo shows most of the popular scales, from the largest, G, to the smallest available commercially, Z. We're still waiting for a manufacturer to offer an S scale General Electric P42 model. Cody Grivno photo

United Kingdom modelers often use OO scale trains (1:76 proportion on HO gauge track), a compromise from the early days of the hobby to accommodate available motors in the slimmer boilers of U.K.-prototype trains. Early Athearn diesels likewise had wider-than-scale hoods to accommodate their motors.

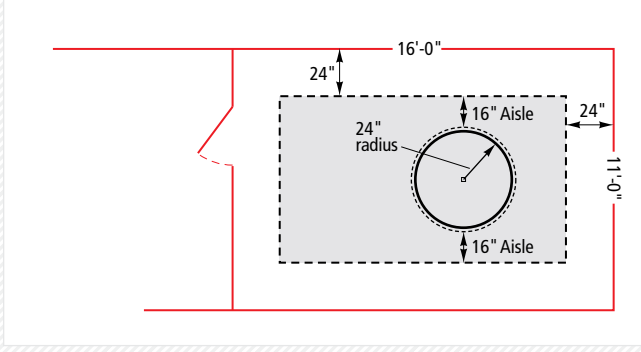
Now that I've filled your head with possibilities, we need to figure out which one is best for you. But how do you go about doing that? We'll take you through the process, Step by Step.

STEP 1 DETERMINE YOUR AVAILABLE SPACE

There are many places to start, but this seems like one of the most important. You're going to have to put your trains somewhere, so determining how much room you want to devote to the activity makes sense. Whether you have a room you want to use, a basement to fill, or just a shelf in a space that's primarily devoted to some other use, get out your tape measure and jot down the dimensions you've allotted (this may change later).

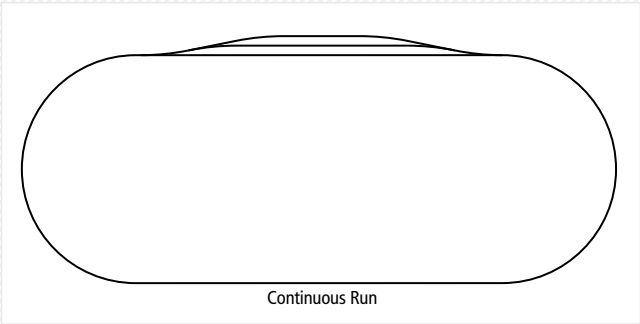
Even if all you're interested in is a temporary display at the holidays, figuring out the space available is going to go a long way to making a decision you can live with.

Clearly, larger trains are going to need more space, but we're not done yet. The next steps will offer more considerations that will affect which scale would be best for you.



Making a sketch of your layout space then trying a few track arrangements in it will help you decide what kind of model railroad you can build. Lance Mindheim illustration

STEP 2 CONTINUOUS RUN OR POINT-TO-POINT?



A continuous run layout is great for watching trains and breaking in new models. Point-to-point arrangements simulate railroads' mission of taking things from one place to another. Lance Mindheim illustration

Now that you know your space, what do you want to do in it? If you want to be able to allow a train to run without much interaction, you're going to want what's known as a continuous-run layout. This is at its simplest a circle of track, and here's where scale and space available crash into one another.

Each scale has a minimum curve radius on which trains will reliably operate. Often, the packaging for pieces of rolling stock will list a minimum radius. Track manufacturers tend to make track to match these minimums. The two most popular scales, HO and N, have effective minimum radii of 18" and 9¾", respectively. This means the track centerline of an HO scale circle is 36" wide. However, the track itself is about 1¼" wide, so the edges of the track are going to be 37½" from edge to edge. With overhanging equipment in mind, you'll need at least 40" of space.

Keep in mind this is a minimum, using the tightest radius curve that some, but not all, equipment will operate on. Making turnback curves – the curve at the end of an oval that brings the train back around – clearly takes up a significant part of your model railroad real estate.

Point-to-point is just that. It can be as simple as a straight section of track. Some folks prefer point-to-point even in large spaces because that's what full-sized railroads do. Curve considerations will still be important, but if you don't have a spare room or similar space, a point-to-point shelf layout is one of the most efficient ways to fit a model railroad into a room that needs to be used for other activities.

STEP 3 WHAT KIND OF TRAINS DO YOU WANT TO RUN?

Dave Abeles' HO scale Onondaga Cutoff models modern railroading in a space similar in size to Bernard Kempinski's O scale Civil War-era Aquia Line. Dave Abeles photo Bernard Kempinski photo

Back in the continuous run section, I said that minimum radii are the smallest curves some trains will run on. So, what does that actually mean?

Trains come in lots of sizes. The earliest steam locomotives were much smaller than the latest – think of the 1890s 4-4-0 American type, *General*, about 50 feet long, compared to the 1940s 4-8-8-4 Big Boy, nearly 125 feet long.

Clearly, a model of a Big Boy is going to need a broader radius curve than an American. The same goes for diesels. A four-axle switcher will operate reliably through an 18" radius curve on an HO layout. An eight-axle UP Centennial diesel might run through 22" radius curves, but it might tend to pull its following freight cars off the track as it enters the curve.

Generally, if you want to run older, smaller equipment, you can plan for using some curves of the minimum radius. If you want to run more modern, larger equipment, you'd better allow for broader curves.

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STEP 4 IS OPERATION ONE OF YOUR GOALS?

"Operation" can be a loaded term. To some, it means running model trains with utmost fidelity to prototype railroad rules and regulations with a large crew that includes dispatchers and tower operators. To others, it means switching a few cars in a yard or industrial area. But either way, scale can have an impact on your enjoyment of operations, depending on what you want to do.

If operation isn't your thing, skip to the next section. If it is, read on.

Small trains are harder to see. If you want to switch cars, and make sure that you're pulling GATX tank car 207531 rather than a similarly painted GATX 210673, you'd better be able to read the number on the side of the car. This is going to be easier in a larger scale than a smaller one. Likewise, it's easier to uncouple cars in larger scales without knocking them off the track, because they're heavier and the space between them is larger.

If you want to watch large trains travel through expansive landscapes, then you're either going to need lots of space or to choose a smaller scale.

Gordy Spiering operates on the North American Prototype Modelers' layout. He's working in one of the layout's large yard, sorting cars to add to passing trains. Eric White photo

This can become true if your primary interest is in passenger trains, as well. Passenger cars tend to be in the 85-foot-long range, while the classic red boxcar is often only 40 or 50 feet long. Some other freight operations that might require more space are auto racks and trailer-on-flatcar (TOFC) operation. Both of these types, originally based on the same types of flatcars, are in the 80- to 90-foot length range.

STEP 5 CHOOSE YOUR LEVEL OF DETAIL

Do you want detail parts to be exactly to scale? This generally isn't practical (although some do it, at least in the larger scales), but goals are what drive us. The larger the scale you're modeling in, the more achievable the goal of precise detail.

If you want to see each brick in the wall, count each rivet on a freight car, and watch the roller bearing caps rotate on your fleet of container well cars, then you're going to want to model in a larger scale.

If you want to get a broad overview of the landscape and want your trains to be dwarfed by their surroundings, you're going to want to chose a smaller scale.

N scale layouts such as Mike Danneman's, at right, can do a great job of representing the tremendous scope of the landscape in a reasonable space.

Mike Danneman is well known in N scale circles for his gorgeous Rio Grande layout, where scenery dominates in the basement just as it does in the Rockies. Mike Danneman photo

STEP 6 PICK A BUDGET

It would be great to buy everything we like in the hobby shop, but for most of us, that's not realistic. Setting a budget for your hobby will be affected by your scale choice, as well.

Generally, larger trains cost more money. However, there are other considerations. HO scale is by far the most popular scale, meaning there are lots of manufacturers competing for your hobby dollars and lots of people looking to spend their money. Some devote themselves to the most-detailed and accurate models possible. Others make up their balance sheets by focusing on volume. If your budget is tight, you might find HO scale offers the most choices for your buck.

Every month there are more new products produced and shared on the pages of Model Railroader. Choosing a scale can help you set your budget. William Zuback photo

N scale models are often less expensive, though not exactly half HO scale. But a smaller scale also means you need more models to fill a space.

O scale tends to cater to the more established hobbyist, as prices for models can be high. It takes fewer O scale models to fill a layout, though.

STEP 7 CHOOSE HOW MUCH SCRATCHBUILDING YOU WANT TO DO

In HO scale, you can find track with molded plastic ballast at one end of the spectrum, and individual ties, tie plates, and rail at the other end, from multiple manufacturers. This is true of most HO scale hobby products. If you want to build everything from scratch in HO scale, you certainly can. If you want to buy off-the-shelf, ready-to-run models, that's easy to do, as well.

As you move into the minority scales, you'll find there's less choice. Modelers who claim N scale as their primary scale amount to about 20% of the market, with HO scale at nearly 80%. That means the rest share a portion of the tiny percentages left.

If you don't mind scratchbuilding many of your models, then modeling in O and S scales are popular choices.

Brooks Stover models in S scale, which doesn't have as many models and kits available as HO or even N. Therefore, Brooks has to (or gets to) scratchbuild specific models he might want. Brooks Stover photo

STEP 8 GIVENS & DRUTHERS

This term was popularized by model railroading track-planning guru John Armstrong. When creating a track plan for your layout, he said, there were things that were givens, such as the space you had to use and the money and time you could devote to the hobby, and druthers, things you'd like to have ("I'druther have a Big Boy than a Geep").

As you go through these steps, decide which ones you can stretch, and which ones can't change. Remember how I said in the first step your allocated space could change? Many of us have come to the conclusion that a few inches more, and we could add some feature, or perhaps go to a larger scale.

All of these parameters have wiggle room, but they're all going to affect others. Hopefully your answers to these questions should help you arrive at a decision you, and those who will share space with your layout, can live with. And remember, have fun! MR

1 Aberdeen & Rockfish Electro-Motive Division GP7 No. 205 brings a short train to Fayetteville on Jon Fruth's HO scale Wolf Creek Central. The layout is built on a diagonal axis, allowing operators to reach more of the operational areas.

OLD SCHOOL FUN

This 8 x 13-foot HO scale layout was inspired by a John Armstrong track plan

By Jon Fruth • Photos by the author

Starting in March 1952, *Model Railroader* began a series called *Track Plan of the Month*. A frequent contributor was John Armstrong, the dean of model railroad planning. He designed two track plans for the September 1953 issue. John rotated the center line of the layouts' footprints 45 degrees and chose the title "On the Bias."

One of John's two designs was the Central Minnesota RR, a tabletop railroad with 24" minimum radius. My railroad room was too narrow for an HO scale railroad with its axis canted at 45 degrees. To make the best of John's proposal, I altered the footprint into a dogleg configuration – one portion tipped at approximately 11.5 degrees, with the remainder bent to 25 degrees. I renamed my 8'-1" x 13'-1" layout the Wolf Creek Central.

Prototype inspiration

A few years ago I visited the Aberdeen & Rockfish RR in North Carolina. The short line meanders approximately 50 miles, west-to-east, from Aberdeen, N.C., to Fayetteville, N.C. The town of Raeford sits midway along the line. Between Raeford and Fayetteville lies Dundarrach. At Dundarrach the railroad makes a sharp turn to the north on an 8-degree curve.

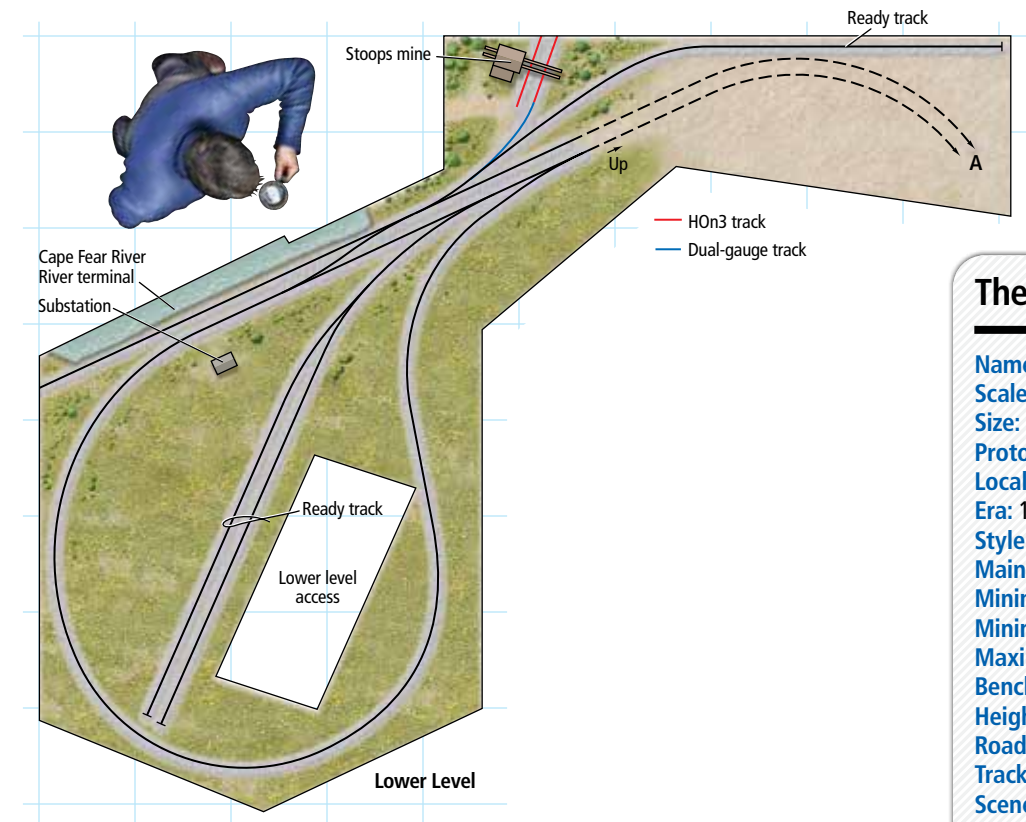
In the past, a sawmill received rail service at Dundarrach. The sawmill is gone, but the sharp curve remains. I kept the curve and added a whistle stop named "Struggles."

River Terminal is approximately one mile beyond Fayetteville. River Terminal does duty as a universal interchange. Barges tie up to either receive or offload goods. Though almost anything can travel by barge, commodities handled at River Terminal include grain, lumber, coal, and petroleum products.

Wolf Creek Central RR

HO scale (1:87.1)
Size: 8'-1" x 13'-1"
Scale of plan: ½" = 1'-0", 12" grid
Numbered arrows indicate photo locations
Illustration by Kellie Jaeger

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



The layout at a glance

Name: Wolf Creek Central RR
Scale: HO (1:87.1)
Size: 8'-1" x 13'-1"
Prototype: freelanced
Locale: southeast North Carolina
Era: 1990s
Style: peninsula
Mainline run: 81 feet
Minimum radius: 24"
Minimum turnout: no. 4
Maximum grade: 2.7%
Benchwork: L-girder
Height: 48"
Roadbed: Homasote
Track: code 70, 83, and 100 flextrack
Scenery: Woodland Scenics ground foam
Backdrop: Painted tempered hardboard
Control: Digitrax DB150 DCC

2 In this overall view, Fayetteville is in the front, Rising Sun is in the middle, and Rockfish is in the back. Jon attached racks to hold cards for a four-cycle car routing system to the fascia.

3 An Aberdeen & Rockfish EMD GP38 hustles a short train around the bend at Struggles. The four-axle road locomotive is special edition model from Atlas Model Railroad Co.

The AR general offices and engine terminal are in Aberdeen, but the majority of railroad business transpires along the line at Raeford, Fayetteville, and River Terminal.

The railroad interchanges with the Aberdeen, Carolina & Western and CSX in Aberdeen. AR's interchange with Norfolk Southern is about 50 miles to the southeast in Fayetteville.

Adapting the prototype

On the Wolf Creek Central, the main features of the AR remain intact, but I changed some of the town names. Aberdeen is Rockfish, Raeford is Rising Sun, and Dundarrach is Struggles. Fayetteville remains as Fayetteville; River Terminal is still alongside the Cape Fear River.

There are three distinct plateaus on the WCC: River Terminal, Fayetteville, and Rockfish. Short grades connect the three levels. Grades are approximately 2.7 percent. There is 20" of vertical easement into and out of each grade. Grades are typically 2.5 percent on the hilly AR. The model railroad is therefore not too far off base.

I added a balloon track (reverse loop) at River Terminal to allow for turnaround and return to Fayetteville. River Terminal also offers some not-too-obvious operating considerations. On the WCC, empty cars for receiving materials at the riverfront need to be requisitioned from one of the three interchange partners. The cars can be parked at a ready track or at one of the interchange tracks on the layout. After loading at River Terminal, cars are routed either on-line or off-line via interchange.

The Cape Fear riverfront, with its space-eating balloon track, caused a demand for more real estate. I added a grade from Fayetteville down to River Terminal, with its ready tracks and the balloon track. The mainline's end-to-end running length grew to 81 feet.

The lowest elevation on the WCC is below River Terminal, and the corresponding Cape Fear River. A 1" dip on the balloon track, below the finished grade above, gave room for a 24" minimum radius.

The casual observer may note that the WCC has no staging tracks. The underlying logic for this is that one doesn't usually find foreign traffic running end-to-end over the AR. Power on the AR typically pulls short trains to serve its many customers. It would be unusual for, say, a CSX or an NS train to appear at Aberdeen or Fayetteville to make a run across the line. The three ready tracks that bring cars for interchange on the WCC work just fine.

Recycling 101

I salvaged the flextrack, a mix of codes 70, 83, and 100, from previous layouts. I used the code 100 on the hidden tracks and at River Terminal. Track in the visible sections of the layout is a mix of codes 70 and 83. In addition, there are six curved turnouts, a No. 6 double-slip switch connected to a No. 6 crossover, and a No. 6 three-way turnout.

Meet Jon Fruth

Jon Fruth is a member of the Chesapeake & Ohio Historical Society; Kokomo, Ind.'s Midwestern Model Railroad Club; the Nickel Plate Historical & Technical Society; and the Fostoria, Ohio, Rail Preservation Society. Jon grew up in Fostoria's "Iron Triangle" and was forever bitten by the railroad bug. Jon and his wife, Jean, live in Kokomo. In addition, Jon enjoys hiking and bicycling.

The longitudinal L-girders and the 1 x 3 framing were also salvaged from prior layouts. I purchased new Homasote and ½" plywood for this layout's flat surfaces. The Homasote is screwed to the plywood from below. I spiked the flextrack and turnouts directly to the Homasote with no roadbed in between. After applying the ballast, I believe the finished track looks presentable.

I attached six 60-pound casters, also saved from an earlier layout, to the bottom of the layout's legs. Later I discovered the casters weren't sufficient. I should have invested in 100-pound casters instead.

Layout features

The majority of the turnouts are manually operated with Caboose Industries ground throws. For hard-to-reach turnouts, I used Tortoise by Circuitron and twin-coil switch machines. The reach to the center of the layout at Rockfish is a little longer than recommended by John Armstrong. However, there's little to operate out in the middle of town, so the longer reach is tolerable.

I used Tortoises to control the double slip, the crossover at Fayetteville, and the ladder track at the head of the Fayetteville yard. I switched to twin-coil switch machines for the code 100 turnouts at River Terminal.

The layout is controlled with a Digitrax DB150 command station and a handheld radio throttle. I added a decoder programming track near the Fayetteville depot.

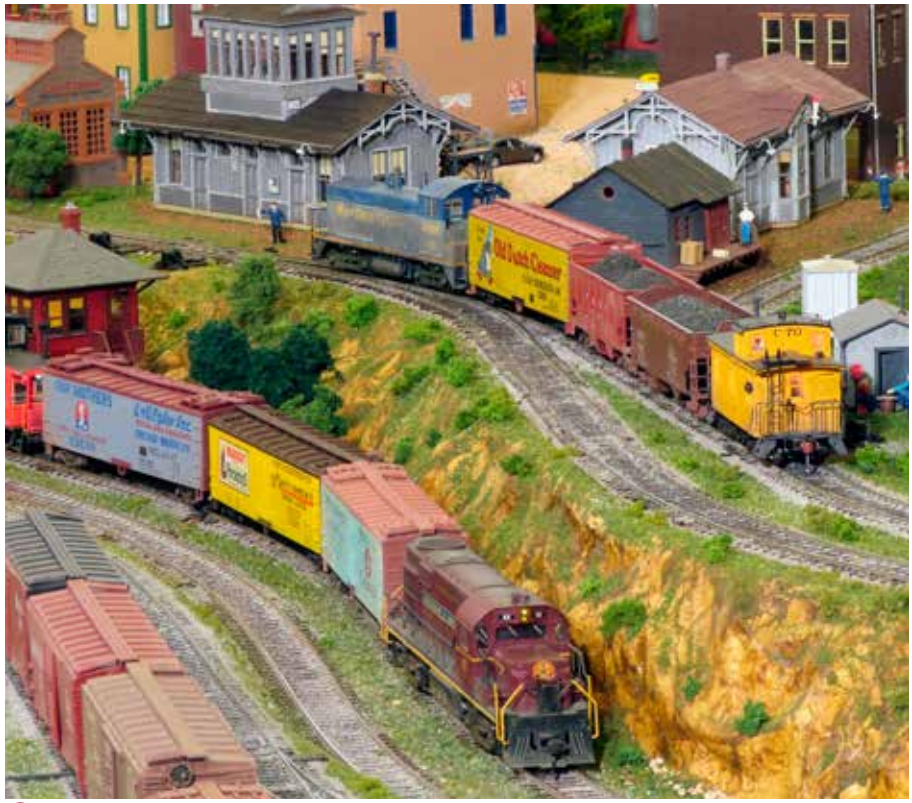
On the main control panel, a heavy-duty double-pole double-throw (DPDT) switch toggles the layout between run and programming modes. Another DPDT switch on the panel lets me switch the entire railroad from DCC to 12V DC for troubleshooting.

I divided the layout into six electrical blocks. The balloon track and the yard in downtown Rockfish are also auto-reversing zones.

A four-cycle car forwarding system is used for operation. It works well with the short sidings of the Wolf Creek Central. Short trains of up to five cars are more than practical.

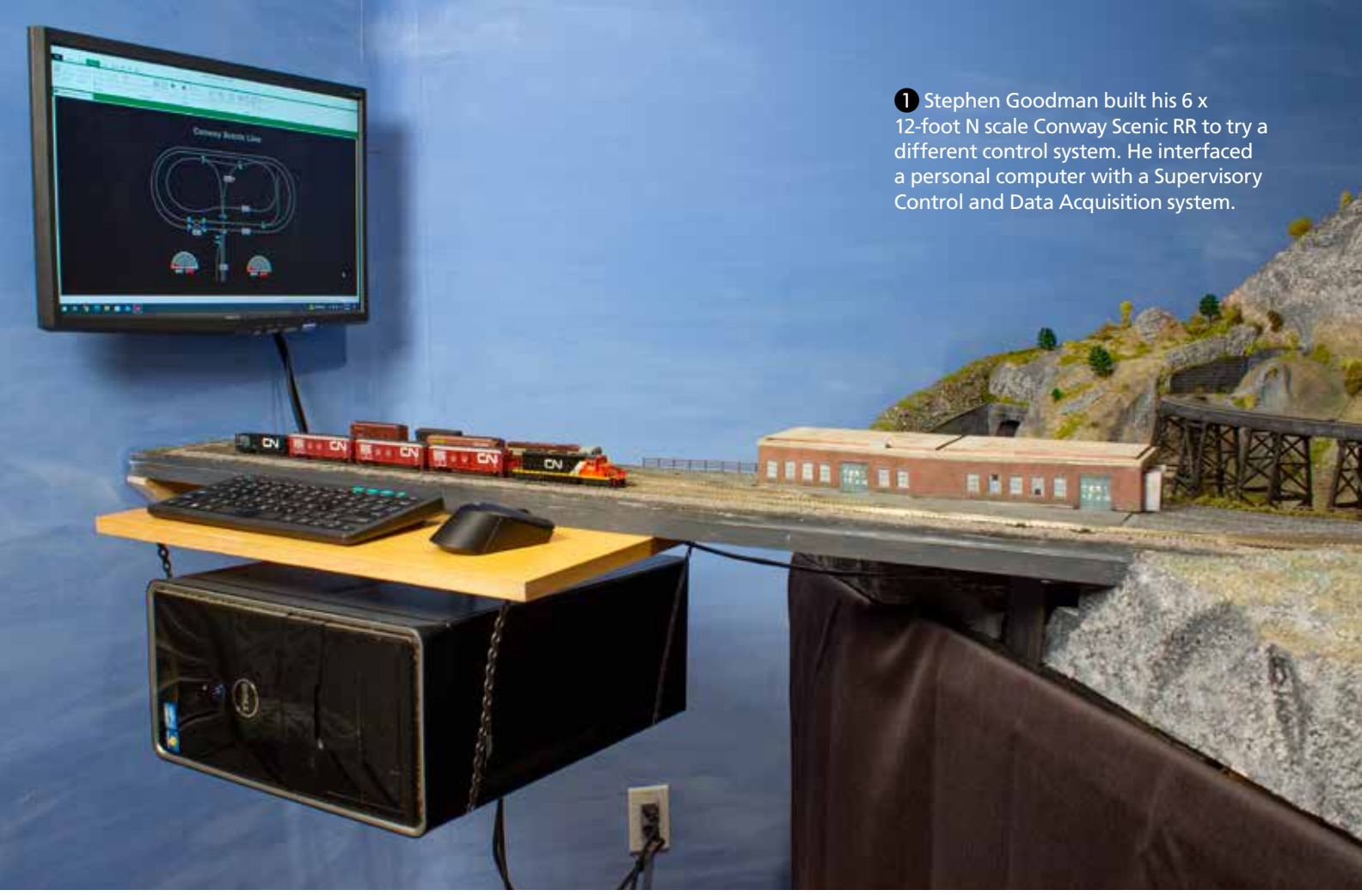
Enjoying the ride

The moderate size of the Wolf Creek Central presented everything that I wanted. The bias footprint offered challenges that made it interesting but fun to build. I hope John would be pleased to see a layout designed on the bias. MR



4 As a Wolf Creek Central end-cab switcher leads a train past QN Cabin, an Arkansas & Missouri Geep is on the point of a short train headed toward staging. Short trains like these are the name of the game on Jon's layout.

5 Aberdeen, Carolina & Western GP40-2W No. 703 leads a short passenger excursion train at Rising Sun. The AR depot and engine terminal are visible behind the train.



1 Stephen Goodman built his 6 x 12-foot N scale Conway Scenic RR to try a different control system. He interfaced a personal computer with a Supervisory Control and Data Acquisition system.

Build an automated layout

This 6 x 12-foot N scale model railroad serves as a test bed for a Supervisory Control and Data Acquisition system

By Stephen Goodman • Photos by the author

As a kid growing up in Montreal, I always used to read *Model Railroader*. I could never figure out why I was so entranced by the magazine, but I remember being able to read each one over and over again.

During each summer, my family moved to Bethlehem, N.H. I feel like I grew up in the White Mountains. Those summers inspired my second layout in 30 years, the Conway Scenic RR.

For this N scale layout, I focused on efficient benchwork and scenery techniques. The 6 x 12-foot model railroad is controlled by something you don't see every day, a Supervisory Control and Data Acquisition system (SCADA).

Setting the stage

I built the layout in a carpeted, well groomed basement. I had no room for spills or any permanent flaws.

My goal was for this model railroad to fill as much of the uniquely shaped room as possible, so I chose N scale. The entire layout building process took almost 18 years, including many long breaks and a move to a new house prior to the scenery phase.

The layout's benchwork includes subroadbed that I cut from ⅜" plywood. I used vertical risers to build gradual, smooth grades. Few parts of the layout have no grade.

❷ After shaping the extruded-foam insulation board mountain, Stephen removed it from the benchwork to complete the basic scenery. He used a wire wheel and drywall hand saw to shape the foam.

The scenery takes shape

Once the track was installed and connected to the control system, I added the scenery that was to re-create the White Mountains of New Hampshire.

I used extruded-foam insulation board to build a thin-shell mountain using a knife and hot glue gun. Once the basic shape was completed and the few cracks were filled with drywall mud, I carved the texture using a spinning wire and a drywall hand saw. [Do this in a well-ventilated area and wear personal protective equipment. – *Ed.*]

Yes, this was a messy process, but the carpet was easily vacuumed. The results were worth the bit of clean-up. I used latex paint, sometimes brushed and sometimes sprayed, along with common scenery products to capture the look of the White Mountains I was going for.

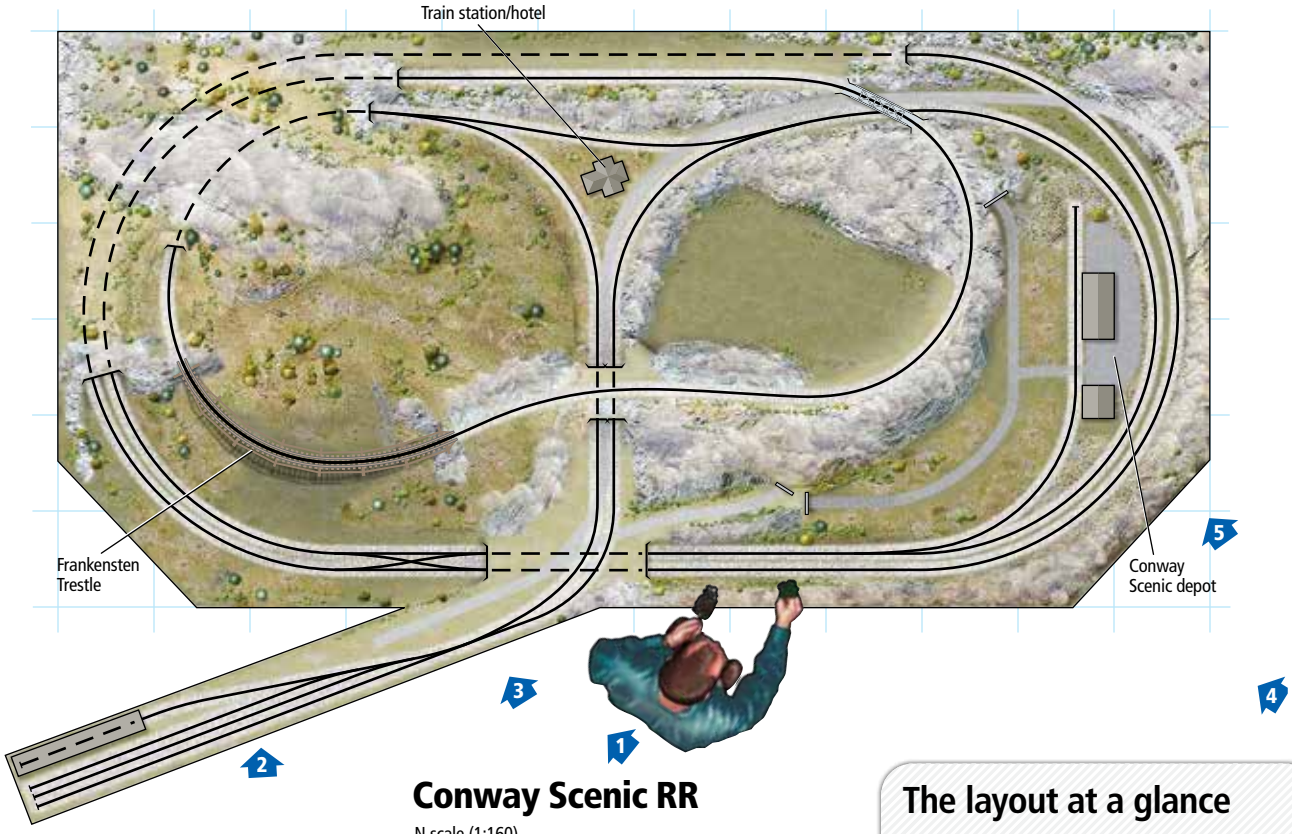
As the layout progressed, segments were completed before the next was even started. I did this to continuously change the project of the day and keep the layout building process fun and interesting. I was gratified every time I finished a new scene.

❸ Stephen prepared the scenery for this mobile module off site and installed it when complete. Notice how other sections of the layout are still in their early stages.

The last area I finished was the center, which included a train station/hotel. I saved this section until the end as I was using it for an access port to reach the rest of the layout.

Old Man of the Mountain

One of the highlights of the layout is a model of the most famous landmark of New Hampshire, the Old Man of the Mountain. This amazing natural phenomenon used to be seen in Franconia Notch, high in the mountains and only visible from a single angle in the valley.



Conway Scenic RR

N scale (1:160)
Plan size: 6 x 12 feet
Scale of plan: ½"= 1'-0", 12" grid
Numbered arrows indicate photo locations
Illustration by Kellie Jaeger

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

The layout at a glance

Name: Conway Scenic RR
Scale: N (1:160)
Size: 6 x 12 feet
Prototype: freelanced
Locale: New Hampshire's White Mountain region
Era: modern
Style: island
Mainline run: 45 feet
Minimum radius: 36"
Minimum turnout: No. 8
Maximum grade: 3.5%
Benchwork: open grid
Height: 36"
Roadbed: Cork
Track: Peco code 80 flextrack
Scenery: extruded-foam insulation board
Backdrop: painted on walls
Control: SCADA automation system

The landmark fell one night in 2003. The profile of the Old Man remains on New Hampshire license plates to this day.

I re-created this famous landmark by building a replica of the rock formation that can only be seen from a single point in the room. I challenge visitors to find my version of the Old Man when they're standing in the room. It's fun to watch when they finally settle in the correct spot, and it pops out at them.

Making it automated

One of the main reasons I started this project was to integrate the model railroad with a SCADA system as the main control for all layout functions. I worked at a SCADA company that built equipment used in the automation of remote infrastructure, including gas wells and water works.

The layout is controlled by a Control Microsystems SCADAPack32 system with auxiliary analog output, digital input, and digital output expansion modules. There are approximately 250 points available for control. The Human-Machine Interface (HMI) software is ClearSCADA, a system that can control literally hundreds of thousands of points. A screen shot of the HMI interface is shown on page 37.

The two semi-circle elements at the bottom control two separate power supplies to the layout's five direct-current blocks. (No, this doesn't have digital control to the locomotives, and is thus not ideal, but that wasn't the main idea for this layout). The throttle is operated by pressing on the triangular elements in the semi-circle as if you were pulling back on a throttle. The squares below the throttles control the direction, which is indicated on the block as a small arrow.

The green and blue buttons are for turnout control. A green square indicates the current position of a turnout. If you want to line the switch for the opposite route, press the blue button. Once the action is complete, a verification signal changes the colors on the HMI to indicate the action was successful.

The system also uses optical sensors to detect which block a train is in at any time and what direction it's going. The system is then able to indicate if there's any impending doom, such as a turnout lined incorrectly. If this happens, the system will trigger a number of alarms and actions, including slowing the train and sending a message to the operator's cell phone and the HMI. If the train gets close to the turnout, it will automatically bring the locomotive to a stop.

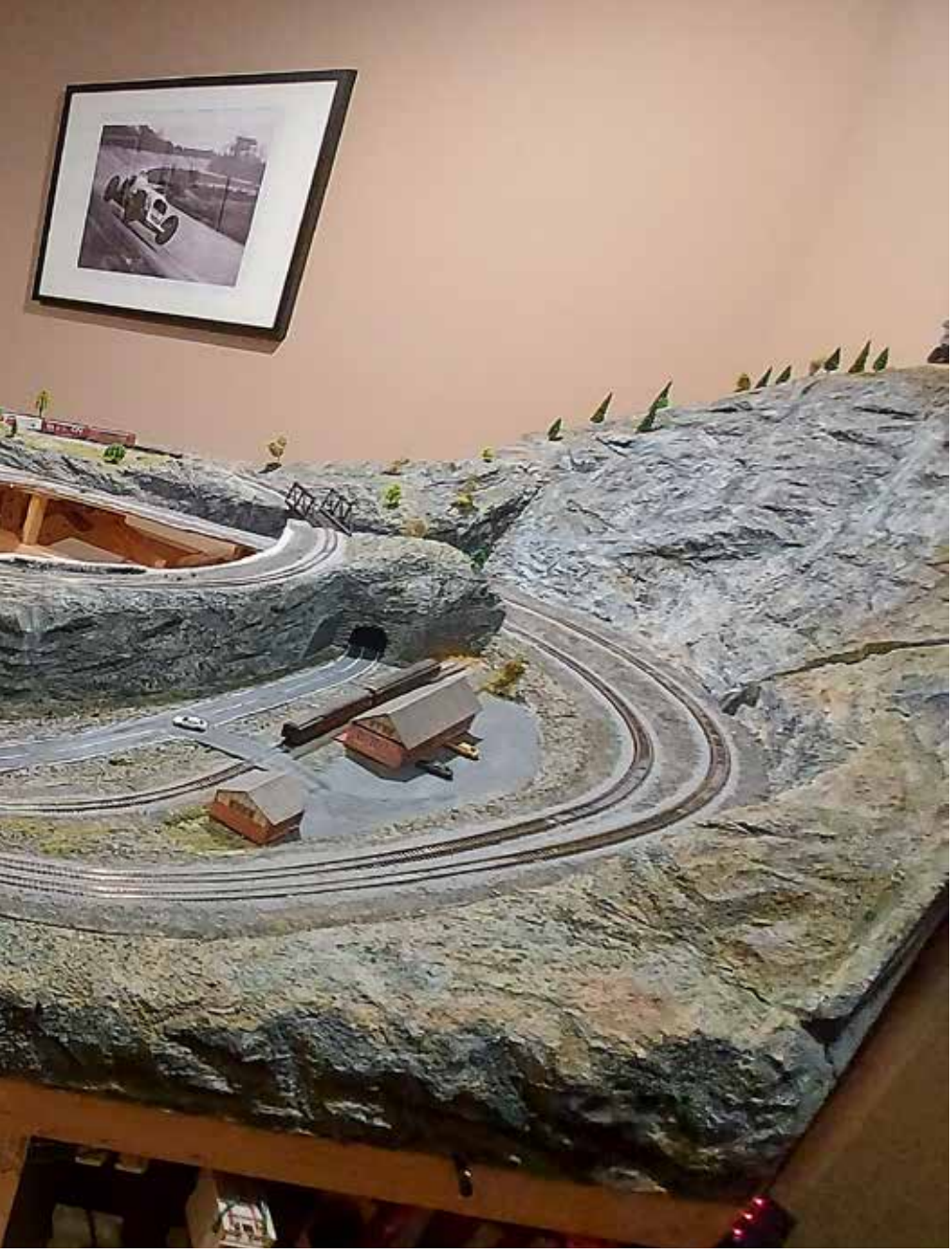
Of course, the entire system can be run remotely from anywhere in the world over the internet using a phone app or through a remote PC with the software on it.

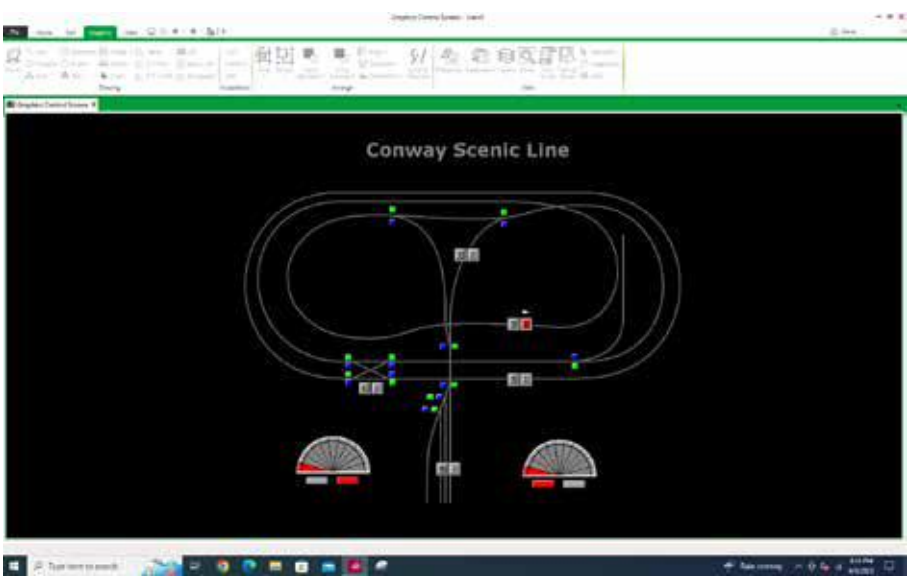
The Conway Scenic RR

True to my desire to be efficient, I elected to construct all of the buildings using cardboard with printed details. There aren't many structures on the

❹ The last module that Stephen installed covered an area he was using as an access port to work on the rest of the layout. All of the structures are cardboard with printed details.

❺ The Control Microsystems SCADAPack32 system features auxiliary analog output, digital input, and digital output expansion module options. All three are utilized on the N scale layout.





6 This screenshot of Stephen's graphics control screen shows all the controls that are needed for the layout. Trains and turnouts are all operated from this interface.

Meet Stephen Goodman

Stephen Goodman lives in Ottawa, Ontario. He is a mechanical engineer by trade with a PhD in materials science. His career has included periods within the aerospace and industrial automation sectors. He is an avid classic car enthusiast and has been involved in model railroading since childhood.

layout, giving you the feeling that the scene is mostly undeveloped.

One of the most famous parts of the Conway Scenic RR is Frankenstein Trestle, located in Crawford Notch. I built a quick model of it with foam and balsa, using my imagination instead of exact details.

When I understood that my layout might be covered in *Model Railroader*, I decided to create my own Conway Scenic locomotive and passenger car set based on what was in operation throughout the past 20 years. Of course, none of these are available commercially in N scale, so I had to paint my own models. Conway Scenic No. 2820 is a General Electric U23B from the late 1960s. I used the Life-Like Alco C424 version of this model [Atlas released the U23B painted for Conway Scenic RR No. 2820 in its 2019 release –*Ed.*] The passenger cars are a mix of Pullman-Standard, Canadian Car & Foundry, and other prototypes.

An interesting exercise

The scenery methods that I used worked as intended to keep my basement environment clean.

However, the use of a SCADA system to control the layout was complicated and demanding. To keep it operational for this many years has meant regular maintenance – changing PCs as one got older, making sure the software in the controllers is archived in case it needs to be reloaded, and updating software licenses, among other items. I don't suggest anyone try this method to run trains, but it was an interesting exercise. My next layout will adopt a purpose-built model railroad control system. MR

Modeling railroad MAINTENANCE OPERATIONS

Conrail B23-7 1989, freshly outshopped after repainting, leads WOR-402, a work train on the Onondaga Cutoff. Dave Abeles shares ways you can add maintenance operations to your model railroad.

Model the work of "those other railroaders" with inspections and work trains

By Dave Abeles • Photos by the author

When we wave to the engineer on a train rolling past on the prototype, it's easy to forget about all the other people needed to keep it rolling. There's more going on behind the scenes to support that train than meets the eye.

Most important of these unsung jobs is maintenance – the art and science of keeping track, bridges, signals, and structures in a state of good repair, ensuring safe passage of trains carrying passengers and freight. It's a hardworking, tough, and experienced group of people who surface track and change worn rail, calibrate switches and signals, and clean and repair railroad facilities and bridges. Unlike other modes of transportation, railroads own their property and infrastructure and must maintain it out of their own budgets.

It's an expensive proposition. Most railroads employ an entire workforce of skilled labor and technical professionals just to maintain these assets. When we talk about "railroaders," we must keep in mind that the word also includes these other railroaders – the ones who never run a train, but create, maintain, and monitor the infrastructure to keep the trains moving.

Signals are maintained and inspected according to the Code of Federal Regulations (CFR). On the Onondaga Cutoff, that means maintainers must climb the former NYC signal bridges, such as the maintainer seen here on the bridge at Control Point (CP) 277. The company pickup is typical for the sort of vehicles used for inspection trips.

Modeling maintenance operations adds a new level of realism to your layout regardless of era or prototype.

On-track equipment is stored in yard tracks when not in use. For layouts, it's an opportunity to showcase custom models like this Jordan Spreader, an Overland brass import modified and painted by Dave, and a Russell snowplow, made by Walthers.

Storage trailers, common along maintenance yard areas, offer some fun modeling opportunities to include "fallen flag" paint jobs weathered to fit the era. Here a former Erie Lackawanna trailer and a former Penn Central boxcar perform storage duties for Onondaga maintenance crews. The truck is a custom resin cab on a Herpa frame with a scratchbuilt body, fitted with a Herpa boom.

Ballast tamping is a dusty, gritty job on the railroad. Thanks to Bachmann's motorized tamper, a moving tamper can be added to operating sessions. Decals from Microscale's Conrail Ballast Car set complete the model so that it looks right at home on Conrail.

Maintenance activity adds depth of context to a scene and allows a viewer to see more of the whole picture. On my HO scale Conrail Onondaga Cutoff, modeling this group of railroaders provides for visual interest and operational challenges that help bring the layout and operation to life.

Track, bridges, and signals

Track is foundational to railroading itself. Among the infrastructure group, the track guys like to say that they're the most important: they're the only ones absolutely required to run trains. No bridges? "Ahh, they can be filled in." No signals? "Run on the timetable." It's a fact that track maintenance is central to railroading, and most railroads have a battery of resources to make it happen.

Prototype track maintenance checks the gauge of the rail and condition of the ties, uses ultrasonic testing for rail integrity, cleans drainage ditches, and checks for settling along or under the track. Fortunately for modelers, manufacturers have produced an assortment of kits and ready-to-run equipment that helps us model this activity.

Bachmann makes a variety of track maintenance equipment in HO scale, including a motorized tamper and a motorized hi-rail truck in various road names. Walthers manufactures a Sperry Rail Car, a motorized former passenger car for rail inspection. Details West produces a kit to turn HO pickup trucks into non-motorized hi-rail trucks. Custom Finishing has an extensive line of cast-metal kits for on-track equipment, including ballast tampers, tamper-aligners, and other equipment.

Many vehicles on the railroads were customized by that road, so there's an opportunity for scratchbuilding or kitbashing. Cabs for work trucks are available as resin castings from a variety of sources, including ralphratcliffemodels.com, and as 3-D printed models from sites like shapeways.com.

Another aspect includes some of the larger pieces of equipment used for different maintenance jobs. One of the most versatile is the Jordan Spreader, made by the Jordan Co. in a variety of configurations. These have many uses, including ditching, snowplowing, and ballast spreading. Walthers and Overland manufacture models of Jordan Spreaders in various scales, and Shapeways has 3-D printed options as well. Even if our models can't actually clear ditches, plow snow, or spread

Track crews are always busy on the railroad. Here, the Onondaga Cutoff track gang prepares to change a frog in a switch at CP 282. The dispatcher and yardmaster will need to change their procedures while the work is completed. Both trucks feature cast-resin cabs and kitbashed Herpa frames with scratchbuilt bodies. Decals from Vernon Shops complete the models.

ballast on our rights-of-way, we can use these kits for static display or as run-through movements.

Railroad bridge maintenance includes trucks equipped with specialty booms and mechanical arms that lift heavy steel beams or wooden bridge timbers into place. Herpa makes booms that can be kitbashed onto trucks to represent knuckle booms, commonly used in bridge maintenance due to the tighter clearances restricting access. The firm also manufactures wheels and truck frames that are great starting points for kitbashing trucks.

Signal maintenance, also specialized, involves a number of federally-regulated inspections and preventive maintenance for signals, switches, and associated electronics. The signal department generally uses pickup trucks and some of the same boom trucks as the other groups, along with machines to place cable in ditches. With buried cable running between signal masts and signal cabinets along the right-of-way, signal maintenance requires close coordination from the track department when the track gangs with their mechanized equipment work in the area of signals and interlockings. (For more on signals and interlockings for your layout, my book *Guide to Signals & Interlockings* is available from Kalmbach Books).

Trackside details

All railroad maintenance activities require skilled employees with specialized knowledge. Railroads use employees from a Bridge and Building Department (B&B for short) to handle bridge repairs as well as repairs to stations and other company buildings. These people use on-track equipment and other vehicles to perform the work, but also a variety of materials we can include on our layouts.

Materials needed by maintenance crews in the form of new ties, spare rail, tie plates, and spikes are stocked wherever there's a little extra space on railroad property, along with extra ballast and larger stone (called rip-rap) used to stabilize embankments during floods. These stores and piles are simple to model using commercially available ties and rail, cut to length and stacked along the track.

There are two major categories of railroad bridge track – ballasted-deck and open-deck. Ballasted deck bridges use track placed in a ballast bed that's continuous across the bridge. Open-deck bridges have wooden ties resting directly on the steel superstructure of the bridge and use backwalls to hold the non-bridge ballast off the bridge.

Some common bridge parts are kept on hand, but the majority of railroad bridges are custom-built for a specific

Working on bridges is a specialized and complicated process, especially when revenue moves are on adjacent tracks. The Onondaga B&B (Bridges and Buildings) team has one of its boom trucks on Track 1 to repair damaged walkway grates on bridge 277.76 over the old Erie Canal. The crew works from Track 1 so Track 2 can stay open for SD40-2 No. 6437, leading train SENF.

Real situations, modeled solutions

During a recent operating session on my HO scale Onondaga Cutoff, I noted a passing LPG propane tank car that had lost a side ladder. I walked the route back around, hoping to find the ladder so that I could make a quick repair. I found the ladder on the through-truss bridge over the Erie Canal – as well as the culprit: the etched-brass walkway between the main tracks had come loose and snagged the ladder. The ladder pulled the walkway back over itself, creating a bent mess of brass that had torn the ladder from its mount.

Using the FRS radio, I called the Mohawk Dispatcher to report the defect. I became "Foreman Abeles" with the Onondaga B&B Department. The dispatcher responded by holding trains out of the area while I inspected the damage. Several trains, even priority piggyback trains, were delayed as a result. I placed a few maintenance trucks along the bridge to suggest a work zone on Track 1 and advised the dispatcher that trains could pass on track 2, but only at restricted speed to allow for a safer work zone for the B&B gang. The dispatcher then contacted the train crews via radio and each crew copied a NORAC Form D to get permission through the work area at restricted speed.

I was able to cut the walkway free and reinstall it with a few small dabs of Walthers Goo adhesive. Once the work was complete, I used the radio to cancel the Form D for the speed restriction.

Modeling the maintenance in real time added a layer of fun variety for operators and made for some fun tongue-in-cheek conversation about the Onondaga B&B crew's work quality. – *Dave Abeles*

Getting it done

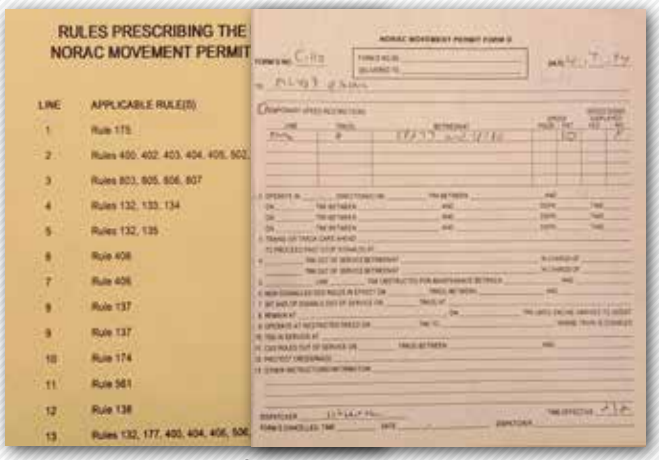
Maintenance operations can add a lot to your railroad's operating scheme. While most inspections can happen without interfering with normal train activity, some inspection work and a large amount of maintenance requires dedicated time for track to be out of service to revenue trains. This can be woven into the sequence of operations and often requires special paperwork and permission to ensure only the maintenance crews occupy the track.

If maintenance is being performed by a locomotive with cars, often that movement is treated like any extra train. Examples include ballast trains, rail trains, and trains setting out new ties for future replacement.

For other on-track equipment that doesn't reliably shunt the signal system, there are two major types of track permissions for maintenance activity: foul time and designating a track out of service. Foul time is for activity that doesn't disturb the track bed or affect the integrity of the track. It's appropriate when an off-track crane is lifting supplies closer to the track or for most inspection activity. Designating a track as "out of service" is used for maintenance that may affect the stability of the track. This includes ballast tamping, bridge repairs, rail replacement, culvert construction and the like.

Operationally, foul time is granted and released via verbal permission from the dispatcher or operator for a maintenance crew to be on a certain track for a certain amount of time. On the other hand, because physical work on track or bridge potentially impacts the structural integrity of the track itself, it needs more formal authority.

Written permission is required to remove track from service and return it to service under the rulebook that governs that track. For northeastern railroads, this includes the Northeast Operating Rules Advisory Committee (NORAC)



Conrail is a member of the Northeast Operating Rules Advisory Committee (NORAC) and uses NORAC Form D to grant track authority for maintenance. Each book comes with a list of rules applicable to different jobs and a number of blank sheets used to ensure both the dispatcher or operator and the movement have the same information. Form Ds are also used for speed restrictions, like this one issued to ML403, a westbound auto rack train.

Form D, while railroads using the General Code of Rules (GCOR) follow the GCOR Track Permit procedure. These rules provide specific directions for removing a track from service.

Once the work is complete, the rules also govern required inspections and approvals before regular train operations can be resumed over the track – since track integrity is involved, everyone needs to be absolutely sure that track will not fail underneath a train. Like the prototype, you can use paperwork to take track out of service to simulate maintenance or to simulate speed restrictions to be handed to passing trains. – *Dave Abeles*

location, so standardized parts are relatively rare. Still, bridge ties are often kept on hand for use on open-deck bridges. While these too are often customized, wooden ties can be quickly cut to length using hand saws. Steel shapes, girders, and trusses can be modeled easily from leftover bridge kit parts from as well as shaped plastic from firms such as Plastruct or Evergreen.

A few old truck trailers or containers are often used as storage for small items, tools, and materials that are more sensitive to the weather. This is a good opportunity to include a heavily weathered trailer, perhaps from an earlier era or a predecessor railroad, on your layout. Prototype photos are great to guide your weathering effort as well as deciding where to place the storage trailers.

Finally, thanks to several figure manufacturers, we can populate our work locations with maintenance crews from multiple eras. Bachmann, JTT, Preiser, and others offer painted and unpainted track workers and maintenance figures. These are available in modern versions with high-visibility vests and hard hats and more traditional versions from earlier eras when such clothing and Personal Protective Equipment (PPE) wasn't required.

Bachmann also released a DCC-equipped hi-rail work truck that makes for some variety during operating sessions. Here, truck TC-5180 works around the superelevated curve at MP 279.8 on a routine track patrol.

A wave from the cab

Take some time to place some maintenance supplies and personnel trackside. An old siding or area can be used to stage a Jordan Spreader or other equipment or to display a maintenance vehicle or a kitbashed truck. A working hi-rail truck or ballast tamper can run between trains, adding a sense of prototype flavor to your railroad. Next time you're moving a regular revenue train on your model railroad, you can imagine giving a wave to the maintenance crews you've located around the layout. Remember: there are a lot of different kinds of railroader, and each one plays a role in keeping the trains moving! MR

Dave Abeles is a frequent contributor to Model Railroader *magazine and its special publications, including* Model Railroad Planning 2024, *available to order now. His track plan appeared in* Model Railroad Planning 2018.

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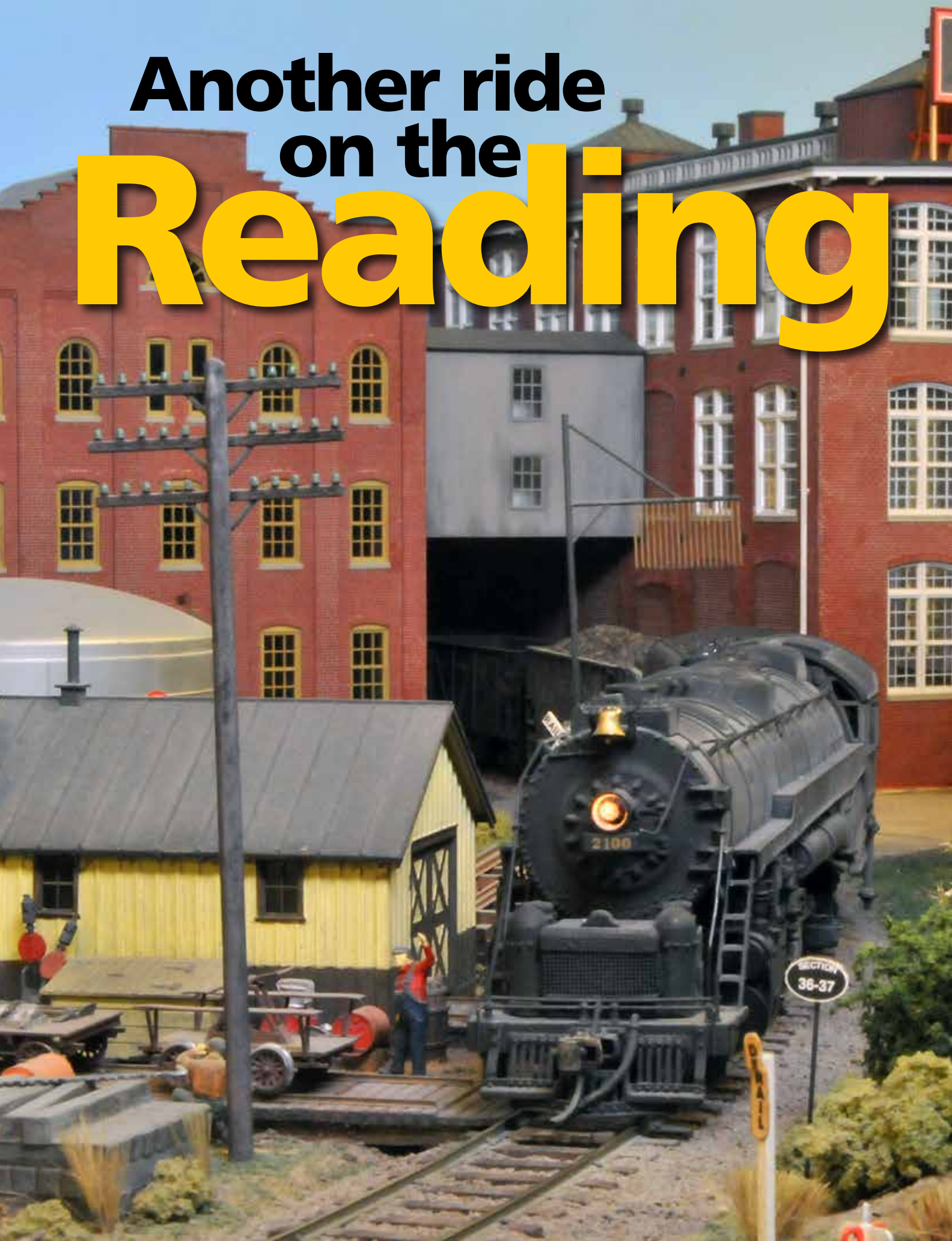
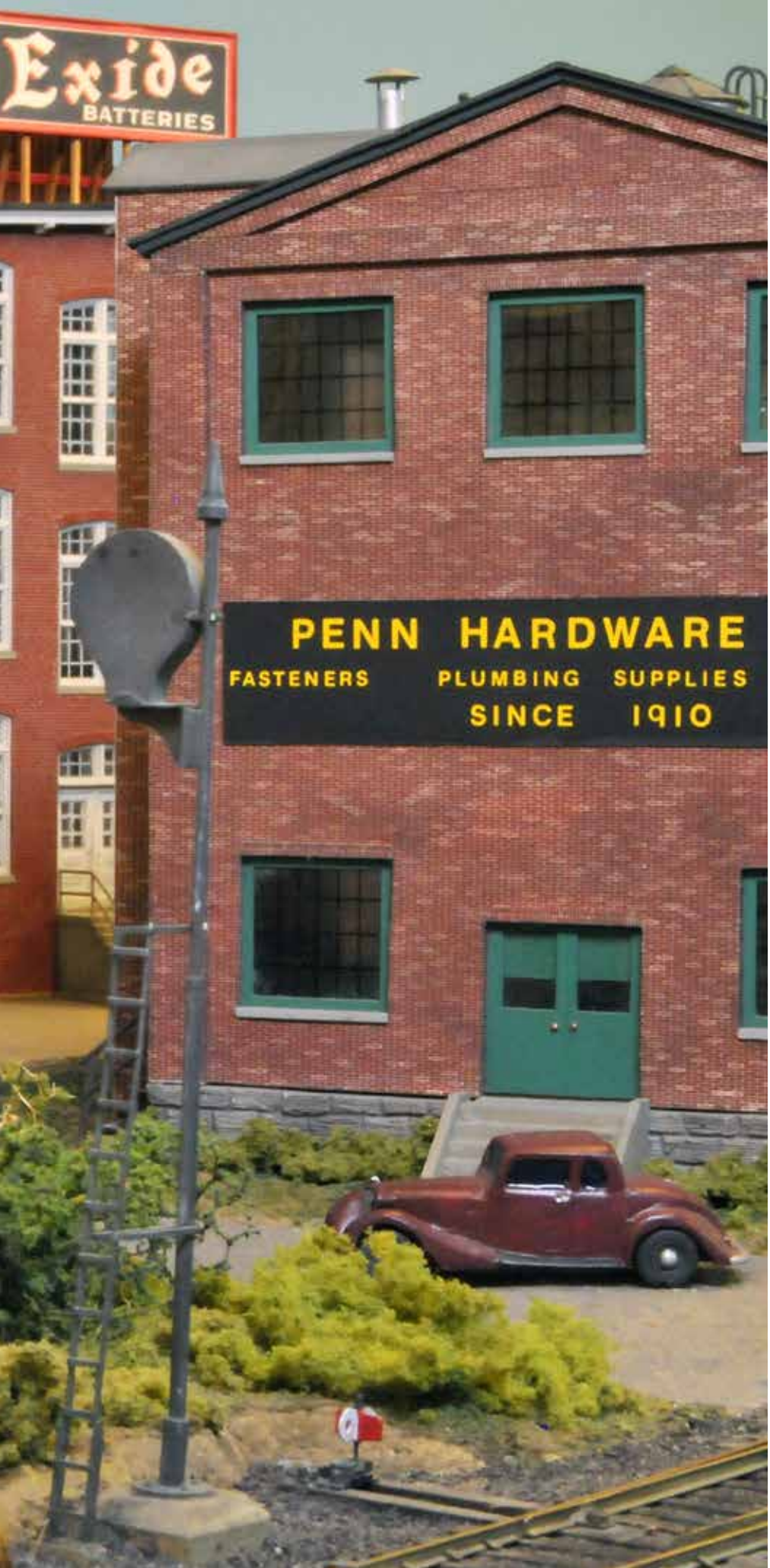
Another ride on the Reading





New scenes, structures enhance this 13 x 22-foot HO scale layout

By Lou Sassi • Photos by the author

For some people, the third time is the charm. In Jerry Strangarity's case, the fifth time is. After building but never finishing four previous layouts, Jerry is bringing his 13'-6" x 22'-0" HO scale Reading Co. closer to the finish line. The model railroad is set in eastern Pennsylvania during the 1930s and '40s and features a mix of steam and early diesel locomotives.

Longtime *Model Railroader* readers may recall Jerry's layout from the November 2010 issue. Since that visit, Jerry has completed the final three areas: West Philadelphia, Reading/Hamburg, and Birdsboro.

A familiar path

Jerry's interest in model railroading began when he was about 12 years old. His father bought him a Revell train set for Christmas, and his mother let him build a small layout in the dining room. Jerry recalls that over the next few years, the model railroad stayed up for months at a time until it was put in the garage for storage until the next Christmas season.

Further fueling Jerry's love for the hobby was his father's interest in model trains. Though his father never had a layout, he constructed a number of freight cars, both kit built and scratchbuilt. Many of those cars can be found on Jerry's layout today.

A native of Reading, Pa., Jerry developed an interest and appreciation for the Reading Co. and the architecture of that area. He spent six years building his version of the Philadelphia industrial district before starting on the layout shown here. You can learn more about Jerry's 2½ x 17½-foot Philadelphia section in *Great Model Railroads 2003*.

❶ Reading Co. class T-1 4-8-4 No. 2100 leads a coal drag into Philadelphia on Jerry Strangarity's HO scale layout. The locomotive is a Gem Models brass import that has been repowered and now has a sound decoder.

❷ This view shows a large portion of Jerry's 13 x 22-foot layout. The Reading roundhouse is in the foreground, Birdsboro is beyond that to the right, and Locust Summit is at center.

Space to build

The model railroad is located in a finished basement with a drop ceiling and carpeting. The benchwork is a mix of open grid and modified L-girder. Some of the legs are bolted to the concrete floor with angle iron for greater stability.

The layout is illuminated with compact fluorescent light bulbs concealed behind a valance. Jerry painted the existing drywall sky blue. After the paint dried, he added clouds with an airbrush. He hand-painted the hills and mountains on the rest of the layout using an assortment of artist's tube acrylic colors and brushes.

In areas where there was no wall for a backdrop, such as the Philadelphia industrial district, Jerry attached tempered hardboard to the benchwork. The city skyline consists of commercial backdrop building photos that Jerry cut out and glued in place.

One recent addition is the city skyline behind the Reading yard. Here, Jerry used paper cutouts and kitbashed and scratchbuilt structure flats. [See photo ❺ on page 49. – *Ed.*]

City and country scenery

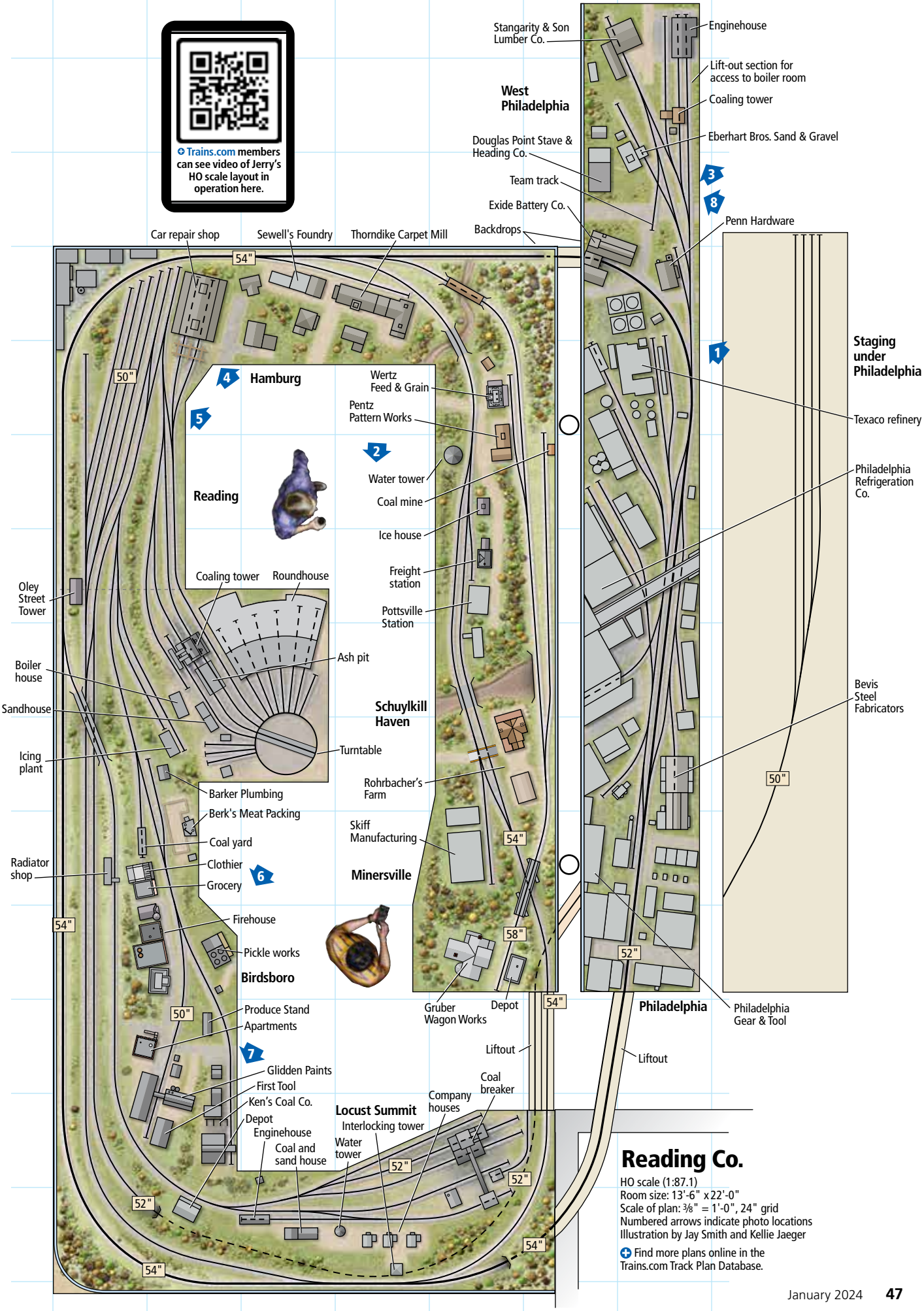
Jerry feels that scenery is one of the most interesting aspects of the layout. His model railroad includes heavy industrial, big-city areas; small towns; and rural settings, all of which capture the flavor of locations the Reading served in eastern Pennsylvania. The scenery and structures work together to present a realistic depiction of how things looked in the 1930s and '40s.

Jerry used extruded-foam insulation board as the starting point for flatter landforms. After carving the contours, he covered the foam with a thin coat of Structo-Lite plaster to get the final shape and surface texture.

For larger mountains, Jerry turned to the time-tested method of weaving a cardboard lattice, gluing it in place, and covering it in paper towels dipped in plaster. He also covered the dried plaster with a coat of Structo-Lite.

The layout at a glance

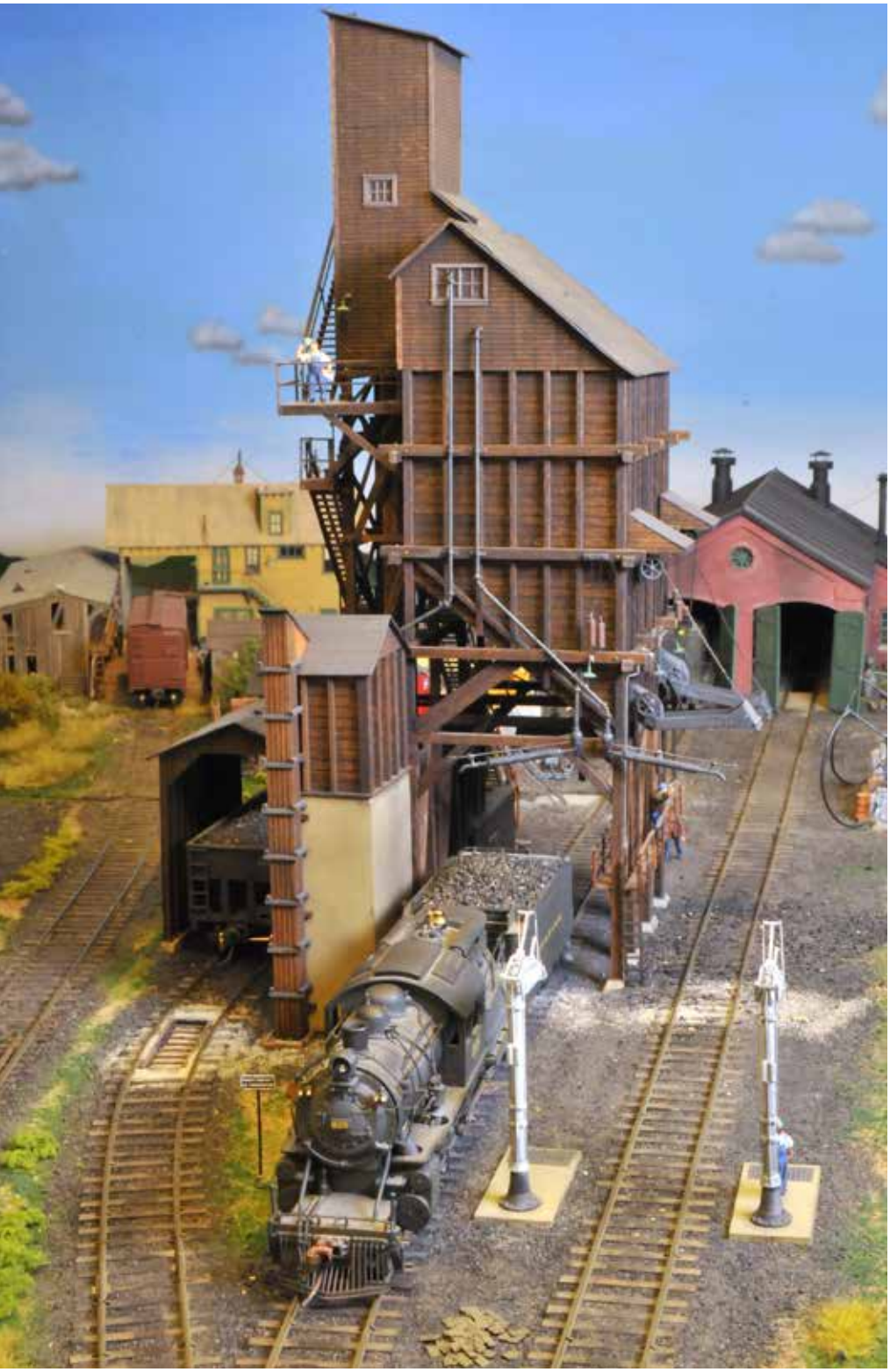
Name: Reading Co.
Scale: HO (1:87.1)
Size: 13'-6" x 22'-0" plus 2'-6" x 5'-3" West Philadelphia addition
Prototype: Reading Co.
Locale: eastern Pennsylvania
Era: 1930s to 1940s
Style: walk-in
Mainline run: 80 feet
Minimum radius: 36" (main)
Minimum turnout: No. 6 (main), No. 4 (yards and industries)
Maximum grade: 2%
Benchwork: modified L-girder
Height: 50" to 58"
Roadbed: cork on plywood (main), Homasote on plywood elsewhere
Track: handlaid code 55 and 70, code 83 flextrack
Scenery: Structo-Lite plaster on carved extruded-foam insulation board and plaster over cardboard webbing
Backdrop: painted drywall and tempered hardboard
Control: Lenz Digital Command Control



Reading Co.

HO scale (1:87.1)
Room size: 13'-6" x 22'-0"
Scale of plan: ⅜" = 1'-0", 24" grid
Numbered arrows indicate photo locations
Illustration by Jay Smith and Kellie Jaeger

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



❸ Reading Co. class L-7 4-6-0 No. 608 has just finished taking on coal in preparation for its next run out of West Philadelphia. Jerry scratchbuilt the coal tower on this new section of the layout from a series of construction articles published in MR during the early 1950s.

After the Structo-Lite dried, Jerry painted it with an earth-tone latex paint. Then he applied assorted Woodland Scenics ground cover, secured with a diluted mix of white glue and water.

Recently, Jerry began using Woodland Scenic static grass for lawns and field grass. He also uses the company's poly fiber material, attaching it to sagebrush trunks when modeling larger trees. Jerry sprays the poly fiber with unscented hairspray and covers it with Woodland Scenics ground foam.

For delicate underbrush and smaller trees, Jerry prefers Scenic Express SuperTrees. He glues ground foam to the natural material to simulate leaves.

For streams and rivers, Jerry first shaped the base using Structo-Lite plaster. Once dry, he painted the plaster and poured Woodland Scenics water products on top.

To simulate waves and ripples, Jerry applied acrylic gloss medium to the surface with a stiff-bristle brush. He drybrushed the peaks with white acrylic paint to mimic a froth.

Structure showcase

Structures on Jerry's layout are a mix of scratchbuilt, kitbashed, and kit-built. Many were constructed using prototype photos as a reference. Others were inspired by articles published in model railroad magazines.

Jerry uses an assortment of materials when scratchbuilding, including styrene, paper, wood, and cardboard. The materials he selects are influenced by the size of the structure and the type of building he is trying to re-create. If the prototype is wood, Jerry uses wood on the model, as he thinks it yields the most natural look.

When constructing larger buildings, Jerry uses Bristol board and Strathmore illustration board. To prevent these materials from warping, Jerry braces them from the inside with stripwood.

When Jerry uses cardboard for structures, he constructs the windows from various thicknesses of Strathmore. The material is denser then regular cardboard and leaves a cleaner edge when cut. He soaks the window pieces in clear lacquer to give them a smooth surface, almost like styrene.

Regardless of the media Jerry works with, he uses leather dyes mixed with alcohol to achieve various colors and weathering effects. He also details his structures as much as necessary to achieve a prototypical appearance. Some structures have only two or three sides, because the entire building isn't visible. "Why model what you can't see?" Jerry asks. He notes that roof details are especially important, since they're often the most visible part of a building.

This is Reading territory

The track plan is an original design and was motivated by Jerry's desire to

model some of the various locations that the Reading Co. ran through. That includes Philadelphia; Reading, including its large engine terminal; Birdsboro, a typical Pennsylvania small town; the eastern Pennsylvania coal region; and some rural areas.

The track in Locust Summit and Philadelphia was hand-laid using code 70 rail on hand-cut ties. The mainline and other areas use Atlas code 83 flextrack laid on cork roadbed and secured with caulk. Jerry handlaid many of the sidings and spurs with code 55 rail.

There are two bridges on the railroad, one a Central Valley truss bridge and the other a Micro Engineering through plate girder. Jerry built the turntable in Reading from an article published in MR many years ago. It rotates using a worm-and-gear drive manually operated by a hand wheel mounted on the fascia.

Jerry's locomotive roster consists of 20 steam engines and five diesels. Most of the steam engines have SoundTraxx sound decoders. While the majority of Jerry's steam fleet is brass imports, he does have a few plastic models from Bachmann and Precision Scale Models.

In addition, Jerry has a scratchbuilt 0-6-0 and a 2-10-0 with a scratchbuilt boiler and cab, Bowser mechanism, and Mantua tender. He also has a brass Camelback that was kitbashed and detailed to look like a Reading engine.

Jerry's freight car fleet has approximately 250 cars, including more than 100 billboard refrigerator cars. Many of the cars are kits produced years ago by manufacturers such as Ambroid, Mainline Models, Red Ball, and Silver Streak. He usually adds or substitutes detail parts from Grandt Line (now San Juan Details) and Tichy Train Group to give them better detail.

The refrigerator cars are a mix of any wood-side car Jerry can find, such as Athearn, Train-Miniature, and Walthers, to name a few. He paints the cars and letters them with sets from Champ Decals, Clover House, and others.

Most of Jerry's passenger cars are Reading Co. prototypes, primarily Bethlehem Car Works kits. He has one special model, a wood business car with a clerestory roof that he scratchbuilt in 1970. The car won an award at an NMRA division model contest. On occasion Jerry also runs Pennsylvania RR passenger equipment.

Jerry weathers all of his rolling stock with a mix of acrylic washes, drybrushing, and airbrushing. Sometimes he uses an India ink wash.

❹ The Reading car repair shop is one of the new structures on Jerry's layout. The building features a removable roof and detailed interior.

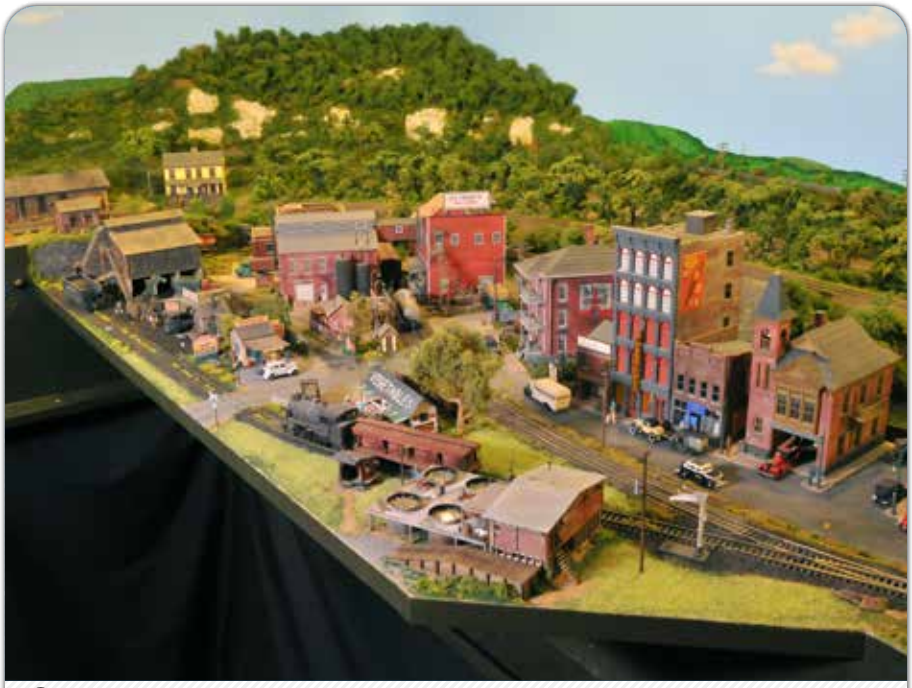
Finally on the layout

I built the Reading Co. car repair shop more than 50 years ago following a discussion with my grandfather. He talked about working in the Reading Co. shops as a kid and recalled the long working hours, dirt floors, and grimy conditions. After listening to him recall his railroad experiences, I decided to build a model based on his descriptions.

I used balsa wood for the walls, then covered them with Model Hobbies brick paper (no longer available). The windows are Strathmore cardboard. I scratchbuilt the overhead crane inside from styrene. The model won best of show at a National Model Railroad Association regional convention.

The car repair shop languished underneath the layout for several years. Recently, a friend suggested I make some adjustments to the track plan so I could put the structure to use. More than a half century later, the car repair shop has finally found a permanent home. – *Jerry Strangarity*

❺ Class M-1 2-8-0 No. 2041 is in charge of a solid coal train rumbling through the railroad's namesake city. The skyline consists of scratchbuilt and kitbashed structures and paper cutouts glued to the backdrop.



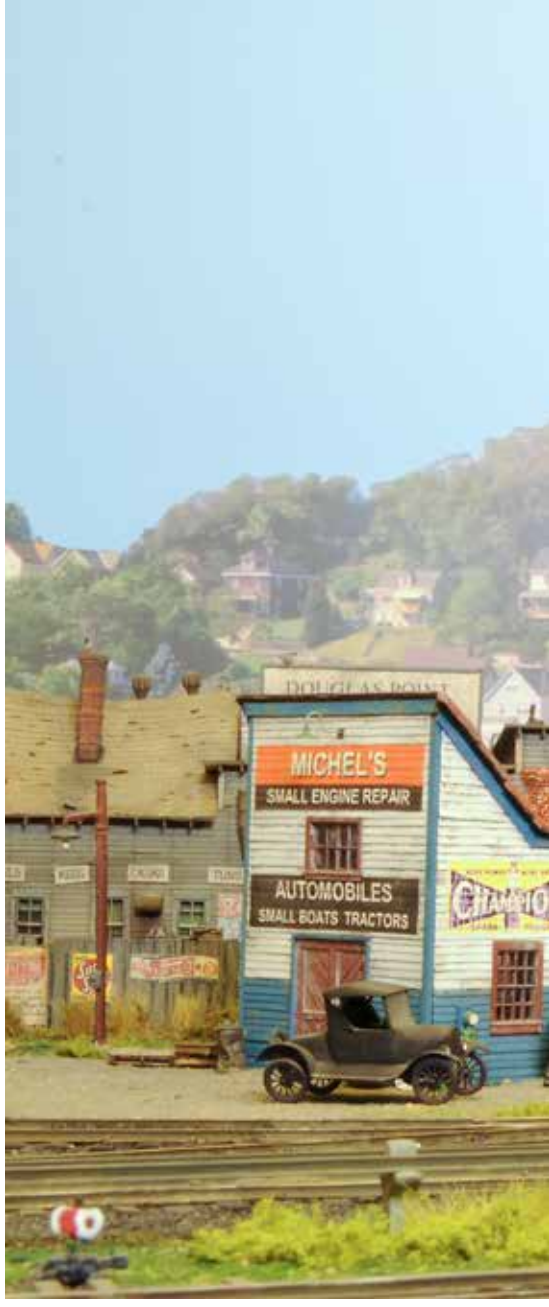
❻ A simple bump-out at Birdsboro added more buildings and rail-served customers to Jerry's layout.

The Birdsboro bump-out

As I was surveying my layout, one area that I wanted to expand with more buildings and rail-served customers was Birdsboro. However, the only place I could add on was in the aisle.

Taking away aisle space isn't ideal. However, since I was only adding one spur, I was able to keep the bump-out's footprint fairly narrow. Further, the existing track was near the front edge of the layout, so reaching in to line turnouts and rerail cars wasn't a problem.

I used heavy-duty shelf brackets to support the bump-out. After adding the track and structures, I blended the scenery between the new and existing sections. The finished bump-out looks like it has always been part of the layout. – *Jerry Strangarity*



❼ Loose-car railroading was still common in the 1930s and '40s. Reading Co. class B8b No. 1395, an 0-6-0C, backs down the siding to pick up an empty hopper at Ken's Coal Co. in Birdsboro.

Running trains

Jerry operates his layout with a Lenz Digital Command Control System and six handheld controllers. The railroad is divided into three power districts.

The mainline turnouts are controlled with twin-coil switch machines, actuated by push buttons mounted on the fascia. The twin-coil machines are powered by a capacitor-discharge unit to eliminate any possibility of coil burnout.

All other turnouts are operated with a push-pull rod and single-pole double-throw slide switch mounted directly under the turnout. The switch moves the points via a length of wire, while the frogs are powered through the switch.

In a few locations there are scratch-built, non-operating banjo-style signals. The styrene signals are based on those used by the Reading in the 1930s and

'40s. In Philadelphia, both banjo and semaphore signals are used.

A typical operating session consists of a wayfreight running from Reading to Philadelphia, where a lot of switching takes place. A local freight runs from Reading to Birdsboro, while several other freights run from Reading to other locations around the layout.

A dedicated coal drag of Jerry's father's wood hoppers runs from the coal mine at Schuylkill Haven to the breaker at Locust Summit. Loaded and empty trains operate between Reading and Locust Summit.

Passenger trains, mostly commuters, are run around the main from time to time, stopping at stations around the layout. Through freights go between the staging yards under Philadelphia and Reading where cars to local industries are sorted.

8 Jerry's locomotive fleet consists of 20 steam engines and five diesels. Alco HH900, built in 1937, spots a hopper at Eberhart Bros. Sand & Gravel Co. The industry and the gray barrel-and-stave mill behind it are both Fine Scale Miniatures kits.

Into the future

Jerry feels he has been successful at re-creating the look of the Reading Co. in eastern Pennsylvania (though he'd hoped to model a few more depots). Various buildings around the railroad set the scene for Reading country and were built to replicate specific prototypes or be representative of structures from the area and era he's re-creating.

Jerry does have some minor detailing he'd like to complete. He's also considering a big change or two. But as he puts it, "That is purely speculation." MR

Meet Jerry Strangarity

Jerry Strangarity and his wife, SydneyAnne, live in Cincinnati. The retired machine designer has written many structure articles for the hobby press over the years. Jerry's non-modeling interests include astronomy, bicycling, and reading. The couple has three children and 11 grandchildren.

Welcome to FREEMONT MILLS

Part 1: A first look at our 2024 project layout, an HO scale Free-Mo module

By Steven Otte • Photos by Connor Bruesewitz/Saturn Lounge

Though experiments in modular model railroading no doubt began earlier, it was just over 50 years ago when Ntrak, the first formal modular standard, was officially adopted. Since that day in California in 1973, a plethora of new standards have been created in a variety of scales and shapes. Since we at *Model Railroader* couldn't remember having built a module as a project layout before, we decided it was time. So, welcome to Freemont Mills.

Unlike a standalone model railroad, modules are designed to connect to other modules to form a larger layout. Modular standards are sets of rules, dimensions, and specifications that guarantee all modules built to that standard will connect to and play well with others. These standards specify factors like layout height, track placement, allowable grades and curvature, and the like so modelers who get together at a club meet or train show can be assured that trains can run from one module to the next without trouble. There are modular standards in all scales, including sub-standards branching off of established specifications.

As you might have guessed from the name, Freemont Mills is a Free-Mo module. Free-Mo is a relatively new standard, created in 1995, but gaining in popularity all the time. Free-Mo has added standards for N and Sn2 scales, but we built ours in HO, the original.

Let's take a look at the Free-Mo standard, what it specifies, and what it doesn't. Then we'll discuss our module.

The Free-Mo standard

Unlike more rigid modular standards, Free-Mo defines the modules' endplates and connections, but the shape and size of the module between those endplates is up to the builder. That's where the "Free" part of the name comes in. You can build a module on a curve, put in grades, or include a loop or a wye. A typical module has a main line that comes in one end and exits the other, but you could build a terminal or turnback loop with just one endplate, or a junction with three or more connections. As long as the endplates match up and it's wired properly, it's all good.

The endplates defined by the standard are 6" high by 24" wide for single track, 26" wide for double track. The track is centered on the endplate with double track spaced 2" apart, so modules can be joined end-to-end in either orientation. Why are the double-track modules 2" wider, you might ask? So that when a double-track module end is joined to a single-track one, the fascia will still line up on one side. Smart!

What's next

January: Welcome to Freemont Mills
February: Benchwork, track, and wiring
March: Structures
April: Scenery and details

1 The tail end of a Western Maryland local freight disappears around a bend in the track on its way through Freemont Mills, *Model Railroader*'s 2024 project layout. Follow along in this series of articles to see how the MR staff designed, built, wired, and scenicked this HO scale Free-Mo module.

2 Western Maryland No. 195, in charge of the local freight today, pulls an empty boxcar from the Stern & Childers Plumbing Supply warehouse. Stern & Childers is the last factory in town, with Syzdek Crates and Pallets having closed down years ago. Stern & Childers is an American Model Builders LaserKit; Syzdek is a cast Hydrocal kit from Downtown Deco.

3 *Model Railroader* staff members show off their work on the Freemont Mills project layout. From left to right, assistant digital editor Mitch Horner; associate editor Bryson Sleppy; senior associate editor Steven Otte; editor Eric White; and senior editor Cody Grivno.

Although you are in theory free to build what you want between the endplates, modules should be able to run the longest equipment reliably. Therefore, mainline track is required to be code 83 nickel-silver flextrack, with a minimum curvature of 42" radius, No. 8 or larger turnouts, and powered turnout frogs. Smaller code rail and No. 6 turnouts can be used on secondary track.

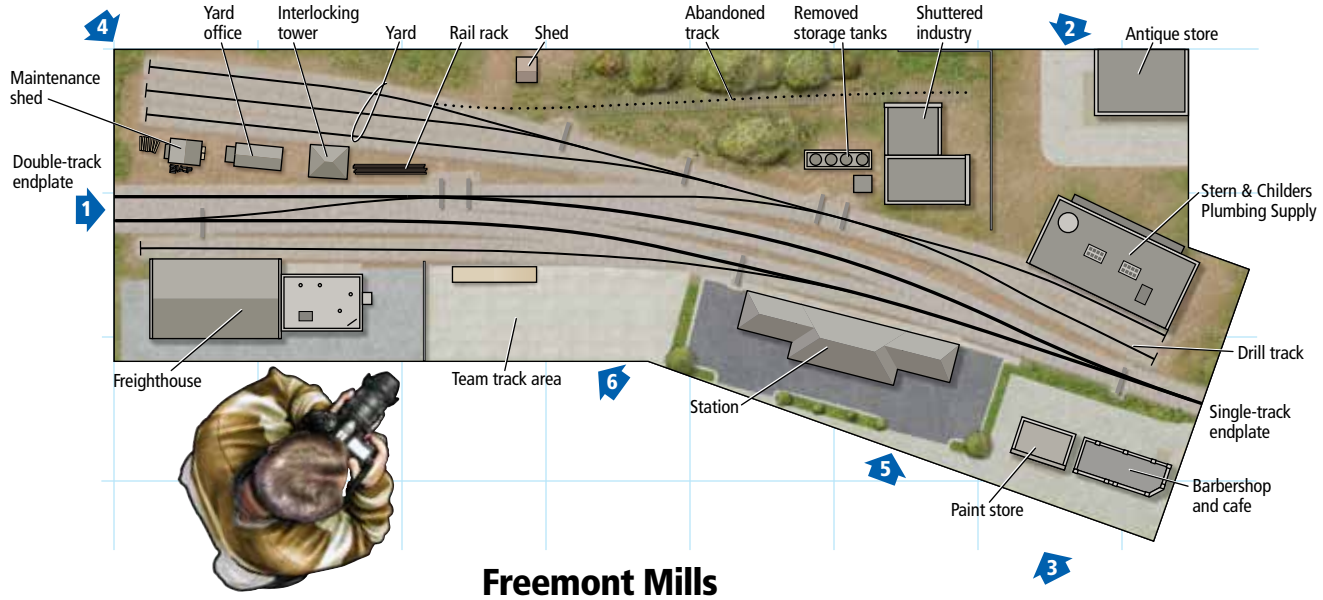
Unlike other modular standards, Free-Mo lets you include grades, too (as long as they're 2% or less). A Free-Mo module's railhead can be between 50" and 62" off the floor, in ¾" increments.

A Free-Mo layout is designed to be operated with Digital Command Control. The standard defines a track bus, with commercially available connectors; an accessory bus to power things like lighting, signals, and switch motors; and a LocoNet bus for use with Digitrax and compatible DCC systems. Watch for the next installment of this series in our February 2024 issue for more detail on Free-Mo wiring.

The standard also defines some aesthetic recommendations. All benchwork should be covered with scenic materials. Track should be ballasted with fine light gray ballast, rail painted with Roof Brown, and ties weathered with a fine spray of Grimy Black. For more detail, check out Free-Mo.org.

Designing Freemont Mills

In addition to being interesting to look at and fun to operate, this module needed to be a good project for the magazine. It had to demonstrate the benefits of the Free-Mo standard, not cost too much in time or money, and demonstrate techniques useful to both basic and advanced modelers. It also had to fit in our building's elevator when finished. Accomplishing all this at once was easier said than done.



Freemont Mills

HO scale (1:87.1)
Size: 3'-5½" x 7'-10¾"
Scale of plan: ¾" = 1'-0", 12" grid
Numbered arrows indicate photo locations
Illustration by Kellie Jaeger

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

The layout at a glance

Name: Freemont Mills
Scale: HO (1:87.1)
Size: 3'-5½" x 7'-10¾"
Prototype: freelanced
Locale: Eastern U.S.
Era: 1970
Style: Free-Mo module
Mainline run: 94"
Minimum radius: 60"
Minimum turnout: No. 6
Maximum grade: none
Benchwork: open grid
Height: 50"
Roadbed: cork
Track: Walthers code 83
Backdrop: none
Control: Train Control Systems LT-50

4 The engineer of WM No. 195 heads to the yard office to pick up his switch list. The three-track yard is served by wood structures from American Model Builders, Bar Mills, and Blair Line. The module is illuminated by streetlights from Woodland Scenics' JustPlug line.

I scrapped my first draft for being too limited. The selling point of Free-Mo is that in between the endplates, the module can be almost any shape. But when I sat down with my graph paper and pencil, I took the easy route and drew an 8-foot-long rectangle with two tracks down the middle.

Free-Mo modules can curve. A more free-form module could open up space on the outside of a curved main. Why was I starting with a rectangle?

My second draft showed more promise. A gentle curve mid-module gave me room for the yard I wanted on the outside of the curve. But again, I had mentally locked myself into a module of fixed width, with the main line right down the middle. That didn't leave enough room on either side of the main for a yard. My third try gave me the plan I wanted.

The left side of the plan starts out fairly conventionally, with a straight, rectangular section. I wanted the other end to be a single track endplate, so a crossover turns the double track main into a passing siding. By curving the main to the right but keeping the edge of the benchwork straight, I created a triangular area that gave me room for a couple industries and a switchback leading to a three-track yard.

The turnout leading to that side of the layout has two sidings, one an industrial spur, the other a switchback/drill track for a three-track yard. This left a triangle of territory between the industry and the yard that was big enough for another industry, but would be hard to get a track to. I decided this would be the perfect place for a derelict, shuttered industry once served by a now-abandoned track. That way I could have the visual interest of an industry without having to figure out how to switch it.

5 Passengers wait on the platform at the Freemont Mills depot as No. 195 bustles about doing its switching duties in town. The module is set in 1970, just prior to the formation of Amtrak. The locomotive, an Alco RS3, is a Bowser model.

The other side of the main has only one spur, but it's still important to the module's operational scheme. The center of visual interest is the passenger station, a Walthers kit that I've had in my office for 16 years. Not knowing yet in what era the module would be set, I took a leap of faith and assumed passenger service wouldn't be out of place. I added benches and other furnishings to the platform, figures of waiting passengers and crew, and signs proclaiming the station as Freemont Mills.

The spur to the left of the station hosts two universal industries. The first, at the end of the spur, is a large freight-house. The stretch of track between the freighthouse's car spots and the main will serve as a team track. Both of these can ship or receive almost any conceivable kind of freight, greatly increasing the layout's operational possibilities without a lot of trackwork or structures. And though switching the freight house when cars are spotted on the team track will be challenging, that's the sort of challenge many operators enjoy.

Operating scheme

Modules are, by definition, intended to be operated in conjunction with other modules. Since Freemont Mills is the only module we've built so far, it's not likely to be linked into a larger Free-Mo system anytime soon. However, we can tell what kind of operations our module has to offer a larger layout by looking at how it could be operated alone.

To maximize the length of the passing track, I pushed the turnouts at either end as close as possible to the endplates. This leaves just enough track past the points for a switch engine or other short wheelbase diesel, but not a locomotive and car. To operate Freemont Mills without other modules linked to either end would require us to build a couple of removable tail track or staging modules, as we've done with previous project layouts. These will let us bring in a train from outside the module, run around both ends of the staging track, and access both sides of the main line.

Bringing the main line from double track at one end of the layout down to single track on the other gives Freemont Mills the feel of a junction town between a busy Class I and a branch or short line. The yard would then be used to interchange cars from the Class I and make up trains for the single-track branch.

An operating session would begin with cars spotted at the freight house, the team track, and Stern & Childers Plumbing Supply. Interchange traffic for the Class I are assembled on one yard track, while the other two tracks are empty to await incoming cars.

The daily transfer train arrives on the right-hand track of the double-track main, crossing over to the left to pull into the yard drill track. The locomotive then backs its train into the empty yard track, doubling up this move if the whole train is too long for the drill track. It next couples onto the interchange cars and backs them out onto the passing track, again taking two moves if necessary. The Class I locomotive then runs around them to couple onto the other end and returns the way it came.

The branch line power, which has been waiting patiently on the house track or the Stern & Childers spur, now swings into action. It enters the yard and breaks down the incoming cars into cars meant for local, on-module destinations ("propers") and those headed farther down the branch ("throughs") on two different yard tracks.

The crew picks up the propers and performs its in-town switching duties, pulling outgoing cars and spotting incoming ones. These moves get more complicated if cars on the team track need to be replaced after working the freight house or if there's any switching to be done at Stern & Childers, which as a facing-point turnout requires a run-around to get cars into the yard.

After stashing the local pulls in the yard, the locomotive couples onto the throughs, picks up a caboose, and heads

6 A worker heads up the loading ramp to load some crates into the boxcar waiting on the team track. Senior associate editor Steven Otte built a styrene form and cast the concrete loading dock in plaster tinted with Woodland Scenics Earth Colors liquid pigments. The freight house at left is a Walthers kit.

out the single-track end of the module into the attached tail track. There, the cars are fiddled to represent switching done at unmodeled towns down the line, and the positions of the engine and caboose are swapped. The local re-enters the module, runs around its train, stashes the caboose at the end of a yard track, then shoves the rest of the train into the yard. Finally, the crew makes up the outgoing interchange cars into a block for tomorrow's transfer to pick up.

Future plans

Most of our project layouts are one-and-dones. After they're complete and their articles have been published, they usually hang out in storage a while, only occasionally being pressed into service as locomotive test tracks, until they're sold, dismantled, or otherwise disposed of. But the modular nature of Freemont Mills begs for future expansion.

While the single-track switching tail and two-track staging attachments mentioned above will let us operate the module, it would be a lot more fun to add on more modules. I've been thinking about a wye that would attach to the double-track end of Freemont Mills, with three double-track endplates offering even more connections. Inside the wye would be an engine terminal. Add an interchange track, and this would reinforce Freemont Mills' role as a junction town. But Free-Mo's requirement of a 42" minimum curve radius means this module would take up a lot of square footage and wouldn't fit in our elevator, so it might not happen.

A more practical option would be a single-ended module representing a town at the end of a branch line. This module would have to have some basic engine servicing facilities as well as a runaround track and a way to turn locomotives. A mine or a logging operation seem like natural choices of industry for such a configuration. Later, we could build more single-track modules to go between Freemont Mills and the end of the line.

Considering how much fun we've had building Freemont Mills, it's probably safe to say that our first Free-Mo module will not be our last. MR

CREATING A MODEL RAILROADER HALL OF FAME

Over the next year, we'll look at the top contributors to our hobby

By Eric White

While *Model Railroader* has been around for 90 years, and the Model Railroad Industry Association of the Hobby Manufacturers Association has had an industry hall of fame since 1985, to our knowledge, there has never been a model railroaders hall of fame.

It's time to change that. With this issue, we'll begin the nominating process, and over the next year, we'll reveal other nominees. These will be people who are well known for their contributions to the hobby, whether as modelers, manufacturers, or innovators. You'll be able to get into the act as well, by voting on our website, Trains.com.

Each month, we'll nominate a few folks who we think are deserving of being in the inaugural class of the Model Railroaders Hall of Fame, then we'll post the choices on our website, where you and your friends can cast your votes.

In the December issue, we'll announce the inductees. If there's someone you think we might miss, please send a letter or e-mail to the addresses on page 8 and we'll take your suggestions under consideration.

The basic requirements for a candidate are that they've made a significant contribution to the hobby, and that they're no longer with us. While this means folks won't have the satisfaction of knowing they're in the Hall of Fame, it also means people won't be enticed to stuff the ballot box for themselves.

Some months, the nominees will be organized by the aspect of the hobby they've influenced, and other times, they'll be people who were important in many aspects of the hobby.

Albert C. Kalmbach

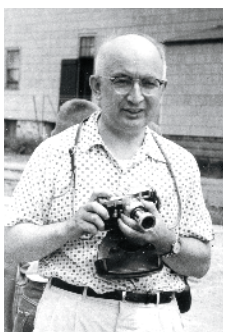
Our first nominee is an obvious choice, especially for this magazine. Al

Al Kalmbach waves from the cab of Milwaukee Road 4-8-4 No. 265. Al was the founder of Kalmbach Media, and in January 1934 he published the first issue of *The Model Railroader*. The locomotive was on display in Milwaukee, and is now at the Illinois Railway Museum in Union, Ill. A.L Schmidt photo

Linn Westcott stands next to Milwaukee Road No. 265 in February 1960. Linn edited *Model Railroader* from 1961 to 1977 and in that time, and even before, had a significant impact on the hobby with his many innovations. A.L. Schmidt photo

Kalmbach started *The Model Railroader* magazine during the Depression in 1934 and ran the magazine and the company named for him until his death in 1981.

In addition to MR, Al founded *Trains* Magazine in 1940, and after World War II, his company began publishing books on the hobby, as well. But it wasn't just his work at Kalmbach that make Al a logical first nominee.



Al Kalmbach on a railfan outing. A.L Schmidt photo

Al was also an organizer who brought different people together, becoming one of the charter members of the National Model Railroad Association at its formation in 1935. Al's contributions to the hobby certainly set it on its path to where it is today, a diverse hobby that has enthusiastic participants from all over the world.

Linn Westcott

Although he wasn't the first editor of *Model Railroader* (that was Al Kalmbach), Linn Westcott was for many years the face of *Model Railroader* and model railroading.

Besides guiding *Model Railroader* as a monthly magazine, Linn was also an innovator, always looking for a better way to do things. His most enduring contribution was the creation of L-girder benchwork, which uses two pieces of dimensional lumber to make a strong, economical foundation for a model railroad.

Linn Westcott in the midst of a layout project. A.L Schmidt

Working in the direct-current days, Linn developed several circuits that improved realism and control of trains before the advent of Digital Command Control. A man of many talents, Linn also created scenery techniques such as zip-texturing, which allowed plaster landforms to be quickly transformed into a surface that more accurately resembled grass and scrub, and hard-shell scenery, which is the basis of much plaster scenery built today.

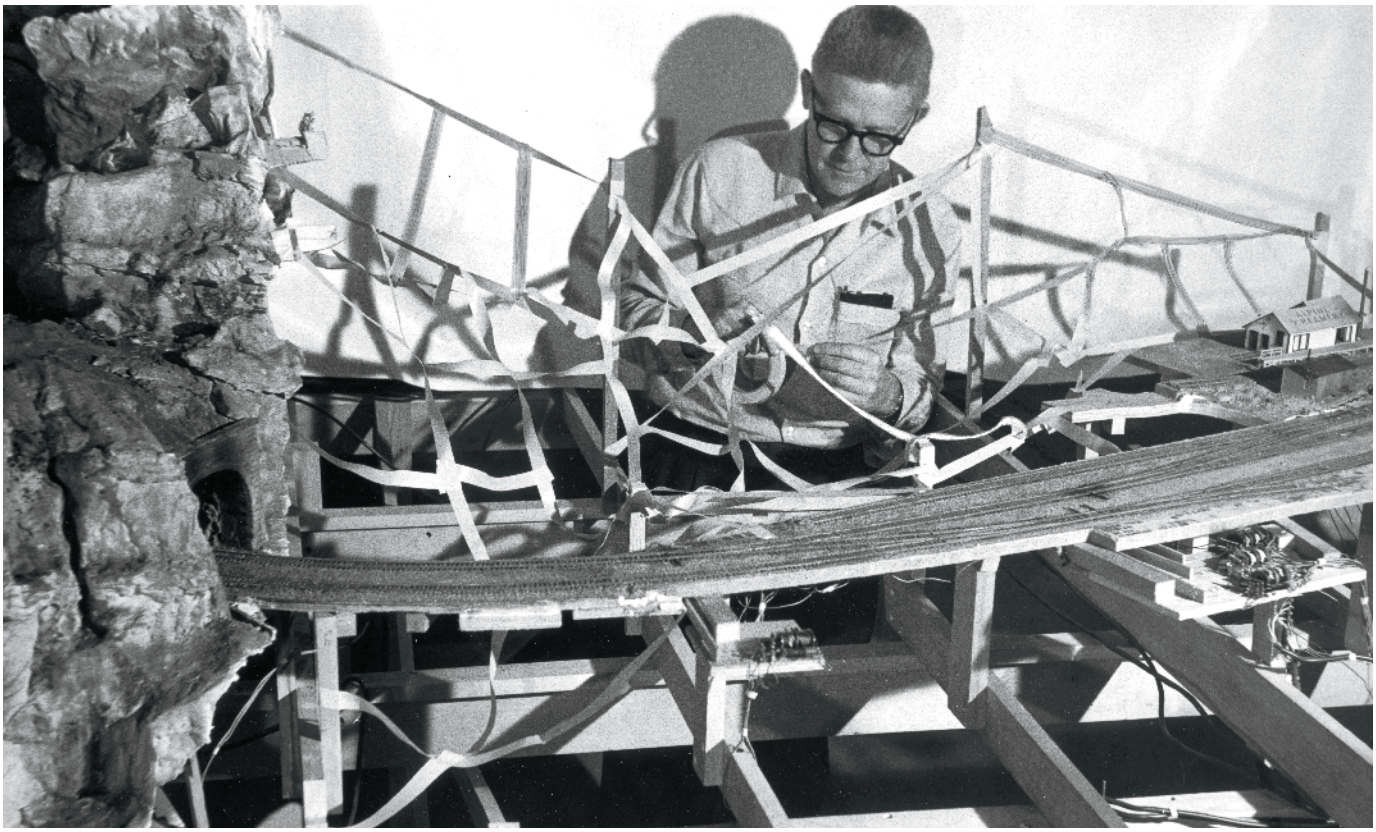
And, of course, he guided MR through the 1960s and most of the 1970s. Not only was he an excellent editor, but he was noted as well for his photography. He also contributed many books to the hobby.

W. Allen McClelland

The Virginian & Ohio is the canvas Allen McClelland used to bring model railroading from what it was to what it could be. Allen is credited with promoting staging yards, walkaround train control, and prototype freelancing with the goal of creating a model of a railroad, as opposed to railroad models.

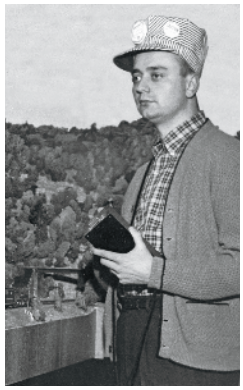
Tony Koester, one of Allen's friends, calls Allen "The man who changed everything" in Tony's recent book about Allen. Reading the chapter headings in the book gives us an outline of Allen's accomplishments and contributions.

"Beyond the basement" covers the idea that we can only model a portion of a railroad, so we need to think outside the basement walls to how our railroads



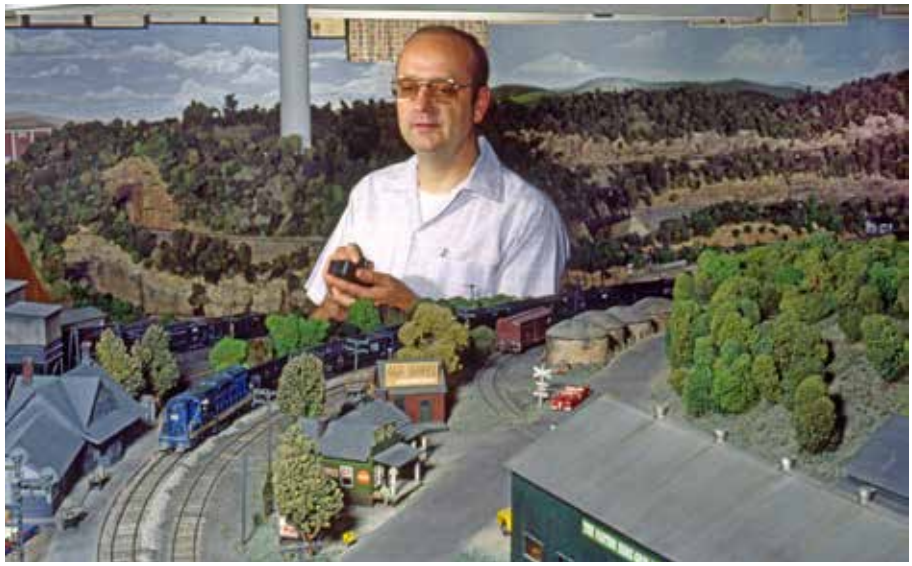
Linn Westcott creates a web of masking tape in order to build hard-shell scenery, one of many concepts he either created or popularized that have become integral to the hobby. Below the wooden joists, you can see his L-girders. Linn Westcott photo

are connected to the nationwide rail network. Staging yards are the stand-ins for the rest of the world outside our basements. When Allen started modeling, this was a groundbreaking idea.



Allen McClelland with an early walkaround throttle. W.A. McClelland photo

"Linear layout design" describes how Allen wanted to get people out on the railroad with their trains, rather than acting as dispatchers observing the whole railroad from a central location. This made operators interact with the layout more directly in a role closer to that of an engineer.



Allen McClelland was another innovator. He developed walkaround throttles so he could follow the trains on his freelanced Virginian & Ohio, which was designed to represent a part of the national rail network. W. Allen McClelland photo

"Walkaround command control" tells the story of how Allen literally hacked apart the General Electric Astrac command control system to allow operators to follow their trains. This early system existed through the 1960s. With Digital Command Control, following trains around the layout is fairly common today. In the 1960s, it was revolutionary.

Among other contributions, Allen is known for his "Good Enough Principle," the idea that nothing has to be perfect to convey a sense of reality, as long as all aspects of the layout are finished to a consistent level of "good enough" to get the idea across.

Help us decide

These three men have all had a significant impact on the hobby. You can make your own impact by casting a vote on our website, Trains.com. MR

Go to Trains.com to cast your vote for the Model Railroader Hall of Fame.

MODELING PALM TREES

Clusters of scratchbuilt palms line a canal on Lance Mindheim's HO scale East Rail layout. Follow along as he shares his techniques for modeling these warm-climate trees.

A craft cutter makes it easier than ever to make fronds in any scale

By Lance Mindheim • Photos by the author

Florida and California are hotbeds of rail activity. If you model one of these regions, as I do, you'll need plenty of palm trees. Unfortunately, the feathery nature of palm fronds doesn't lend itself as well to commercially manufactured or naturally available products as deciduous trees and conifers do. Though there are some injection-molded palm trees on the market, the size and selection is limited, and the fronds tend to be much coarser than their full-size counterparts. That's why I decided to make my own palm trees.

Getting started

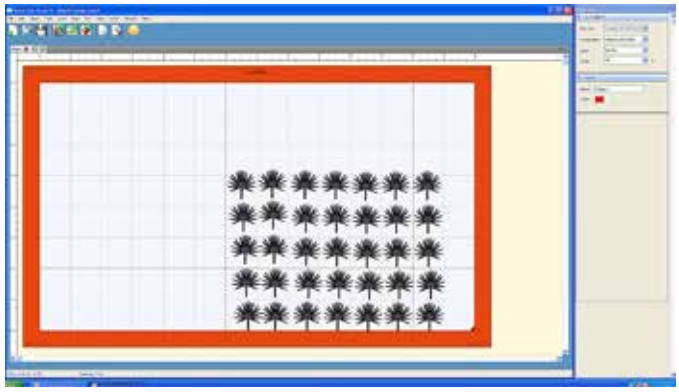
While scratchbuilding trees isn't difficult, it does take a commitment to purchasing and learning how to use a craft cutter. These versatile machines will serve you well for various projects beyond trees. The cutters, such as the popular Cricut line, are available in a variety of price points online or through big-box craft stores such as Hobby Lobby, Jo-Ann Fabrics, and Michaels.

Many years ago I bought an expensive industrial cutter. In retrospect, a basic craft store model would have been sufficient. Floral designs are a staple of the craft hobby, so right out of the box the cutters are designed for output similar to what we're trying to do with the palms.

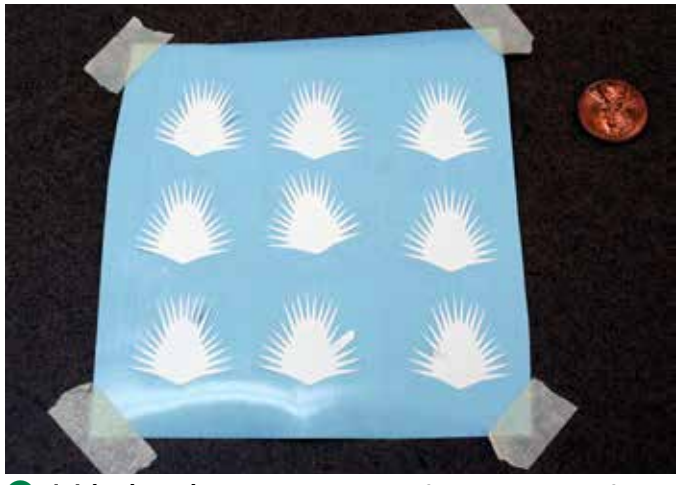
You have some latitude as far as the actual colors you use to paint the trees. I used Rust-Oleum French Beige for the trunk and Summer Squash and Eden for the fronds. To add highlights and contrast to the fronds I used Forest Green and tan acrylic craft paint. All of these colors, 1, can be found at hardware and craft stores. Let "close enough" be your guide.

1 **Close enough colors.** Lance used a combination of spray and craft paints for his palm trees. He used the Rust-Oleum spray paint for the base colors and used the craft paints to add highlights to the fronds.

2 **Quick and easy.** To model the palm tree's trunk, Lance used a 7" long piece of ¼" styrene tubing. He then placed the styrene in a drill chuck and added the distinct banding with a three-sided file.



3 **Making multiples.** This screen shot shows the project board from the Sure Cuts A Lot software. Lance scaled one frond, then used the cut-and-paste feature to duplicate the original and quickly make multiples.



4 **Finished product.** Here's what the fronds look like after Lance peeled away the backing paper. He used baby powder to remove the adhesive from the back of the fronds.

5 **Adding wire.** A 2"-long strip of 26 gauge floral wire serves as the stem of each frond. Lance bonded the dissimilar materials with a drop of thin cyanoacrylate adhesive.

Styrene trunk

To model the trunk, I cut a 7" long section of the Plastruct ¼" styrene tubing. To add the distinctive banding texture found on palm tree trunks, I inserted the tube into a drill chuck, then held a sharp, three-sided file against the rod while the drill spun it 2.

After cleaning the styrene, I spray-painted it with the same Rust-Oleum French Beige. To bring out the texture of the bands, I applied an India ink wash (2 teaspoons of ink per pint of 70 percent alcohol) over the painted styrene trunk. Finally, I sprayed the trunk with a few coats of Testor's Dullcote.

Most of my palm trunks are relatively straight. If you want to add a slight curve to the trunk, insert a section of 14AWG solid wire into the tube and then give it a slight bend to the desired shape.

Foolproof fronds

With the trunk completed, it was time to fire up the craft cutter to make the fronds. To use the cutter, you'll need to connect it to a computer and download the simple, user-friendly software that's included with the machine to guide the cutting process.

Depending on the machine, you may also be able to purchase your own project software, such as the

popular Sure Cuts A Lot (surecutsalot.com) brand of software that I use.

Once you have the cutter set up, the next step is to get an image or diagram of the palm fronds onto the project board. There are several ways you can do this.

The first option is to sketch the frond with the software included with the machine.

The second option is to import a photo of a line sketch of the frond. My software has a feature called "trace photo" that will trace any simple sketch you upload and cut accordingly. You can draw the frond by hand on a sheet of paper with a pen, photograph or scan it, and then import the drawing to the cutter.

If you don't feel comfortable drawing, option three is to search the Google image library for "palm frond drawings." This will yield a multitude of usable drawings.

The fourth route is to prepare the artwork in Adobe Illustrator and import the file. If you have a CAD track planning software program, you could also use that and move the file to Adobe Illustrator.

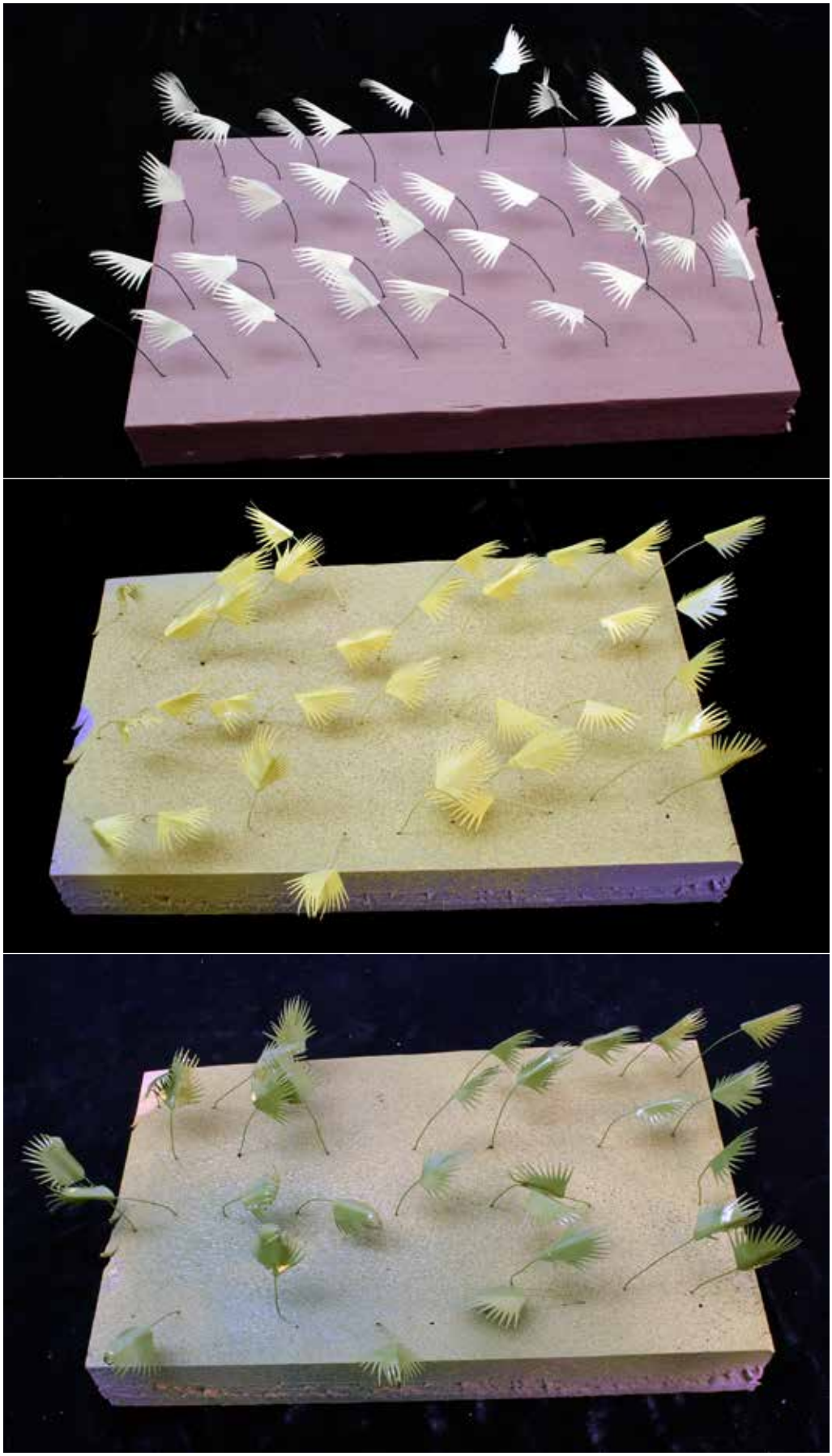
Designing and cutting

Once I had the frond sketch on the project board, I adjusted it to match the size and scale of the frond applicable to your situation. For my HO scale Florida palmettos, I sized them to roughly 1" long and wide. Sizing is easily done by dragging the "handles" on the corner of the sketch. I use approximately 30 fronds for a typical tree.

After I had one frond on the cutter's project sheet and sized it, I used the "copy/paste" feature on the screen to make the rest of them 3.

I turned to Oracal No. 631 peel-and-stick vinyl for the fronds. This is an inexpensive, readily available product found on Amazon.com.

I taped a sheet of the vinyl to the cutting board and fed it



6 **To the spray booth.** Once the stems were attached to the fronds, Lance placed them in a block of foam for painting (top). He used Rust-Oleum Summer Squash for the base coat (middle), followed by an overspray of Eden (bottom).

7 Added realism. Lance diluted Forest Green craft paint in alcohol to create a wash for the fronds. This simple step gives the fronds realistic color variety.

8 Topping it off. Lance attached a ball of craft clay to the top of the trunk with thick CA. He then carefully inserted the stems into the clay. A typical tree has eight fronds in four bands.

9 Hiding the clay. The thin profile of the fronds and stems left the clay ball visible. To hide the ball, Lance added a few tufts of Scenic Express SuperTree material after installing the fronds.

Parts list

Craft Smart acrylic craft paint
23677 Campground

Deco Art Americana acrylic craft paint
DA242-3 Fawn

Oracal Products
631 Matte white vinyl

Plastruct
90106 ¼" tubing

Rust-Oleum satin spray paints
249064 Painter's Touch 2X Summer Squash
257418 Painter's Touch 2X Eden
276271 French Beige

Miscellaneous
26 gauge floral wire
Black craft modeling clay
Drill
Three-sided file

into the machine. Machines have a variety of cutting settings. Since the vinyl is thin, I selected a light cutting depth to cut through the top vinyl surface but not the backing. I used the Sure Cuts A Lot "draw with a pen" setting.

Once the machine finished cutting the fronds, I removed the vinyl from the cutting mat and peeled away the backing sheet 4. A quick sprinkle of baby powder removed the adhesive from the back of the fronds.

Assembly time

Next, I cut 2"-long pieces of 26 gauge floral wire to serve as the stems. I attached the wire to the fronds using thin cyanoacrylate adhesive (CA). Then I gave the fronds a pinch to bend them over the stems. I also put a slight bow in the stems 5.

After I finished adding the stems to fronds, I placed them in a block of foam for painting. I used Rust-Oleum Summer Squash for the base coat, followed by an overspray of the same company's Eden. The process is shown in 6.

To add some contrast and color variety to the fronds, I diluted Craft Smart Campground craft paint in alcohol and applied it with a brush 7. I followed that up by lightly brushing Deco Art Americana Fawn craft paint on the tips of the fronds.

Finishing touches

I finished up the tree by installing the branches. First, I rolled up a ¾" ball of black craft clay and attached it to the top of the trunk with thick CA. I then trimmed the floral wire stems to approximately 1" in length and inserted them into the clay ball. I made roughly four bands, each containing six to eight fronds 8.

Once I had the fronds positioned, I drizzled a few drops of thin CA over the clay ball to hold them in place. If you pass a hair dryer over tree, it will introduce some slight curvature to the fronds.

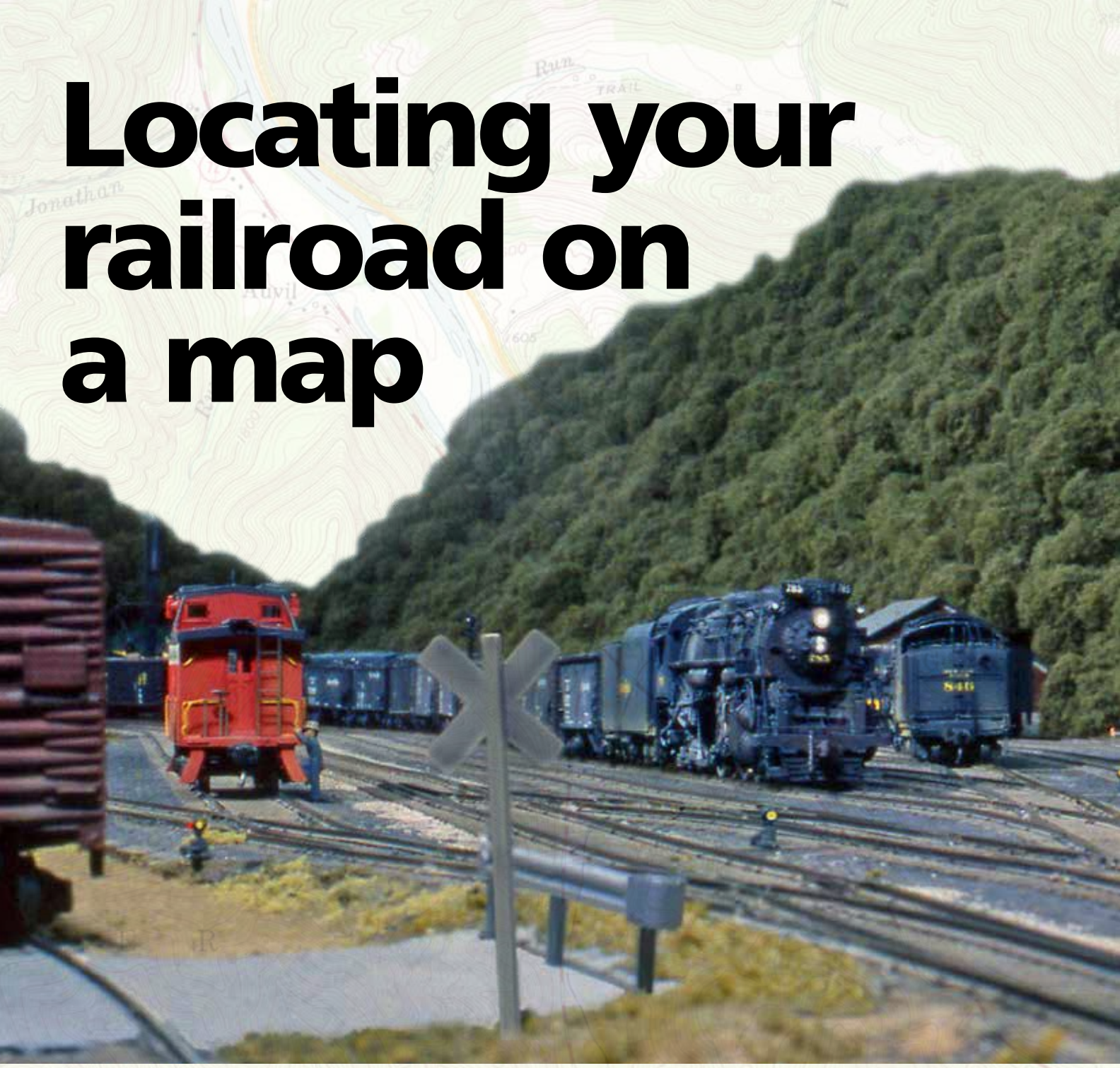
Even after adding the fronds, the clay ball was still visible. To remedy that, I added some Scenic Express SuperTree material 9.

I finished the tree by giving it one more spray of Dullcote. Once that dried, I planted it on the layout.

[To read more about Lance's HO scale East Rail layout, which models CSX in Miami, Fla., pick up a copy of *Great Model Railroads 2008* from the Kalmbach Hobby Store (KalmbachHobbyStore.com) –*Ed.*] MR

Lance Mindheim, a frequent contributor, is owner of The Shelf Layouts Co. Inc. (shelflayouts.com), a custom layout construction and design firm. He models urban industrial switching railroads and presently has three layouts. His "main" model railroad is based on CSX's Downtown Spur in Miami.

Locating your railroad on a map



Aiming to give your layout a feel of realism? Here's your first step

By Tony Koester

If you're planning to model a part of a prototype railroad, you almost naturally envision or actually look at a map of the railroad to find a section of it that appeals to you. You may be led there by photos of the prototype or by personal experiences – memories of railfanning your hometown railroad or watching trains at a family vacation spot, for example.

But the freelancer who wants to do her or his own thing may lack such specific guidance. I still have the plan for a freelanced railroad I designed for our first basement, and to this day I can't tell you what part of the country that railroad was supposed to represent. As a result, it was a mishmash of favorite scenes – a port, a coal mine, a bridge abutting a tunnel mouth, and so on.

I had no idea what the railroad did for a living, no concept of how it might fit into the North American rail network, what industries it served, or what types of rolling stock should therefore predominate on my roster.

In short, I had made one critical mistake: I had failed to consider where the railroad-to-be might have been located on a map.

The Allegheny Midland's coal-marshaling yard was at the midway point of the main line in South Fork on the south edge of a place logically called Midland, W.Va. The main classification yard at Midland was actually a partially hidden staging yard.

The Allegheny Midland

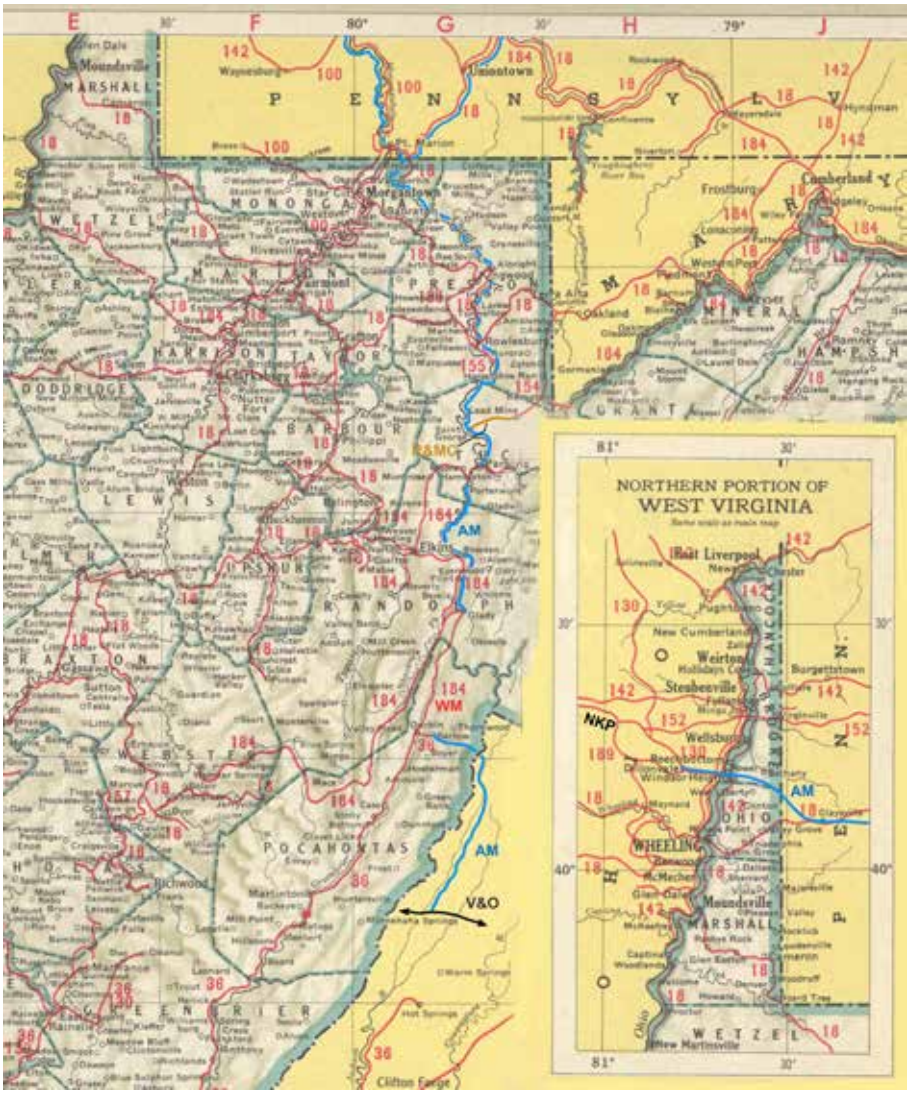
That was 1971. By 1973, when we had moved into our newly built home, I had wised up. I think it was because I had met Allen McClelland and figured out what made his Virginian & Ohio stand head-and-shoulders above most other freelanced railroads: It all hung together as an enterprise.

Allen had located the V&O on maps of Ohio, West Virginia, and Virginia to create a route from his home near Dayton, Ohio, to Afton and Staunton, Va., where it connected with the Chesapeake & Ohio, thus providing an outlet for tidewater-bound coal.

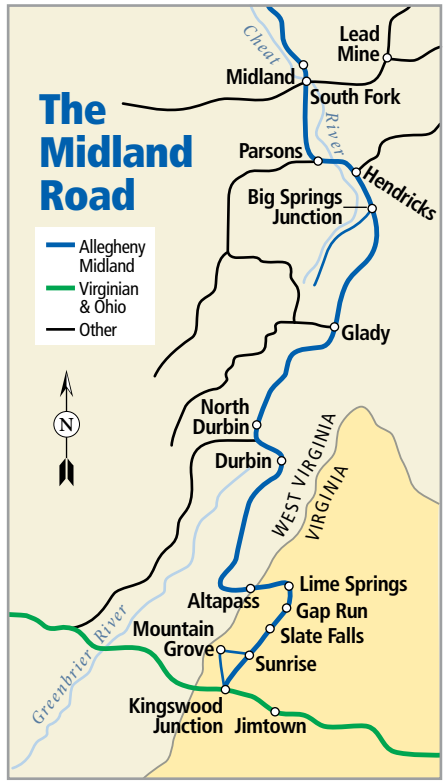
By doing so, he could study the territory abutting the V&O right-of-way to determine what industries were typical of the area and thus how the railroad would derive revenue, what type of rolling stock and motive power it would need, how the scenery and structures would look on the segments he chose to model, and so on. It all started with a map.

Our new home provided a roughly 24 x 30-foot room for a model railroad. My growing friendship with Allen suggested that a good premise for it would be to connect my personal favorite prototype, the Nickel Plate Road, which had acquired an extension into the southeastern Ohio coal fields, with Allen's V&O.

Now all I had to do was to plot a path from Dillonvale, Ohio, through the rugged Alleghenies southeastward to reach the V&O around Sunrise, Va.



The portion of an undated but early railroad map of West Virginia shows the railroads in the area through which Tony routed the Allegheny Midland. Number 18 denotes the B&O, 155 the Rowlesburg & Southern (whose right-of-way Tony usurped between Rowlesburg and Parsons), and 184 the Western Maryland, over which the AM has trackage rights from Parsons to "North" Durbin. The freelanced Ridgeley & Midland County ran between "Midland" (St. George) and Lead Mine.



A system map of the freelanced Allegheny Midland RR shows how the fictional railroad connects Tony's favorite prototype, the Nickel Plate Road, in Ohio with the freelanced Virginian & Ohio in Virginia.

After the fiasco with the design of the first never-built layout, I checked official state highway maps (which o ften show railroad lines) for Ohio, West Virginia, and Virginia. The goal was to find a route that wasn't already occupied by an existing prototype railroad.

Most modelers would stop there, as that would give them a good sense of what towns, rivers, and so on their new railroad would be dealing with. Additional research would start to flesh out the picture.

Between when I was in college and the time I joined the staff of *Railroad Model Craftsman*, I managed the office of a small civil-engineering and land-surveying firm in Lafayette, Ind., so using maps was second nature to me.

I ordered U.S. Geological Survey index maps for the three states, then ordered the appropriate "quadrangle" topographic maps that would give me a close-up view of the terrain. I actually went to the trouble of designing a route that could have been built.

That only segments of the right-of-way ever actually had rails suggests there were other factors that weren't in my favor beyond sheer engineering concerns. However, it was a challenging and entertaining exercise as we waited for our new home to be built.

For example, I needed a flat area for the coal marshaling and classification yards near the middle of the main line, at a fictional town I named Midland, W.Va. On a topographic map of the area surrounding Parsons, W.Va., I found exactly what I was looking for at St. George, just north of Parsons.

From Parsons south, I arranged for trackage rights with the Western Maryland to just beyond Durbin, W.Va., which gave me the opportunity to run WM trains and have the WM switch a paper mill I located at "North" Durbin.

Putting the Allegheny Midland (AM) on a detailed map led to all of these innovations that otherwise never would have occurred to me.

Choosing the right names

Choosing a name for a freelanced railroad and the towns it serves can make or break its plausibility. They either sound right for the region you're modeling or they don't. McClelland's Virginian

The U.S. Geological Survey 15-minute quadrangle map for St. George, W.Va., shows the abandoned Rowlesburg & Southern right-of-way along the east bank of the Cheat River as a broken line or dirt road and the open area where the AM's main classification and coal-marshaling yards were located. Tony's field trip to that location (inset) confirmed the map's information.

& Ohio ranks at the top of the list of excellent choices for freelanced railroad names. It tells you what three states it serves and sounds so prototypical that, after Allen handed him a business card, a mine tipple foreman was sure he had shipped coal over the V&O. My former Allegheny Midland also told you where it was located.

By putting the railroad on a map, you're assured of finding place names that reflect the region. In central Appalachia, for example, what is called a "pass" in the West is known as a "gap," as in the famous Cumberland Gap. So the AM had Gap Run and Boyd Gap. Streams often branch in the mountains, so there are many towns with "Fork" in their names, as in South Fork and Coal Fork on the AM.

More than building models

If I tried to list the steps one would logically take from concept to completion of a model railroad, even with my decades of experience, I'd surely become discouraged. Most certainly it involves much more than building scale models.

Unless the prototype railroad you favor has already done it for you, taking the time to find a reasonable path for your railroad-to-be between logical end points on a map is not only worth the effort but actually a lot of fun, much like solving a mystery. With today's online resources, the only cost is your time. The reward is a could-have-been railroad that can be explained to visitors and crew members in a way almost certain to garner their interest. MR

Using topographic maps

We've all seen the weather person on TV point to those squiggly "isobar" lines on a map of our state and say that where they are all bunched closely together, that's where the pressure drops off more rapidly and wind speed picks up. It's the same thing with a topographic map. Where the contour lines (which denote a series of points of equal elevation) are bunched together indicates a steeply sloping surface, and where they're spaced far apart is relatively flat land.

So the goal of someone plotting the path of a railroad from A to B is literally to find the path of least resistance. It's the same on your model railroad. You don't want to have to climb steep hills unless you're modeling a logging line that employs Shays and Heislers. Doing this across the flatlands of the South or Midwest is usually not a major challenge except where large streams or swamps have to be bridged. But glaciers north of the Ohio Valley left piles of debris that may require cuts and fills or impressive bridges, and geological formations such as the Cincinnati Arch or Niagara Escarpment may offer obstacles far from mountain ranges. Geomart (geomart.com/products/raisedrelief/usgsquads.htm) offers plastic 3-D versions of topographic maps that give you a quick sense of ridges and valleys to speed up your pathfinding efforts.

Finding a route through the mountains is usually quite basic. Follow a river at a reasonable gradient until you can't, doubling back along the way if you must, then tunnel to the other side of the ridge to reach another stream-cut valley. You can judge feasible grades and curve radii by observing what the map shows existing or even abandoned railroads in that area did.

You'll either regard this process as an engrossing challenge, as I did, or a total waste of time.

In the latter case, find an existing or abandoned railroad and usurp its right-of-way or negotiate trackage rights. – *Tony Koester*

MODEL A CONTEMPORARY CIRCUS TRAIN

Two General Electric AC6000CW diesels lead John Rezuke's HO scale Ringling Bros. and Barnum & Bailey circus train on the Bay State Model Railroad Museum layout. John's train is based on how the prototype appeared in the late 1990s and early 2000s.

A 32-car HO scale rolling tribute to the Greatest Show on Earth

By John Rezuke
Photos by the author

Regardless of the scale, when it comes to re-creating circus trains, most modelers select equipment that harkens back to the days of the big top and colorfully painted wooden wagons. I refer to this time, when more circuses traveled by rail and the circus was a popular form of entertainment, as the "tent era."

By the mid-1950s, many circuses began to abandon the train and shift over to truck. The Ringling Bros. and Barnum & Bailey Circus, however, remained on the rails and continued to travel in two separate unit trains and one truck into the 21st century. Watching the circus train go by as a railfan was as much a thrill as seeing the show itself.

The closure of the Ringling Bros. in 2017 marked the end of the circus train era in North America. It was heartbreaking to know that we would never get to see a circus train again and future generations would never get to see one up close. That's what led me to model a 32-car circus train in HO scale.

Making it manageable

Putting together a modern Ringling Bros. circus train in HO wasn't an easy task. Before I purchased the first piece of equipment, I researched what types of cars Ringling used after it dropped the tent from the show.

Then I created a list of all the cars I wanted to build and what I would need to model each one. I also needed to decide how many cars I was going to build. Both Ringling Bros. unit trains had approximately 60 cars. The consist included four stockcars up front to carry the show animals; 30 coach cars to house the performers, staff, and train crew; 18 flatcars loaded with wagons and equipment; two container storage cars; and one full generator car, dining car (known as the "pie car"), half generator/half shop car, and bi-level flatcar.

I built a 32-car train 1, next page. Anything longer would have been difficult to operate on most layouts. I wanted this train to run, not sit in a display case.

Following the prototype's lead

The only commercially available modern cars lettered for Ringling Bros. are coaches. The ones I've seen aren't accurate re-creations of what Ringling used on its trains. It was clear all the cars for my train would have to be kitbashed.

When modeling the train, I tried to follow the prototype's lead. For example,

Amtrak 642, a Siemens ACS-64, is on the point of a Ringling Bros. and Barnum & Bailey circus train at New York City. You can read more about the end of the circus train era in "Ringling's train ties up for the last time" by the late Jim Wrinn in the August 2017 issue of *Trains* magazine. Gary Pancavage photo

1 Keeping it right sized. Though the full-size Ringling Bros and Barnum & Bailey train was approximately 60 cars, John made his train 32 cars. It's shown here on the North Shore Model Railroad Club in Wakefield, Mass.

2 Just like the prototype. The prototype stockcars were built using ex-Union Pacific 85-foot baggage cars, which John found were offered in HO scale by Wm. K. Walthers Inc. He added Bollinger Edgerly Scale Trains vents to the roof and used styrene strip to model the window vents on the car sides.

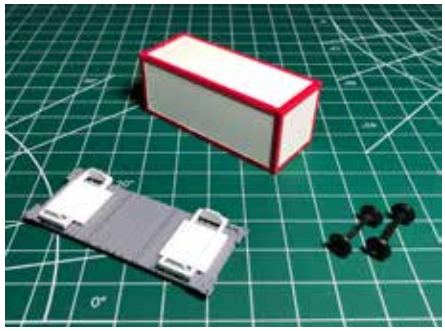
the four full-size stockcars were former Union Pacific 85-foot baggage cars. I used four Walthers models based on UP prototypes as the starting point for my kitbashing projects 2.

I also used Walthers cars for the coaches, generator car, pie car, and shop car. I selected Athearn models for the flatcars and wagons. The bi-level flatcar is an Accurail kit. [Accurail no longer offers this model. The company's bi-level car is now part of the WalthersMainline series. – *Ed.*]

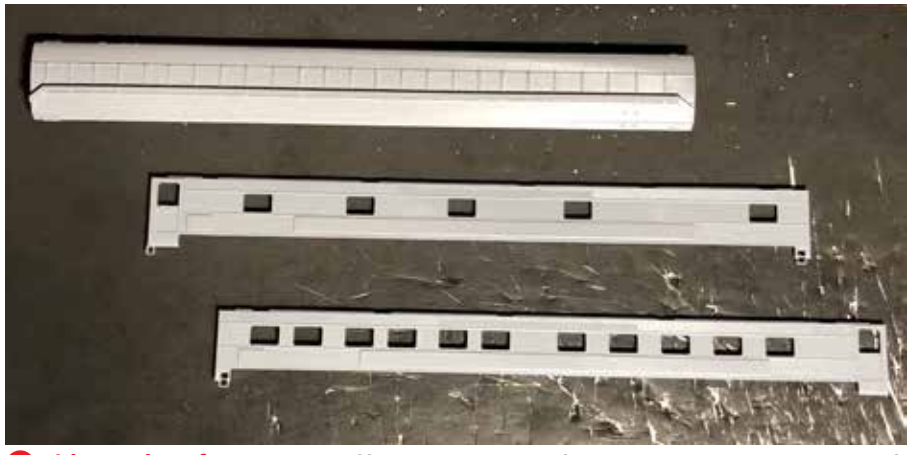
Creative kitbashing

The construction process of each car followed standard kitbashing techniques, but relied mostly on creativity, resourcefulness, and a good eye for details. The wagons, for example, were fairly easy to model. For a standard wagon, I started with an Athearn smooth-side 20-foot intermodal container for the body. I stripped the model of its factory paint, primed it, and painted it white.

Next, I carefully added red to the edges and corners of the container with



3 Innovative solution. John used an Athearn 20-foot smooth-side intermodal container as the starting point for this circus wagon. He made the bogies using assorted pieces of Evergreen Scale Models styrene. The wheels for the wagon were sourced from Bachmann automobiles.



4 Sides and roof. John used different techniques for modeling the sides and roof on the coaches. Most of the time he was able to use parts from various Walthers models. He used laser-cut styrene sides from Union Station Products for the pie and generator cars.

a paint marker. I used Evergreen Scale Models styrene strips to model the bogies and tow bars on the front of the wagons. The wheels are from Bachmann automobiles 3.

Coach construction varied depending on the prototype I was modeling 4. It came down to how many windows I would need to remove or whether the car included specific features. Most of the coaches, and even the stockcars, could be kitbashed using the sides that came with the Walthers car. I used Union Station Products laser-cut styrene sides as well as parts from other Walthers car kits for the pie and generator cars.

Each model had to be disassembled, stripped of its factory paint, and repainted silver before decals could be added. The majority of the graphics were produced by Circus City Decals in Baraboo, Wis.

Sweating the details

I added extra details to each car to capture the personality of the train and the circus as a whole. For example, in the stockcars I included elephants and hay-lined floors. I even added a man shoveling manure out of one car. I made the bars on the stockcar doors removable for staging unloading scenes.

In other cars, I added circus performers and employees standing in the vestibules and looking out the windows from the bedrooms. The pie car has a full kitchen, lunch counter, and interior lighting 5.

5 Time to eat. The pie car not only has a fun name, but it has a wealth of interior detail. John installed a full kitchen, lunch counter, and figures. The car's interior is illuminated with light-emitting diodes.

6 The circus is in town. Elephants are unloaded from one of the stockcars in John's train. If you look closely you can see the hay-lined floor inside the car.

Taking the show on the road

What really makes the train come to life is watching it run on a layout. Even before I'd finished all of the cars, I took the train to various model railroad clubs and events, mainly in the northeastern United States where I live.

When traveling, I pack the train into a 30" x 13½" x 12" box containing four trays, each of which holds eight cars. On the prototype, the host railroad would supply the motive power. Thus, whenever I bring the train to a model railroad club, I like to have the club provide the locomotives. This makes for great club publicity and gives members a chance to have their motive power pull the train.

HO scale circus train by the numbers

The chart below shows the different models John Rezuke used to model his 32-car Ringling Bros. and Barnum & Bailey circus train. Unless noted, the sides and roof were painted silver, the underbody was painted black, and the cars were lettered with sets from Circus City Decals (available online at circuscitydecals.com).

Some of the HO scale models listed in the chart below may be sold out at the manufacturer or no longer be in production. However, you may be able to find them at brick-and-mortar or online hobby shops, model railroad swap meets, and online auction websites. – *Cody Grivno, senior editor*

John Rezuke's HO scale Ringling Bros. and Barnum & Bailey circus train

REPORTING MARK/ ROAD NUMBER	CAR DESIGNATION	MANUFACTURER	DESCRIPTION	PRODUCT NUMBER	MODIFICATIONS
RBBX 60002	Stockcar	Walthers	UP ACF 85-foot baggage car	920-9201	Bollinger Edgerly Scale Trains vents (14) added to roof, styrene strip attached to car sides to simulate window vents, and select doors removed to show detailed interior.
RBBX 60006	"	"	"	"	"
RBBX 60010	"	"	"	"	"
RBBX 60014	"	"	"	"	"
RBBX 40014	House car	"	ATSF 6-6-4 Pullman sleeper	932-6722	Select windows covered, vestibule windows widened, skirting removed, paper window shades installed, and styrene strip added to roof to simulate electrical bar.
RBBX 40011	"	"	RI ACF 44-seat coach	932-6930	Vestibule windows widened, paper window shades installed, and styrene strip added to roof to simulate electrical bar.
RBBX 43001	"	"	"	"	"
RBBX 42011	"	"	Amtrak PS 12-double-bedroom sleeper	932-9404	"
RBBX 41304	"	"	PRR Budd *Inn*-series 21-roomette sleeper	932-9630	Vestibule windows widened, skirting removed, paper window shades installed, and styrene strip added to roof to simulate electrical bar.
RBBX 41305	"	"	"	"	"
RBBX 42105	"	"	ATSF PS 4-4-2 sleeper	932-16708	Union Station Products sides attached, vestibule windows widened, paper window shades installed, and styrene strip added to roof to recreate electrical bar.
RBBX 60011	Generator car	"	UP ACF 85-foot baggage car	920-9201	Union Station Products sides attached, roof and car frame replaced, styrene roof vents added, vestibule window widened, and sound decoder installed.
RBBX 63001	Pie car	"	"	"	Union Station Products sides attached, roof vent added, interior detailed and lighted, and styrene strip added to roof to simulate electrical bar.
RBBX 42203	House car	"	NYC 64-seat coach	932-16785	Vestibule windows widened, paper window shades installed, and styrene strip added to roof to simulate electrical bar.
RBBX 42013	"	"	PRR ACF 4-4-2 Sleeper	920-9243	Select windows covered, vestibule windows widened, skirting removed, paper window shades installed, and styrene strip added to roof to simulate electrical bar.
RBBX 42107	"	"	SP PS 10-6 sleeper	932-55035	"
RBBX 41402	"	"	B&O Budd *Bird*-series 16-4 sleeper	920-9404	"
RBBX 42016	"	"	PRR ACF 44-seat coach	932-6927	Vestibule windows widened, paper window shades installed, and styrene strip added to roof to simulate electrical bar.
RBBX 41404	"	"	ATSF Budd 10-6 sleeper	932-9001	Select windows covered, vestibule windows widened, skirting removed, paper window shades installed, and styrene strip added to roof to simulate electrical bar.
RBBX 60001	Shop/tool car	"	UP ACF 85-foot baggage car	920-9201	Additional set of Walthers car sides from 44-seat coach used to add windows and vestibule to baggage car sides, baggage door modified, and styrene strip added to roof to simulate electrical bar.
RBBX 84801	Storage car	Athearn	TTX Twin F89F 89-foot TOFC flatcar	ATHG69949	Pair of Athearn 40-foot containers spliced using styrene and mounted on 89-foot flatcar, additional styrene pieces used for doors and panels, grab irons installed, and entire car painted silver.
RBBX 84802	"	"	"	"	"
RBBX 80701	Flatcar	"	"	"	Original flatcar painted silver, side flaps added on either end, and wagons kitbashed from Athearn 20-foot intermodal containers. Other equipment added from items found at model train shows and online retailers.
RBBX 80702	"	"	"	"	"
RBBX 80703	"	"	"	"	"
RBBX 80704	"	"	"	"	"
RBBX 80705	"	"	"	"	"
RBBX 80706	"	"	"	"	"
RBBX 80707	"	"	"	"	"
RBBX 80708	"	"	"	"	"
RBBX 80709	"	"	"	"	"
RBBX 84708	Bi-level flatcar	Accurail	89-foot partially enclosed bi-level auto rack	ACU9411	Original kit pieces repainted silver, styrene strips added along the upper level, and HO scale automobiles added.

Where possible, the train can also be staged in a yard to unload/load the show (6 on previous page). The stockcars are spotted and unloaded. I built a separate set of eight flatcars for staging scenes for unloading the wagons and hauling them to the arena for the show, just like they did on the prototype.

Bringing my 32-car HO scale Ringling Bros. and Barnum & Bailey Circus train to clubs and shows gives me the satisfaction of knowing that the memory of the circus and circus trains will continue to live on. MR

Learn about John Rezuke's train on Facebook. Search "The HO Scale Ringling Bros and Barnum & Bailey Circus Train".

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MoPac in an attic

This HO scale track plan depicts the Joppa Subdivision in southern Illinois

By Bob Sprague

In crisis there's danger and opportunity. That's what I first thought when I looked at a diagram of the space Tom Austin had available for his HO scale model railroad.

On one hand, the square footage was ample. Tom was willing to use two decks to maximize the operational possibilities of his planned layout. That aside, the space represented one of the more unusual challenges I've faced as a layout designer. A finished attic with sloping walls, interior partitions, a stairway down, a chimney, and other obstructions. Four 6 x 6-foot dormers were available, but at least two had to be used for Tom's office and workshop. We discovered in the process of ascertaining precise dimensions that nothing was truly square – typical in older homes.

The prototype selected also led to complications. Tom is a member of that fraternity of model railroaders who derive a lot of satisfaction from re-creating a particular line in a specific location at a designated moment in time. The closer we could get to his modeling subject, the Missouri Pacific in southern Illinois circa 1979, the happier he would be. But the prototype line, the Joppa Subdivision, is nearly arrow-straight. While some curves would be unavoidable, I wanted to stay away from tight S-curves and maximize the use of long tangents representing the Missouri Pacific's main line running through Midwest farmland.

How to dodge the obstructions, employ the dormer space, capture the look of the prototype, and facilitate the coal mining operations Tom wanted to replicate? Well, I knew the job was dangerous when I took it.

A moment in time

Think "coal" and images of Pennsylvania, West Virginia, or maybe Wyoming come to mind. But from the mid-1950s to the 1980s, southern Illinois was also a major supplier of coal. Buried just under the rolling farmland were rich veins of black gold. The shifting politics and price of oil created a cycle of booms and busts for coal mining during the latter half of the 20th century.

West Frankfort, Ill. (not coincidentally Tom's hometown), sat astride the mainline of the Chicago & Eastern Illinois RR (CE&I). When the CE&I was purchased by MoPac in 1967, a golden age of railroading began, with MoPac's handsome Jenks Blue Electro-Motive Division four-axle diesels providing daily service to the mines in the area.

The primary goal of the layout was to simulate operations of Ziegler No. 4 and Freeman No. 4, two massive complexes located off a branch to the south of West Frankfort. The track layout would match the prototype, with as little compression as possible. Extracted coal would be sent north towards Mt. Vernon and south to Joppa, and empties would be returned.

To make the concept work, we focused on a segment of MoPac mainline a little more than 12 miles long. It would begin a little south of West Frankfort at Jenkins' Siding, where the branch line to the two mines joined the main, proceed north through West Frankfort and its compact yard, and extend to Benton Junction, where the MoPac interchanged with the Illinois Central Gulf (ICG). By resisting the urge to cram in more features, we were able to create more authentic – and considerably more realistic – versions of what we chose to keep.

Today the mines on the Joppa Sub are gone, and the Missouri Pacific was absorbed into the Union Pacific in 1982. But Tom had a cache of historic aerials, track maps, and trackside photos. Scars from the old branch line and mines were clearly visible on Google Maps once I figured out where to look. Piecing it all together allowed me to develop a way to fit it all into Tom's attic room.

What to do with dormers

At 6 x 6 feet, Tom's dormers were big enough to accommodate 180 degrees of

Four Missouri Pacific Electro-Motive Division road locomotives lead a southbound coal train at Dupo, Ill., on May 3, 1981. Bob Sprague's latest HO scale track plan depicts the MoPac's Joppa Subdivision, located east of here, in 1979. Alex Mayes photo

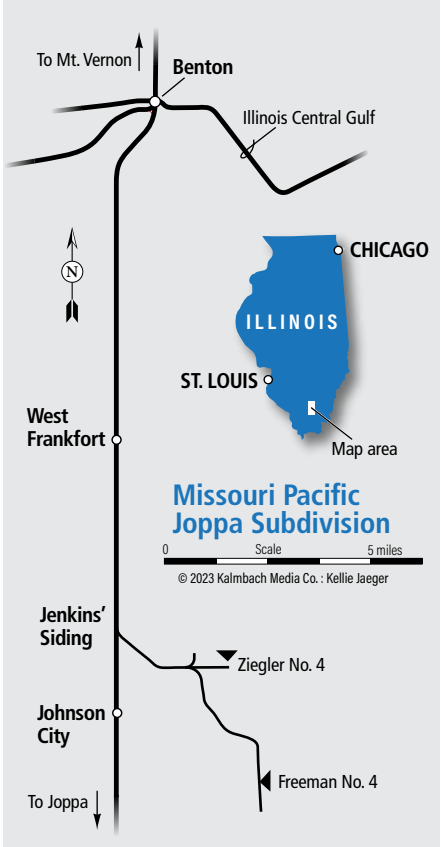
30" radius curvature. Curves, however, are few and far between on the Joppa Sub, and that was particularly true for the mine complexes. The yards for empties and loads stretched in straight lines for almost a mile around the tipple at Freeman No. 4, and almost as far at the Ziegler mine. They would neither look good nor operate well if bent around a curve inside of a dormer. Instead, it seemed best to use the dormers primarily for behind-the-scenes trackage.

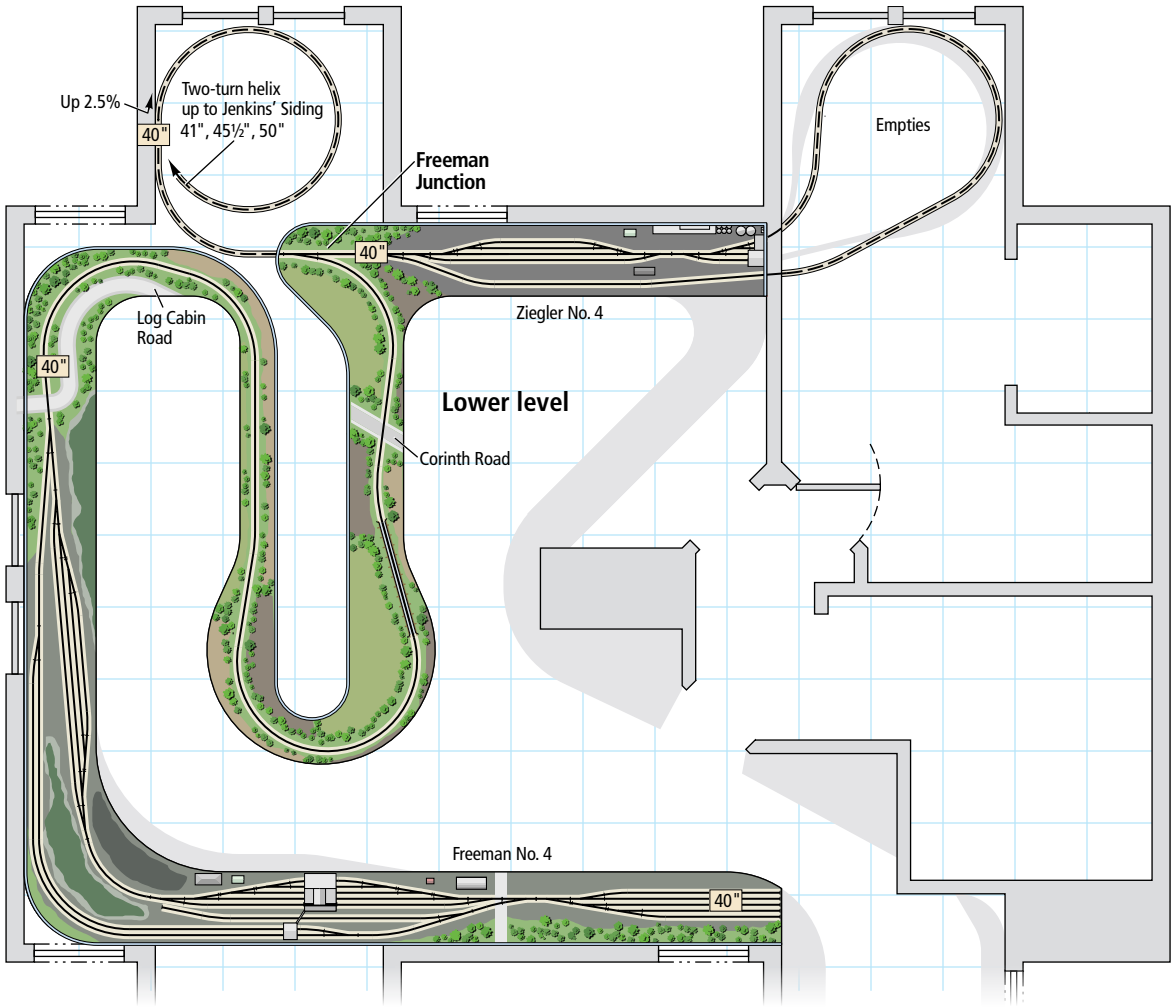
I began by experimenting with laying out tracks for the mines. Prototype mines of any size are almost always arranged with separate yards for empties and loads; strings of cars are pushed or pulled from the empties yard under a tipple and into the loads yard, from which they are eventually taken for delivery to processing plants or customers. Freeman No. 4 and Ziegler No. 4 both followed this pattern. It was apparent neither would fit the available space without some bending of space and time.

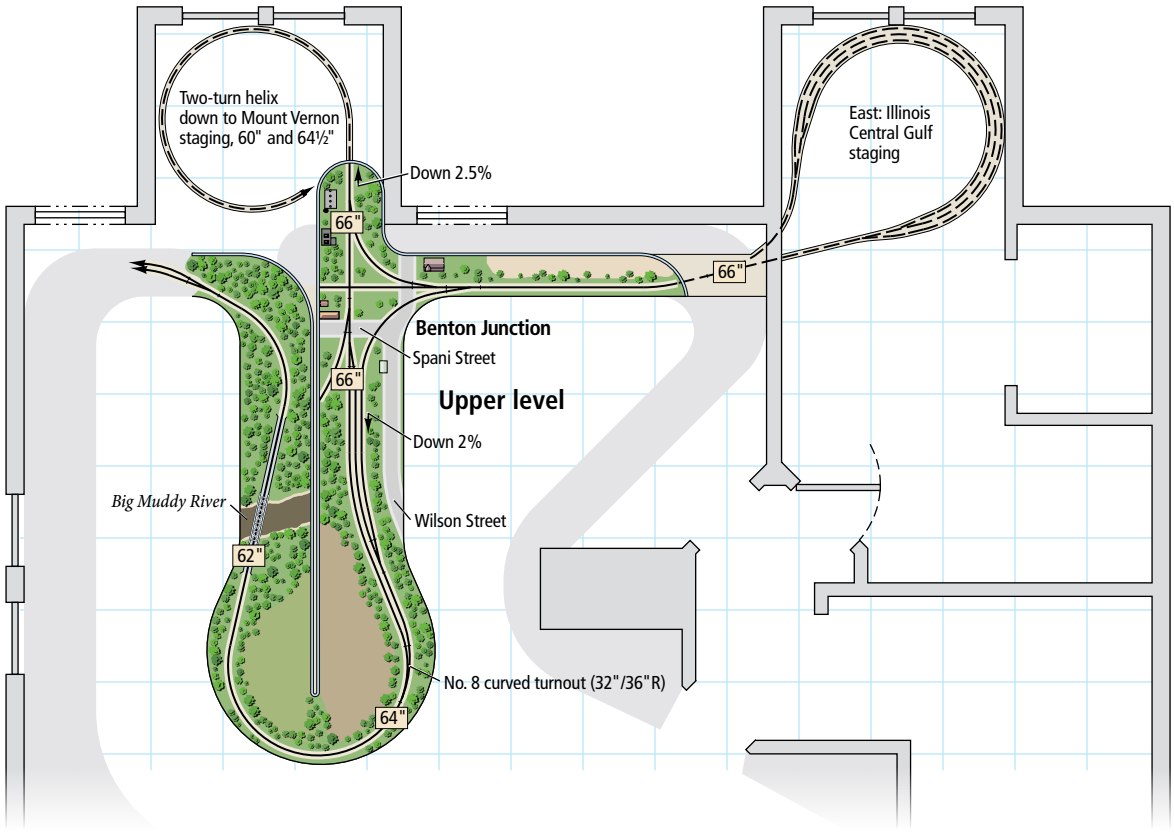
For the Freeman mine, I introduced a 90-degree bend and, by sacrificing one dormer, was able to include a track-by-track model version along two walls. I introduced some trickery for the Ziegler version: The loads yard is modeled, but the mine itself is a flat on the wall, and empties are fed from a backstage balloon track located in the dormer that also houses the workshop.

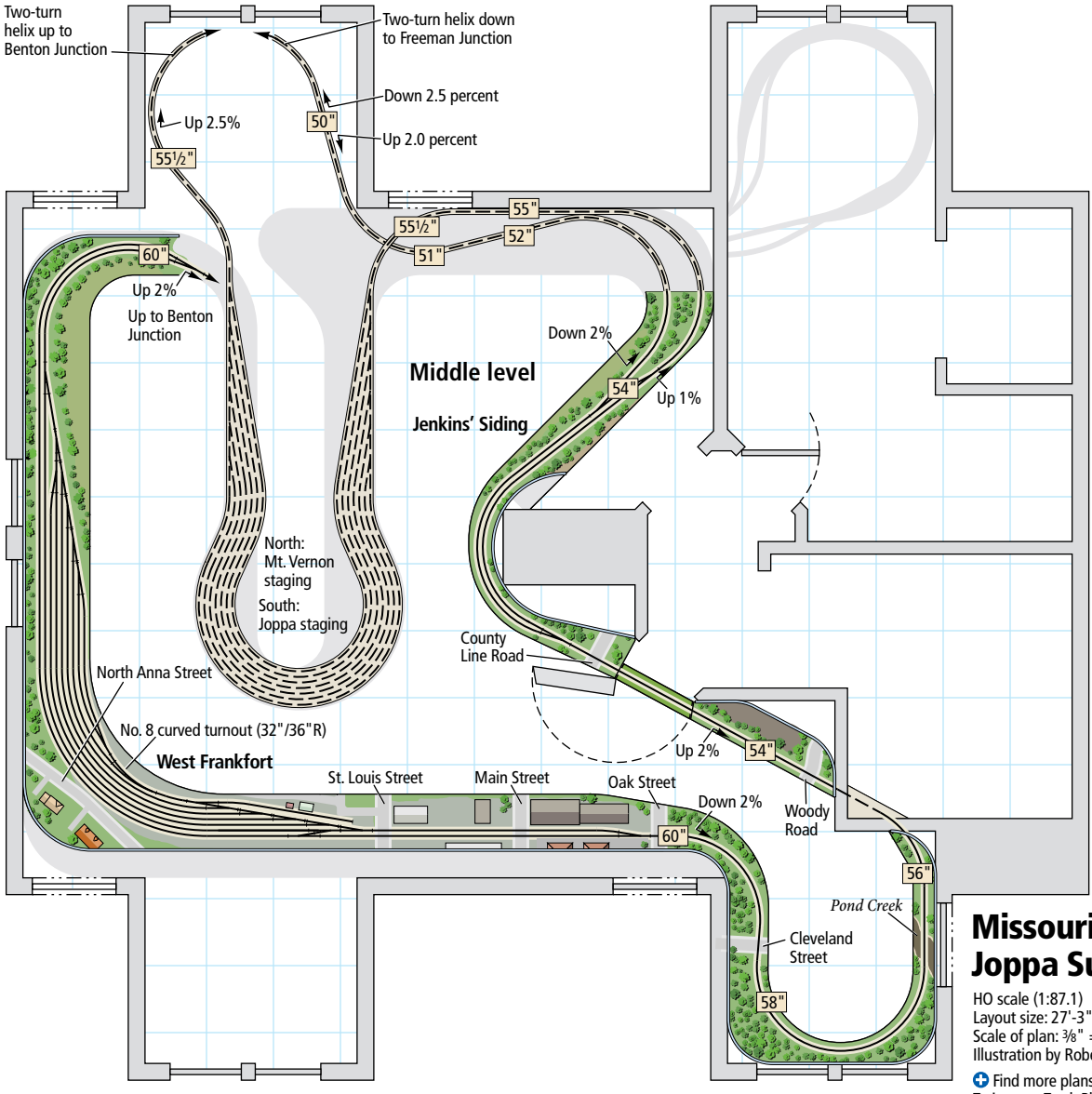
Since the mine operations were to be the focus of the plan, it was acceptable to devote a full deck to the mines. A two-turn helix stuffed into another dormer, plus a few feet of concealed track, was enough to reach a second deck representing the MoPac mainline. With the help of a single swing gate across the entrance, it makes a complete turn around the room and contains Jenkins' Siding, West Frankfort, and the interchange at Benton Junction. The top deck is shallower than the bottom deck, because it must account for the inward-sloping attic walls.

My original thought was to put the mines on the top deck and the mainline down below. An "aha" moment led me to flip them. This has several advantages. One is that mine operations will be easier at the 40" elevation of the lower deck. The lower deck doesn't need to block the main entrance to the room. The gully on




Up 2.5%
Two-turn helix
up to Jenkins' Siding
41", 45½", 50"
40"
Freeman
Junction
Empties
40"
Log Cabin
Road
Ziegler No. 4
40"
Lower level
Corinth Road
Freeman No. 4
40"


Two-turn helix
down to Mount Vernon
staging, 60" and 64½"
East: Illinois
Central Gulf
staging
Down 2.5%
66"
66"
Benton Junction
Spani Street
66"
Upper level
Down 2%
Big Muddy River
Wilson Street
62"
No. 8 curved turnout (32"/36"R)
64"



Missouri Pacific Joppa Subdivision, 1979

HO scale (1:87.1)
Layout size: 27'-3" x 31'-6"
Scale of plan: ⅜" = 1'-0", 24" grid
Illustration by Robert Sprague

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

The track plan at a glance

Name: Missouri Pacific Joppa Subdivision
Scale: HO (1:87.1)
Size: 27'-3" x 31'-6"
Prototype: Missouri Pacific
Locale: southern Illinois
Mainline run: 131 feet (visible), 222 feet (including helix and branch to start of Freeman mine)
Minimum radius: 30"
Minimum turnout: No. 6
Maximum grade: 2.5%

the mine branch south of Corinth Road can be created with scenery that extends far below track level, making possible the inclusion of a large bridge.

Mainline staging, unusually, wound up in between the upper and lower decks. From Benton Junction the mainline spirals down a short helix to reach a large yard in the peninsula, accessible from inside or through the fascia. The staging forms a continuous loop, good for show running but also felicitous for open-top traffic.

A continuous scheme allows a train of loads, for example, to disappear north only to return a short time later still loaded, as if the customer decided the coal was no longer needed. I took advantage of the dormer occupied by the balloon track at Ziegler No. 4 to add some ICG staging off the interchange at Benton Junction, as well.

Making it work

The Joppa Sub isn't a plan for a first-time railroad builder. Although the trackwork is relatively straightforward, considerable care and planning will be required to address the helix, grades, and multi-deck construction. I would build and thoroughly test the lowest level with the mines first, move on to the helix and staging, and finally add the mainline level on top. By the time the first two turns of the helix are complete, satisfying operation of the mines should be possible, using the helix as a temporary serial staging track and feeding the mines with loads and empties.

I don't envy Tom the task of hoisting plywood up to his attic train room. Once he does, he should have the opportunity for a lot of building and operating fun on a plan that reproduces this segment of MoPac's Joppa Sub with a high degree of fidelity. MR

Bob Sprague is a frequent contributor to Model Railroader. *He lives in Baltimore and is building a double-deck, prototypically accurate version of the Maryland & Pennsylvania RR circa 1924.*

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A wireless control panel can add flexibility to your operations and simplify the construction process. Contributing editor Larry Puckett explains how he installed the DCC Concepts ESP wireless control system on his layout.

WIRELESS CONTROL USING ESP

Advances in technology allow for this turnout control panel

By Larry Puckett • Photos by the author

For many years I've built control panels the conventional way – creating a track diagram, installing push-button or toggle switches on the diagram, and then running hundreds of feet of wire from the control panel to the switch machines used to operate the turnouts. I always wondered why no one offered a system that would take the push-button or toggle switch inputs, convert them to Digital Command Control (DCC) commands, and send them to switch machines using the DCC power or accessory bus wires.

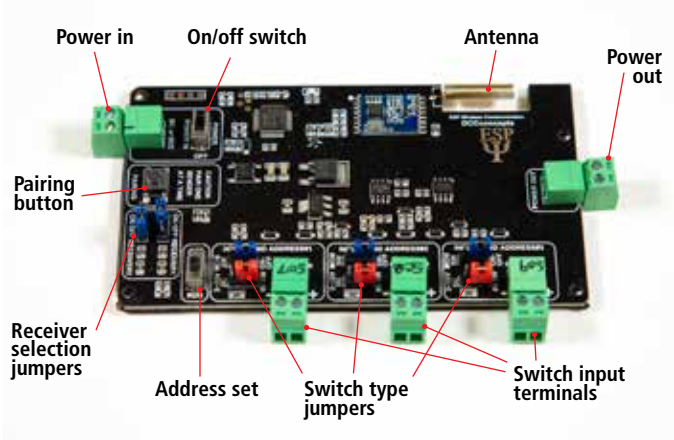
Finally, DCC Concepts has done that with its new ESP wireless control system. When I saw this system demonstrated in late 2021, I was intrigued, as it coincided with my planned installation of a hidden staging yard on my HO scale Piedmont Southern layout.

I realized right away that the ESP wireless system could simplify the installation and save me the headaches (and backaches) of running all those wires between the control panel and the turnouts hidden deep beneath my main Monroe Yard.

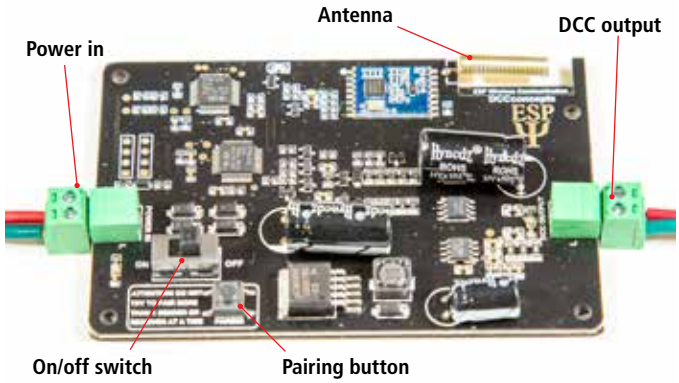
The ESP wireless system

The ESP wireless system consists of two main components: transmitters ❶ and receivers ❷. Transmitters are located in the control panel and take the input from push-button or toggle switches on the control panel, convert them to accessory decoder commands, and then wirelessly transmit those commands to a receiver installed on the layout. This wireless connection eliminates the need for the myriad of wires run between a conventional control panel and the turnout switch machines. It also makes it possible for the control panel to be completely portable and separate from the layout.

Transmitters require a 12-23VDC or DCC power supply to operate, and multiple transmitters can be daisy-chained from a single power supply. I've also used a standard 9VDC battery without any problems. However, this size battery

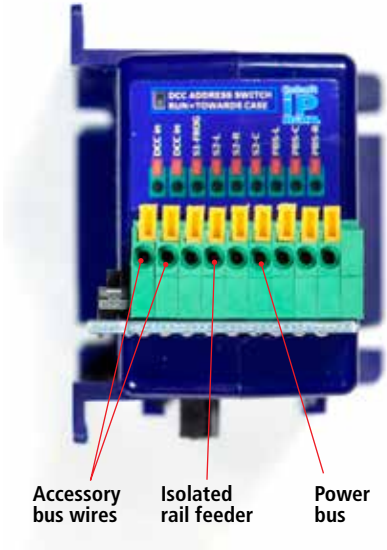


❶ Transmitters take switch inputs, convert them to DCC accessory decoder commands, then send them to a receiver on the layout.



❷ Receivers accept the accessory decoder commands, merge them into the DCC signal, boost them to the correct voltage and amperage, and send them out on the accessory bus.

❸ The DCC Concepts Cobalt iP Digital switch machines that Larry used (center) are similar to Circuitron's Tortoise (left) and Smail (right) switch machines. The Cobalt machine has a built-in accessory decoder, eliminating the need for running wires to and from a separate accessory decoder.



❹ Larry wired the Cobalt iP Digital switch machines using their internal single-pole double-throw switch. Power for each staging yard track is turned on only when the turnout points are set for that track.

might not last for more than a few hours of continuous operation.

For a more reliable, long-term power source I use a rechargeable power bank made by TalentCell (No. YB1203000-USB), rated at 12VDC 3Ah.

Setting up a transmitter requires installing jumpers for the type of switch or device to be used. Either push-button or toggle switches, which can be momentary or latching, and powered devices such as occupancy detectors can be used.

There's a jumper for the switch type and another for whether it's powered or not. You also need to set the accessory decoder addresses that it will control, which involves connecting the transmitter to an active DCC power bus, turning on the address programming switch, and sending the first address of a three-address sequence using a handheld throttle. This process is essentially the same as is required for programming the addresses of most accessory decoders. Each transmitter supports up to three switches or devices and accessory decoder addresses from 1 to 2044.

In order for the transmitters to communicate with the receiver they must be paired using a proprietary process similar to pairing Bluetooth devices. Just install the activation jumper, push the pairing buttons on each device, wait until the onboard light-emitting diodes (LEDs) stop flashing, and you're done.

Once the devices are paired, they'll only communicate with one another. An unlimited number of devices can be paired. Also, because each receiver has its own unique address, you could fill a room with them and there would still be no crosstalk. The wireless link between transmitters and receivers can provide reliable communication at distances of at least 200 feet.

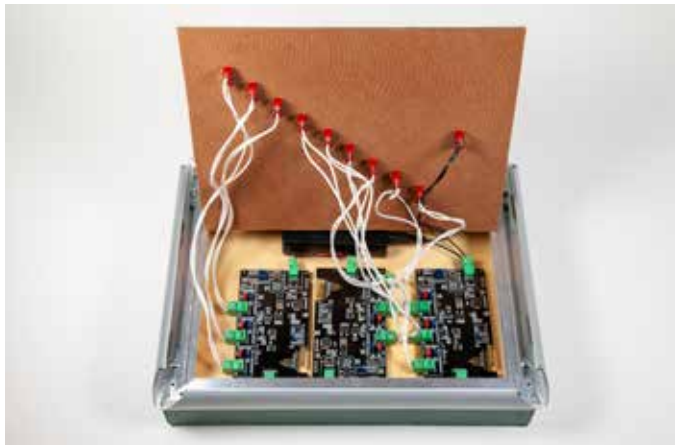
The receiver is installed on the layout and takes the accessory decoder commands it receives from the transmitters in the same way that DCC boosters take commands from a command station. It boosts them by increasing the voltage and amperage. These commands are then sent out to all the accessory decoders on the layout through a single accessory bus.

An ESP receiver can create a stand-alone DCC accessory bus rated at 1.5 amps and requires either a 12-23VDC or DCC power supply. Only one receiver is required on a layout. However, more can be used for multiple accessory buses, if you desire.

Planning the installation

I had three primary goals when installing my staging yard: To remotely control the turnouts using an accessory decoder bus, to automatically turn power on and off to each track in the staging

❺ The snap frame from SECO can be opened for easy access to the control panel, allowing it to be lifted out. Larry screwed the frame on top of a wooden enclosure.



❻ Tipping up the control panel diagram provides access to the battery and transmitters for wiring. The removable screw terminals allow for quickly removing the track diagram.

yard when the turnout points are lined, and to simplify the installation and eliminate as many wires as possible. I think it's important to be able to switch power off to staging yard tracks so that parked locomotives will not continue to consume track power, decoders will not drone on for hours even when not in use, and locomotives will not inadvertently creep across closed turnouts or run into the end of the track if someone fails to completely set them to speed step "0".

For the first goal I opted to use DCC Concepts Cobalt iP Digital switch machines ❸ along with the ESP system. These are similar to Tortoise by Circuitron switch machines, but have a built-in accessory decoder, eliminating the need to run additional wires from a separate accessory decoder.

For the second goal I used a single-pole double-throw switch built into the iP Digital switch machines, wiring it so power to each track was on when the turnout points were lined for the desired yard track and off when the turnout was set back to the ladder track ❹. With this arrangement, the toggle switch position serves as an indicator of which track is selected and its power status.

Consequently, I saw no need for light-emitting diodes (LEDs) in addition to the toggle switches, thus keeping the control panel smaller and simpler.

Control panel construction

I designed my control panel diagram ❺ using a computer graphics program (any freeware drawing program will work). I printed the diagram on 8½" x 11" glossy photo paper using a Canon photo printer. Most inkjet printers will produce similar output. To protect the diagram I applied an adhesive plastic overlay made by Avery (No. 73601), available at office supply stores or from Amazon.com. I then punched holes for the toggle switches and attached the diagram to a piece of ⅛" tempered hardboard using 3M spray adhesive. I then drilled holes for the switches and installed on/off toggle switches for each track and another to turn the battery power on and off.

My control panel enclosure is made of 1 x 2 pine glued and nailed together with a ¼" plywood bottom. The dimensions were determined by the outside dimensions of the frame I used for the track diagram. I painted the exterior to match the fascia and other panels on my layout.

To mount the control panel diagram, I used a SECO snap frame (No. SN8511-SV) purchased from Amazon. These are brushed aluminum frames that snap open, allowing you to change out photos and other documents as desired. They're designed to be screwed to a wall, so I screwed it to the top of my wooden enclosure.

With the control panel completed, I soldered two wires to each toggle switch and installed the battery and transmitters ❻. These are held in place with industrial strength hook-and-loop fasteners attached to the bottom of each and to the bottom of the enclosure.

To complete the panel installation, I inserted the wires from each toggle switch into the screw terminals on the transmitters, corresponding to the switch machine it controls.

Installing the ESP receiver

There are three options for installing and powering the ESP receiver. First, you can power it using any 12-23VDC 1.5 amp stable power supply. In this configuration it will create a stand-alone accessory decoder bus with its own accessory decoder commands. This configuration would allow it to be used on a non-DCC layout or a unique installation such as a helix occupancy display.

The second option is to power it using the output from the main DCC command station/booster output. When main DCC power is supplied to the ESP receiver, the device adds its own DCC accessory decoder commands to those generated by the command station. It then passes this combined data stream in a separate accessory bus that is a slightly lower voltage (about 0.7 volts are lost in the internal circuitry) as the main DCC power bus but limited to 1.5 amps.

Third, if a higher amperage is required, the output can be fed through a DCC booster having a higher amperage rating. When used in this configuration the ESP receiver uses only about 100mA, thus keeping the load on the DCC system low.

Switch machines like the Cobalt iP Digital and Tortoise/Smail use <40 mA when in motion and <10mA when waiting for a command. This low current demand and the fact that multiple switch machines will not be activated simultaneously means dozens can be operated with much less than 1.5 amps.

The DCC Concepts ESP wireless system and its Cobalt iP Digital switch machines are currently available in the United States from Iron Planet Hobbies (ironplanethobbies.com) or can be ordered directly from the DCC Concepts website (dccconcepts.com).

For a more detailed look at how I built and wired my staging yard, as well as the ESP wireless system, visit my YouTube channel "Model Railroading With The DCC Guy." MR

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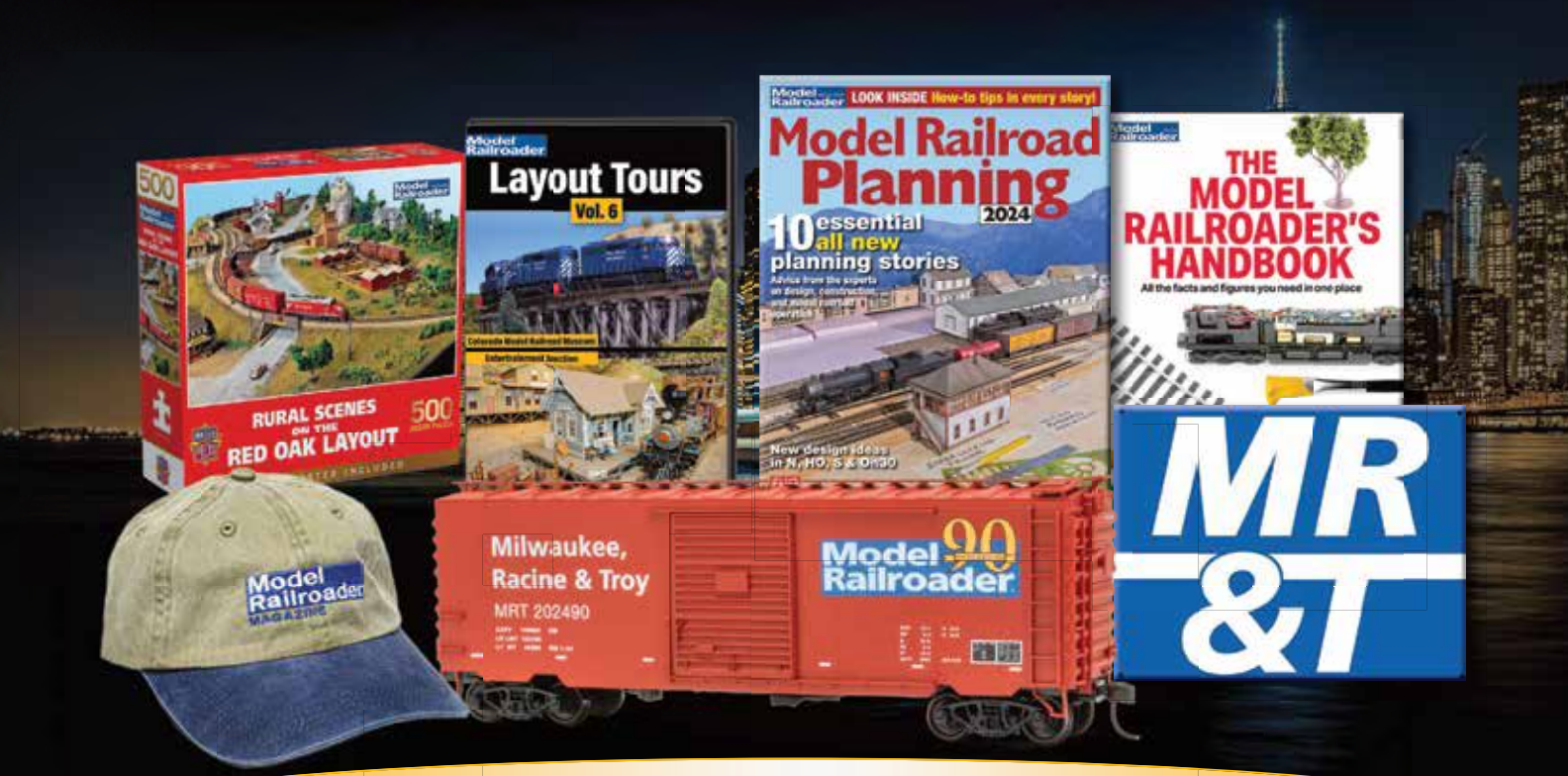

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By Jerry Dziedzic

Delivering train orders

The operator jumped to answer the order wire when it rang at the station. "Mayfield, 19 copy east," said the dispatcher, briskly. The op pulled the levers controlling the train order signal, reached for a manifold of blanks always kept ready, and replied, "Stop displayed." Soon, after all stations being addressed acknowledged, the dispatcher (DS) began dictating the order, a cadence so rhythmic it could be musical. Let's unravel this description.

Telegraphy first handled the transmission of train orders, the origin of "order wire." The term continued when telephones took over. "Mayfield" names the station copying the order. "19 copy east" instructs the op to make three copies: one each for the conductor and engineer, and one kept at the station as a record. DS would give the total number needed, as "19 copy 5 east," if that station would deliver the order to more than one train. "Stop displayed" confirms that the op has positioned the order board so that it signals eastward trains approaching Mayfield to receive an order.

The op wrote or typed orders on onion-skin paper, so thin that orders became known as "flimsies" or "tissue." This made it easy for a crew member to read in dim light without illumination that would interfere with night vision. Instead, holding the order before a lantern, a gauge light, or an open firebox door allowed low light to shine through. Double-sided carbon paper interleaved the manifold, imprinting copies on the back side intentionally.

19 refers to one of the two forms of train orders. A Form 19 order could be caught on the fly, without stopping. The photo at right shows a Santa Fe trainman grabbing an order at Isleta, N.M., in 1943. The op tied the order on the hoop, seen where the hoop joins its stem. The trainman extends his arm so its crook catches the hoop as the train passes. He'll remove the order and toss the hoop back on the ground for the op to retrieve. Where there was no delivery stand, the operator held the hoop up at trackside. I've had the experience of grabbing one like this at slow speed; it's hard to imagine doing so at high speed. It must have been hair-raising for the operator, standing so close to an onrushing train.

Form 31 was the second type of train order. Delivery required a physical stop for the engineer's and conductor's signatures. 31s were reserved for critical orders, typically holding the train at the point where it received the order. Southern Pacific and Santa Fe are two prototypes which stopped distinguishing between 19s and 31s. Theirs became simply train orders. We'll put 31s aside because they rarely appear on model railroads.

PERHAPS THIS EDGES YOU CLOSER TO TIMETABLE-AND-TRAIN-ORDER OPERATION, EVEN IF ONLY TO LEARN MORE. – JERRY

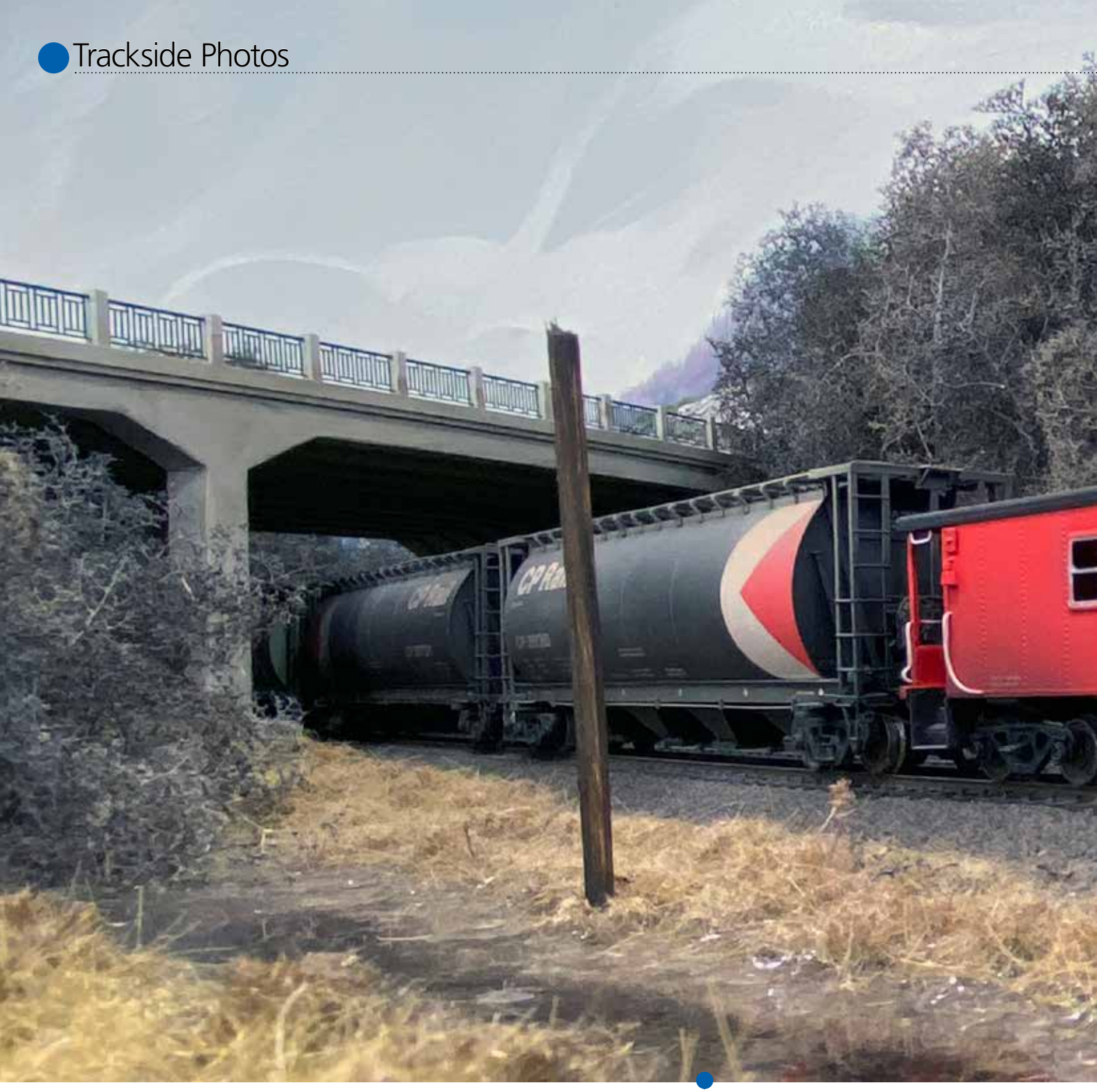
A typical train order signal was an upper or lower quadrant semaphore with two blades, one facing each direction. Color light signals were also used. Some railroads favored three indications; others, only two. Also, some railroads made the normal position the stop position while others made it the clear position. As usual, results may vary so follow your prototype railroad's system.

Most layouts simplify matters. Manual operation is easy: the operator walks to a station and nudges the board into position. Servos and signal drivers make possible controlling order boards from a central location. Orders aren't hooped up; instead, they're often hung on a clip at the order board. Delivery might take place by walking to the operator's desk, too.

Perhaps this edges you closer to timetable-and-train-order operation, even if only to learn more. Two interesting titles backgrounded me: Tom French's *Railroad Telegraphers Handbook* and Thomas Jepsen's *Ma Kiley: The Life of a Railroad Telegrapher.* Both are easy reads with a perspective that makes you feel like you're standing in the depot. Here's one for a rainy day, every bit of which you'll need: loc.gov/photos/?q=jack+delano+railroad.

Jack Delano was a Farm Security Administration photographer during the Great Depression and war years whose photo appears above. The Library of Congress houses his railroad images, many of them evocative, some even intimate in the way they depict railroading and railroaders. MR

Jack Delano, whose rich documentation of railroading resides at the Library of Congress, photographed a crew member on a Santa Fe freight leaning out to snag an order hoop at Isleta, N.M. in March 1943. Photo courtesy of the Library of Congress



A westbound Canadian National manifest rolls under Highway 401 east of Kingston. The action takes place on Jason Shron's HO scale Kingston Sub, which was featured in the June 2022 MR. The caboose is a Van Hobbies brass model of CN's unique Hawker Siddeley van, and the cylindrical hoppers are by Rapido Trains. Jason shot the photo.

Send us your photos

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

The northbound Plainfield Local crosses the Quinebaug River as it works between New London, Conn., and Putnam, Conn. Robert Murphy's freelanced HO scale layout is loosely based on the New Haven line from New London to Worcester, Mass., in the late 1950s to early 1960s. The Alco RS3 locomotives are Atlas models with added details. Chris Adams, whose own HO scale Valley Local layout appeared in December 2023's Trackside Photos, took the picture.

Chicago, Burlington & Quincy EMD GP9 No. 280 rolls through Buda, Ill., with a string of ballast cars in tow. Ray Bedard of San Jose, Calif., shot the photo on his HO scale Mendota West layout. The locomotive is a Proto2000 by Walthers model. Ray built Ovide's Bar & Grill to honor his father and named Greiner Feed & Seed for his grandfather.

Sandy River & Rangeley Lakes
No. 15 heads across the Winter Mill trestle on its way to Kingfield. Lou Sassi photographed the scene on the On30 SR&RL layout Lou built with his wife, Cheryl. A *Model Railroader* contributing editor, Lou wrote two articles about creating this scene that appeared in the June and July 2022 issues.

The engineer of Atchison, Topeka & Santa Fe No. 642, a freshly shopped General Electric C44-9W, acknowledges a young railfan's wave with a short blast of the horn. John Vavra of Escondido, Calif., shot the photo on his HO scale Santa Fe Lines layout. The locomotive is a ScaleTrains model and the figure of the boy is from Preiser.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All ads must be prepaid and pertain to the subject of model railroading.

Schedule of Events

CA, ANAHEIM: 2023 TTOS-SP Super Meet. December 15-16, 2023. Friday, 5-8pm; Saturday, Noon-6pm. Brookhurst Community Center, 2271 Crescent Ave. Buy-Sell-Trade Trains, Toys, and Railroad Memorabilia. Train races, auction, and more! FREE kids train set raffle Saturday. 2-day admission: $5/person, $10/family. FREE parking. Vendors: 8-ft tables, $25, $30 after 12/01. Visit: TTOS-SP.ORG/THESUPERMEET/ to register. Questions: info@ttos-sp.org

FL, BROOKSVILLE: Regal Railways presents Toy Trains & Hobby Show. Hernando County Fairgrounds, 6436 Broad St., Brooksville, FL 34601. Saturday, January 20, 2024. 9:00am-2:00pm. Admission: $6.00 adults, children under 12 free. Vendors and model train layout. Lunch available. Contact: Joe at 727-244-1341 or visit: www.regalrailways.com for more information.

GA, SAVANNAH: Coastal Rail Buffs 35th Annual Model Railroad and Train Show at Cottonwood Suites, 301 Governor Treutlen Dr, Pooler, GA 31322. January 27-28, 2024, Saturday 10:00am-5:00pm, Sunday 10:00am-4:00pm. Adults 2-day admission $10.00; Students/Seniors $7.00, Active-Duty Military $5.00, under 12 FREE. Dealer tables, operating layouts in O, HO, N. Visit: www.coastalrailbuffs.com

IA, MONTICELLO: 2024 Train Show. 2 Days, February 3-4, 2024. Saturday 10am-4pm and Sunday 9am-2pm. Berndes Center, Jones County Fairgrounds, 766 N. Maple St., Monticello, IA 52310. Tables $30. Admission: $5, children under 12 free with paid adult. Monticello RR Club, PO Box 169, Monticello IA 52310 or email Ron Ackermann at rack611@gmail.com

IN, LEBANON: Central Indiana Division/NMRA Train Show. Boone County 4H Fairgrounds, 1300 E 100 S, Lebanon, IN 46052. Sunday, January 28, 2024, 10:00am-3:00pm. Admission $5.00/adult, 16 years and under free. Dealers, operating layouts, railroad-related activities, food, door prizes. Dealer tables $16.00 each. Contact David Nance at 765-482-4075 or at LebanonTrainShow@gmail.com. More info at http://cidnmra.org

MN, WOODBURY: Newport Model RR Club Train Flea Market. Woodbury High School, 2665 Woodlane Drive, Woodbury, MN 55125. Saturday, January 13, 2024, 9:00am-2:00pm. Admission $5.00. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Don, 763-257-5443

SC, CHARLESTON: Charleston Area Model Railroad Club's Train Show. Exchange Park Fairgrounds, 9850 Hwy 78, Ladson, SC 29456. January 6-7, 2024. Saturday 9:00am-5:00pm; Sunday 10:00am-4:00pm. Adults $10, Seniors $8, Active Military and 1st Responders $5, and Kids 12 & under FREE. For Vendor info and/or additional show details go to www.camrc.club

SC, EASLEY: CRMHA MODEL TRAIN EXPO 2024. February 16-17, 2024. Friday, noon-6pm. Saturday, 9am-3pm. Impact Center at Rock Springs Church, 207 Rock Springs Road, Easley, SC 29642. Admission: $8.00 Adult, good for both days. Children under 10 are FREE. Trains of all sizes, operating layouts, model train vendors, a Kids Zone and more! Visit: www.crmha.org

TX, HOUSTON: Greater Houston Train Show presented by the San Jacinto Model Railroad Club. Saturday, February 17, 2024, 10:00am-4:00pm. Pasadena Convention Center, 7902 Fairmont Parkway, Pasadena, TX 77504. Operating Layouts, Classes on Railroads and Modeling Subjects, NMRA Contests, and Vendors from across the Southwest. Admission: $5, under 12 FREE, $10 per family. Concessions, free parking. Info: http://sanjacmodeltrains.org/

TX, PLANO: Dallas Area Winter Train Show. Plano Event Center, 2000 E. Spring Creek Parkway. January 20-21, 2024, Saturday 10am-5pm; Sunday 10am-4pm. Adults $10.00, 12 and under free w/adult. 80,000 sq.ft. of model railroading with numerous operating layouts, layout tours, vendors, and door prizes. Information: Chris Atkins, chris@railroadmodelers.com 469-438-0741. Visit: www.dfwtrainshows.com

WI, LA CROSSE: The 32nd Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. Saturday, January 27, 2024. 9:00am-3:00pm. Admission $5.00, under 12 free. 300 vendor tables. All Scales; Model, Toy & Antique Trains & Memorabilia. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383. Visit: www.4000foundation.com

WI, NEW BERLIN: Train School will be held Sunday, January 14, 2024. 1pm-4pm at the VFW, 17980 West Beloit Road, New Berlin, WI 53146. Free admission. Come, learn about model trains from experienced model railroaders wanting to share their knowledge of the hobby. Sponsored by the WISE Division of the NMRA. More information, visit: www.wisedivision.org

WI, STEVENS POINT: Central Wisconsin Model Railroaders 26th Annual Model Railroad Show. Holiday Inn Convention Center Hotel, 1001 Amber Avenue, Stevens Point, WI 54482. January 20-21, 2024. Saturday 9:00am-5:00pm. Sunday 10:00am-3:00pm. Adults $5.00, kids 12-17 $2.00. Many layouts, swap/sales tables, vendors. Contact Jim Miller, 715-340-0265; email: jimbro67@gmail.com

All listed events were confirmed as active at the time of press. Please contact event sponsor for current status of the event.

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a. Total number of copies (net press run)	93,194	87,857
b. Paid and/or requested circulation		
1. Paid or requested mail subscriptions	62,866	59,499
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3. Sales through dealers and carriers, street vendors, counter sales, *et al.*	6,861	5,893
4. Other classes mailed through the USPS	0	0
c. Total paid and/or requested circulation (sum of 15b1-15b4)	69,726	65,392
d1-3. Free distribution by mail (samples, complimentary, or other free)	421	410
d4. Free or nominal rate distribution outside the mail	0	0
e. Total free distribution (sum of 15d1-15d4)	421	410
f. Total distribution (sum of 15c and 15e)	70,147	65,802
g. Copies not distributed	23,047	22,055
h. Total (sum of 15f and 15g)	93,194	87,857
i. Percent paid and/or requested circulation:	99.40%	99.38%
16. Paid Electronic Copies		
a. Paid electronic copies	2,376	2,190
b. Total paid print copies + paid electronic copies (sum of 15c and 16a)	72,102	67,582
c. Total print distribution + paid electronic copies (sum of 15f and 16a)	72,522	67,992
d. Percent paid (both print and electroic copies; 16b divided by 16c times 100)	99.42%	99.40%

17. This statement of ownership will be printed in the January 2024 issue of this publication.
18. I certify that the information above is true and complete.
Nicole McGuire, Chief Marketing Officer.
Date: October 1, 2023

By Tony Koester

A level playing field

Brian Pate (left) and David Doiron enjoy the last operating session on Brian's HOn3 Klondike Mines Ry. before parts of it were packed up and shipped to become a permanent display at the Klondike Visitors Association in Dawson City, Y.T., Canada, in 2015. Mark Dance photo

Model railroading is a level playing field. It's an arena where people of all walks of life mingle to enjoy the hobby of scale model railroading.

It matters not whether you're a famous rock star or a guy who drives a UPS truck. When we are model railroading, money and fame don't count for anything. We are just friends with a common interest.

That said, I continue to be amazed at some of the credentials of our contemporaries. This matters only because these accomplished people don't suddenly get stupid when they turn to our hobby; their skills and knowledge are applied for our benefit. Or perhaps we just sense that we are around people who have a lot to contribute and enjoy their company.

Case in point: When I read the brief obituary of the late Brian Pate in the December 2023 MR, such thoughts came to mind.

If you knew Brian only casually, as most of us did, you regarded him as a friendly fellow who did some very nice modeling that he occasionally shared with us in these pages. However, there was so much more to Brian than that.

Born in England in 1928, Brian began his notable academic career by obtaining his bachelors (1949) and masters (1951) degrees in special chemistry from London University while conducting research at Harwell — Britain's Atomic Energy Research Establishment.

Brian showed an aptitude for teaching and held lecturing professorships at universities in five countries. Shortly after receiving his masters, Brian married Margaret, and they would spend the next 69 years together, raising a family, living, working, and building model trains.

At that time, the world was coping with the Cold War, and Brian's expertise in high-energy nuclear chemistry was in great demand. In 1953, Brian and Margaret moved to Montreal. He completed his Ph.D. in chemistry at McGill University in 1955 before venturing to the U.S. for stints at Brookhaven National Laboratory on Long Island and Washington University in St. Louis. At each stop, Brian put down roots in the local modeling community, building layouts, sharing techniques, and establishing friendships.

In 1965, they headed to their final destination back in Canada, this time in North Vancouver, British Columbia.

Brian began his career researching large-scale nuclear reactions. He then co-led the team that proposed, constructed, and operated TRIUMF — the world's largest cyclotron particle accelerator. Prior to his retirement in 1993, Brian was leading a team pioneering the use of high-speed particles to detect and treat diseases.

He was always a model builder, and he shared his tips and techniques with anyone who expressed an interest. He started by building airplanes, but his interests shifted to model trains.

His talent as a model builder is evident in not one but two Gold Awards for Best in Show at NMRA national conventions with his models of the steamship *Canora* (Calgary, 1979) and the Klondike Mining Company's Dredge No. 4 (Portland, 1994). Brian was fond of pointing out the irony of having won Best in Show at two model railroad competitions with ship models.

During a hiking trip in Canada's Yukon Territory, Brian stumbled on the inspiration for his final layout, the 3-foot gauge Klondike Mines Ry. Modeling the gold dredges, buildings, and sternwheelers of this area occupied much of his retirement.

Operating sessions on the KMR, shared with hundreds of visitors from around the world, brought both hosts and guests immeasurable joy, although Brian often quipped that he didn't know whether people were there for the layout or for Margaret's amazing baked treats afterwards!

The KMR layout and Brian's model of Dredge No. 4 are on display in the Visitors Information Centre in Dawson City, Y.T., Canada. His model of the terminus of the Canadian Pacific Ry.'s Arrowhead branch is on display at the Revelstoke Railway Museum in Revelstoke, B.C.

My thanks to Mark Dance for the background information I've shared here. MR

I CONTINUE TO BE AMAZED AT SOME OF THE CREDENTIALS OF OUR CONTEMPORARIES. – TONY

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