

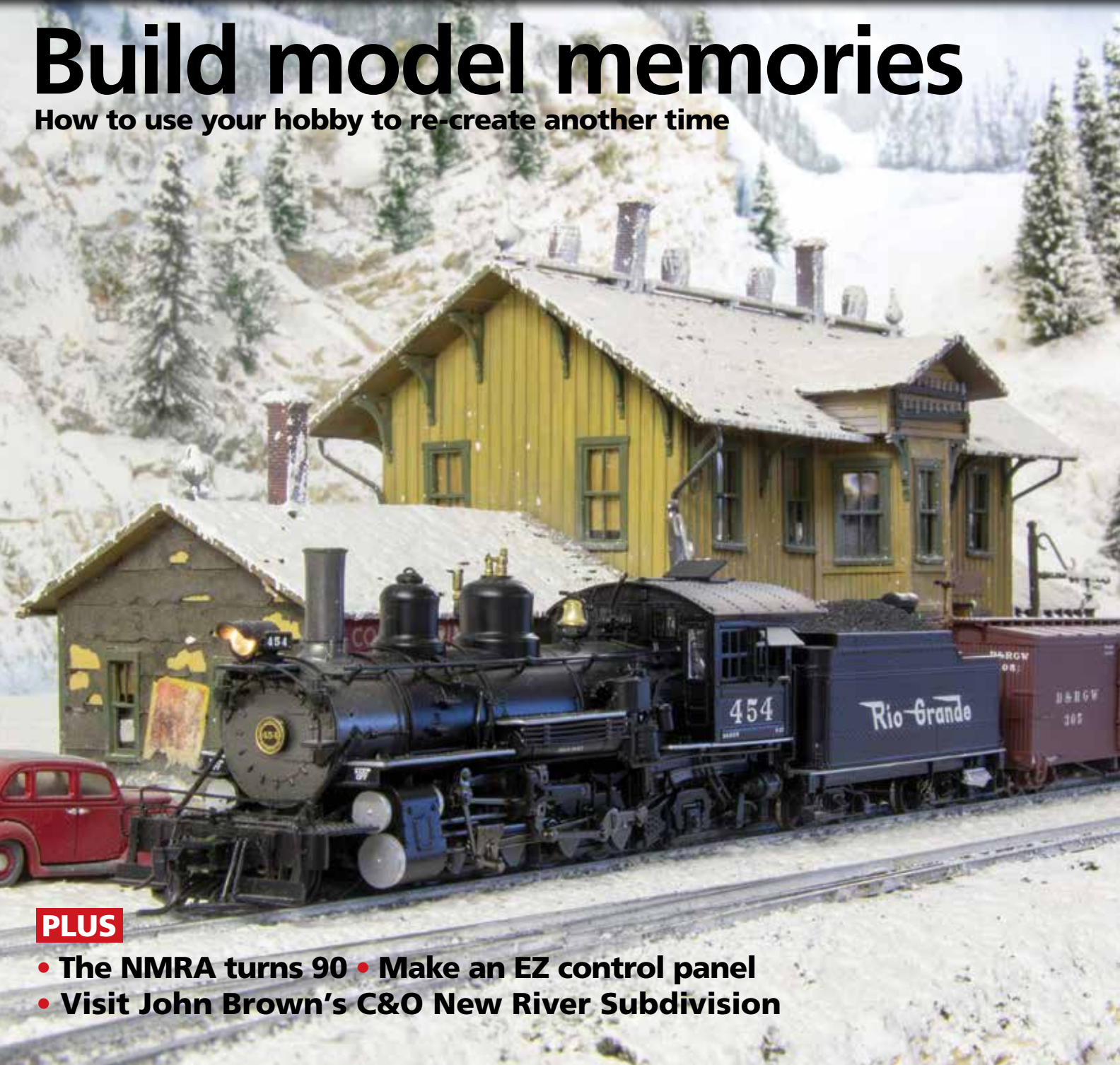
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December 2025

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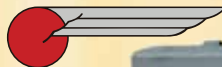


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Who needs a train?



On the cover: Rio Grande 454 is on Eddie Carroll's HO/HOn3 Glenbrook Valley RR. See page 63 for more winter scenes. J. Stephen Sandifer photo



Next issue

In January, we visit sunny southern Canada, introduce our new project railroad, upgrade a wooden freight car kit, build a ballasted bridge, and more!

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The 1960s represents a period of change in history, and railroads weren't immune to that. At the beginning of the decade, large systems were looking for ways to cut costs as the trucking and airline industries cut into the near monopoly railroads had long held on transportation. Diesels had replaced steam, but that wasn't enough. At the end of the decade, two of the biggest railroads, the Pennsylvania and New York Central, had merged into Penn Central, and the Great Northern; Northern Pacific; Chicago, Burlington & Quincy; and Spokane, Portland & Seattle were about to form Burlington Northern. Check out more on Trains.com



Painting track

Track is central to railroading, so it's a good idea to pay attention to it. It has to work well to deliver power to our trains and keep equipment going where we want it to, and it's also central to most scenes on a model railroad. Brown plastic ties and silver-colored rail are great improvements over brass rail on fiber ties and tubular 3-rail track on metal ties, but painting is an important step. Cody Grivno shows how he makes quick work of the task on our East Troy Industrial Park project.

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Photo: PECO Streamline Code 70 Track on Mick Bryan's Bryford County Terminal.

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Using our modeling to inspire memories

The holiday period at the end of the year often results in reflection on past experiences, and many (most?) of the readers of this magazine connect trains to December and the Christmas holiday.

Many of the layout visit stories we run at least mention receiving a Lionel (sometimes American Flyer) train set for Christmas early in childhood. They're often some of the first memories guys have of doing something with their fathers involving a shared interest.

Being able to look back on these memories is great, but wait, there's more! We can also add to these memories with the projects we'll be taking on in the next year.

Of course, we're building memories with everything we do, but there's another way to look at building memories.

What time period attracts you? Is it a time you experienced? If so, I wouldn't be

surprised if you told me it was the time period when you first had experiences with trains.

Our columnist, Tony Koester, has often remarked his Nickel Plate Road Third Sub is his very own time machine in his basement. It takes him back to the fall of 1954 when he was but a lad.

Being a little younger than Tony, I'm drawn to a period about 20 years later and a few hundred miles east from where the Nickel Plate crossed Indiana. Just a few minutes west of our offices in Brookfield, Wis., the Waukesha County Gandy Dancers Model Railroad Club host Friday evening open houses through the summer that my son likes to visit.

Being able to create a world that honors and reinforces those memories of our youth is one of the attractions of model railroading. We get to build our memories in a

physical form that we can share with others.

Some of us are quite exact in what we want to re-create, while others take a looser view, but we're all in it for the same thing — creating enjoyment through our hobby.

On Tony's layout, there's a long, steel deck-girder bridge that crosses the Little Vermillion River and a dirt road. Three plastic figures look down the road toward the bridge, an adult and two children. The figures represent Tony's father with two of Tony's children. The scene was inspired by a photograph of Tony's oldest son with Tony's father, and now it inspires that memory and others like it every time someone visits the layout.

Why not start building some memories of your own?

This is also a time of year when we mark changes. Jerry



Dziedzic came to *Model Railroader* in 2016 with his On Operations column. After just over a decade, and more than 100 columns, Jerry is moving on. You can read his last regular column on page 61.

But Jerry's not gone from the pages of MR. We have a story planned for next month, and we hope he'll be back after that as well!

Model Railroader

Model railroading is fun!

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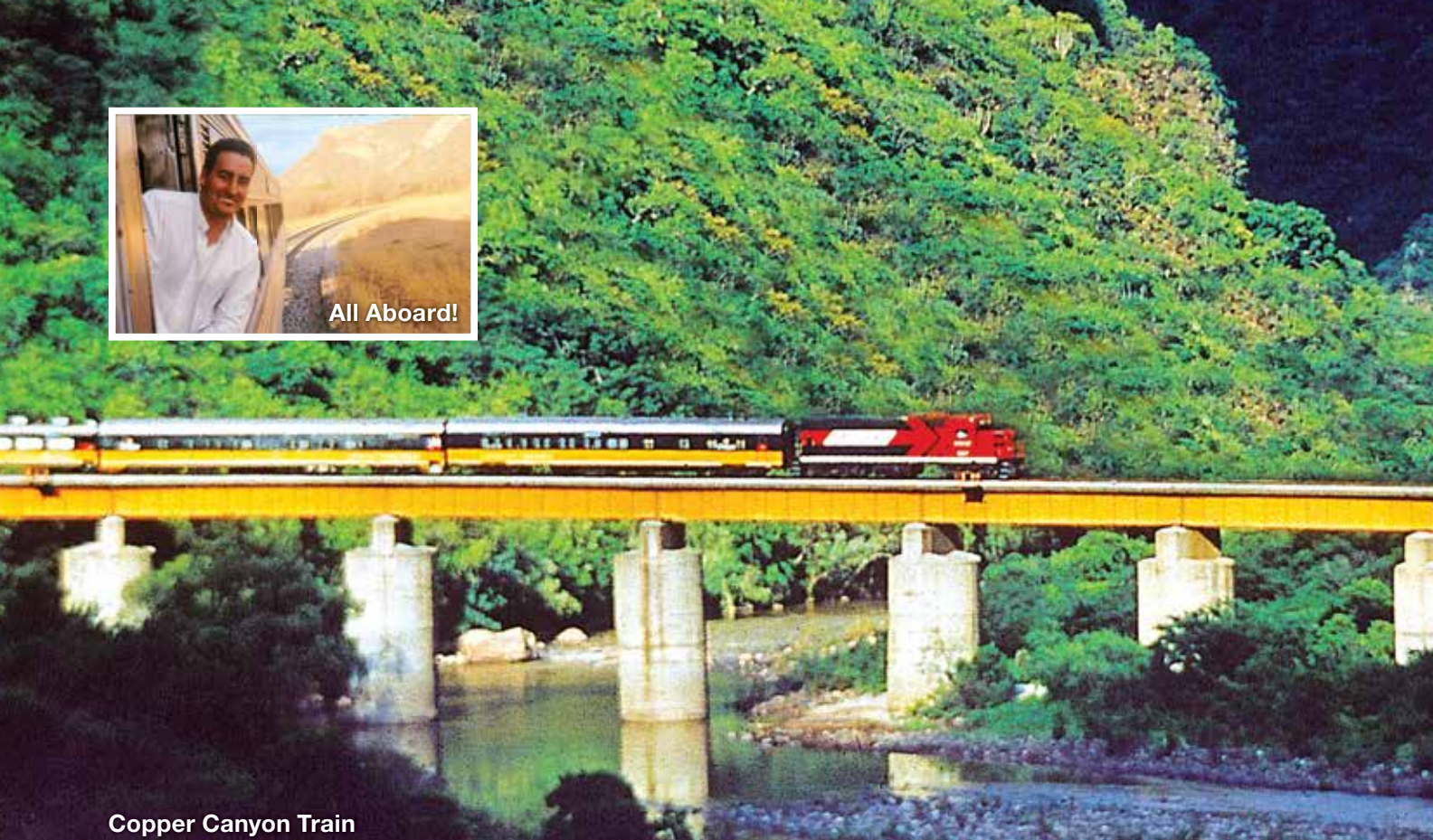
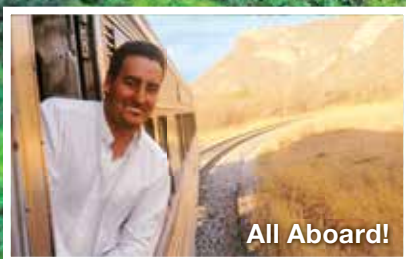
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HO scale



Electro-Motive Division GP7 diesel locomotive. Paint schemes on this Proto-series diesel from Walthers include Northern Pacific; Chicago, Burlington & Quincy; Algoma Central; Atchison, Topeka & Santa Fe; Chesapeake & Ohio; Detroit, Toledo & Ironton; Rock Island; and Wabash. The HO scale GP7 is offered in four road numbers per paint scheme; an undecorated model is also available. Product features

include prototype-specific details; wire grab irons; etched-metal lift rings; a heavy, die-cast metal chassis; and Proto-Max metal couplers. Direct-current models with a 21-pin DCC plug and factory-installed 28mm round speaker are priced at **\$219.98**. Versions with a dual-mode ESU LokSound V5 sound decoder retail for **\$319.98**. Wm. K. Walthers Inc., 414-527-0770, walthers.com

HO scale diesel locomotives



• **Santa Fe-rebuilt CF7 diesel locomotive.** Atchison, Topeka & Santa Fe; Allegheny RR; Amtrak; Ashley, Drew & Northern; Black River & Western; and Blue Mountain & Reading. Two to three road numbers per scheme. All-new tooling. Round or angle cab as appropriate. Prototype-specific details, etched-metal windshield wipers, and light-emitting-diode lighting. Direct-current model with 21-pin plug for DCC decoder and factory-installed speaker, \$219.95; with ESU LokSound sound decoder, \$339.95. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com



• **Electro-Motive Division and General Motors Diesel Division SW9 diesel locomotives.** Atchison, Topeka & Santa Fe; Boston & Maine; Canadian

National; Canadian Pacific; Erie-Lackawanna; Illinois Central; Louisville & Nashville; New York Central; Toronto, Hamilton & Buffalo; and Union Pacific. Four road numbers per paint scheme; also available painted (Industrial Blue, Industrial Red, and Industrial Yellow) but unlettered. See-through, etched-metal parts; detailed cab interior; and die-cast metal frame and gear boxes. Direct-current model, \$239.95; with ESU LokSound V5 sound decoder and MoPower capacitor, \$349.95. Rapido Trains, 905-474-3314, rapidotrains.com

HO scale rolling stock



• **Trinity 19,600-gallon tank car.** Archer Daniels Midland, Cargill, Corn Products, Domino Sugar, General American Transportation Corp., National Tank Car, Procor, Shippers Car Line, Trinity Leasing, Union Tank Car, and VTG North America. Etched-metal walkways; separate, factory-applied grab irons; and metal couplers. \$49.95. InterMountain Railway Co., 800-472-2530, intermountain-railway.com



• **Northeastern cabooses.** Duryea underframe: Jersey Central Lines, Lehigh Valley, Maine Central, Metro-North Commuter RR, Providence & Worcester, Reading Co., Reading & Northern, and Western Maryland. Solid underframe with end porthole windows: Chicago & North Western, Conrail, Lehigh Valley, Penn Central, Rock Island, and Union Pacific. Prototype-specific details, operating interior lights, and semi-scale metal couplers. Suggested minimum radius, 18" \$109.95. Rapido Trains, 905-474-3314, rapidotrains.com



• **Wabash streamlined caboose.** Wabash; Ann Arbor; Detroit, Toledo & Ironton; and Norfolk & Western. One to two road numbers per paint scheme; also available undecorated. Prototype-specific details, swing motion trucks with 33" metal wheels, and Proto-Max

Club offerings



- **David Bradley Manufacturing Works 40-foot boxcar.** Accurail HO scale injection-molded plastic kit custom-decorated for the Kankakee Model Railroad Club. Two road numbers. Kit, \$30; assembled with Kadee couplers, \$35. Shipping \$10 per car. Payment via check or money order payable to KMRC. No credit card orders. Kankakee Model Railroad Club, 197 S. East Ave., Kankakee, IL 60901

metal couplers. \$75.98. Walther's Proto. Wm. K. Walther's Inc., 414-527-0770, walther's.com

HO scale passenger equipment



- **Pacific Car & Foundry Southern Pacific class 66-B-2 economy baggage cars.** Southern Pacific (baggage/messenger and baggage/express with early and late doors, lease, maintenance of way, and scale test car), Amtrak, Alaska RR (with sound), Eureka Southern, and Rock Island. One to three road numbers per scheme. Southern Pacific business train two-car sets (economy baggage car and power car with sound) in two paint schemes. Full underbody detail, SP Class 4-T-1 trucks, and sprung diaphragms. Power cars feature generator sounds. Single car, \$129.95; single car with sound, \$154.95; and two-pack with sound, \$279.95. Rapido Trains, 905-474-3314, rapidotrains.com

HO scale commemorative



- **America 250/American Revolution Bicentennial equipment.** Atchison, Topeka & Santa Fe CF7 No. 2526 in

N scale



American Car & Foundry 50-foot Precision Design boxcar. Atlas offers this Master Line model in new road numbers (Montana Rail Link, BNSF Ry., Canadian National, Chicago & North Western, and Rock Island) and paint schemes (Conrail and Union Pacific). The N scale model is available in one to two numbers per scheme; an undecorated version is also available. The boxcar has a plastic body, die-cast metal underframe, 70-ton roller-bearing trucks, and truck-mounted Accumate couplers. The manufacturer's suggested retail price for the boxcar is **\$30.95**; undecorated cars sell for **\$23.95**. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com

fictional Bicentennial scheme and Lehigh Valley Northeastern caboose No. 1776 in prototypical Bicentennial scheme. CF7 features angled cab; heavy, die-cast metal chassis; and working headlights, ground lights, number boxes, and Stratolite beacon. Caboose has Duryea cushion underframe, two-tread steps, operating lights, and semi-scale metal couplers. CF7 (direct current, \$249.95; with ESU LokSound V5 sound decoder and MoPower capacitor, \$359.95); caboose, \$109.95. Rapido Trains, 905-474-3314, rapidotrains.com

N scale freight cars



- **Standard and wide-cupola cabooses.** New paint schemes (wide-cupola caboose unless noted) — Norfolk Southern (standard cupola), Belvidere & Delaware (standard cupola), Conrail, Department of Defense, DuPont, Family Lines (Seaboard System), Mass Coastal, and Union Pacific (Denver & Rio Grande Western shoving platform scheme). New road numbers (wide-cupola caboose) — BC Rail, Burlington Northern, and Chessie System. One to two road numbers per paint scheme. Roller-bearing caboose trucks and

Accumate couplers. \$37.95. Master Line. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com



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Z scale locomotives



- **Electro-Motive Division F7A and F7B diesel locomotives.** St. Louis-San Francisco (Frisco). Single A unit and A-B set. Powered A and B units. Prototype-specific details and blackened metal wheels. Contact manufacturer for pricing information. American Z Line, 614-764-1703, americanzline.com



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Rapido HO EMD GP40



A newly tooled Electro-Motive Division GP40 recently joined the Rapido Trains HO scale diesel locomotive lineup. The four-axle road unit has an injection-molded plastic body, metal side handrails with plastic stanchions, and body-mounted metal couplers.

Electro-Motive Division produced the GP40 from November 1965 until December 1971. During the course of the production run, 1,243 units were built for railroads in the United States, Canada, and Mexico. The 3,000 horsepower road switcher was equipped with a 16 cylinder, 645E3 diesel engine.

The sample we received is decorated as Western Pacific 3511. The full-size unit was built by Electro-Motive Division in April 1967 under order number 7981.

Union Pacific acquired the WP in 1982; on July 16, 1984 the 3511 was renumbered UP 660. The GP40 was retired by UP on April 5, 1993.

Among the factory-installed details on the GP40 are wire grab irons; see-through, etched-metal steps; and a detailed cab interior. In typical Rapido fashion, the underframe is well appointed, with air filters, traction motor cables, and other parts.

That said, the four-axle road unit is far from a one-size-fits-all model. Our WP model has sealed-beam front and rear headlights,

positioned where the bulb-and-reflector lights were once located. In addition, the 3511 has Zephyr Gothic lettering on the long hood, see-through footboard pilots, and a 3,600-gallon fuel tank.

The 48" radiator and dynamic brake fans are multi-piece assemblies, with plastic housings, etched-metal grills, and a cap top. Following the prototype, the radiator fan has 10 blades and the dynamic brake fans have 8 blades.

The model we received is neatly painted in WP's aluminum and orange paint scheme. As delivered, the top of the short hood was painted orange on the full-size units. Western Pacific shop forces repainted this area black shortly after delivery, as depicted on the Rapido Trains model.

Drawings of the EMD GP40 appeared in *Our GM Scrapbook* (Kalmbach Publishing Co., 1971). The model's dimensions match published data.

For workbench testing, I used an NCE Power Cab. At step 2 the road unit ran at 0.8 scale mph. The GP40 achieved a top speed of 61 scale mph at step 28. With a drawbar pull of 3.8 ounces, the Rapido model can pull 53 free-rolling freight cars on straight and level track.

Then I took the GP40 over to our Winston-Salem Southbound to see how the model performed in an operating layout environment. The four-axle unit switched cars without issue and had no

trouble navigating the No. 4 turnout and 30-degree crossing.

The Rapido HO EMD GP40 is a well-researched model. If you're in the market for a four-axle road unit or a GP40 and slug set, you'll want to take a look at these locomotives. — *Cody Grivno, senior editor*

Facts & features

Price: Single unit — direct current, \$239.95; with ESU LokSound V5 sound decoder, \$349.95. Locomotive with slug — direct current, \$449.95; with ESU LokSound V5 decoder, \$669.95

Manufacturer

Rapido Trains
382 High St.
Buffalo, NY 14204
rapidotrains.com

Era: November 1965 to present

Road names: Western Pacific; Canadian National; Illinois Central; Kansas City Southern; Missouri-Kansas-Texas (single unit and with slug); National Ry. Equipment; Richmond, Fredericksburg & Potomac; St. Louis Southwestern; Union Pacific (single unit and with slug); and Wisconsin Central.

Features

- Body-mounted metal couplers, at correct height
- Metal wheel stubs on plastic drive axle gears, correctly gauged
- Weight: 1 pound, 1.4 ounces



ScaleTrains HO NS AC44C6M



A Norfolk Southern AC44C6M diesel locomotive is one of the latest additions to the ScaleTrains Rivet Counter line. The HO scale model is based on General Electric Dash 9-40C and Dash 9-44CW rebuilds and has body-mounted metal Type E semi-scale couplers.

Norfolk Southern No. 4000 was built by General Electric as Dash 9-40C No. 8799 in January 1995. The locomotive was rebuilt by American Motive Power in Roanoke, Va., in August 2015 and converted from a direct current transmission to alternating current. The road unit, one of the prototypes for what GE calls the DC2AC program, was painted in a special scheme with a blue mane trimmed in yellow, dubbed the “Sonic Bonnet” after video game character Sonic the Hedgehog.

For more information on the prototype locomotives, check out Greg McDonnell’s article “DC2AC” in *Locomotive* 2016 from *Trains* magazine.

The first thing I noticed after removing the AC44C6M from the packaging was the incredible number of factory-installed details on the model. The front pilot has a snow plow, m.u. and train line hoses (with the glad hands picked in silver), an uncoupling lever, m.u. receptacles, and an m.u. cable. The rear pilot lacks a plow, but has many of the same details, as well as spare coupler knuckles painted a rust color.

That high level of detail continues on the cab, which has formed-wire grab irons, a blanked out nose headlight, and

a plain cab door. On top, the 4000 has a JEM Communications Positive Train Control antenna farm.

See-through, etched-metal parts are the name of the game on the long hood. More than 20 intake and exhaust grills can be found on the radiator compartment alone. Additional long hood details include a bathtub-style exhaust silencer and a cast brass Nathan AirChime P5R24 air horn.

Our review sample is neatly painted in the eye-catching blue-and-gray paint scheme applied to NS 4000 and 4001. The lettering placement matches prototype photos that I found online. For the most part the colors are opaque, but some blue from the mane is visible under the yellow trim.

I did the initial speed testing at the workbench using an NCE Power Cab. At step 1, the six-axle road unit moved at 0.9 scale mph. At step 28, the locomotive achieved a top speed of 63 scale mph. The maximum operating speed of the prototype is 75 mph.

Then I took the AC44C6M over to our Winston-Salem Southbound for additional testing, this time on an operating model railroad. Though the locomotive looked a bit out of place on the Tar Branch, it had no problem navigating the various handlaid and commercial turnouts and an at-grade crossing

It’s refreshing to see model manufacturers looking beyond stock locomotives and producing rebuilds. Though some rebuilds are small in number, that’s not

the case here. Norfolk Southern rosters more than 900 AC44C6M road units, and they travel throughout the North American rail network. Whether or not you model the NS, the ScaleTrains Rivet Counter line model would be appropriate for any modern era layout. — *Cody Grivno, senior editor*

Facts & features

Price: Direct-current model with 21-pin connector, \$225; with ESU LokSound V5 sound decoder, two cube-type speakers, and ESU-designed PowerPack with two super capacitors, \$335

Manufacturer

ScaleTrains
4901 Old Tasso Rd. NE
Cleveland, TN 37312
scaletrains.com

Era: 2015 to present (as decorated)

Road names: Norfolk Southern (blue mane with yellow stripe, black mane with blue stripe, black mane with Tuscan Red stripe, Thoroughbred, Thoroughbred in partial primer, and Thoroughbred with sine wave). One to three numbers per paint scheme

Features

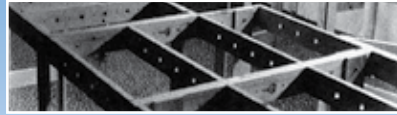
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Dec 7 Wheaton, IL - DuPage County Fair
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Walthers HO EMD NW2



An Electro-Motive Division NW2 has joined the ranks of the WalthersProto line. The newly tooled HO scale model, based on Phase I through IV prototypes, uses plastic and die-cast metal construction and features railroad-specific details, a factory-installed speaker in both direct current and Digital Command Control versions, and body-mounted Proto-Max metal couplers.

Electro-Motive Division produced the NW2 from February 1939 through December 1949. More than 1,100 end-cab switchers were built for railroads in the United States and Canada. Construction of the switcher was paused from 1942 to 1945 by order of the War Production Board, but some diesels were finished during that time.

The sample we received is decorated as Union Pacific 1064, part of the railroad's 1001 through 1095 series. The full-size unit was built in May 1947 under order number E820. The end-cab unit was retired in December 1980.

Among the universal details on the WalthersProto EMD NW2 switchers are a five-pole, skew-wound can motor; a factory-wired speaker; constant, directional light-emitting-diode lighting; a six-louver battery box; a brass early cast-type bell; and factory-installed and painted formed-wire grab irons.

From there, the details on the model are railroad specific. Our UP sample, based on a Phase III prototype, has modified rear cab handrails, a brass early cast Leslie A125-247 air horn on a bracket, cab armrests, and photo-etched metal rectangular sunshades.

Our sample is painted in UP's Armour Yellow and Harbor Mist Gray scheme. The yellow is even and opaque, the color separation lines are crisp, and the black outline around the red letters and numbers is in register.

I compared the WalthersProto model to drawings published in the *Model Railroader Cyclopedia: Vol. 2, Diesel Locomotives* (Kalmbach Publishing Co., out of print). The major dimensions on the end-cab unit follow the printed data.

Then I took the model to our test track, which is equipped with an NCE Power Cab. At step 1, the switcher moved at less than 1 scale mph. The NW2 reached a top speed of 72 scale mph at step 28. The prototype's maximum speed was 65 mph. With a drawbar pull of 1.9 ounces, the switcher can pull 27 free-rolling cars on straight and level track.

For real-world testing, I used the NW2 to switch cars on our Winston-Salem Southbound Tar Branch. The model performed without issue. You can watch a video of the switcher in action on Trains.com.

I've always had a soft spot for end-cab switchers, and I count the EMD NW2 among my favorites. The WalthersProto model accurately captures the lines of the early production prototypes. The model would look right at home working a yard or switching cars at an industry.

— Cody Grivno, senior editor

Facts & features

Price: Direct current with factory-installed speaker, \$219.95; with ESU LokSound V5 sound decoder, \$319.95

Manufacturer

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

Era: 1939 to present (varies based on paint scheme)

Road names: Union Pacific; Atchison, Topeka & Santa Fe; Indiana Harbor Belt; New York Central; Nickel Plate Road; and Southern Ry. Four road numbers per paint scheme; also available undecorated.

Features

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These HO EMD SD40-2 diesels from ScaleTrains are decorated for Dakota, Minnesota & Eastern. The railroad selected South Dakota State University Blue and University of Minnesota Golden Gopher Gold for its paint scheme. Bill Zuback photo

What's in a paint scheme?

Hobbyists are drawn to railroads for a variety of reasons. Perhaps it was the line that served their hometown. Or maybe a relative worked on the railroad. Another reason — with less sentimental attachment — is that they like the paint scheme. The colors applied to diesel locomotives and freight cars are far from random. This month, we'll take a closer look at some ways railroad paint schemes are developed.

Be true to your school. Ideas for railroad paint schemes can come from any number of sources, including colleges and universities. Perhaps the best-known example of this is the Monon RR. Its black-and-gold scheme was inspired by the colors of Purdue University, while the red-and-white scheme borrowed from the University of Indiana's color palette.

At startup in 1986, regional carrier Dakota, Minnesota & Eastern had a fleet of patched out former Chicago & North Western SD9s, Milwaukee Road SD10s, and Norfolk & Western GP9s, among other units. When it came time to pick a paint scheme, DM&E looked to the universities in the two states that it served. Blue honored South Dakota State University in Brookings, while the Golden Gopher Gold paid tribute to the University of Minnesota in Minneapolis.

Many railroads, one look. Over the years various holding companies have operated shortline and regional railroads in multiple states (and even other countries). In most instances these lines aren't physically connected. To give the properties a family look, the locomotives wear a corporate paint scheme. A current example of this is Genesee & Wyoming. The units on the railroads it operates are painted in an eye-catching orange, black, and yellow scheme. Though the diesels all wear the same paint scheme, the herald and reporting marks are unique from railroad to railroad.

A nod to the past. "Heritage" units — locomotives painted in the schemes of predecessor railroads — have been a hot topic for railfans and model railroaders for

the better part of two decades. Union Pacific got the ball rolling in 2005 and 2006 by painting six units in the liveries of merger partners from the 1980s and '90s. Norfolk Southern upped the game in 2012, rolling out 20 units in predecessor paint schemes as part of its 30th anniversary. Then CSX cranked out 21 heritage units in a program that wrapped up in late 2024. I even caught the fever, creating a heritage fleet for our HO scale Milwaukee, Racine & Troy, which you can read about in the January 2014 MR.

It's easy being green. On March 2, 1970, the Chicago, Burlington & Quincy; Great Northern; Northern Pacific; and Spokane, Portland & Seattle merged to form the Burlington Northern RR. Instead of selecting one of the predecessor road's paint schemes, the newly created railroad went with a fresh look. But why green?

In his article "Minnesota short line revives Burlington Northern's Cascade Green" *Trains* Magazine correspondent Steve Glischinski wrote, "The Cascade Green scheme was developed in the 1960s by the New York industrial design firm of Lippincott & Margulies. It was meant to represent the forest country of the Northwest that would be served by the new Burlington Northern, as well as the timber industry, one of the railroad's major customers."



Though its predecessor roads had a variety of great paint schemes, Burlington Northern adopted Cascade Green and black as the look for its diesel locomotives when it was formed in March 1970. Bill Zuback photo

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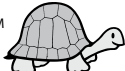


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To avoid damage to potentially brittle 3D printed resin, cut the support structure away from the part when using nippers. A good location is where the base of the cone connects to the larger support. Cody Grivno photo

Q I recently received some 3D-printed figures that are still attached to the support structure. I work in HO scale, and I'm not sure how to safely remove the supports without damaging the figures. Can you provide any tips?

(Albert) Chris Santy

A The first thing to remember is 3D-printer resin can be extremely brittle. When removing supports you can use nippers, as shown above, but make sure to do it well away from the part itself because you can cause fracturing. Then remove the rest of the support with a file or sanding stick.

A better alternative, if there is space for you to use one, is a fine-toothed razor saw. That way you're removing material, not crimping it, meaning there's less chance of damaging brittle resin. Then clean up the part in the usual way. —
Tim Kidwell, Editor, FineScale Modeler

MR

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Norm Charbonneau's layout was featured in the June 2025 issue. Craig Wilson photo

Recognizing a master

You guys finally did it! I have been following Norm for years now through his YouTube channel and it was nice to see his work and layout gain further recognition. His weathering and detailing of structures along with working with Pennsy steam and diesel has been well worth the endless hours I spend watching it. Even though I am an HO scaler, his insight and skill with O scale can cross over to any scale. I consider Norm one of the better model railroaders of today. A level I can only hope one day to achieve.

*Steve Christiansen
Edmonds, Wash.*

Sticking with N scale

Your articles on N scale reminded me of my own journey beginning 40 years ago. My first apartment lacked space to continue in HO, so a 3 x 5-foot tabletop provided room for an N scale layout. The advancement of what was available in N

caused me to stay with my "temporary" scale. A move to our current home allowed me to dedicate 500 square feet to an N scale empire. N scale grew from a temporary solution that got under my skin and has never left my interest.

John Peters, Bloomfield Hills, Mich.

Comments, suggestions, and additional information on *Model Railroader* articles and departments are welcome in this column. Every comment will be read, but not all can be printed or answered. Make your statement in 300 words or less, and send it to **Railway Post Office, Model Railroader magazine, 18650 W. Corporate Dr. STE 103, Brookfield, WI 53045**, or email editor@modelrailroader.com. Please include your name, city, and state.

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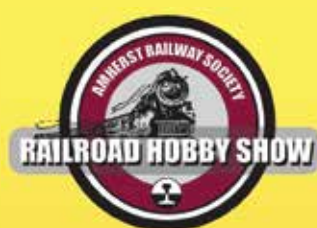
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Dave Bullard heads to Fenster's Produce Stand in his Bulldog Mack with a fresh load of apples. Lou Sassi had been wanting just such a truck for his On30 Sandy River & Rangeley Lakes model railroad. Lou Sassi photos

Model a Bulldog Mack truck in O scale

For quite some time I've been looking for an O scale early generation Bulldog Mack truck to haul apples for Bullard's Orchards in Strong on my Sandy River & Rangeley Lakes model railroad. One day I happened upon a circa 1920s Matchbox box-cab Mack for the paltry sum of \$10 on eBay. ❶ In addition to its more common 1:64 line of die-cast models, Matchbox at one time also produced a line of 1:43-proportion vehicles, covering a wide variety of prototypes. Though still smaller than full O scale, the 1:43 truck was close enough for my project.

I decided to upgrade the Mack with a bit of detailing and kitbashing. Besides swapping the box for a flatbed made from styrene, I changed the antique gas style headlights to something more modern. A trip to my parts stash turned up a couple sealed beam headlights from a Ukraine built 1930s Model AA Ford truck (also an eBay find). With that, the project was off and running



STEP 1 PREPARING THE TRUCK



I dismantled the Mack drilling out the rivets holding on the cargo box, hood, and cab with a 1/8" drill bit ❷. Photo ❸ shows the parts separated from the model. I cut the old gas headlamps off their mounting

bracket using a razor blade. I then drilled holes into each end of the bracket using a No. 76 bit held in a pin vise to accept the replacement headlights ❹. I also squared off the mounts on the new headlights, and

STEP 1 PREPARING THE TRUCK (CONT'D)



drilled No. 76 holes into them. After adding a drop of Weld Bond, I inserted lengths of 24 gauge wire into the headlight mounts, trimmed off the excess wire, added Weld Bond to the opposite end, and pushed them into the holes I'd drilled into the mounting bracket 5.

I found an air horn from a Berkshire Models 1932 Ford flatbed truck in my parts box and, after drilling a No. 69 hole into the top of the left fender, applied a drop of Weld Bond to its mounting post and pressed the horn in place. Photo 6 shows the completed headlights and horn.

STEP 2 A LITTLE SURGERY



I wanted the truck for Bullard's Orchards to have a flat-bed instead of the box. After studying photos of prototype Macks on the internet, I settled on a 5'-6" x 10'-6" bed (more on this later). With a No. 11 blade in my hobby knife, I made a sub-bed by cutting an O scale 5'-6" x 10'-6" rectangle out of a sheet of .040" styrene. I glued two angles

made from .030" x .156" styrene onto the underside of the sub-bed 2'-6" apart 7. By placing these on top of the existing plastic truck frame the bed would sit a scale 1'-9" above it. I then glued three lengths of .030" x .156" styrene strip stock onto the sides and front of the sub-bed, as shown in photo 8.

STEP 2 A LITTLE SURGERY (CONT'D)



After test fitting the sub-bed to the truck I realized I didn't care for the truck's wheelbase and bed being as long as they were, so I shortened both of them by 2 scale feet. Since the truck's frame was plastic, I used a razor saw to cut two feet from the middle of it **9**. For the bed, after trimming 2 feet off of the side rails with a hobby knife, I saved 2 feet off the rear of the bed as well. If starting this project from scratch, make the styrene bed 5'-6" x 8'-6".

The truck needed a driver, and I found an Artista figure that already had both legs removed. If I took out the truck seat, with a bit of arm twisting, the driver fit perfectly behind the steering wheel. Removing the cab roof casting would allow me to remove the seat and make installing the driver much easier, so I drilled out the rivet holding the cab to the fender casting.

Using plastic cement, I glued the front and rear of the truck frame back together. Next, I applied 5 Minute Epoxy to the inside top of the two frame sections and I replaced the front fender and cab floor casting **10**. I added basswood to the underside of the joint for extra strength.

Back in my parts box, I happened upon more items from a cannibalized Berkshire Valley Models 1930s flatbed truck, including an exhaust pipe, muffler, and taillight with license plate holder attached. I mounted these to the underside of the truck with 5 Minute Epoxy.

I also added a strip of styrene below the arched front body of the truck and drilled a No. 68 hole through it. I then installed a 24 gauge wire hand crank in the hole with cyanoacrylate adhesive (CA) **11**. I brush painted all of these details flat black.

STEP 3 DETAILS AND PAINT

Before reassembling the entire truck, I spray-painted both the glossy blue underframe and fender assembly with Krylon Matt Finish to make them appear more realistic. I repainted the hood and cab Testor's Aircraft Gray **12**, and I painted the sub-bed flat black.

Some Mack trucks of this period had wood-framed windshields, so I re-created that look on my apple hauler. I started by staining a couple lengths of HO scale 2 x 8 and 2 x 4 basswood strips from Northeast Scale Lumber with India Ink, mixed at 2 teaspoons of ink to 1 pint 70% rubbing alcohol mix.



STEP 3 DETAILS AND PAINT (CONT'D)



I made the bottom of the windshield from HO scale 2 x 8 stripwood, which I carved with a hobby knife to fit the curvature of the top of the hood. I then cut four pieces of 2 x 4 basswood for the remainder of the frame and glued them together on the sides, middle, and top. I used the grids on a self-healing cutting pad to as a reference



while gluing the parts together. I cut a piece of .010" clear styrene to represent glass and glued it to the back of the frame with small drops of Aleene's Tacky Glue.

Before reinstalling the cab and sub-bed, I repainted the headlights black [13](#), and added the wood-framed windshield and Artista driver [14](#).

STEP 4 WOODEN BED AND WEATHERING



I made the exposed wooden bed for the truck out of Northeast Scale Lumber HO scale 2 x 8 (O scale 1 x 4) stripwood. I distressed the boards by drawing a razor saw across their surface [15](#), stained them with my India ink mix, then glued them in place with Weld Bond [16](#).

I made a rack for behind the cab from HO scale 4 x 6 lumber. Again, using the grid on my cutting mat, I laid the parts out and glued them together with Weld Bond.

I added a Mack emblem to the hood of the truck by photographing another Matchbox Mack I had. I printed out the image, then carefully cut the emblem out of the photo with a No. 11 blade in a hobby knife [17](#). I brushed Aleene's Tacky Glue to the back of the emblem and stuck



it to the hood. I painted the truck's chain drive oxide red, and then I weathered the truck with artists powdered pigments [18](#).

Finally, I added baskets of apples to my orchard's truck. Berkshire Valley Models (berkshirevalleymodels.com) sells bushels of O scale apples as item No. 616. I bought four packs of castings and painted them Model Master Caboose Red [Any apple red will do. — Ed.] and the baskets Model Master Desert Light Brown. I then loaded them onto the bed of the truck. The paint wasn't even dry when Mr. Bullard jumped into the Mack and headed to Fenster's Produce Stand to drop them off. And his Mack truck makes a great detail for the layout! [MR](#)



The purchase of a Broadway Limited Imports HO scale Reading Co. class T1 4-8-4 left Chris Russo wanting more — the ability to access the Digital Command Control functions built into the new model. Being an electrical engineer and electronics hobbyist as well, he set out to build his own simple DCC system on a budget.

DIY DCC on a budget

Build a simple Arduino-based DCC system

By **Chris Russo** • Photo by the author

Growing up in the 1980s I was living the dream. I had an HO layout on a 4 x 8 sheet of plywood in my parents' basement in Reading, Pa., a soldering iron, a nearby RadioShack, and a subscription to *Model Railroader*. My favorite focus then was where my hobbies of electronics and model railroading intersected.

Today I'm 30-plus years into a career as an electrical engineer with a wife and three great kids. There's another 4 x 8 layout in the basement, and much of the '80s vintage HO equipment from my childhood now entertains me and my youngest son.

But memories of my friend's grandfather working on the 1978 running gear rebuild of Reading Co. T1 4-8-4 No. 2101 of American Freedom Train fame inspired me to buy a model of a T1. Recently, I found myself with the means (and permission from my wife), and I purchased a Broadway Limited HO scale model of a T1, complete with DCC and sound. When I got it home, I ran it on my DC layout and was wowed by the detail, the slow speed operation, the sound, the perfectly synchronized chuffs and smoke. And I thought how cool would it be if I could make the whistle work. And the bell.

Inspiration strikes

As a kid I read the series in *Model Railroader* about the CTC-16 system [December 1979-April 1980. — *Ed.*], and recall being amazed by the complexity and possibilities, but also mentally putting it in the “far beyond my means” category back then. Over the years I’ve watched Digital Command Control proliferate in the hobby, but never embraced it since all my equipment pre-dated it, and I thought of it as still beyond my means. Then I bought that T1.

Next thing I knew I was Googling DIY DCC systems and I found a YouTube video showing how to use an Arduino UNO R3 and an L298P motor controller shield to create a DCC base station. I bought the two boards for it, downloaded the sample code, and prepared to tinker.

The control interface from the Arduino to the computer (JMRI) was essentially a serial port over USB, and I could enter cryptic text strings typed in to control my locomotive, which was pretty exciting for less than a \$15 investment.

Time to upgrade

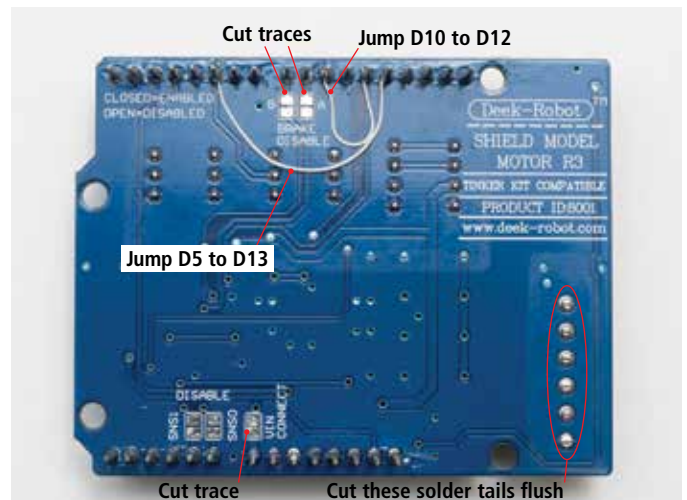
But that excitement faded fast, and the EE in me began thinking it would be nice to have a cheap, simple, home brew handheld DCC throttle to control a few locomotives with a display and a few coveted function keys to blow a whistle or sound a bell once in a while.

To make a long story short(er), I added a case, a simple LCD display, 10 switches, and a bit of code to take the tactile inputs and create the commands to the Arduino. The controller is very basic in its capabilities, but for a guy who formerly was operating the layout using a pair of MRC Ampacks from before 1980, it’s pretty exciting. It can

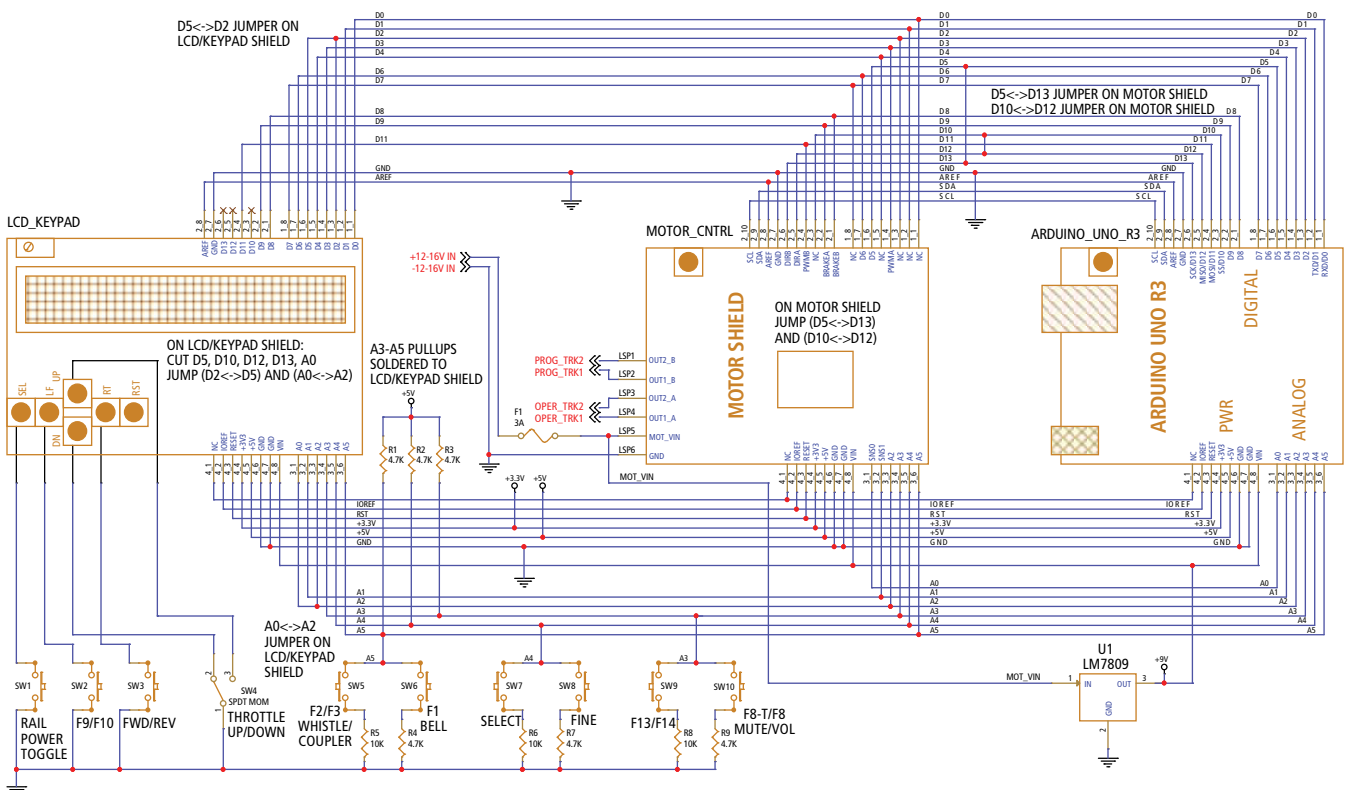
② The schematic below shows all of the connections. Most of them are between the Arduino and the two shields that make up the bulk of this project.

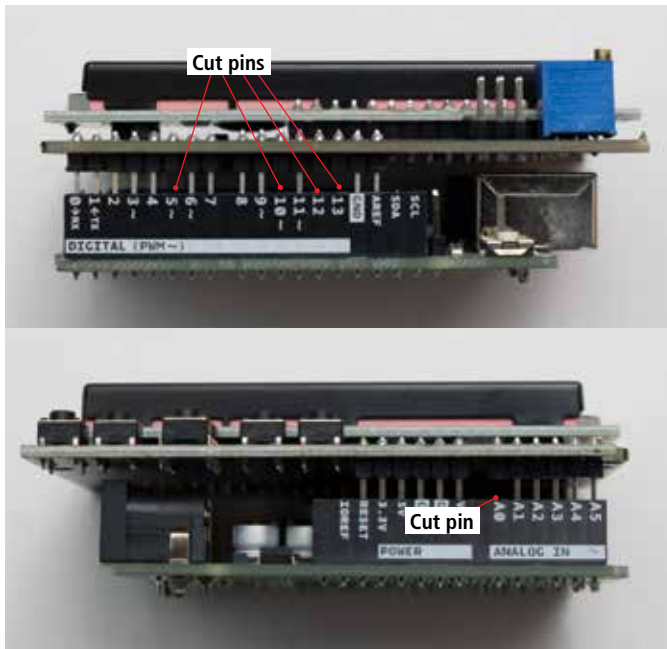


① The major components of this project are (from left) an Arduino UNO microcontroller, a motor shield (shields are printed-circuit-board devices that stack onto Arduino boards), and an LED/keypad shield.



③ The motor shield needs a few of its traces cut, and solder tails removed, as shown here. Also shown are the jumpers mentioned in step 3c.





④ The LCD/keypad shield needs to have I/O pins cut at D5, D10, D12, and D13. On the other side, remove pin A0.



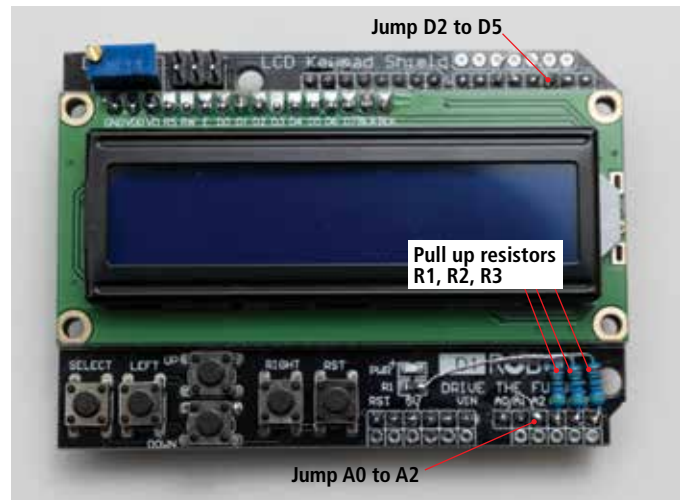
⑥ These wires connect the switches on the throttle's case with the LCD/keypad shield.

control up to 12 locomotives, source 2 amps, control a few locomotive functions, and it cost just under \$30 to build (not including shipping). All of the electronic components were bought via AliExpress.com, though ordering from mainland China requires some patience and care in reading the descriptions carefully and then waiting for delivery. All of the parts can also be brought from more local vendors like Amazon and DigiKey, though at higher cost.

Components and construction

This project is based on an Arduino, motor controller, and LCD/keypad shields ①. The schematic of the complete throttle is shown in ②. Don't be intimidated by the sheer number of connections between the modules as 90% of these are made by just stacking the shield boards together (thank you Arduino!).

Most of the Arduino I/O (input/outputs) are consumed by the motor and LCD/keypad shields, so I had to get a little creative to connect a number of switches and have them uniquely recognized. This was accomplished by using the Arduino's



⑤ Make two jumper connections on the LCD/keypad shield.

analog inputs and voltage dividers (resistor networks) to change the voltage on these analog inputs based on which button is pushed.

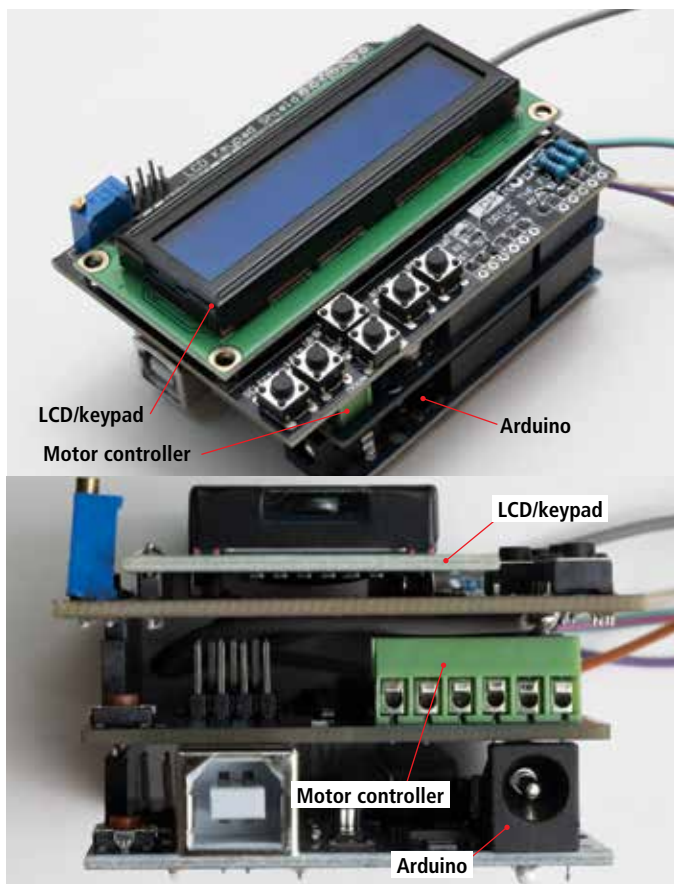
The stock LCD keypad does this with a ladder of five resistors and switches on a single analog input, which is great. But you can't simultaneously push more than one of these buttons or the Arduino gets confused. I used these switches for the overall power enable toggle, throttle up, throttle down, forward/reverse toggle, and F9 (engine startup/shutdown sound toggle on my T1).

On the other three available analog inputs I used a simple single pull-up resistor value to +5V and two different pull-downs on switches to set different voltages, three if you count the possibility of both switches pushed at once. I have not tried, but given the range of the Arduino's analog inputs I expect one could add many more pull-down resistance "steps" and still accurately detect them if more controls were desired. In the code, these voltages indicating which switch is pressed are defined as ranges to allow for unit-unit variation and component tolerances.

The Arduino UNO accepts a 9V power input and has regulators on board to generate its 5V and 3.3V supplies. On paper, this input can be as high as 12V, but the Arduino's regulator gets hotter the further you go above that 9V sweet spot. Since I wanted to re-use the old MRC transformer I had as my DC voltage source, input voltages up to 16V DC can be expected. So I separated the track power +12-16 VIN from the Arduino's VIN and put an LM7809 regulator in the path, U1 in the schematic. I also put a fuse in the power input path for protection.

The case is 3D printed, and is a modified (deeper, and with pre-located switch holes) version of one I found on thingiverse.com (See Trains.com for downloadable files). The button labels are made using a Brother P-Touch label maker. I've found the 3D enclosure prints sometimes can be brittle, especially with smaller physical features. I've also learned that the Arduino combined printed-circuit-board stack height varies slightly depending on board vendors and their component selection, so some adjustment (snipping shorter) to the locating stub heights in the enclosure bottom was required.

If they snap off completely, they could be replaced by small rubber bumpers to support the PCBs, or short nylon screws up through the bottom of the enclosure to engage the mounting screw holes on the Arduino PCB. Lastly, there were some features on the original enclosure design for a battery holder,



7 The three boards stacked together.

not needed here. Those plastic dividers were simply snapped off for the throttle build to free up space.

Connection to the layout is via a large double-pole, double-throw knife switch left over from those RadioShack days; not especially elegant, but my son loves “Frankenstein switches” as he calls them. I basically flip all my old DC block switches on, flip the knife switch to the DCC throttle side, and turn the transformer throttle all the way up to provide my 12-16V DC to the throttle, and I’m in business.

To avoid reverse polarity to the throttle, I placed a bridge rectifier and a filter capacitor under the layout in the path. This way, no matter how the transformer direction switch is set, the throttle sees the correct input polarity. The “Programming Track” power is routed to a simple RCA jack on the side of the throttle case to allow for an easy, yet removable, connection to a piece of track for locomotive programming.

The original open source code by Gregg Berman can be downloaded from <https://github.com/DccPlusPlus/BaseStation>. My modified modules are available from Trains.com. The code modifications were confined to the SerialCommand.cpp and SerialCommand.h files, so you can download the original, swap in my SerialCommand.* files, and be up and running.

I will gladly admit that I am not a programmer (the word “hack” comes to mind). The changes I made could certainly be done more efficiently and elegantly, and I welcome folks improving on my starting point.

Step by step build

1. On the motor controller shield, find the “VIN CONNECT” and “BRAKE DISABLE A, B” traces on the bottom side and cut them to disconnect the motor (input) voltage



8 Add the switches to the case, and make the wire connections on the back.

from the Arduino Vin supply, and to isolate the BRAKE signals from their digital pins. I marked the location in 3 on page 29.

2. Snip the bottom side solder tails from the motor shield’s green power connector to allow a flush fit of the shield on top of the Arduino UNO 3.

3 Because the LCD/keypad and motor shields both expect to use some of the same I/O pins, I had to make a few snips and jumps on the shield boards to avoid conflict and alter the connections to match the schematic. They are as follows:

a. On the LCD/keypad, snip off pins D5, D10, D12, D13, and A0, essentially disconnecting them from the motor shield and Arduino 4 (opposite).

b. On the LCD/keypad, jump pins D2 and D5 together and pins A0 and A2 together 5.

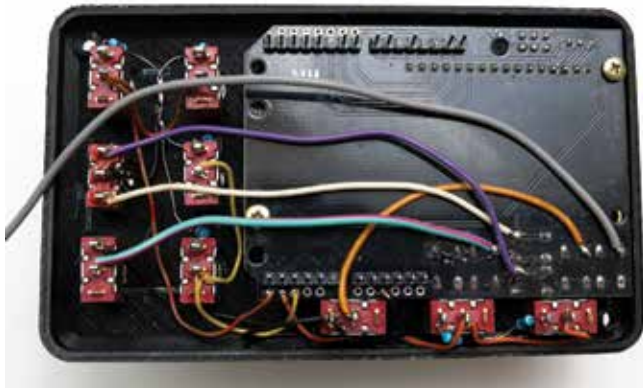
c. On the motor controller, jump pins D5 and D13 together and pins D10 and D12 together. These jumpers are seen as white wires in 3.

4. Place pull-up resistors R1, R2, and R3 on the top side of the LCD/keypad shield as shown in 5. Tuck them in down close to the PCB to avoid interference with the case.

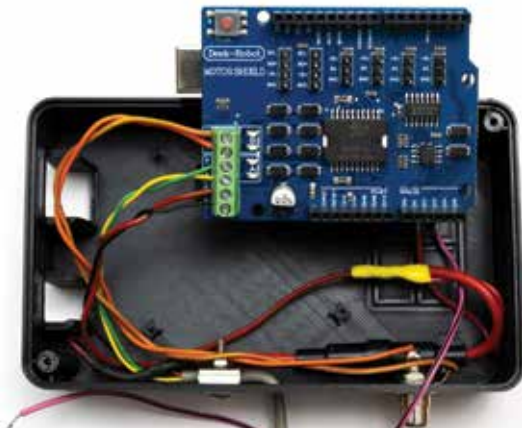
5. Attach wires to the switch connections on the LCD/keypad backside 6. These will be used to connect bigger and more reliable push buttons elsewhere in the case. Note the connections need to be on the non-GND side of these switches as shown.

6. Assemble the three boards together 7.

At this point, you should be able to load code and see the startup messages on the LCD display (being careful not to short the attached wires to anything). Note that on my LCD display, the contrast potentiometer was initially set such that I



9 Install the LCD/keypad shield in the top half of the enclosure and start connecting the switches to the shield.



11 The connections to the motor shield are made to the screw terminals at left from the components placed in the previous step.

saw no characters on the display (minor panic!). They came up once I adjusted it.

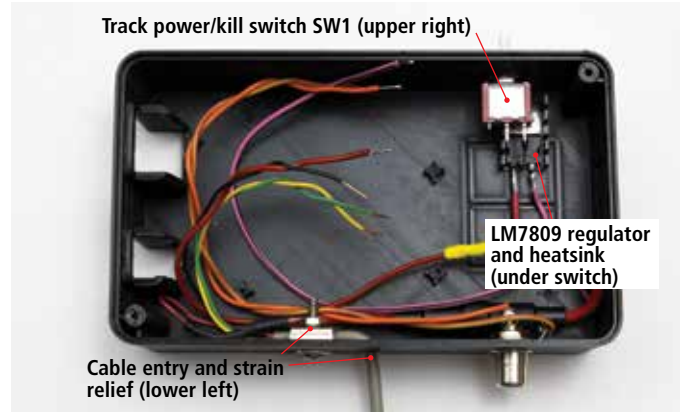
7. Assemble switches S2 through S10 to the case top panel as shown in 8 on the previous page.

Basically, the switches all have either a ground or a resistor connection to GND from them, so there is a common ground wire routed between and around them all. I used diagonal cutters to remove the normally closed (NC) terminal from all the push-button switches to give myself a little more space to work.

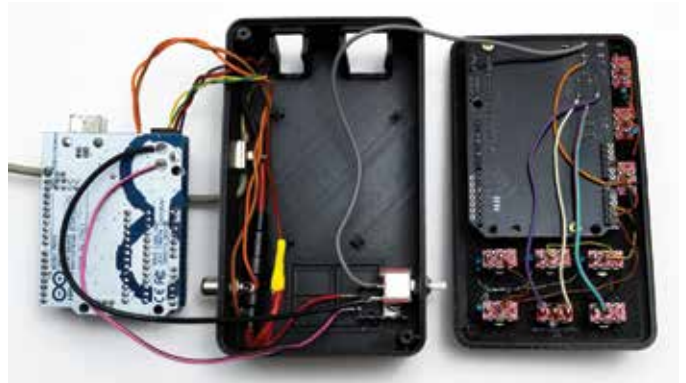
8. Separate the LCD/keypad shield from the stack and install it on the case top panel. There are two screw holes on corners of the display to do this. Be careful, as the 3D printed structure can be brittle. The screws don't need to be torqued down much at all — just tight enough not to move/rattle. At this point, the wires from the keypad switches and wires from the A3 through A5 analog inputs, as well as ground, can be connected to the switches as seen in 9.

9. In the bottom part of the enclosure, drill holes for and mount the cable entry and strain relief (lower left), track power/kill switch (SW1, upper right), and the LM7809 regulator and heatsink as shown in 10.

Care should be taken to place the parts so as not to interfere with the stacked boards or top panel switches in the enclosure. The regulator is oversized for its application, so the heatsink will not get anywhere near hot enough to melt/damage the enclosure. The cable is a four-wire telephone wire cable. Maybe a little light gauge for the job, but it works and is readily available.



10 Start installing components into the lower half of the enclosure, including the cable entry and strain relief (lower left), track power/kill switch (SW1, upper right), and the LM7809 regulator and heatsink



12 Make sure the power connections to the Arduino barrel connector are correct as reversed polarity will damage the board.

10. The fuse/fuse holder is connected between the input red wire and branches to connect to the input side of the voltage regulator, as well as to the motor controller +VIN terminal. The black wire from the input cable connects to the GND terminal of the motor controller. The orange and tan wires connect from the RCA jack programming track power output back to the motor controller "B" output terminals. The yellow and green wires from the input cable (Track Power) connect to the motor controller "A" output terminals. Note that to connect to the motor controller screw terminals, the motor controller and Arduino must be (carefully) separated from the LCD/keypad shield. These connections are shown in 11.

11. The center pin of the LM7809 regulator is ground, and can be bent upward to connect to one of the terminals of the power/kill switch (SW1). The GND from the switch and regulator and the regulator's 9V output (pink wire) should be soldered to the bottom side of the Arduino board barrel connector as shown in 12. Be careful to get the correct pads on the Arduino PCB as reversing the polarity will cause damage.

12. Fold in the wires such that the Arduino and motor controller can fit in the bottom of the case without wires blocking the USB port, then carefully align and attach the lower two boards to the LCD/keypad and slide it all together as shown in 13 on the opposite page.

13. To re-use my old transformer as my DC supply, I added a bridge rectifier and a 4700uF, 35V filter cap in the path. These being somewhat larger components, I placed them under the layout benchwork instead of inside the throttle.



13 When assembling the top and bottom halves of the enclosure, make sure to keep the wires away from the USB port opening.

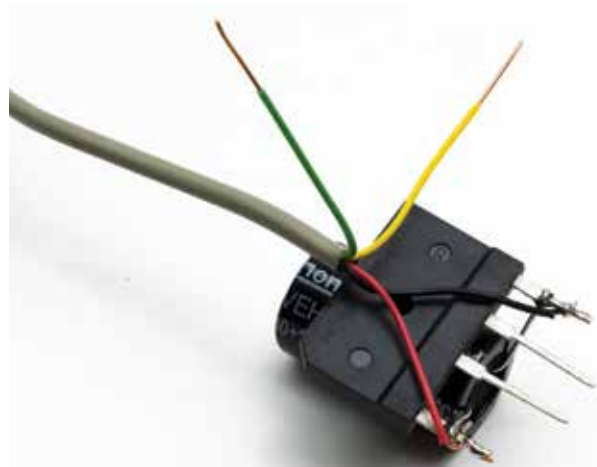
The bridge rectifier AC inputs are fed from the DC transformer output, and the bridge rectifier DC output feeds the filter cap and the power input to the throttle. Though this may seem redundant (a rectifier on a DC supply), it's a handy way to provide reverse polarity protection to the throttle if the direction switch on the old transformer is not set as expected.

The bridge rectifier I used is electrically overrated for the job, but was cheap and physically large/sturdy enough simply zip-tie it under the layout. Also seen in **14** are the yellow and green rail power output from the throttle.

14. Last but not least, screw it all together, label the switches, and you're ready to roll **15**!

Operation

Not having owned or used a DCC throttle before, the user interface is admittedly tailored to my personal tastes. The unit powers up to a "Splash Screen" that reads "I Like Trains" and then the code version. Knowing the version was helpful when I was writing and debugging my code changes. After a brief pause, the screen displays "Locomotive: 1". By pressing the POWER/KILL switch (SW1), track power is toggled on or off, also indicated on the display along with locomotive speed and



14 This bridge rectifier and capacitor were mounted under the layout to avoid having to fit them inside the throttle case. The parts are sturdy enough they could be zip-tied to the layout benchwork.

direction. The momentary contact toggle switch (SW4) is used to increase or decrease speed between 0 and 126. These were the min/max values in the code so I just carried them over. Pressing the DIRECTION switch (SW3) will set the locomotive's speed to 0 and toggle its direction, so the locomotive will slow to a stop (based on its programmed momentum variables) and move in the opposite direction when you give it throttle.

The FINE button (SW8) was something I added to give the user two different step speeds for throttle control. In normal operation, holding the throttle toggle for about 5 seconds will take your speed from 0 to 126, which is good for a lot of things. To get a very low speed or fine adjustment, hold the FINE button down while changing the throttle and it changes value at a much slower pace.

Changing which locomotive you are controlling is done by pressing the SELECT switch, then using the throttle toggle to bump up or down through the locomotives. As you go, you'll see the locomotive number changing on the display. You can set one locomotive's speed, then jump to controlling a different locomotive and the other locomotive will continue on its path until you come back to it and change its throttle or direction.

If at any time you see an oops about to happen, pressing the POWER/KILL switch will shut down all rail power instantly, and reset all locomotives to FWD, SPD=0.

The remaining switches were set up to control some basic sound functions, though the code can be modified to re-map them to suit specific needs. As currently configured, the BELL (F1) switch toggles the bell off and on when pushed. The WHISTLE/COUPLER (F2/F3) switch is configured to sound the whistle as long as the switch is held. Pushing SELECT and F2/F3 (simultaneously) sounds the coupler clank. The MUTE/VOL switch controls F8. Pressing this button will mute/unmute sound by toggling F8.

On my T1 (Paragon2 Sound), holding SELECT while repeatedly pushing MUTE/VOL will increment/decrement the volume by pulsing F8 on-off-on-off. Pushing the F9/F10 or F13/F14 buttons with or without holding SELECT will call their assigned sound effects. Because sound/function definitions vary between models and brands, I included a variable in the code that can be written to identify a locomotive's sound system type and allows



15 The final steps are to screw the top and bottom of the enclosure together and add the labels for the switches.

Parts list

Item	Source/Link	Qty
Arduino Uno R3	aliexpress-Arduino UNO R3	1
LCD 1602 LCD Keypad Shield	aliexpress-LCD 1602	1
L298P Shield R3 DC Motor Driver Module	aliexpress-Motor Shield	1
Momentary SPDT Toggle	aliexpress-mom SPDT toggle	1
SPST Momentary Push buttons (10)	aliexpress-push buttons	10
4.7K resistors	aliexpress-4.7K, 1/4W res, 100pk	10
10K resistors	aliexpress-10K, 1/4W res, 100pk	10
7809 regulator	aliexpress-7809 regulator-5pk	1
5A bridge rectifier	aliexpress-bridge rectifier, 5pk	1
4700uF, 35V cap	aliexpress-4700uF, 35V cap, 2pk	1
Fuse + Holder	aliexpress-fuse and holder, 5pk	1

these switches to map to alternative functions depending on which loco is being controlled and user preferences, though editing it means editing the code and reloading it to the throttle.

Locomotive programming

I took a very simplistic approach to locomotive programming. I added a “Program” mode to the code, but it requires you to connect a laptop to the throttle via USB (baud rate 115.2K) and use text strings to enter programming mode and set configuration variables in your locomotive. When in programming mode, track power and control is disabled and the throttle display reads “PROGRAM MODE.” The program track power comes out of the RCA jack on the side of the throttle, and it gets connected to a piece of track on my workbench via a homemade cable with an RCA plug at one end and a pair of alligator clips at the other.

Having the throttle powered and simultaneously connected to a computer via USB is safe; the Arduino hardware accommodates it. Below is a simple, commented example of the text commands to set and read back a locomotive’s ID. Programming mode can be exited by command or by power cycling the throttle to bring it back to operating mode.

Programming CV1 example

Throttle status report at startup on USB/Serial:
 <iDCC++ BASE STATION FOR ARDUINO UNO /

ARDUINO MOTOR SHIELD: V-1.2.1+ / Feb 19 2024

12:27:03><N0: SERIAL>f 1 144

Issue command “<2>” over the serial port to Arduino to put the throttle into Program Mode. It sets all locomotives to forward, speed = 0, and then echoes back “<p2>” response.

```
<T1 0 1>t 1 1 0 1
<T2 0 1>t 2 2 0 1
<T3 0 1>t 3 3 0 1
<T4 0 1>t 4 4 0 1
<T5 0 1>t 5 5 0 1
<T6 0 1>t 6 6 0 1
<T7 0 1>t 7 7 0 1
<T8 0 1>t 8 8 0 1
<T9 0 1>t 9 9 0 1
<T10 0 1>t 10 10 0 1
<T11 0 1>t 11 11 0 1
<T12 0 1>t 12 12 0 1
<p2>t 12 12 0 1
```

Issue command “<R 1 555 555>” over the serial port to Read CV1, were the 555 555 portion are just two 3 digit numbers (can be anything) to match the request to its response. The throttle answers with “<r555|555|1 3>” telling us it read the value 3 from CV1, followed by the text of the command as issued.

```
<r555|555|1 3>R 1 555 555
```

Issue command “<W 1 8 777 777>” over the serial port to Write CV1 = 8, were the 777 777 portion are just two 3 digit numbers (can be anything) to match the request to its response. The throttle writes 8 to CV1 and then reads it back, responding with “<r777|777|1 8>” telling us it read the value 8 from CV1, followed by the text of the command as issued.

```
<r777|777|1 8>W 1 8 777 777
```

Issue command “<0>” over the serial port to exit Program Mode. Throttle returns to normal operation with rail power off and echoes back “<p0>”, followed by the text of the command as issued.

```
<p0>0
```

The SerialCommands.cpp portion of the sketch is very well commented by its original author and there are many available commands and their syntax spelled out within.

The code as it is currently written uses the Locomotive Primary Address (CV1) to map which locomotive the throttle is controlling, i.e. the throttle can talk to 12 locomotives, and their addresses must be 1 through 12. Modifying this to enable a wider range of addresses to be mapped into the throttle’s 12 control “slots” is an area for future work (probably for the day I buy/enable a 13th DCC capable locomotive).

Closing thoughts

With its limited current capability, limited number of locomotive IDs, and general simplicity, this throttle will not meet the needs of more advanced users or clubs with multiple users. However, it certainly offers a taste of what’s possible with just a few bucks and a little ingenuity. I can already envision improvements such as a higher current motor controller, or moving to having a base unit hard-wired into the layout with (multiple?) Bluetooth connected wireless handheld control(s). Heck, crossing the Bluetooth bridge could enable a home brew phone app control with some coding and ingenuity. Take what I’ve shown here as a basic recipe, add your own spice and flair, and run with it. The sky is the limit, and all for less than the cost of taking the family to the diner for breakfast. **MR**



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LGB G Scale (1:22.5)



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36923
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72308 Christmas Train Starter Set*



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44224
Märklin Start up Christmas Car with sound



36025
Christmas Locomotive



48425
2025 Christmas Car



81846
Christmas Train Starter Set*



Märklin Z Scale (1:220)



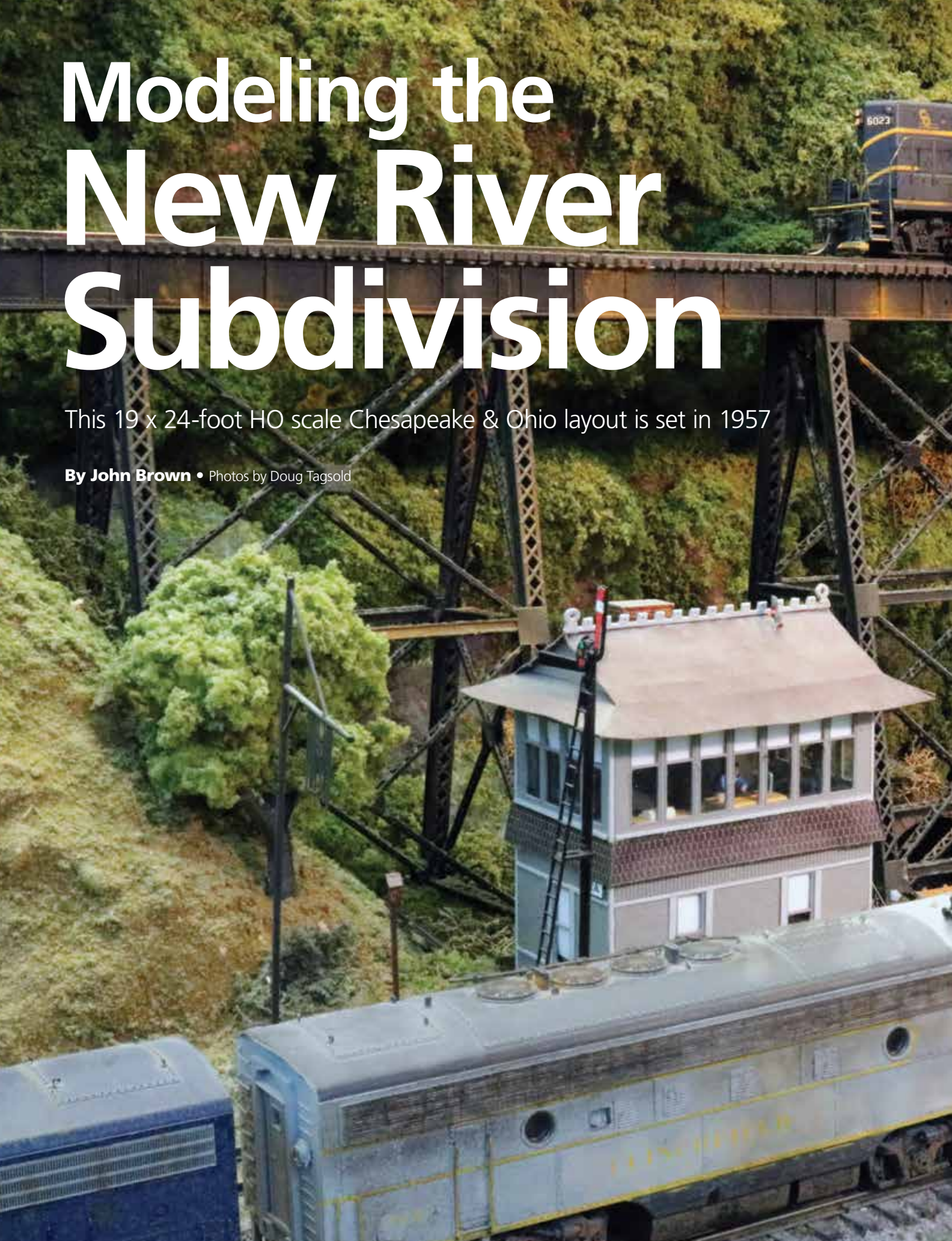
80635
2025 Christmas Car

*120V Electric, ready-to-run starter sets include everything needed to run the train out of the box.

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Modeling the New River Subdivision



This 19 x 24-foot HO scale Chesapeake & Ohio layout is set in 1957

By John Brown • Photos by Doug Tagsold



① A pair of Chesapeake & Ohio Electro-Motive Division GP9s lead Kiser Shifter No. 180 back to Callow, W.Va., with loads of coal on John Brown's HO scale New River Subdivision. Below, C&O-Clinchfield RR No. 92, an east-bound manifest freight, passes MA Cabin.



2 This view shows John at Port Alexander with the car ferry *Alexander Brown* docked and waiting to be unloaded. Waynesburg, W.Va., inspired by Dehue, W.Va., is visible behind John.

My journey to modeling the Chesapeake & Ohio New River Subdivision in HO scale began in Toronto, Ontario,

Canada in the 1940s. Like many modelers my age, I grew up with Lionel trains. When I was 5, Santa put two sets under the Christmas tree. With my parents encouragement, those sets grew to fill half the basement over the years.

On Sundays, my dad would often drive me to downtown Toronto and park the family car in the rail yards. There, we had a front row seat to Canadian National and Canadian Pacific trains switching and passenger trains arriving and departing Union Station.

In my early teens, I'd ride my bike to the Leaside, Ontario, CP station and ride with the switching crew for a few hours. Those were different times!

In 1964, I attended the National Model Railroad Association National Convention in Philadelphia and won an HO "Red Ball" Casey Jones 4-6-0 steam locomotive as a door prize. After that, I decided to sell my Lionel trains and switch to HO scale. Of course, having an

uncle active in HO scale also helped nudge me to the world of 1:87.1, especially when I saw what he had in HO scale compared to my Lionel layout in a similar size room.

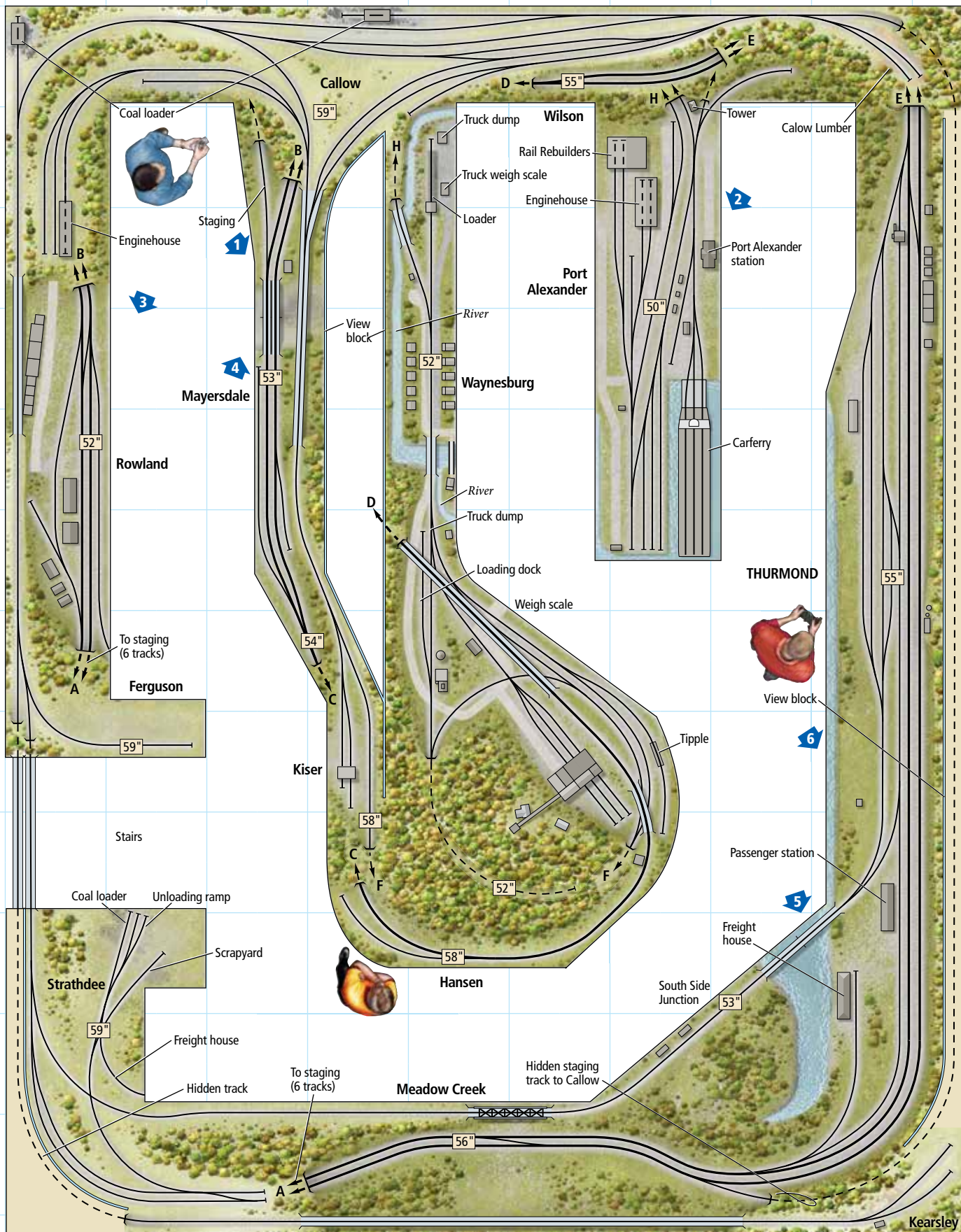
Switching focus

When I bought my home in Waubashene, Ontario, in 1977, I built an HO scale layout depicting the CP and a freelanced railroad I called the Waubashene Central in the basement. However, the layout room had a height problem. In 1986, my late wife suggested I remove the attached two-car garage's roof and build a layout room.

Frequent trips to railfan the Baltimore & Ohio (then Chessie System) at Sand Patch Grade in Pennsylvania got me interested in modeling coal trains. I was detailing Athearn hoppers and lettering them with Chesapeake & Ohio decals from Champ. I asked the C&O Historical Society if the decals were correct for that particular hopper model. The group's quick response led me to join the organization. Its monthly magazine at the time featured a C&O 2-6-6-6,

The layout at a glance

Name: Chesapeake & Ohio New River Subdivision
Scale: HO (1:87.1)
Size: 19 x 24 feet
Prototype: C&O New River Gorge and coal mine area
Locale: Thurmond, W.Va.
Era: 1957
Style: walk-in
Mainline run: 102 feet
Minimum radius: 30" (24" in Waynesburg Mine wye)
Minimum turnout: No. 6
Maximum grade: 1/8" per foot
Benchwork: 1 x 2 frame topped with 1/2" plywood and Homasote
Height: 50" to 60"
Roadbed: Homasote
Track: handlaid
Scenery: cardboard strips and plaster-impregnated gauze
Backdrop: hand-painted and ground foam
Control: Digitrax Digital Command Control



Chesapeake & Ohio New River Subdivision

HO scale (1:87.1), Layout size: 19 x 24 feet, Scale of plan: $\frac{3}{8}$ " = 1'-0", 24" grid
 Numbered arrows indicate photo locations, Illustration by Kellie Jaeger

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



and I became enthralled with Mallets, especially in Thurmond, W.Va.

As I started planning the New River Sub, I wanted the layout to include a harbor with carferry, several coal mines, local switching challenges, a couple of wayfreights, and the town of Thurmond. Being a railfan, and with several cab rides under my belt, I knew I wanted my layout to operate as if it were a business.

In January 1977, a series in *Railroad Model Craftsman* featured a layout that influenced me and many other model railroaders. Among the key features of W. Allen McClelland's HO scale Virginian & Ohio were car cards and a dispatcher. I was fortunate to operate on Allen's layout a couple of times.

Elements of Waubashene Central and Virginian Ry. also came to the new layout. The C&O, as well as the Virginian, served some mines. I also added the Clinchfield RR, as I had ridden trains out of Dante, Va. (CSX by then) with the same crews for six years. Like the VGN, the CRR is represented by staging.

From dream to reality

I designed the track plan for the New River Subdivision. The layout features 30" radius curves (and one 24" curve in the wye at Waynesburg, W.Va.). Grades are approximately 2%.

Before I started work on the benchwork, I finished the walls and painted

3 It's a busy day at Rowland, W.Va. Eastbound train X6500, powered by a C&O Electro-Motive Division TR3 set, rolls past a westbound manifest on its way to Russell, Ky. On the bridge above, an A-B set of C&O EMD F7 diesel locomotives powers a freight running from Ferguson to Callow, W.Va.

them sky blue. I used drop fluorescent lighting to illuminate the room.

I started work on the new layout by building a 2'-6" x 6'-0" module. It includes the harbor section with carferry, a three-track yard, engine shops, and three industries. The carferry, a Voco Marine extruded-plastic kit, has three tracks, holds 15 40-foot freight cars, and serves as a staging yard. I built



this section on Ping-Pong table legs so I can take it to local train shows.

After I finished the module, I started benchwork for the main layout. I used 1 x 2 pine for the legs and joists. The tabletop is 1/2" plywood, topped with Homasote roadbed.

Then I started laying track to connect the module with the rest of the layout. I cut all of the ties from 1 x 4 pine and stained them. I handlaid weathered code 83 rail on the branch line; I used code 100 rail, recycled from my basement CP layout, on the main.

The turnouts are also scratchbuilt. I used Caboose Industries No. 204S hi-level switch stands to operate those that can be easily reached from the aisle. I



4 With a westbound coal train in the clear, the fireman aboard Chesapeake & Ohio X5813 stops at MA Cabin to receive new orders from the operator. In the background, C&O-Clinchfield RR No. 92 manifest with CRR F7A No. 804 on the point, waits on the C&O branch to the Clinchfield connection at Elkhorn City, Ky.

installed Tortoise by Circuitron switch motors in hard-to-reach places or where there wasn't room for a Caboose Industries stand.

One town at a time

Waynesburg, W.Va. is where I built the first three coal mines. I also installed a wye for turning C&O 2-6-6-2 steam locomotives here. One leg of the wye disappears into the scenery and serves as a single staging track for the Virginian Ry.

I wanted Waynesburg to be the start or end of three railroads. In addition to the Virginian, the C&O runs from here to the rest of the layout. The fictional Waubaushene Central operates between Waynesburg and Port Alexander.

Each railroad serves a specific coal tipple in Waynesburg. All three lines work the company store and loading dock.

Waynesburg was inspired by Dehue, W.Va. I placed single-story company houses on one side of the tracks and two-story homes on the other. The houses are a mix of Keystone kits and scratchbuilt. A local country road shares the railroad bridge over a stream in Waynesburg, just like in Belva, W.Va.

The next community is Callow, W.Va. It has three coal mines, a freight house, engine shops, and a lumberyard. There's also a marshaling yard for coal trains. I scratchbuilt the freight house, two coal tipples, and the Mallet house. The station and yard office are kits. I used Woodland

Scenics injection-molded plastic kits for the business district.

During operating sessions, two empty coal trains arrive in Callow from staging. Operators break them down to serve the mines. When the loaded coal hoppers return to Callow, operators assemble them into two trains for the return trip to staging.

Thurmond, W.Va., is the focal point of the layout and I wanted it to be as accurate as possible. I allocated a 2'-6" x 26'-0" space for the town so I could include signature features. Friends built the passenger station, coaling tower, and commissary. I used kits for the crew quarters and various sheds. I scratchbuilt the freight house and Mankin-Cox building. For additional info on the latter, see "A business for Main Street" in the December 2019 MR.

Currently, I'm working on the Kincaid Mercantile building. The Mallet house and Thurmond Bank are also in the plans, along with the county road bridge that spans the New River.

Later, I added Rowland, a small town with three industries. The rail-served businesses give the wayfreight from Thurmond some extra work along the way. The structures here are all from the Walthers Cornerstone series.

Strathdee is another town designed for a wayfreight crew to work. It has a coal mine with two tracks for loading and one for supplies. There's also a freight house, scrapyards, team track, trailer-on-flatcar ramp, and two small industries.



Five sidings — Ferguson, Mayersdale (east- and westbound), Hansen, and South Side Junction — provide work to wayfreights and are used during operating sessions.

Locomotives and rolling stock

My rolling stock fleet consists of resin kits and ready-to-run cars from various manufacturers, including Athearn, Bowser, InterMountain Railway Co., Rapido Trains, Red Caboose, and Tangent Scale Models. If the cars have tack boards, I add placards from Microscale Decals (87-975) and Jaeger HO Products (2100).

Motive power on the C&O New River Subdivision includes brass imports and commercial models from Broadway

Limited Imports, Bachmann Spectrum, Life-Like, Rivarossi (steam and diesel), and Stewart. John Spring from Beeton, Ontario, weathers all of my locomotives and rolling stock.

Structures and scenery

The structures on the layout are a mix of off-the-shelf kits, kitbashed, and scratchbuilt. There are three trestles on the layout. One is a Micro Engineering kit, another was scratchbuilt with scale lumber, and the third is a modified Atlas Model Railroad Co. product.

I used cardboard strips and hot glue to make a web for the base of the mountains. I covered the web with plaster-impregnated gauze strips from Woodland Scenics. After the plaster had

5 Chesapeake & Ohio Electro-Motive Division GP7 No. 5815, the East Yard switcher, brings a cut of loaded Berwind coal hoppers back to Thurmond, W.Va. Below, outdoor enthusiasts enjoy fishing and canoeing in the New River.

dried, I spread drywall compound over the gauze.

The scenery was a team effort with members of my operating crew. To represent the tree canopy, we rolled fiberfill into small, round balls and attached them to the drywall with spray adhesive. We also used spray adhesive to attach three colors of Woodland Scenics ground foam to the fiberfill.

For grass, we mixed different colors and textures of Woodland Scenics grass. We used the same manufacturer's Gray Fine (B1375) to ballast the tracks.



Running trains

I've hosted operating sessions on the third Friday of the month for more than 25 years. Prior to the pandemic, I had 12 operators and a dispatcher. My post-pandemic crew consists of 10 operators and no dispatcher.

Sessions last 3½ hours. During that time, we run a list of 24 trains using car cards with four-destination waybills. Two empty coal trains run from staging to Callow. Three manifest freight trains, two of which are C&O, operate between staging yards as through freights. A C&O-Clinchfield train runs from CRR staging to Port Alexander and back.

There are five wayfreights during each session, which operate as turns: Thur-



6 Chesapeake & Ohio Electro-Motive Division E8 No. 4026 pulls up to the passenger station at Thurmond, W.Va. At right, C&O GP7 No. 5815 peaks into the frame as it works the Thurmond Yard.

mond to Rowland, Kearsley to Thurmond, Port Alexander to Waynesburg, Callow to Waynesburg, and the Virginian Ry. train to Port Alexander.

Passenger operations consist of two C&O trains and a Waubashene Central-C&O Budd Rail Diesel Car.

When Digital Command Control (DCC) first came out, I used CTC-16. Over time it became problematic, so I switched to the Digitrax system. I worked with two modelers to install the company's decoders in my locomotives. To avoid the extra cost of radio control, my operators plug their throttles into UP5 panels located on the fascia throughout the layout.

After each operating session, I do a visual inspection of the rolling stock in the staging yards. I clean the wheels if necessary and look for missing grab irons, stirrup steps, and ladders. If I find anything missing, I fix it immediately.

Adding to the fun

To enhance operations on the New River Sub, I added sound modules to the coaling tower and three water columns [See "How to model water columns" in the July 2025 MR. — Ed.] I also installed order boards at all stations and cabins. At MA Cabin, I have the order board for eastbounds set to stop. All trains stop here while the operator reads the order for his train and completes the required specifics before continuing.

I installed searchlight signals at both ends of the three yards. These give the

yardmaster control of incoming trains. Signals also control the single track from Mayersdale to Thurmond. I also added fuses, described in the November 2021 MR, at four locations on the layout.

Though you've seen bits and pieces of my layout in how-to articles and Track-side Photos over the years in *Model Railroader*, it's fun to finally share the entire C&O New River Subdivision with you. Thanks to Doug Tagsold for photographing the layout. I'd also like to thank the members of my operating crew and the greater hobby community for their help and ideas. [MR](#)



Meet John Brown

John Brown lives in Waubashene, Ontario, Canada and is National Model Railroad Association Master Model Railroader No. 449. He retired after working 23 years in the tool room at Elcan Canada (Division of Raytheon) in Midland, Ontario. He is active in the NMRA Niagara Frontier region and is a member of the Chesapeake & Ohio Historical Society.

Modeling North Bennington, Vermont

This HO scale Layout Design Element is based on a location along the Rutland Ry.

By **Don Janes** • Photos by the author

North Bennington, Vt., is located in the southeast corner of the Green Mountain State near the New York border. It was an important junction point for the Rutland Ry. and still serves as an interchange point between the Vermont Ry. and Pan Am Railways (now CSX) today. Traffic could head north to Rutland, continue to wind south via the Corkscrew Division to Chatham, N.Y., and

connect with the Boston & Albany for a direct route into New York City, or interchange with the Boston & Maine at Hoosac Junction.

Although this would make a great spot for realistic operations on a model railroad, it's not the original reason I decided to model North Bennington in HO scale. The truth is that I stopped in North Bennington in the 1990s and fell

in love with the Victorian-style Rutland station. I liked it so much that I commissioned model maker Rich Cobb to build me a 1:87.1 version of the structure back in 1999.

There was no place for this model on my existing layout, so it sat on a display shelf. It wasn't until several years later, when I expanded my layout, that my North Bennington scene was added.



1 North Bennington, Vt., is the latest addition to Don Janes' HO scale Rutland Ry. Green Mountain Division. This overall view of the scene shows the North Bennington Yard; the Victorian-style station built by Rich Cobb is visible at right.



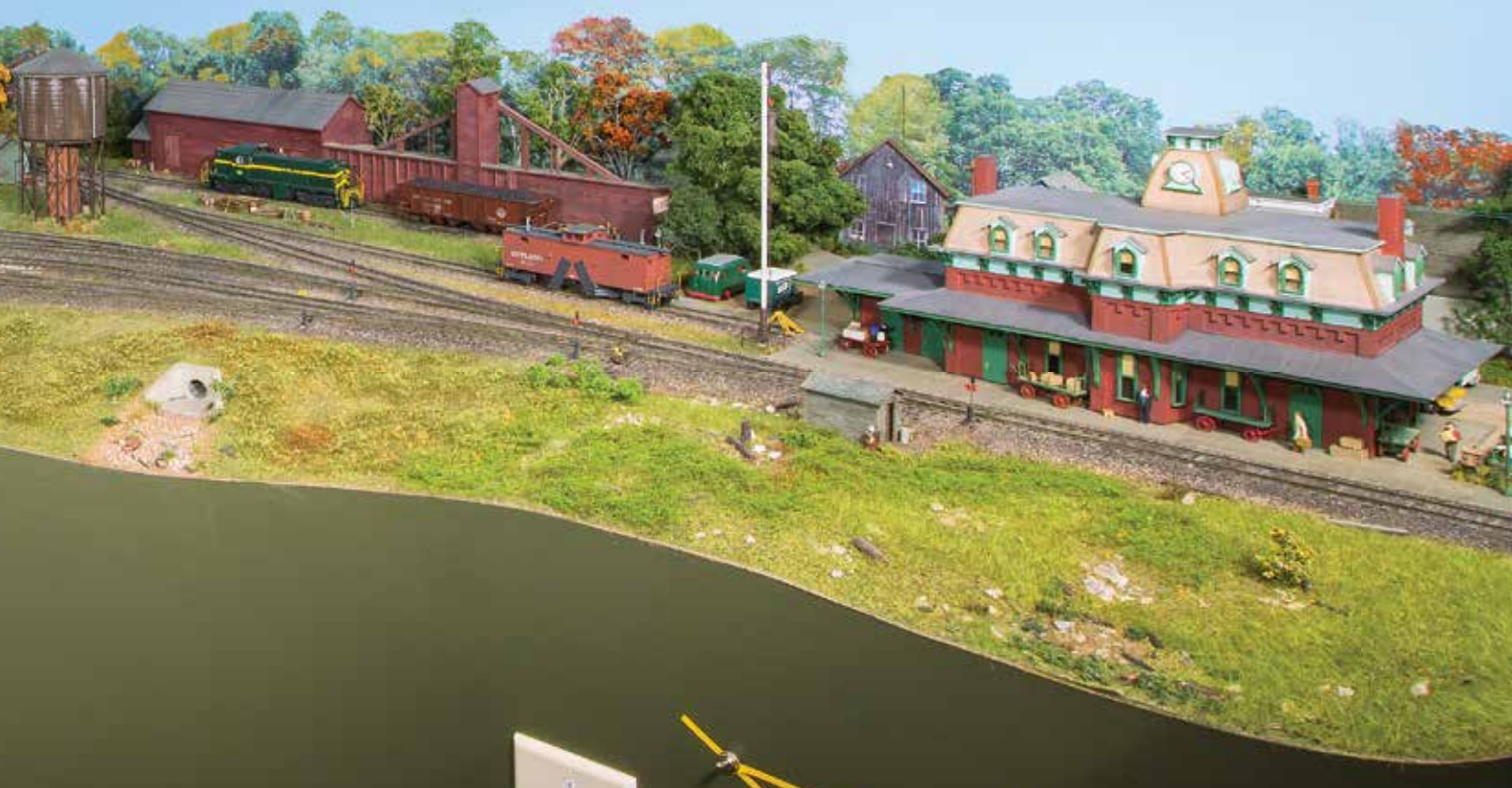
Planning North Bennington

Having acquired extra layout space on my Green Mountain Division, I was able to design the North Bennington scene, using the station as a focal point. Other railroad-related structures would have to be scratchbuilt to fit their locations. I made several trips to North Bennington to document the existing

railroad buildings and general layout of the yard. Additional information was found online and in other sources.

Since North Bennington was located on a curve, I used one of the corners of the layout room to build the scene. By doing that, I could capture the feel of how the actual yard looked. The long curve gives the scene character and makes it look longer than it really is.

② Boston & Maine Electro-Motive Division F2 diesels were often seen at North Bennington. Here, the 4259 is pumping air into the train and will soon depart for Hoosac Junction. At right, Rutland Alco RS3 No. 205 waits in the clear for the cab unit to depart.





3 Wellings Coal, located behind the depot in North Bennington, was still a busy spot in the 1950s as most people heated their homes and businesses with coal. The engineer aboard Rutland No. 405 eases a full Pennsylvania RR hopper onto the industry's spur for unloading.

I started planning the scene by arranging flextrack and turnouts on the benchwork to establish the location of the tracks and structures. Once I was happy with that, I drew their exact location on the plywood and glued down the cork roadbed. Then I handlaid the track and scratchbuilt all of the turnouts, most of them on curves. All of the turnouts are powered by Tortoise by Circuitron slow-motion switch motors.

Space limitations meant I had to stub-end the freight house track rather than have it as a run-through. I also had to eliminate one yard track.

An important feature I wanted to model was the wye that led to Bennington and the Corkscrew Division. The wye doesn't actually connect at the tail, but it gives the illusion the line continues on. Since the coal dealer behind the station is accessed from one leg of the wye, I had to make sure it was long enough to handle two cars and a locomotive.

Signature structures

Key railroad structures I wanted to include were the station and ball signal, freight house, ice house, coal dealer, water tank and water column, and two section shanties. I built the freight house using diagrams and measurements that my good friend George Dutka supplied. I had to shorten the structure by about 20 scale feet to fit in the scene, but it's still a good representation of the prototype. The ice house, coal dealer, water tank, and section shanties were built using photos as guide.

The rest of the buildings add to the scene but aren't exact replicas of what stood at North Bennington. I used Delabarre Tap & Die, a South River Model Works kit, to represent Whitman's Mill. Although it's not a feed mill, the structure looks neat and provides another rail-served customer. I had to move it a little further down the yard so it would fit properly and not block the view of the station or freight house.

As far as I know, North Bennington never had a creamery. However, since creameries were so important on the Rutland, I added one at the south end of town. My friend and master scratch-builder, Don Spiro, was kind enough to give me a creamery he had built. It's a model of a creamery that was located on the northern part of the Rutland.

I built an addition for the creamery to make it a larger complex. The industry suits the scene well and adds to operations. Inbound coal is used for the boiler. Finished product is shipped in milk cars.

Beyond the tracks

With the railroad structures and trackside industries established, I turned my attention to other structures located around the station. Depot Street and Main Street, the latter which crossed the tracks, were mostly residential.

On one of my trips to North Bennington I took some photos of the immediate area around the station, including some of the houses and the coal dealer. Friend and fellow Rutland modeler, Bill Badger, from nearby



Manchester, Vt., also sent me a few photos of the area that he'd taken for me.

I first focused on the two houses on Depot Street. Since space was at a premium, I estimated the approximate size of the houses and constructed two flats. I painted the houses a color I thought would have been correct for the 1950s.

Next to the houses was a good-sized empty lot. I assumed there was a structure there at some point and added a small woodworking shop to fill the space.

Main Street runs right through town. Since I didn't have any photos of how it looked at mid-century that I could use for reference or a photo backdrop, I terminated the street at the wall. I added a two-story house that I built from an Atlas kit to represent one of the older houses that lined the street. The addition of the houses helps make the scene look fairly accurate.



Directly across Main Street from the station is a one-story brown brick post office. I haven't been able to determine if the structure was there in the 1950s, so I used a small one-story brick building that came in a South River Model Works kit as a placeholder. It's called Bennington Potters, so it seemed appropriate.

I also modeled Houghton Street, which runs behind the freight house and up a hill where it turns into Lake Paran Road. I cut out images of various structures from SceniKing backdrops and glued them to the wall. I placed trees in front of the buildings to create the illusion the structures are farther back in the scene.

Locomotives and rolling stock

My original intention was to model only the Rutland. During many weak

moments, I've collected equipment from other New England railroads including the Central Vermont and Boston & Maine. I do, however, have a variety of Rutland equipment that fits nicely into the North Bennington scene.

Locomotives include two Atlas Alco RS3s and an RS1 that I detailed and painted to match the prototype engines, as well as a Bachmann General Electric 70-ton diesel that's based on Rutland No. 500. All of these models have Digital Command Control and sound.

Many years ago Contributing Editor Lou Sassi asked me to detail and paint an Athearn Genesis United States Railroad Administration light 2-8-2 for him. Fortunately, when Lou disposed of his HO scale model railroad, he offered the engine back to me. Mikado No. 37 is the only steam locomotive still operating on my version of the Rutland.

4 General Electric 70-ton diesel No. 500, normally assigned to Rutland, is working at North Bennington today. The end-cab unit is spotting a boxcar at Whitman's Mill. Don used Delabarre Tap & Die, a South River Model Works kit, to represent the mill.

Over the years, I've built up a collection of Rutland cabooses. I scratchbuilt two 40-series cars; others are brass models or resin kits. I also have a flanger and milk car built from Rutland Car Shops kits and a Delaware & Hudson flanger (sold to the Rutland) that I built from a resin kit. I've added several Funaro & Camerlengo kits to my rolling stock fleet, along with brass milk cars.

Passenger cars round out the list of rolling stock. I have brass models of a Rutland coach and combine imported by Railworks. The models still need to be painted and have interiors added. I'm

always on the lookout for Rutland models to add to the my fleet.

Running trains

North Bennington was a junction as well an interchange point. To the south was Bennington, Vt., and the Corkscrew Division to Chatham, N.Y., where the Rutland interchanged with the Boston & Albany. Heading west to White Creek, N.Y., there was a connection with the B&M at Hoosac Junction. Traffic heading north to Rutland could be interchanged with the D&H from Whitehall, N.Y., or the Central Vermont via the Bellows Falls Subdivision.

On my version of North Bennington, the wye to Bennington is represented by a track disappearing into the wall. However, I can bring B&M transfer runs from staging into North Bennington. I have several photos showing a single B&M Electro-Motive Division F2 with cars in the yard at North Bennington. I can also send mainline trains north to Rutland, which is represented by staging.

As far as local switching goes, there's a coal dealer, creamery, freight house, Whitman's Mill, and the express track beside the station. These rail-served customers allow me to use a variety of car types. There's enough local switching to keep an operator busy for quite a while.

Although not prototypical, trains from CV, Canadian Pacific, and B&M pass through North Bennington on their circuit of the layout, making for some

interesting railfanning. Only Rutland trains make station stops and perform local switching.

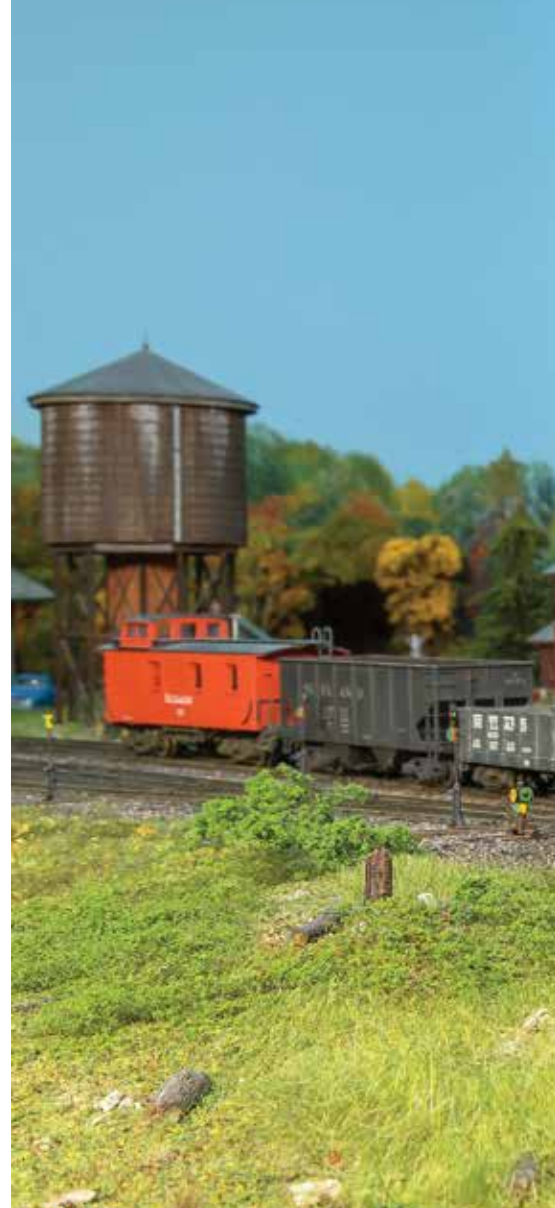
A fun project

North Bennington is the first Layout Design Element — a visually and operationally recognizable model of an actual location — that I've tackled. All of the scratchbuilding and planning involved was a lot of fun. Doing the research and trying to get the scene to look as prototypical as possible within the space limitations was a good challenge.

It was satisfying building a scene that resembles the prototype to some extent and features structures and other elements unique to North Bennington. Though I don't plan to build the rest of my layout as exact replicas of specific locations, I would like to add more LDEs so anyone familiar with the area will recognize what's being re-created. [MR](#)

Don Janes, a retired Canadian National locomotive engineer, lives in Sarnia, Ontario, Canada. His modeling efforts regularly appear in Trackside Photos. His former HO scale Boston & Maine Green Mountain Division layout appear in Great Model Railroads 2001.

5 Having dropped caboose No. 36 in the yard, Rutland Alco RS3 No. 201 backs a cut of cars around the wye behind the old ice house. Don scratchbuilt the ice house based on photos.





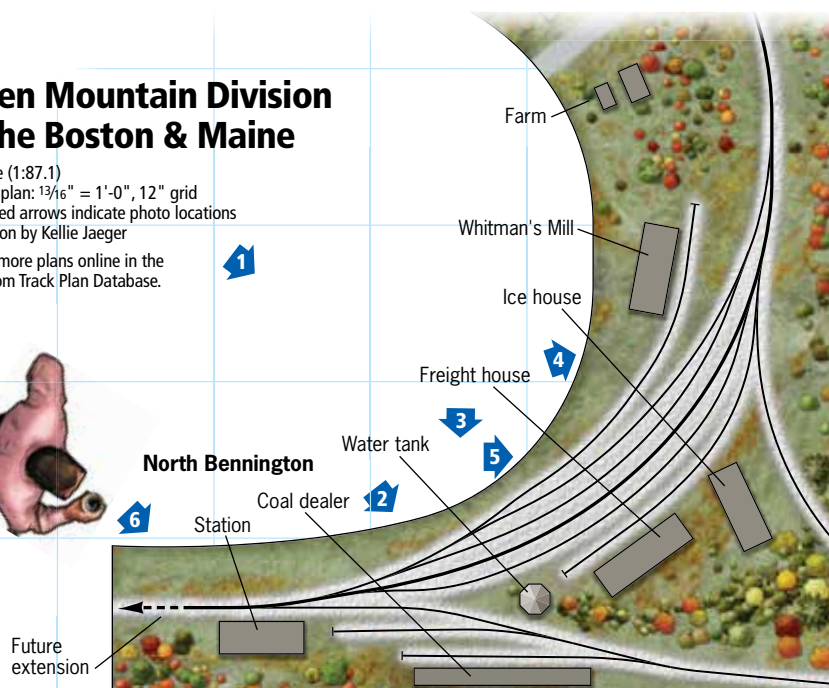
Green Mountain Division of the Boston & Maine

HO scale (1:87.1)
Scale of plan: $1\frac{3}{16}" = 1'-0"$, 12" grid
Numbered arrows indicate photo locations
Illustration by Kellie Jaeger

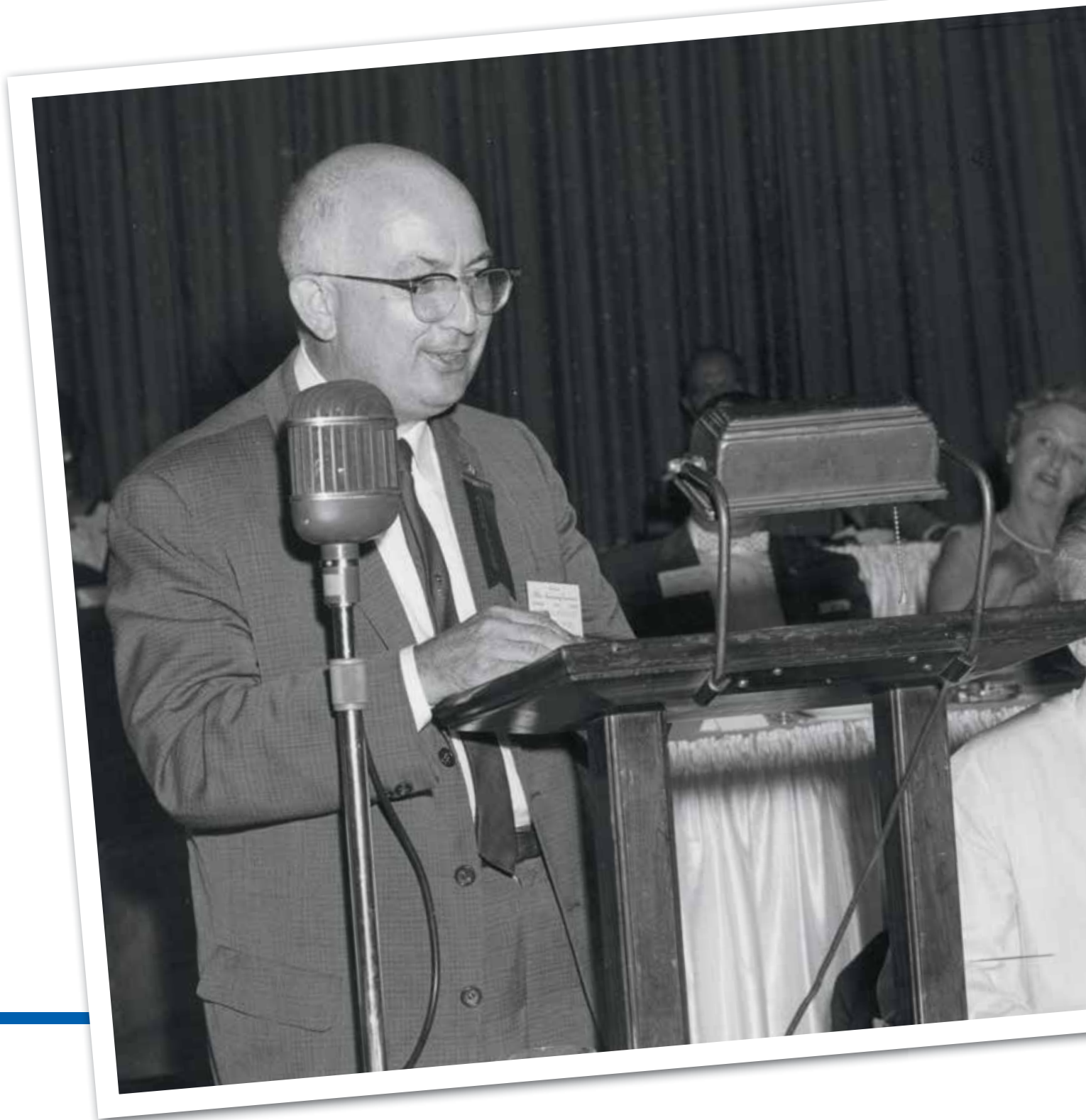
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North Bennington



6 In the shadows of the Victorian-style station, Rutland No. 205 marshals cars in the North Bennington Yard. The four-axle road switcher is an Atlas model that Don detailed and painted to match the full-size unit.



The NMRA



If you're interested in model railroading or are perhaps reading *Model Railroader* for the very first time because of the holiday season, you may not be aware that 2025 was an important year for those who follow the hobby's history. Ninety years ago, during Labor Day weekend in 1935, the National Model Railroading Association (NMRA) was founded in Milwaukee, Wis. It was created at a meeting organized by members of the Model Railroad Club of Milwaukee.

The association was formed through the efforts of like-minded individuals who sought to place model railroading on a better footing, both technically and through increased interaction with others interested in the hobby. Today, the NMRA is still one of the most important model railroad organizations worldwide.

Although many model railroaders can now find information about the hobby through websites or social media channels, such as YouTube or Facebook, in the 1930s, clubs were the most important gathering nexus for modelers. For various reasons, many O scale clubs were located in American cities large and small. These were

often the primary point of contact for those interested in building models and large operating layouts.

During the decade when the NMRA was founded, in addition to clubs, modelers were able to connect through hobby magazines. A couple of years prior to the first meeting of the NMRA in Milwaukee, two of the most influential magazines in the hobby, *The Model Craftsman* and *The Model Railroader* were founded. Through them, modelers could connect with each other by using club directories and classified ads. In fact, sometimes layout stories in the magazines included the owner's contact information, so readers could make arrangements to visit the model railroad in person if they were in the area.

The fact that the NMRA formed at roughly the same time was no coincidence. In the 1930s, a critical mass of manufacturers, publishers, and modelers had assembled, proving that interest in the hobby of replicating railroads in miniature had a grander future than anyone had previously anticipated.

A.C. Kalmbach, *Model Railroader* founder and a founding member of the National Model Railroad Association, spoke at the 25th anniversary NMRA banquet in 1960 at the Edgewater Beach Hotel in Chicago. *Model Railroader* and the NMRA were two of the institutions of model railroading to come out of the mid-1930s. Hobby Industry Association of America/George P. Nemecek



This club directory is from the November 1934 MR.

Emmanuele Stieri, who was undoubtedly an optimist, founded The Model Craftsman Publishing Co. in Chicago in 1933 during the Great Depression. In March of that year, while the Depression was in full force, the first issue of *The Model Craftsman* appeared. The magazine is still in publication today as *Railroad Model Craftsman*, now produced by White River Productions.

Within a year of *The Model Craftsman*'s first issue,

The National Model Railroad Association's early adoption of standards helped the hobby to grow

By Gerard J. Fitzgerald • Photos as noted

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Albert Carpenter Kalmbach began publishing *The Model Railroader* with his wife, Bernice, out of Milwaukee. Its first issue was published in January 1934.

Early years of the hobby

Even in the Depression years, the United States was surprisingly filled with hobbyists of all stripes. People spent their time collecting stamps, painting, building models, and making various kinds of crafts.

This group of early modelers might also have been more diverse than we remember. Al Kalmbach was a surprising visionary when it came to gender balance in the hobby and called for the inclusion of women as equal partners in Vol. 1, No. 1 of *The Model Railroader* in January 1934.

"A paper of this type must necessarily be somewhat of a cooperative effort. Material for it cannot be drawn out of thin air by the imaginative minds of the country's highly paid fiction writers. It must be furnished by the experiences of the thousands of men (yes, and even women) to whom model railroading is a precious hobby."

In addition to magazines and hobbyists, the 1930s saw some important model train manufactures enter the market. In 1932, William K. Walthers founded Wm. K. Walthers Inc. Walthers became a key player in the hobby's growth, and its name is synonymous with model railroad manufacturing and distributing. Perhaps most importantly in the days before the internet, Walthers' ever-expanding paper catalog was a resource for generations of modelers who religiously kept copies on their workbenches.

William K. Walthers also wrote and published the *Handbook for Model Railroaders* in 1937. It was a wonderful primer to model railroading, and used by many in their hobby journey.

With modelers, clubs, manufacturers, and publications in place, the hobby was poised to move forward. Yet one important hurdle remained, one which the fledgling model railroad organization took on straight away.

Hobby standards

It is important to recall that when the NMRA was founded in Milwaukee on

Sept. 1, 1935, the organization had five major goals:

- Establish standards.
- Promote fellowship.
- Facilitate the exchange of information and equipment.
- Hold national exhibits.

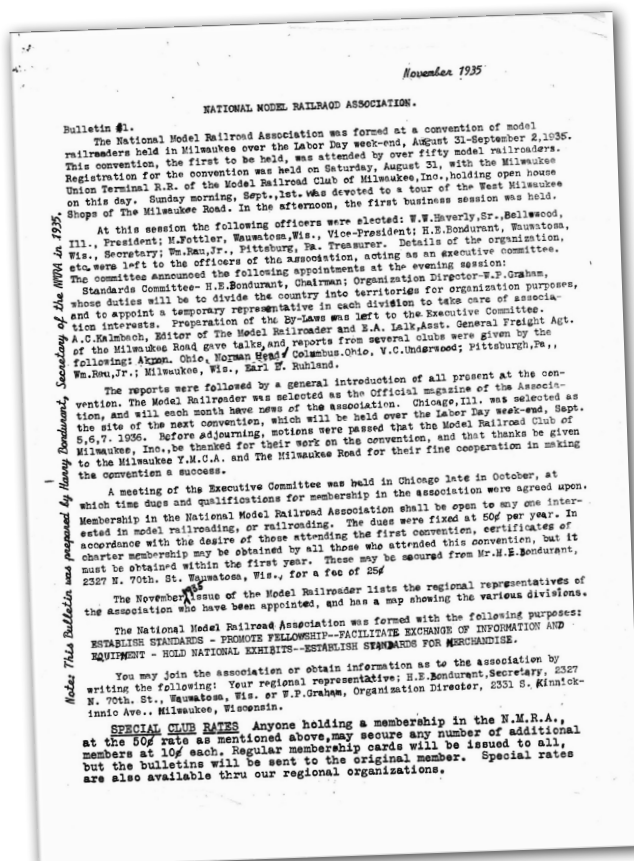
Model railroaders gathered in Milwaukee, Wis., over the Labor Day weekend in 1935 and agreed to create the National Model Railroad Association at this meeting on September 1. Firecrown Media collection

- Establish standards for merchandise.

Two of those five goals, the first and last, involved establishing standards.

It was obvious to advanced modelers at the time that the need for standards was paramount for the immediate future and growth of the hobby.

Today, when it's possible to purchase off-the-shelf locomotives that are now unit specific, the concept of buying or building track or models that might not be to scale or operate together can seem baffling or even



The first NMRA *Bulletin* was published in November 1935. It lists the founding officers of the club, the location of the 1936 convention, dues, and information about how the association would be organized. Courtesy National Model Railroad Association

incomprehensible. However, in the mid-1930s, there were few agreed upon standards among hobby manufactures, which made running trains from various brands together difficult, if not impossible. It was clear to active modelers at the time that this was the greatest problem facing the hobby and a serious impediment to its growth.

Al Kalmbach, who specifically called out for standards in the very first issue of *Model Railroader* in 1934, later said the following about the problems of standardization within the hobby during the 1930s:

“It is hard now to even imagine, or to recall, the complete dimension of chaos which existed prior to the NMRA. O Gauge was the predominate scale then, but there wasn’t even agreement on the exact gauge. Yes — everyone called it 1¼ inch [gauge — *Ed.*], but one manufacturer said 1¼ inch was to be taken on curves and the track slightly narrowed on the straight! Others said the 1¼ inch measure was on the straight track with the gauge slightly widened on curves. HO had three sets of scale and gauge dimensions.

“About flanges and flange-ways there was even less agreement. Wheel treads varied all the way from nearly scale to frankly tinplate ‘stay on the rails regardless of looks.’ Third rail was a nearly universal means of power distribution, but nobody agreed on where the third rail should be located, that is, how high above rail level, and how far from the running rail.”

The problems stemming from the lack of standardization for outside third rail illustrates the systemic and delicate nature of the issue within the hobby. Locomotives cannot operate without power/electricity and the inability to agree on where to place and the height of the third rail encapsulates the struggles model railroaders

faced in the late Interwar Period. The NMRA offered a path forward.

Beginning in 1935, the NMRA formed a Standards Committee under charter member Harry Bondurant, who was also the first secretary of the organization. The committee proposed a series of recommendations that were accepted, or at least not rejected out of hand, by most modelers and manufactures in the nation. These standards allowed interoperability on layouts among train products from across the world and provided a sound foundation that has supported the hobby ever since.

Once adopted, the next key issue in the 1930s was making this information available to modelers and manufacturers. Having this information would allow them to move forward and rebuild or convert track, wheelsets, outside third rail, and many other features that would allow interoperability, no matter the model or the layout. How that information was conveyed to everyone in the model railroad community over the next few years is not exactly known, although the NMRA freely offered its standards data to all who asked for it.

Most model railroaders were of course not yet members of the new organization, nor had they even heard of it. Access to the standards was possible through word of mouth, at club meets, and in books. The hobby press covered the NMRA’s standards as they developed, as well.

William K. Walthers addressed the standards question in his *Handbook for Model Railroaders* in chapter five, “Freight and Passenger Cars.” The NMRA standards were also reproduced on page 50, and the author noted the following:

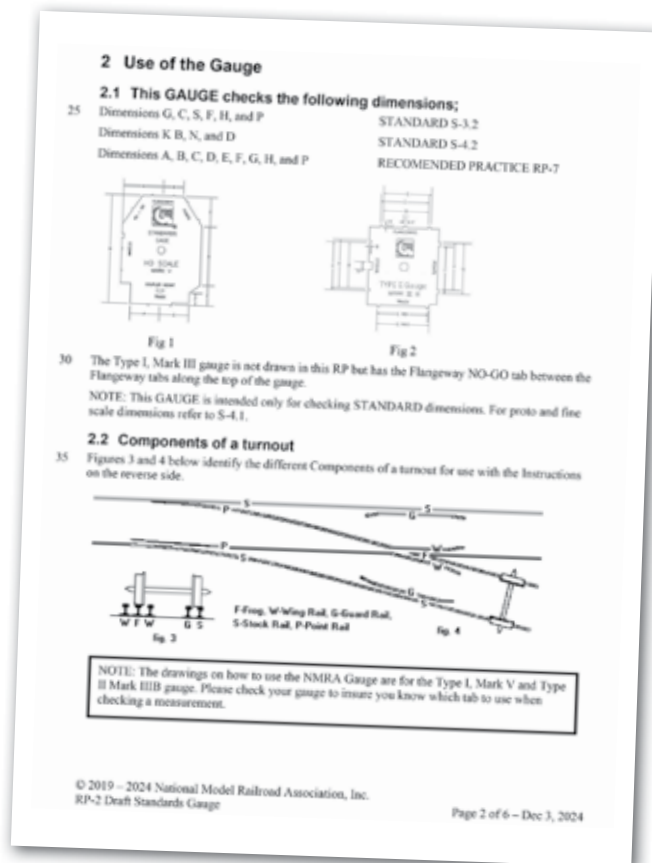
“Before you build or buy any cars, you should first establish a few fundamental standards so that all your cars

will work together. Now that the National Model Railroad Association has taken upon itself the task of fixing these standards, there will be less confusion in the future and cars made by different manufacturers will work together. It is a wise move to make these national standards your standards. If you do, you will be able to operate your trains on tracks with cars built by others. The interchange of operating is one of the biggest thrills in model railroading.”

Over the next 90 years, modelers, the NMRA, manufactures, and the model press grew together as the hobby developed. Today, model railroaders everywhere enjoy trains that would no doubt impress the early pioneers of the 1930s, all thanks to the standards developed by the NMRA. And work on those standards still continues as the hobby itself evolves.

While there has been progress, and detail has increased overall, the same skill set and determination that attracted people in 1935 are still key to bringing people of all ages and backgrounds into the hobby nearly a century later. Perhaps most importantly, model railroading is still fun! **MR**

Gerard Fitzgerald holds a Ph.D. in the history of technology, teaches at the University of Virginia, and is an active member of the James River Division of the NMRA. A former editor of the Layout Design SIG Journal, Gerard also helped found the Atlantic Coast Line-Seaboard Air Line Historical Society modeling magazine, and often gives clinics on rail-related historical topics at both NMRA and various Railroad Prototype Modeler meetings across the country.



This is an example of a National Model Railroad Association standards page, showing the Standards Gauge and components of a turnout. These sheets are valuable sources of information for modelers. Courtesy National Model Railroad Association

The end is in sight



Frankfort, Ind., had been a railroad hub since the narrow gauge days, and that dramatically increased when the Nickel Plate Road absorbed the Toledo, St. Louis & Western (Clover Leaf) in the Roaring '20s. It also bought the Lake Erie & Western, which paralleled the NKP through this small western Hoosier city, and it soon consolidated the division points of the two railroads in Frankfort.

In 1937, the NKP erected a 500-ton concrete coal dock at Frankfort. It still stands today, with its huge Nickel Plate Road herald defying two new masters to deny its heritage.

Steam's nemesis is idling quietly nearby as a pair of Alco Berkshires await their next assignments at Frankfort, Ind., in the mid-1950s. Steam ended west of Frankfort in July 1955 but hung on for another year between Frankfort and Bellevue, Ohio. The HO scale Berkshires on Tony Koester's layout are custom-painted Key Imports brass models; the RS3s are factory-painted models from Overland and Bowser.

Prototype photo by Darrell Finney, model photo by Ted Pamperin and Tony Koester

During the 1950s, the era my HO model railroad accurately depicts, Frankfort was an extremely busy hub from which four divisions radiated to the east and west. Schedules for hotshots like KC-44 and MB-98 allowed less than an hour for yard crews to swap cabooses, switch out shorts (cars for the local to distribute short of the next

division point) and proper (cars for in-town delivery), and tack on throughs, and for hostlers to service the Berkshire or Mikado locomotives, and get the symbol freights rolling east to Cleveland and Buffalo and on to markets in Boston and New York City. The activity never stopped; it was a 24/7 operation.

Send us your scenes

Have you modeled a scene based on a prototype photo? Send both the prototype and model photos, along with a brief description of the scene and the modeling techniques shown, to: Prototype to Model, *Model Railroader* magazine, 18650 W. Corporate Dr., Suite 103, Brookfield, WI 53045; or email to Contributing Editor Tony Koester in care of editor@modelrailroader.com.

Since we replicate all train movements in and out of Frankfort, it was important to model the engine terminal accurately too. One of the jobs is that of the roundhouse foreman/hostler, who has his hands full as he ensures the right type of power — steam for the St. Louis and Sandusky divisions, diesels for the Toledo and Peoria divisions — are ready to go.

I was fortunate to grow up along the NKP's St. Louis Division during the last four years of steam, so I witnessed

USRA light Mikados and the famous 700-class Alco- and Lima-built Berkshires switching in my hometown or racing westbound as they assaulted infamous Cayuga Hill on their climb out of the Wabash River valley. But I never got to visit the yard and engine terminal at Frankfort in the steam era.

Thanks to model railroad-ing, however, now I can. **MR**

Contributing Editor Tony Koester's Nickel Plate Road appeared in December 2014 and November 2025 MR.



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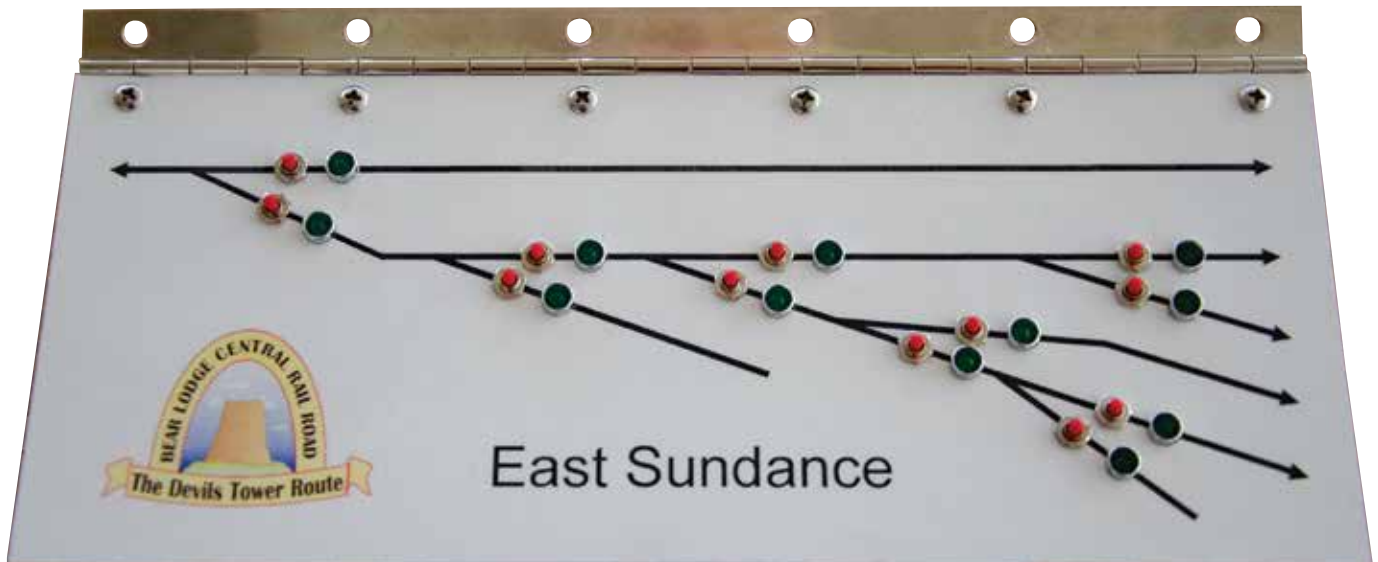
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Easy turnout control panels



Turnout control panels are hardly a thing of the past. Vic Worthington shares how he made this panel for his HOn3 Bear Lodge Central Rail Road.

Push buttons and indicator lights make it easy to line turnouts and check routes

By Vic Worthington • Photos by the author

Back in the glory days of direct-current (DC) operation, block control panels were commonplace on model railroads. When Digital Command Control (DCC) came along, these panels largely fell by the wayside. Though I don't miss all of those block switches, I must confess that I liked the old-style panels with their buttons and lights.

My HOn3 Bear Lodge Central Rail Road was built with walk-around operation in mind. Most of the turnouts are controlled manually at the local level using Blue Point switch machines and a homemade linkage and knob.

However, at one end of the layout I have a yard that's approximately 12 feet long by 18" deep. A 4-foot long peninsula sticks out about halfway along the yard. Though the peninsula allowed for some interesting track planning possibilities, it stuck out like a sore thumb when it came to operations.

I thought motor-driven machines would make operating in this area much simpler. I installed EasyDCC AD4 accessory decoders to drive Tortoise by Circuitron switch machines for operating the turnouts. Though the decoders worked, I had to enter as many as seven digits to line a turnout. I also had to remember each turnout's number.

Fortunately, the AD4 accessory decoders also support push-button control. I decided it was time to build one of those blinking light panels. Follow along as I share how I built a turnout control panel for my HOn3 Bear Lodge Central Rail Road.

Vic Worthington, 83, has been playing with trains for 70 years. He spends summers in Wyoming and winters in Arizona, where he has an HOn3 layout.

Step 1 Panel artwork

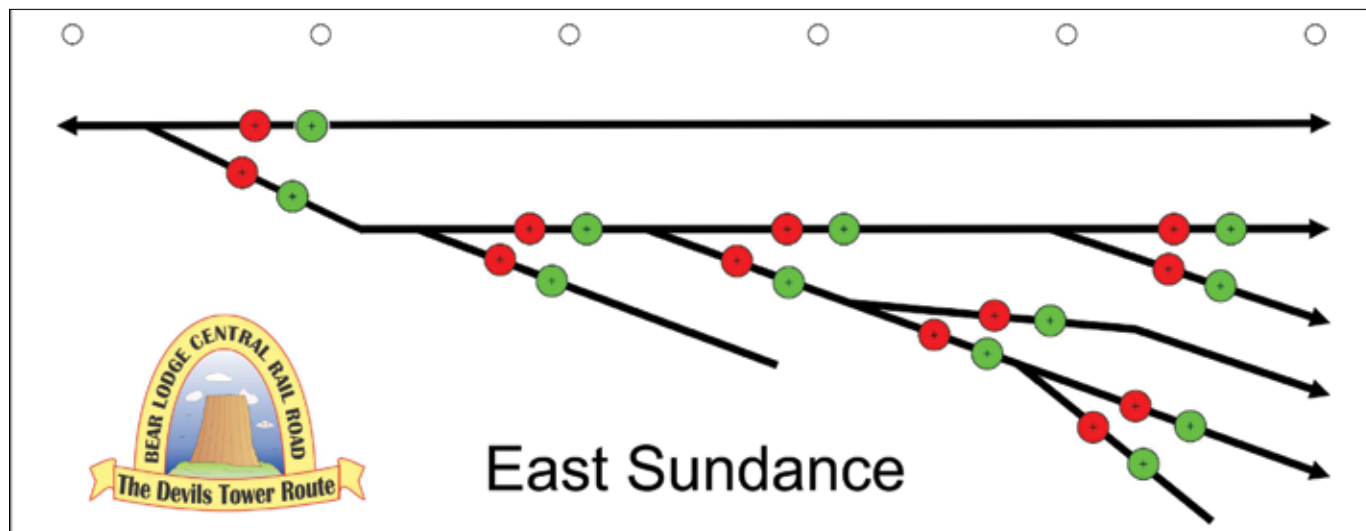
Modelers of a certain age remember when building a turnout control panel was a complex process that involved, among other things, painting and taping on the track diagram. I'm happy to report the process is much simpler today.

I used Corel Draw to create the track diagram shown on the next page. Though other drawing programs will probably work as well, I prefer Corel Draw because I can specify the actual dimensions I need for the various panel elements.

I turned to the line tool to lay out the track arrangement at East Sundance. Then I used the circle tool to show the locations of the push buttons and indicator lights. After placing a crosshair in the center of the circle, I combined them into a single object and used the duplicate function to make more.

I like to use the fill function to color the button circles red and the light circles green, but this isn't necessary. The crosshair made drilling the backing board very easy.

Step 1 Panel artwork (cont'd)



Finally, I added the railroad herald and location name below the track diagram, as you can see in the illustration above. I then used the rectangle tool to draw a box around

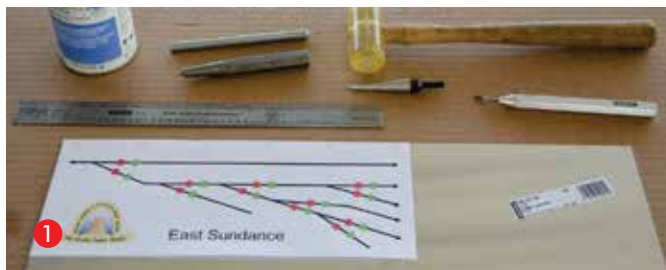
the diagram. This helped determine the size of the backing board. I also added hole locations for the mounting screws along the top edge.

Step 2 Punching and drilling

I printed out the panel diagram to check for accuracy. Once the diagram was to my liking, I coated the .025" sheet aluminum backing board with 3M General Purpose 45 spray adhesive and attached the diagram **1**. Then I trimmed the board to size.

Next, using the crosshairs as guides, I marked the locations of the holes I needed to drill with a center punch. I wasn't worried about damaging the diagram while drilling as I would replace it later with an overlay printed on better paper.

Once I'd finished drilling the holes with a step bit, I stripped off the remains of the pattern and removed the spray adhesive residue with Goo Gone. Then I used a General Tools deburring tool to clean up the holes and confirmed all of the components fit in their proper locations. I did a final cleaning of the aluminum with denatured alcohol **2**.



Step 3 Finishing touches

With the aluminum backing board cleaned and ready, I turned my attention to the final panel diagram. Prior to making a new printout, I deleted the rectangle outline and screw holes from the illustration.

I printed the new diagram on high quality, gloss photo paper. This produced a much sharper image. I chose a sheet of paper about 1" larger on all sides than the actual size of the overlay. This helped when aligning the panel board.

I let the new panel diagram overlay dry thoroughly. Then I used a sharp pin to pierce the diagram through the crosshairs on the circles closest to the vertical and horizontal edges (I didn't pierce all of the circles). I used the piercings to align the panel board to the diagram **1**, opposite.

Next, I covered a flat surface with waxed paper and placed the diagram on it, print side down. I then trimmed the waxed paper with a sharp hobby knife so that it was the

same size as the overlay. I used FrogTape to securely fasten the overlay to the flat surface.

I placed the panel board upside down on top of the diagram and used the piercings to aid in alignment. I made sure there was no tape between the overlay and the board. When the two items were aligned, I taped the top edge of the board to my work surface. The tape acted as a hinge to lift the board and apply the glue.

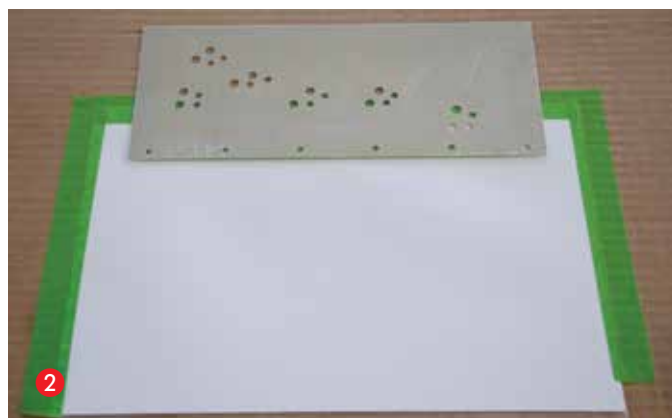
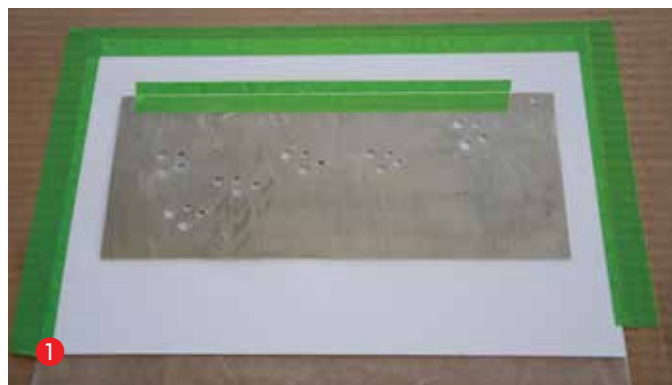
I checked several times to make sure the hinge was secure and that the board correctly aligned with the diagram when I folded it over. Once satisfied with the fit, I flipped the board over, coated the diagram with 3M General Purpose 45 spray adhesive ②, and set the aluminum backing board onto the overlay. I placed a weight on the aluminum for several hours while the glue dried.

Finally, I trimmed the diagram to the size of the board. Then I covered it with clear laminating film, which both protects diagram and makes the panel easy to clean. I used a piece of film larger than the panel so I didn't have to be exact when applying it.

Once the laminate was securely attached and I'd worked out any air bubbles, I used a No. 11 blade in a hobby knife to trim the film and open the holes for the lights and buttons.

Then I added the red push buttons and green indicator lights. I used the supplied screws to hold the piano hinge to the wood case. I switched to pop rivets to mount to the panel. The hinge provides access to the buttons and lights should any maintenance be necessary.

If you're looking to add a turnout control panel to your model railroad, I hope you give these techniques a try. **MR**



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Markers

My goodness, this issue's cover says December! Let's mark three occasions to wrap up 2025: A new program, a new book, and a poignant milepost.

OPSIG Achievement Program. The Operations Special Interest Group rolled out its Achievement Program (OPSIG-AP) in July. Crews fill many roles when they make layouts come alive during operating sessions: engineers, conductors, dispatchers, yardmasters, agent-operators, and more. How often do we hear people eager to join ask how they can start! Paul Weiss spearheaded the achievement program effort. He hit it out of the park when I asked what inspired him: "I thought about my personal journey from a solo modeler to an enthusiastic operator. Somebody had to show me a path."

Right on! We often pair someone who's green with an experienced hand. I won't forget the night I copied train orders for the first time. The person who coached me then, now an OPSIG-AP trustee, has been a good friend ever since.

OPSIG-AP aims to light the path with education and recognition. It names thirteen achievement categories. Most rely on sincere evidence of participation, but the "C&E" category lifts the bar. Conductors and engineers take a written exam that tests their ability to apply book knowledge of rules to typical model railroad operations.

Modelers who succeed in this and seven other categories earn a special "Operations Ninja" badge. Check it out: <https://opsig-ap.org>.

Jim Providenza, well-known for his HO scale Santa Cruz Northern layout and numerous articles published in *Model Railroader* and other hobby magazines, can add another bullet to his resume. *Life Along the Tracks* is his new Washington State University Press book, co-authored by Mike McLaughlin. [The book is currently available for pre-order at Ron's Books and other distributors. — Ed.] It's a first-person account of Mike's lifelong railroad career serving Great Northern, Rio Grande, and Rock Island, leading to transportation management. The book's cover, a compelling Phil Hastings photo of a Rock section gang heaving its motor car onto the rails, hints at his path. *Life* is an easy read; it's hard to put down because every chapter is a stand-alone short story.

Mike hired onto a Great Northern gang in the Seattle area in 1954. Long days on the business end of picks and shovels put him in envy of the

signal department. To his dismay, transferring to it taught him that signal maintainer helpers use shovels too, ditching to uncover or bury signal lines. He describes a certain allure of life in outfit cars, enduring the extremes of desert heat that scorched roofs and bitter cold that covered them with icicles.



Great Northern 2504, a P-2 class Mountain, crosses the Ballard Bridge in 1936. The scene begs modeling, especially how the boathouse and dock list at low tide. J. A. Turner photo, courtesy of Pacific Northwest Railroad Archive, JATGLoco_2504dBallardC1936

Turning its pages brings plenty to inspire modeling, too. The Seattle-area chapters about the Ballard Bridge and the Van Asselt Transfer ooze with detail. The bridge carried GN's double track main across the canal connecting Puget Sound with inland Lake Washington and Lake Union. The imposing lift structure opened and closed frequently to accommodate rail and maritime traffic.

The Transfer chapter describes South Seattle territory crowded by Northern Pacific, Union Pacific, Great Northern, Milwaukee Road, and Pacific Coast RR trackage. Highlights abound: Spokane Street Tower, Milwaukee's vest-pocket Stacy Street Yard and Pier 27 Barge Yard, and NP yard and engine terminal facilities.

Imagine a layout with such diverse features! Squeeze in an operating Ballard Bridge, something I've yet to see on a layout, and I'd mark up for the bridge tender job fast!

Finally, the milepost.

Writing "On Operation" has been a wonderful journey. Pondering this reminds me of the personal, detailed reply I received, postmarked from Kalmbach's legendary 1027 North 7th Street address. It answered questions I mailed when I was a teen entering the hobby. This makes me proud to find myself a member of the *Model Railroader* crew. The column treated me to new discoveries, new friends, and fond memories.

But "writing is hard," as former *Trains* editor Jim Wrinn snapped while I bumbled through my first feature for his magazine. You see, writing takes time and other obligations intrude. As such, I'm taking a sabbatical to discover how many Super Trees I can grow, maybe submit an occasional modeling article, perhaps build a bascule bridge.

So, dear readers, until the writing bug bites again, thanks for a good run. **MR**



**SQUEEZE IN AN
OPERATING
BALLARD
BRIDGE... AND
I'D MARK UP
FOR THE
BRIDGE TENDER
JOB FAST!
-JERRY**



The noise of a passing train drowns out the sound of the stream and the birds chirping in the trees. Contributing Editor Pelle Søeborg took the photo on his 2024 Midwest-inspired module, which consists of three sections with a total length of 8½ feet. This set of modules can be combined with his 2022 module set of the same length. Pelle added the clouds with Photoshop.





Rio Grande 454 is at Blest, Colo., on Eddie Carroll's Glenbrook Valley RR in Houston. The HO/HOn3 layout filled a double deck 3,000-square-foot second floor of the Carroll home. The late John Weiss inspired much of the narrow gauge portion. Retirement and a move took this inspiring scene away.

J. Stephen Sandifer 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) on a flash drive to: *Model Railroader*, Trackside Photos, 18650 W. Corporate Dr., Suite 103, Brookfield, WI 53045; or email them to us at editor@modelrailroader.com.



Colorado & Southern Extra 69 East, the Silver Plume Ore Extra, is en route to the smelter at South Denver on Doug Tagsold's 1:72 scale narrow gauge model railroad. Craig Wilson took the photo and added the falling snow with Photoshop Elements.



A westbound Norfolk & Western

4-8-0 M2c with a local freight is pulling into Arlington, W.Va., early on Christmas Eve during a light snow fall. Memories of trains from Christmas past run through the minds of the adults while the children hope Santa brings that special train set at the top of their list. Gary Hoover took this shot on his HO layout after temporarily adding some Woodland Scenics snow to the area.



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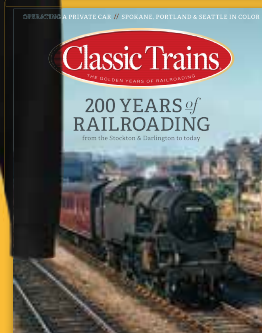
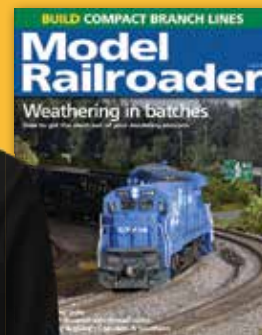
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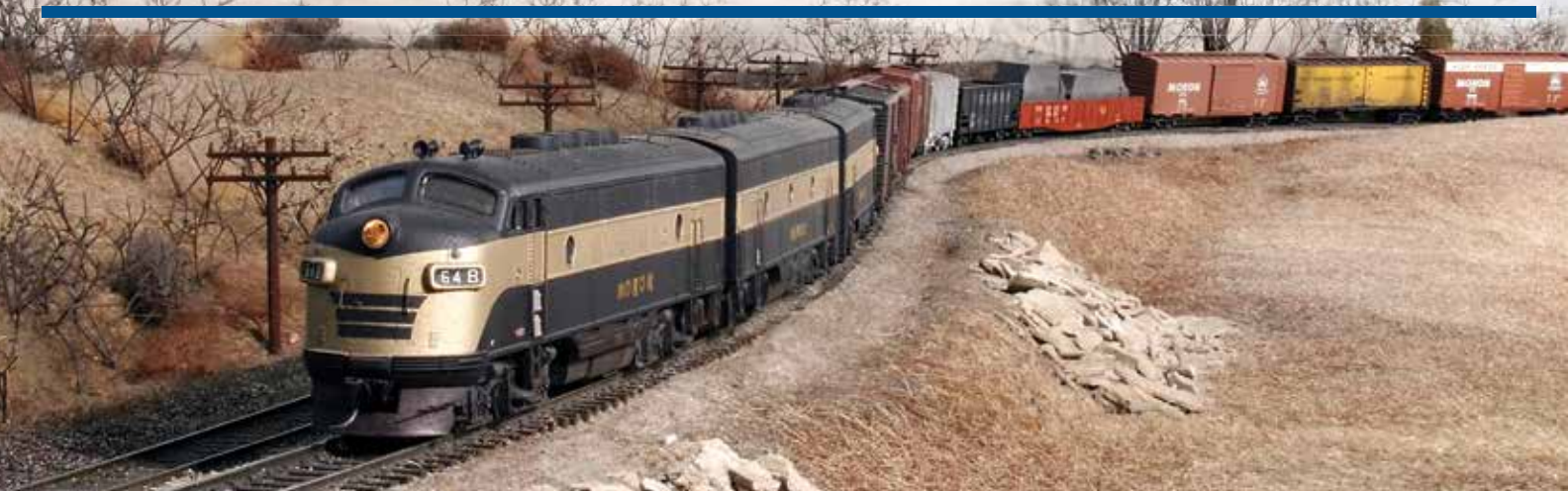


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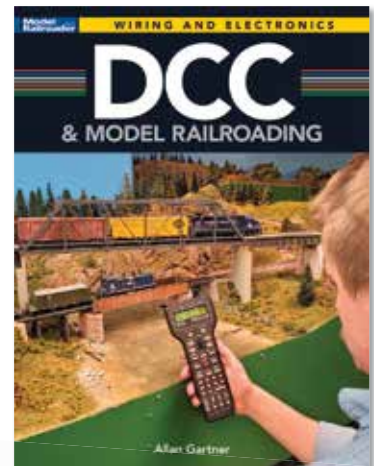
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Schedule of Events

CA, TURLOCK: San Joaquin Valley Toy Train Operators, Inc. Model Train Show. December 6 & 7, 2025. Saturday 10am-4pm. Sunday 10am-3pm. Admission: \$10, kids under 12 free with an adult. Operating layouts, vendors tables, free parking, food trucks. Stanislaus County Fairgrounds, 900 N. Broadway. Information: Jack Smith, 209-765-1354, www.sjvttoinc.com

CO, LONGMONT: Boulder Model Railroad Club 48th Annual Model Railroad EXPO. December 12-14, 2025. 10am-5pm. Boulder County Fairgrounds Exposition Hall, 9595 Nelson Road, Longmont, CO 80501. Adults \$8, Seniors \$5, Kids 12 and under FREE. Multiple scales, layouts, and vendors. Additional information, visit: bmrconline.org or email: bmrcepo@gmail.com

CO, LOVELAND: Rocky Mountain Train Show, November 29-30, 2025. The Ranch Events Complex, 5280 Arena Circle, Loveland, CO 80538. Saturday, 9am-5pm, Sunday 9am-3pm. 200+ sales tables, 50+ vendors, operating layouts, model trains of all scales. Admission \$10.00, 12 and under free. Free parking. 303-364-0274 www.RockyMountainTrainShow.com Information@RockyMountainTrainShow.com

FL, NEW PORT RICHEY: Regal Railways presents a Toy Train, Collectible and Hobby Show/Sale. Elks Lodge, 7201 Congress Street, New Port Richey, FL 34653. Saturday, December 20, 2025. 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.

FL, OCALA: "Trains for Christmas" Free train show November 8-9, 2025. Saturday 10am-4pm, Sunday 11am-4pm. Experience multiple layouts and participate in great raffles. We are a collection site for Toys for Tots. No vendors. NEW LOCATION: Marion Oaks Community Center, 294 Marion Oaks Lane, Ocala, FL 34473. Information, contact Bill Quast at 352-209-5422 or email wquast@gmail.com

FL, PALM BEACH GARDENS: 14th Annual Palm Beach Gardens Train & Toy Show presented by Derrick Wagner Memorial Scholarship Foundation. December 13 & 14, 2025. Saturday 9am-3pm, Sunday 11am-3pm. St Mark's Gymnasium, 3395 Burns Road, Palm Beach Gardens, FL 33410. Admission: \$7/adult, \$12/family, children under 12 Free. For information: Ken Johnson, 954-881-9730, may91@aol.com, or visit: DerrickWagnerFoundation.com

FL, PINELLAS PARK: Suncoast Model Railroad Club Train Show/Open House. Saturday, December 6, 2025. SHOW- New venue! Pinellas Performing Arts Center, 4951 78th Avenue N., Zip: 33781. 9am-3pm. Admission: \$8.00, Children \$3.00, under 11-free. Free parking. Tables: Event Planner, smrrclub@gmail.com, 727-523-1860. OPEN CLUBHOUSE- 12355 62nd Street North, Suite A, Largo, FL 33773. Admission: FREE. www.suncoastmrrc.com

IN, DANVILLE: Central Indiana Division-NMRA 18th annual Danville Train Show. Saturday, November 22, 2025. 10:00am-3:00pm. Hendricks County Fairgrounds, 1900 E. Main St., Danville, IN. Operating layouts, displays, door prizes, vendors, food. Free parking, \$3.00/adult, under 16 free. Dealer tables \$16.00 each. Contact: Dave Mashino at danvilletrainshow@gmail.com or 765-860-1560. More info at www.cidnmra.org

IN, LA PORTE: La Porte County Train Show and Swap Meet. La Porte County Fairgrounds Community Building, 2581 In-2, La Porte, IN 46350. Sunday, November 23, 2025, 9:30am-2:00pm (Chicago time). Adults \$5.00, youths 6-12 \$1.00, 5 and under free. Contact: Dave Novak at trains86@myyahoo.com or 219-778-3195.

MA, MARLBOROUGH: Hub Division NER/NMRA. Royal Plaza Trade Center, 181 Boston Post Road West (Rte. 20 West), Marlborough, MA. Saturday December 6, 2025, 10am-4pm, and Sunday December 7, 2025, 10am-4pm. Admission: \$15.00; Children under 12 and Scouts in Uniform FREE. Admission is good both days. Information: Ray, 781-910-9581; e-mail: TE.info@hubdiv.org; website: www.hubdiv.org

MI, BELLEVILLE: Rails on Wheels & Division 6-NMRA's North Central Region, presents the Southeast Michigan Model Railroad Show/Sale. November 23, 2025, 10am-3pm. Early Bird 9am. New Location: Wayne County Community College's Ted Scott Campus; 9555 Haggerty Rd., 48111. Admission: \$5, Early Bird \$10. Tables \$25. Operating Layouts, LEGO layout, Vendors, Clinics. Contact: John Young, 517-449-9063, cdjhyoung@yahoo.com

OH, MASSILLON: CJ Trains Winter Train and Toy Show. Massillon Knights of Columbus Hall, 988 Cherry Road NW, 44647. Sunday, December 14, 2025, 10:00am-3:00pm. Admission: \$5.00, 12 and under FREE. \$25/dealer table, 152 - 8' dealer tables. Jon Ulbright, PO Box 446, Wooster, OH 44691, 330-262-7488, cathijon@ssnet.com www.cjtrains.com

SC, CHARLESTON: Charleston Area Model Railroad Club Show. December 13-14, 2025. Saturday 9am-4pm and Sunday 11am-3pm. Citadel Mall, 2070 Sam Rittenberg Blvd., Charleston, SC 29407. Enter at the Food Court. Three large operating layouts (N, HO, & O). Free parking. Admission: \$10. Kids under 13 get in free. www.camrc.club for more information

TX, HOUSTON: Houston Area Model Train Show, November 15-16, 2025. Saturday 10am-5pm, Sunday 10am-4pm. Adults \$7, 17 and under free. All scales, operating layouts, club/museum displays, table sales and more. Pearlard Knights of Columbus Hall, 2320 Hatfield Rd., Pearland TX 77581. More information at http://houstonttrak.org or by email info@houstonttrak.org. Sponsored by Houston Area T-TRAK Association, Inc.

VA, FREDERICKSBURG: Rappahannock Model Railroaders 28th Annual Christmas Model Train Show, December 13-14, 2025. Operating G, O, S, HO, N, Z and LEGO train layouts. Vendors, Santa, train set raffle and kids area. Saturday 9am-5pm. Sunday 10am-4pm. Adults \$10. Youth 13-17 \$5. Under 13 free. Eagles Lodge, 21 Cool Springs Road, Fredericksburg, VA 22405. Info: www.rmrrailroaders.com

WA, KENT: Boeing Employees' Model Railroad Club Annual Swap Meet. Saturday, November 8, 2025, 9:30am-4:00pm. Kent Commons Community Center, 525 4th Avenue North, Kent, WA 98030. Admission: \$10.00, under 16 free. Ed Sherry or Caleb at: seattleandnorthcascades@gmail.com

WI, LA CROSSE: The 34th Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. Saturday, January 24, 2026. 9:00am-3:00pm. Admission \$8.00, 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.org

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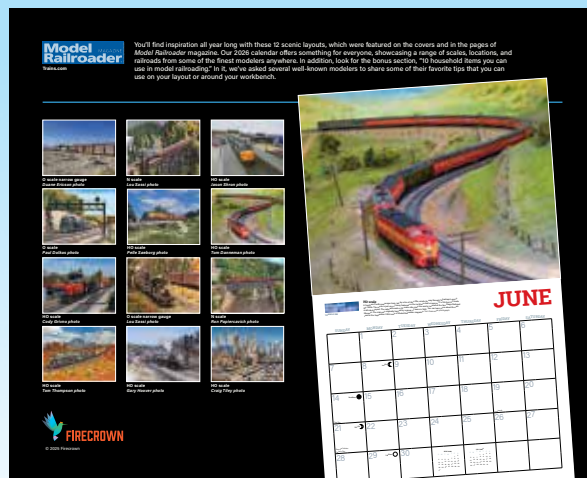
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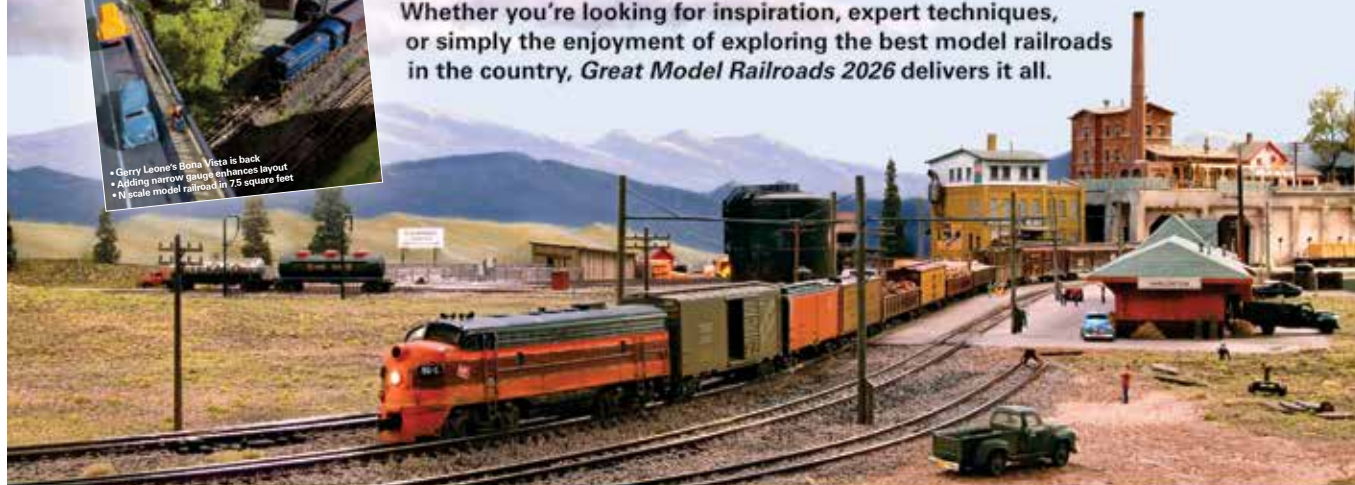
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Model MAGAZINE Railroader



Next Issue

Meet the East Troy Industrial Park

Our new project railroad imagines a branch of the Milwaukee, Racine & Troy in one of its namesake towns.

Visit sunny southern Canada

The Sun Parlour Lines takes us back to when the Chesapeake & Ohio and New York Central crossed southern Ontario.

Plus more:

- Learn how to build a ballasted deck girder bridge.
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Who needs a train?



The curve of the overhead bridge provides a perfect frame for this scene on Neal Schorr's O scale railroad. Also see MR's September 2024 Prototype to Model section. Neal Schorr photo

I hope that by now you have noticed MR's Prototype to Model section, which runs in even-numbered months, including this issue. The basic idea is to send us an interesting color or black-and-white prototype photo and then a model image depicting the same scene as closely as possible.

Often the hard part is obtaining a reasonably high-resolution prototype photo. This usually means a scan of an original glossy photographic print or color transparency. If the image you have shows evidence of being a halftone — that is, it comprises a lot of tiny dots of various sizes — that probably won't work. Then it's time to track down sources that may have original prints, negatives, or transparencies.

Up to now, we've featured scenes with or without trains in them — more on the latter in a moment. But there's no reason a car or locomotive against a plain background, much like a steam locomotive

builder's photo, wouldn't be a good candidate for the Prototype to Model section of MR if you have a similar prototype photo.

End of commercial. Now let's discuss aesthetics. In the September 2024 MR, we published a beautifully crafted and photographed depot scene on Neal Schorr's O scale Pennsylvania/Conrail layout. There wasn't a train in sight in the prototype photo, so there wasn't one in the model photo, either.

And that's my point: We're so enamored with the action inherent in our trains — something the folks who build plastic planes and ships must envy — that we don't stop to smell the roses with or without our cameras. It takes longer to settle a ready-built depot into its home on the railroad than it does to plop a ready-to-run locomotive onto the rails, but guess which one will get all the attention because it moves and makes noises: "Look at me!"

I wrote in a previous column about being carried back to the 1950s one night when I finished the scene where the Nickel Plate Road crossed the Chicago & Eastern Illinois in my then hometown, Cayuga, Ind. As I was leaving to turn off the lights, I glanced back at the newly completed scene with crossing diamonds, tower, depot, and small hotel. In a flash, I was mentally transported back to that time and place, yet no trains were moving, not a sound was forthcoming. The visuals were enough to create a time machine that lasted for several precious seconds.

Neal said something similar about the photo we published last September: "It is just the mood of that picture that makes it so special. The two elements that make it

so meaningful are the framing provided by the silhouette of the concrete arch bridge and the sky."

The accompanying photo was taken from the opposite side of the arch bridge. In many ways, I think it is even more aesthetically powerful. The arc of the bridge makes a frame for the scene lacking in the other photo. It wasn't a candidate for Prototype to Model, however, since Neal didn't have an equivalent prototype photo. But it is a wonderful portrait of Neal's model railroad, and it lacks a train, which in fact would be a distraction.

So with or without your camera, take another look around your railroad for views like this one that you may have missed or underappreciated for the art they are. You may find that a few adjustments or additional details will improve them, but I'll wager there are several of what photographers call "angles" you've overlooked that will add a sense of depth to your railroad. And visitors may spot potential photos for you as well.

If you're a prototype modeler, go through your collection of publication-quality prototype photos and transparencies and see whether

there are some angles you can recreate on your model railroad. If you're a prototype-freelancer, there may be a scene that you've borrowed from a railroad that will lend itself to copying from a prototype photo. And please consider sharing them with us. **MR**



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CPKC Engine #9375 was the first to receive this brand-new livery after the company conducted an internal survey. This new model will feature an updated version of the Canadian Pacific beaver logo and feature the back trim/gold stripes of the Kansas City Southern railroad.



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