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Model Railroader

March 2024
Trains.com

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RAPIDO

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PRESENTS



A Step Back in Time to the Golden Age!



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AIM HIGH!



Walters 2024 National Model Railroad Build-Off launches March 1! New categories this year include Weathering, Graffiti Art, and Kitbashing, or you can go the distance with a diorama in the Freestyle category. Ace a victory for bragging rights and cash prizes up to \$2000! All entries due by July 1, 2024, with winners announced in August.

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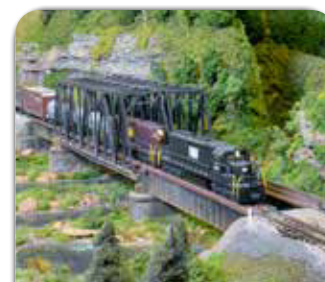


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Matching paint



On the cover: A Santa Fe reefer train rolls through the Arizona desert on Tom Thompson's HO scale layout.
Tom Thompson photo



Next issue

In April, visit two N scale layouts, one in Montana and one in Appalachia. Plus, we scenic our Free-mo project layout, Cheryl Sassi scratchbuilds spruce trees, and more!

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The Green River layout in HO scale

Hilton Glavish's Green River layout models Union Pacific's Wyoming Division in the 1950s with stunning scenery. The 33 x 44-foot layout depicts the line from Green River to Echo Canyon, Wyo., with a mainline run of 375 feet. Not only does the layout capture the scenic details of the region, but the layout was built for operations, showcasing UP's Big Boys, turbine locomotives, passenger trains, and more. Get an inside look at this impressive layout on Trains.com.



Building a T-TRAK module

In this all-new video series, David Popp explores the T-TRAK modular system for building tabletop model railroads. T-TRAK offers a portable and space-efficient solution. David gives a background on the module system, takes a look at two modules, and walks you through the whole construction process. Along the way, learn tips and tricks for building these wood kits. Scan the QR code above with your smartphone's camera to watch this and other T-TRAK videos on Trains.com Video!



Railroads for beginners to model

Anyone beginning their first model railroad has a lot of decisions to make. One of the biggest decisions is what railroad to model. Our editors offer their top picks for railroads, eras, and locations to help you start on your own layout. Each editor chose a railroad (or specific section of a railroad) that a beginner could model on their first or second layout, based on modeling difficulty and availability of products. Why did Bryson choose the Detroit, Toledo & Ironton? What is the New York & Long Branch? Why should you model either of these railroads? You'll just have to read to find out.



Rapido Trains UK Titfield Thunderbolt deluxe train pack

In honor of the 70th anniversary of the film *The Titfield Thunderbolt*, Rapido Trains UK produced a commemorative train set depicting the train featured in the movie. David Popp takes you through the movie and the models, showing how each piece of the train fits into the storyline of the film. In addition to the set, David looks at the extra pieces of rolling stock that are available separately. Fans of the movie and modelers alike will be quite entertained by this unusual review.

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(0001203)

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Why we weather our models

Weather or no? While we're not on the New Haven, the question of weathering is a timeless one.

Looking back over our 90 years, John Allen is often credited with championing what we call weathering in articles on his Gorre & Daphetid model railroad. But a look at the *Model Railroader* Archive, aided by searching through the rrmagazineindex.org, showed me that even in the first few issues, the subject of weathering had come up.

So what is weathering? If you've been in the hobby for a while, you're familiar with the term, and it doesn't take much thought to figure it out anyway. But just so we're all on the same page, weathering is painting and finishing a model so it appears that it has been left out in the elements through all sorts of weather.

Many of us want to re-create the buildup of dirt, the breakdown of rust, the fading from the sun's rays, and the effects of wear and tear on our models.

John Allen was famous for adding splotches of pigeon dung on the roofs of his buildings. A little dab of white paint, and maybe a model bird or two on the peak of the roof, and you're good.

Another modeler famous for his weathered structures is George Sellios. His company, Fine Scale Miniatures, offered craftsman kits of weather-beaten models, often appropriate for the Depression Era. His layout, the Franklin & South Manchester (notice the F&SM initials) is a tour-de-force of gritty, urban railroading.

Why should we weather our models? Adding weathering effects helps to make our

models look more like the real world. And weathering is a matter of degrees. When railroads were prosperous, equipment was kept clean and trash was picked up. As profits faded in the 1960s and '70s, maintenance was deferred and dirt and grime built up. The amount of weathering helps tell the story of the railroad we're modeling.

Adding weathering also allows us to take ready-to-run models and make them our own. No two modelers will use exactly the same materials and techniques.

Some folks look at adding paint or chalk powders to a model with some trepidation. Jumping into the weathering end of the pool on a new steam engine costing hundreds of dollars is certainly something to think about.

That's why many articles on weathering suggest



starting with inexpensive models, techniques that are more forgiving, or both.

In this issue, we have two articles about weathering. One offers general tips and techniques, and the other gives readers step-by-step instructions for what might be their first weathering job.

Go ahead and jump in, the water's fine!

Model Railroader

Model railroading is fun!

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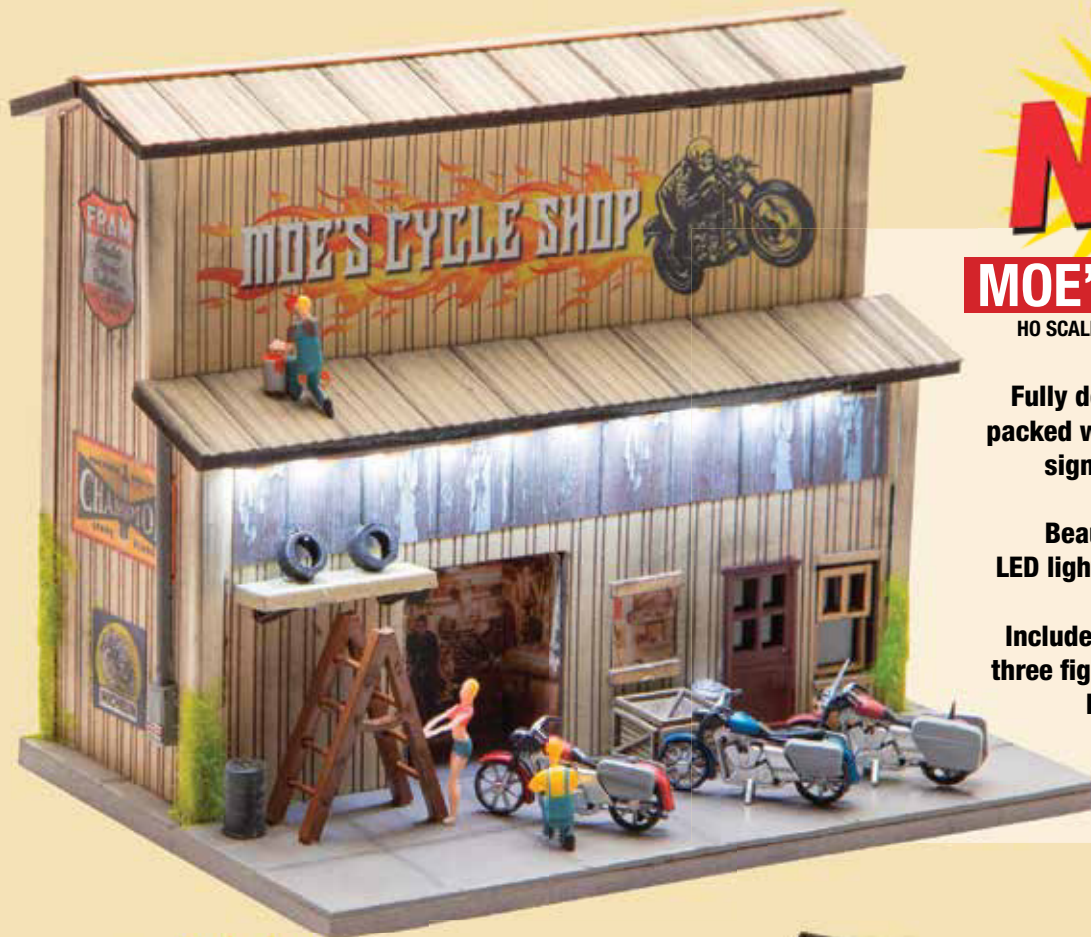
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HO scale



Canadian Pacific D10 4-6-0 steam locomotive. Rapido Trains offers this model decorated for Canadian Pacific (freight and passenger versions), Dominion Atlantic, and Quebec Central in one to nine road numbers per scheme. The 4-6-0 is also available painted black but unlettered. The locomotive, part of Rapido's Icons of Canadian Steam series, features road-

number-specific details; blackened metal wheels and driving rods; and working head, marker, and classification lights. The HO scale model has a minimum recommended radius of 22". Direct-current models are priced at \$499.95. Versions with Digital Command Control and sound sell for \$599.95. Rapido Trains Inc., 905-474-3314, rapidotrains.com

HO scale locomotives



• **Electro-Motive Division GP7 diesel locomotive.** Amtrak, Chicago & North Western (GP7R), Burlington Northern, Erie Lackawanna, and Precision National. Two to three road numbers per scheme; also available undecorated in three body styles. Light-emitting diode lighting featuring xenon strobe or beacon as appropriate. Direct-current

model, \$219.99; with DCC and sound, \$319.99. Genesis line. Athearn Trains, 800-338-4639, athearn.com



• **United States Railroad Administration 2-8-2 steam locomotive.** Nickel Plate Road, Rock Island, Seaboard Air Line, Union Pacific, and Western Pacific. One road number per scheme. Light-emitting diode directional

lighting. DCC-ready with 8-pin socket. Metal drivers. \$359. Bachmann Trains, 215-533-1600, bachmanntrains.com

HO scale rolling stock



• **1937 Association of American Railroads boxcar.** Monon; Canadian National; Canadian Pacific; Chesapeake & Ohio; Delaware, Lackawanna & Western; Erie; Minneapolis & St. Louis; New York, New Haven & Hartford; New York Central; Nickel Plate Road; Seaboard Air Line; Soo Line; Southern Pacific; Southern Ry.; and Western Pacific. Multiple end, roof, and door variations. Single car, \$54.95; six-pack, \$329.70. Rapido Trains Inc., 905-474-3314, rapidotrains.com

HO scale



Pullman-Standard PS-1 40-foot boxcar. This commemorative boxcar is decorated for the 1,000th issue of *Trains* magazine. The car (\$44.99) has Milwaukee, Racine & Troy reporting marks and features an injection-molded plastic body, positionable 6-foot doors, factory applied ladders and grab irons, see-through running boards and brakewheel platform, and full brake assembly. The HO scale boxcar, produced by Kadee Quality Products Co., is available from the Kalmbach Hobby Store, KalmbachHobbyStore.com



• **American Car & Foundry 50-foot boxcar.** Montana Rail Link and Berlin Mills Ry. Factory-installed flashing rear end device operates on direct current and DCC layouts. \$65. Bachmann Trains, 215-533-1600, bachmanntrains.com

HO scale



Electro-Motive Division SW1500 diesel locomotive. The latest arrival from Athearn is lettered for Wisconsin Central, Burlington Northern, Conrail, St. Louis Southwestern (Cotton Belt), and Western Pacific in three road numbers per scheme. The end-cab switcher is also available undecorated in two versions. This is the first time that the locomotive is available with light-emitting-diode lighting. The HO scale SW1500 also has a full cab interior. Direct-current models with a 21-pin NEM connector are priced at **\$219.99**. Versions with a dual-mode SoundTraxx Tsunami2 sound decoder sell for **\$319.99**. Athearn Trains, 800-338-4639, athearn.com

In Memoriam

Mark Gurries, 1961-2023

Mark Gurries, 62, passed away on November 25, 2023, after health complications. A noted expert in the use of NCE's DCC system, he hosted a website explaining DCC topics. Former DCC Currents columnist Allan Gartner spoke highly of Mark: "Mark explained technical DCC issues in a manner that could be understood by the average modeler. He had a hand in shaping decoder programming software in what would become DecoderPro. He was also a primary contributor on the NCE DCC groups.io forum."



Plastic parts molded in light ivory, concrete, medium gray, light gray, and clear acetate. \$84.98. Walther's Cornerstone. Wm. K. Walther's Inc., 414-527-0770, walther's.com

HO scale details and accessories



• **Chicago & North Western Electro-Motive Division GP7R detail kit.** Kit includes first generation rebuilt roof access hatches, switch brooms, sand fillers, walkway equipment box, two strobe light options, short m.u. stand, exhaust stack, Mars headlight, and ratchet hand-brake. Designed to fit newer Walther's shells. Includes instructions. Shell not included. \$25. Gotham Rail & Marine, gothamrailmarine.com



• **CIMC 53-foot reefer container.** Tiger Cool Express, Alliance Shippers, CR England, Go 2 Logistics, Hub Group, J.B. Hunt, KLLM Transporters, and Marten. Stackable with other brands of 53-foot

Continued on page 15



• **Bethlehem Steel 3,350-cubic-foot capacity quad coal hopper.** Wisconsin Central, Clinchfield, Louisville & Nashville, and Seaboard System. Four to 24 road numbers per scheme. Multiple body styles with correct bolster post/detail variations, roping plate versions, and top chord corner cap options. \$52.95. Tangent Scale Models, 828-412-3886, tangentscalemodels.com



• **Milwaukee Road rib side caboose.** St. Maries River RR and Milwaukee Road. Multiple road numbers per scheme. Also available undecorated. Ribbed-side body with coal or oil stove as appropriate. Factory-installed wire grab irons, railings, and ladders. \$59.98. Walther's Proto. Wm. K. Walther's Inc., 414-527-0770, walther's.com



• **Pennsylvania RR H21 hoppers.** Pennsylvania RR. Also available undecorated. Multiple road numbers available.

Body subclass variations including center sill, sides, ends, and details. K or AB brake systems as appropriate. Full inside and outside rivet detail. Single car, \$54.95; three-pack, \$164.85; six-pack, \$329.70. Rapido Trains Inc., 905-474-3314, rapidotrains.com



• **Pressed Steel Car Co. 41'-6" drop-bottom gondola.** Northern Pacific (1940 and 1966 schemes). Multiple road numbers per scheme. Semi-scale metal couplers. Detailed interior and under-frame. Single car, \$54.95; three-pack, \$164.85; six-pack, \$329.70. Rapido Trains Inc., 905-474-3314, rapidotrains.com

HO scale structures



• **Modern furniture factory kit.** Two-story main building with front office, and truck and railcar loading and unloading areas. Separate lumber storage building with interior racks. Large dust/sawdust collector. Parts to build detailed electrical transformer, vents, and four roof-top air conditioners included. Separate doors and windows.

Broadway Limited HO scale EMD GP35



An Electro-Motive Division GP35 has joined the Paragon4 and Stealth product ranges from Broadway Limited Imports. The second-generation diesel features railroad-specific details, cast- and etched-metal parts, and a factory-painted and installed crew figure.

Electro-Motive Division produced the GP35 between October 1963 and January 1966. The four-axle road locomotives were equipped with a 16-cylinder 567D3A diesel engine rated at 2,500hp. During the course of the production run, EMD produced more than 1,300 units.

Our sample is decorated as Chicago, Burlington & Quincy No. 992, part of the railroad's 978 through 999 series. The 992 was built in August 1964. The unit became part of the newly formed Burlington Northern fleet in March 1970, renumbered 2538. On Dec. 9, 1972, the locomotive was involved in a wreck in Lava, Ore. Burlington Northern scrapped the 2538 in February 1973.

The BLI GP35 has an ABS body with a die-cast metal chassis. The front and rear pilots on the CB&Q model are fitted with footboard pilots and factory-installed plastic m.u. hoses, trainline hoses, uncoupling levers, and footboard handrails. The handrails and stanchions are also plastic; the grab irons are formed-wire parts.

Long hood features include metal lift rings and a cast brass three-chime air horn. The dynamic brake and radiator fans are multi-piece assemblies with a plastic housing, etched-metal screen, and separate fan blades.

The CB&Q model we received is neatly painted in the railroad's Chinese Red and gray scheme. Placement of the lettering, herald, and stripes match prototype photos I found online.

There were a few detail discrepancies between the model and the full-size 992. The prototype had three-latch engine compartment doors, not seven as on the model. There was also a step guard in front of the battery box on the engineer's side, which was omitted on the model. The handrail was attached to the step guard, not the sill.

Prototype drawings of the EMD GP35 were published in the 1966 *Car and Locomotive Cyclopedica of American Practice* (Simmons-Boardman Publishing Corp.) The BLI model closely follows the listed dimensions.

I tested our sample, equipped with a dual-mode Paragon4 sound decoder, using an NCE PowerCab. At step 1, the model moved at 3 scale mph. The four-axle locomotive achieved a top speed of 76 scale mph at step 28. The full-size engine had a top speed between 71 and 83 mph, depending on the gear ratio.

The built-in capacitor pack helps the locomotive operate over dirty track and dead spots. When I lifted the model off the tracks, the sounds and lights stayed on for six seconds.

Next, I tested the GP35 on our Wisconsin & Southern and Milwaukee, Racine & Troy staff layouts. The unit did a great job handling a short train switching industries on the WSOR. The road switcher muscled 12 50-foot boxcars up the 3 percent grade between Williams Bay and Skyridge.

The Electro-Motive Division GP35 was a popular second-generation diesel, with examples still in service today. Broadway Limited Imports has done a good job capturing the lines of this 2,500hp engine in HO scale. If you model any time between 1963 and today, you'll want to check out this road locomotive.

— Cody Grivno, senior editor

Facts & features

Price: With dual-mode Paragon4 sound decoder, \$399.99; Stealth series (direct current with factory-installed speaker but no sound), \$299.99

Manufacturer

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

Era: August 1964 to early 1970s (as decorated), October 1963 to present (varies depending on scheme)

Road names: Chicago, Burlington & Quincy; Atchison, Topeka & Santa Fe; BNSF Ry.; Chesapeake & Ohio; CP Rail; New York Central; Pennsylvania RR; Southern Ry. (high short hood); Southern Pacific; and Union Pacific. Low short hood unless noted. Two numbers each in Paragon4 series, one number in Stealth series. Also available undecorated.

Features

- Correctly gauged metal wheels
- Kadee-compatible metal couplers, .030" high (front) and .010" high (rear)
- Minimum radius 18"
- Operates on codes 70, 83, and 100 rail
- Weight: 14.4 ounces

Otter Valley HO scale bulkhead flatcar



The FreightCar America (FCA) 52-foot, 100-ton bulkhead flatcar with side stakes is the third HO scale freight car released by Otter Valley Railroad, a hobby shop located in Tillsonburg, Ont., Canada. Features on the newly tooled model include an injection-molded plastic body, die-cast metal underbody, and trucks with rotating bearing caps.

We received two samples, Canadian National No. 200149 with Duluth, Winnipeg & Pacific reporting marks and International Railcar Services Inc. (CWLX) No. 200005. The models are based on prototypes built by FreightCar America under order 160020 between February and April 2013.

The cars, built for CN, were assigned DWC reporting marks and numbered in the 200000 through 200149 series. Some of the cars from this group became part of the International Railcar Services fleet in the early 2020s. The full-size cars are mainly used to transport pipe for oil fields and oil production.

The Otter Valley Railroad bulkhead flatcars have injection-molded plastic bulkheads, side sills, and side stakes. Five wire grab irons are attached to both sides of the bulkheads. The underframe-mount stirrup steps are formed metal parts that fit into openings in the bottom of the side sills.

The plastic bulkheads are smooth on the front, simulating the metal face found on the full-size cars. The opposite side features four horizontal braces. An inset plastic casting contains the corner posts, ladder stiles, molded ladder rungs, and a single horizontal brace. The end posts are notched to fit over the four horizontal braces.

Etched-metal crossover platforms are attached to a plastic shelf above the coupler on both ends. Formed wire crossover handrails, threaded through a metal eyebolt, are located about halfway up the car end. Both bulkheads are capped with brass Z channel.

The underbody has a mix of plastic, die-cast metal, and formed wire construction. The stringers and crossties are molded into the underbody. Much of the 3.3 ounces of weight comes from a die-cast metal part that includes the body bolsters, bolster block, center sills, cross-bearers, and draft-gear boxes.

The cars ride on screw-mounted Aurora Miniatures North America trucks with 36" metal wheelsets and rotating bearing caps. The models are equipped with body-mounted AuroraJanney scale plastic couplers without trip pins.

The paint on both of our samples was smooth and evenly applied. The lettering, herald, and stripe placement matched prototype photos. I especially liked the silhouette of the CN "wet noodle" herald on the CWLX car. The heralds were peeled off the bulkheads when the full-size cars were acquired by International Railcar Services.

There were a few minor paint and lettering issues. The white stripe should be on the front and both sides of the side stakes. In addition, the typeface for the reporting mark, road number, capacity data, and other stencils is incorrect. The model uses a font from the Helvetica family, while the prototype has lettering from the Futura family.

I then compared the models to prototype drawings from the FreightCar America website. The cars match or are

within scale inches of the approximate general dimensions listed.

I took the cars over to Jones Island on our Milwaukee, Racine & Troy staff layout for further testing. The cars performed without incident while being pushed and pulled in a train.

The Otter Valley Railroad bulkhead flatcars are well-executed models of a unique prototype. If you model the modern era, you'll want to add a few of these cars to your freight car fleet. — *Cody Grivno, senior editor*

Facts & features

Price: Single car, \$51.30; six-pack, \$278.47. Price may vary based on exchange rate.

Manufacturer

Otter Valley Railroad Inc.
37 Tillson St., Unit E
Tillsonburg, Ontario, Canada
N4G 0B7
ovrtrains.com

Era: 2013 to present

Road names: Canadian National in 12 road numbers and International Railcar Services Inc. in 13 numbers. Also available painted Mineral Red with data only.

Features

- 36" metal wheelsets, in gauge
- Body-mounted AuroraJanney plastic scale couplers at correct height on CWLX car, .015" too low on CN car
- Pipe load sold separately
- Weight: 3.3 ounces (1.7 ounces too light per National Model Railroad Association Recommended Practice 20.1)

Eastern Seaboard Models N scale gondolas



The Pennsylvania RR class G26 series

of mill gondolas has returned to the Eastern Seaboard Models product lineup. The G26 car, last released in 2009, is now joined by class G26A and G26C gondolas, as well as Norfolk & Western class G3 cars. All of the ready-to-run gondolas have screw-mounted draft-gear box covers, Dalman or National B-1 trucks as appropriate, and 33" metal wheelsets.

The Eastern Seaboard Models N scale mill gondolas are based on the PRR class G26 series of cars built at the railroad's Altoona, Pa., shops. Between 1930 and 1931, shop forces built 1,700 of the 65'-6" cars, numbered 439009 through 440709. Lehigh Valley acquired 50 cars from this class for its fleet. The class G26 riveted-side gondolas featured two exterior posts that ran from the bottom of the top chord to the sill in the fish-belly section. The cars were narrow compared to other rolling stock, making them well suited to navigating the tight curves and limited clearances of steel mills.

The Altoona shop forces built another 700 gondolas between 1940 and 1942, part of the railroad's class G26A. These cars, numbered 440710 through 441409, had an upgraded underframe and three full-height exterior posts in the fish-belly area. Norfolk & Western's class G3 cars were built to this design.

In 1966 and 1967, 300 G26 and G26A cars were rebuilt in Altoona. The G26C gondolas featured seven full-height posts in the fish-belly section. Gondolas from the G26 series lasted into the Conrail era.

The N scale mill gondola features a die-cast metal floor/underframe, injection-molded plastic sides and ends, and

positionable drop ends. The plastic sides are attached with glue. Handle the gondolas with care if you pick them up by the sides.

Molded details include rivets, grab irons, ladders, and stirrup steps. The brake gear (ratchet hand brake or Ajax brake wheel) is freestanding.

The die-cast metal floor has rivet detail that follows the center sills, body bolsters, and crossmembers. Single dimples between the rows of rivets simulate drain holes.

Details on the die-cast metal underbody include center sills, crossmembers, and body bolsters. There are several ejector pin marks on the underbody, but they'd be nearly impossible to see when the car is on the rails. The air reservoir, brake cylinder, and control valve, all fairly basic in appearance, are separate, factory-applied parts.

The solid-bearing trucks are pin-mounted. All but two of the cars in this run feature Micro-Trains Dalman solid-bearing trucks. The PC G26A gon and the PRR G26C car with a plain keystone herald use Micro-Trains National B-1 trucks. The trucks are fitted with ESMC 33" metal wheelsets.

We received samples decorated for LV (G26), PRR (G26A), and PC (G26C). All three models were neatly painted in their respective paint schemes.

I compared the LV and PRR models to elevation drawings of class G26 and G26A cars, respectively, that I found on the prr.railfan.net website. The dimensions matched or were within scale inches of the published data.

To see how the cars performed in an operating environment, I tested the gondolas on our State Line Route layout. I pushed and pulled the cars on the main line and through turnouts. The models comfortably navigated the 18" minimum radius curves and No. 6 turnouts.

It's neat to see Eastern Seaboard

Models not only bring back an existing model, but offer it in new variations, as well. Though the mill gondolas are decorated for Eastern roads, these cars could be found throughout the United States. The long cars would certainly add interest an N scale freight car fleet. — *Cody Grivno, senior editor*

Facts & features

Price: \$37.25

Manufacturer

Eastern Seaboard Models
P.O. Box 301
Waldwick, NJ 07463-0301
esmc.com

Era: 1930s to 1980s (varies by paint scheme)

Road names: G26: Lehigh Valley and Pennsylvania RR (circle keystone). G26A: Penn Central and PRR (circle and shadow keystone). G26C: PRR (plain keystone, Ajax brakewheel and ratchet hand brake versions) and PC. G3: Norfolk & Western (early and late schemes).

Features

- 33" wheelsets, in gauge
- Body-mounted couplers, at correct height
- Minimum radius: 12½"
- Weight: .6 ounces (.65 ounce too light per National Model Railroad Association Recommended Practice 20.1)

Continued from page 11

containers and chassis. Single containers feature sound. Single, \$39.99; three-pack, \$42.99. Operator line. ScaleTrains, 844-987-2467, scaletrains.com



• **Flatcar loads.** Industrial mix tanks, pressure vessel, and steel ladle. Fully painted. Steel ladle, \$49.99; pressure vessel, \$54.99; industrial mix tanks, \$59.99. ClassOneModelWorks.com, 816-243-0044, classonemodelworks.com



• **Safetrans System Corp. relay shed.** Represents modern 6 x 8-foot welded aluminum relay shed. Injection-molded

plastic kit with photo-etched lift rings. Jackson-Standard Models. 217-971-9817, jacksonstandard.com

N scale locomotives



• **Electro-Motive Division SD40-2 diesel locomotive.** Conrail; Atchison, Topeka & Santa Fe; Chicago & North Western; Electro-Motive Division Leasing; Milwaukee Road; and Norfolk & Western. Multiple road numbers per scheme. Road-number-specific details. Light-emitting diode lighting. Detailed cab interior. Direct-current model, \$149.99; with DCC and sound, \$254.99. Rivet Counter line. ScaleTrains, 844-987-2467, scaletrains.com

N scale rolling stock



• **Pullman-Standard PS-2 2893 three-bay covered hopper.** Southern Ry., Jack Frost, Milwaukee Road, New York Central, Southern Pacific, Weyerhaeuser, and Wabash. Multiple road numbers per scheme. Separately applied details including round roof hatches, brake wheel, and walkway. \$32.99. Add \$5 for Primed for Grime. Athearn Trains, 800-338-4639, athearn.com

Z scale locomotives

• **Electro-Motive Division SD40-2 diesel locomotive.** Union Pacific. Three road numbers. Prototype-specific details including brakewheel, dynamic brake, sunshades, trucks, radiators, and more. Directional light-emitting diode lighting. Price TBA. American Z Line, 614-764-1703, americanzline.com **MR**

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HO scale



89-foot flatcar with bi-level

shielded auto rack. This auto carrier is decorated for Norfolk & Western (with N&W flatcar); Atchison, Topeka & Santa Fe (with ATSF flatcar); Chesapeake & Ohio; Conrail; Illinois Central Gulf; Milwaukee Road; and Southern Pacific (with SP flatcar) in four road numbers per scheme. The HO scale car features a detailed flatcar body with Paragon II-style rack with side shields. Drawbars are included to negotiate 24" curves. Modeler-applied bridge plates are included. The car is priced at **\$44.98**. WaltherMainline. Wm. K. Walther Inc., 414-527-0770, walthers.com



In Jim Hediger's Workshop column from our February 2004 issue, contributor Rich Newmiller showed how he made these loads for his open-top cars, bundled together with graphic tape. Rich Newmiller photo

Model steel strapping for an open-top load

Q I'm putting together some pipe and lumber loads for flatbed and open gondola cars — basically, long straight pieces about half a car in length. What would I use to model steel strapping to hold the loads together? I work in HO scale.

Rich Bond

A The easiest and best-looking solution we have come across has to be graphic tape, also known as chart tape. This is a roll of very thin adhesive tape used by draftsmen and newspaper paste-up artists in the days before computer graphics. It comes in plastic or crepe (you want plastic), in multiple colors (you want black), and with or without a clear background (you want without). Look for it in your local office, art, or drafting-supply store, or online. One roll can band dozens of flatcar or gondola loads. Chartpak is one well-known brand.

For HO scale, get $\frac{1}{64}$ " thickness, which comes out in HO scale to about $1\frac{3}{8}$ " wide. This is wider than the steel banding on the prototype (typically $\frac{1}{2}$ " or $\frac{3}{4}$ "), but that's generally the thinnest you can get that doesn't have a wider clear backing to hold it together. Wrap it around your load, trim it so there's a very small overlap, then apply a dot of silver paint to the overlap area to represent the clip that holds the strapping together.

Steel strapping has been used since the 1910s to hold together wood crates, bales of cotton and wool, lumber, pipes, bricks, and more. Earlier loads might have been secured with rope, cable, chain, or wood cribbing. If you're modeling the diesel era, nylon strapping came about in the 1960s. That might be a use for those other colors of graphic tape.

equipment rosters, and the locations of interchanges with other railroads. (They don't list locomotives, though.)

The title, publisher, and frequency have changed over the years, but it's currently published quarterly by S&P Global. For more information, write to *Official Railway Equipment Register*, P.O. Box 3000, Northbrook, IL 60065. The annual subscription is \$379, which is a bit steep.

But as a hobbyist, you don't need a subscription; you only need one copy, for the year you model. Search online sources like Amazon.com, eBay, and specialty book vendors like Arizona Hobbies (arizonahobbies.com) and AbeBooks (abebooks.com) for "Official Railway Equipment Register." You'll find a lot of vintage copies for sale, as well as some reprints. You might not be able to find the volume for the year you model, but like the items on "The Price is Right," you want the one closest to your model year without going over.

Q I'm wondering how to control turnouts with momentary switches. Does a momentary SPDT (single pole double throw) toggle return to center off after it throws the switch machine? If so, will a light-emitting diode (LED) connected to the toggle stay on?

Ron Vowles

A It depends on how you wire it. A momentary single-pole double-throw (SPDT) switch routes current one way or the other when you're holding it and returns to its center-off position when released. An application you might be familiar with would be the switch that controls a car window.

A slow-motion "stall motor"-type switch motor, like a Tortoise by Circuitron, requires continuous voltage to keep it in position, in either direction. So a momentary switch won't work to control this kind of switch motor as it is. But you can use a momentary SPDT switch to control an old-fashioned solenoid switch machine or a servo-based machine, neither of which requires a continuous current.

However, a light-emitting diode (LED) won't light when the current cuts off, so an indicator light on this kind of switch machine takes separate wiring,

Send questions to Senior Associate Editor Steven Otte at AskTrains@Trains.com.

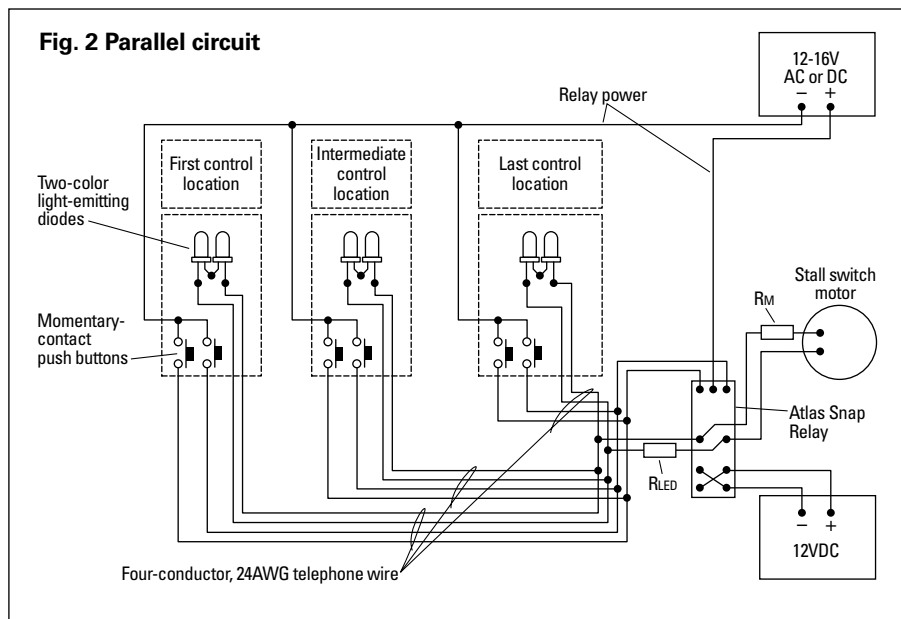
Q I'm inquiring about the Official Railroad Equipment Register (ORER). Where can you purchase it? Is it a subscription? And if so, how often is it? What is the pricing? How can it help model railroaders and/or railfans? What kind of information does it contain? Please let me know all the pros and cons. Thank you!

Ronan Schwartz

A The *Official Railway Equipment Register* is an industry reference that's been published annually since 1896 (at least, that's how far back our collection

in the David P. Morgan Memorial Library goes). We refer to it all the time when writing product reviews of rolling stock models.

The ORER is invaluable if you're compiling a freight roster of a prototype railroad in a particular year. This hefty publication lists all the working railroads in North America and their freight rosters by car number and Association of American Railroads (AAR) car type code. It also includes other information of use to modelers, including car dimensions, the address of the railroad's headquarters, a list of its officers, passenger

Fig. 2 Parallel circuit

In our September 2010 issue, author Bob Kingsnorth explained how to control turnouts with momentary switches from more than one location. This diagram shows how to wire the circuit. Rick Johnson illustration

and the switch motor will stay lit. It might be easier and cheaper to just control this kind of switch machine with a non-momentary switch.

However, there is one good reason you might want to use momentary switches to control a stall-motor-type switch machine, and that's so you can control a turnout from more than one location. For example, you might have a long yard that you want to be able to control from both ends. Or you might want to be able to line turnouts both from trackside and from a dispatcher's desk. In a case like that, you can control a switch machine with a relay and use momentary switches to trigger the relay from multiple locations. Author Bob Kingsnorth shows how to do this in an article in our September 2010 issue.

like a relay with its own power supply. (Conveniently, some switch machines, like those from Walthers Control System and Circuitron, have built-in outputs that can drive indicator LEDs.)

Similarly, you can use a momentary SPDT to trigger a relay or similar circuit that will power a stall-motor-type switch motor. In this case, an indicator LED hooked into the wiring between the relay

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Q I'm planning an HO scale switching layout designed to squeeze a maximum number of industries into a corner shelf. To capitalize on limited real estate, I intend to use low-profile backdrop buildings. I want a diverse freight car fleet, not just the ubiquitous boxcar. I'm looking at several Walthers buildings: River City Textiles, with the water tank on top; Heritage Furniture, where the tracks run under the building; and Centennial Mills, with its distinctive dust collectors. How do I justify something other than boxcars to serve these industries?

William Schmid

A If your heart is set on those three structure kits, you can still diversify your freight car fleet by choosing what industries those structures represent.

The cyclones on the Centennial Mills building mark it as a flour mill. Depending on the era you model, the incoming grain might travel in covered hoppers rather than boxcars. Outgoing flour would probably be shipped in barrels or



Marquette Yard on *Model Railroader's* HO scale house layout, the Milwaukee, Racine & Troy, is filled with freight cars of all kinds. You can diversify a freight car fleet by modeling industries that receive and ship a wide variety of cargos. Steven Otte photo

sacks, which still requires boxcars. But if your grain is coming in hoppers, that's a good thing, because it distinguishes incoming from outgoing loads.

Other industries might also use those dust collectors, though. For instance, a woodworking factory would use them to

collect sawdust. Its products will ship out in boxcars, but you can receive lumber on bulkhead flatcars.

If you change Centennial Mills to a woodworking plant, you probably don't want to keep Heritage Furniture as a furniture factory, too. Luckily that building is more generic looking and can be changed to a broader variety of businesses. How about something in food processing, like a brewery, cannery, or creamery, so you can ship out its product in reefers?

To my eye, River City Textiles doesn't look much like a textile mill. A modern-looking brick structure like this would likely have fire-suppression systems fed by city water, so the tank on the roof would be there to store water for the manufacturing process. A pulp-only paper mill is a possibility. To receive the bleach and other chemicals a paper mill needs, you'll have to supplement with a couple more car spots serving some vertical storage tanks. But that's a good thing, because you'll be able to bring in some tank cars, too. **MR**



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Syzdek Manufacturing is an HO scale Hydrocal kit produced by Downtown Deco. Senior Editor Cody Grivno shares how he built the structure, part of our Freemont Mills project layout. Photos by the author

Build a cast Hydrocal structure kit

Over the years I've built many structure kits. The majority have been injection-molded plastic. A handful were laser-cut wood, including one that serves as the office for the scrapyard on our HO scale Milwaukee, Racine & Troy staff layout. I even tried my hand at a small brass building, which you can read about in the December 2007 issue of *Model Railroader*.

One medium I'd yet to work in was Hydrocal. When Senior Associate Editor Steven Otte selected Downtown Deco's Syzdek Manufacturing as one of the buildings for our HO scale Freemont Mills project layout, I jumped at the opportunity to broaden my structure-building experience.

If you've built plastic or wood structure kits, you already have many of the skills needed to assemble a Hydrocal building. As you'll see in the article, I had to remove flash, sand the edges of parts, and prime the building, as I'd do with kits in other media.

Gluing, painting, and weathering are three areas where you may have to switch things up. I used 5-minute epoxy to assemble the walls and acrylic craft paints for some of the painting and weathering. Yes, you read that correctly — the same acrylic craft paint you find in plastic tubes for a dollar or two at art supply, craft, and even some big box stores. Check out step 3 to learn more about how I used them. I'll definitely use these paints again on other buildings.

Though I'd never assembled a Hydrocal kit before, I was pretty happy with how Downtown Deco's Syzdek Manufacturing turned out. It was fun to learn some new (to me) painting and weathering techniques. If you've never tried building a cast Hydrocal building kit before, go for it. I'm glad that I did. I look forward to working with more of these kits in the future. [MR](#)

STEP 1 WHAT'S IN THE BOX?



There's more than just Hydrocal wall castings in the Syzdek Manufacturing kit. Also included are an assortment of Tichy Train Group injection-molded plastic door and window castings; white and clear styrene sheet for the roof and window glazing, respectively; 1/4" square styrene strip for making a vent duct; black paper roofing material; and a sheet of printed signs. A cast-Hydrocal corrugated metal shed and roughly a half-dozen detail parts complete the kit. I didn't use all of the items for this project.

With any structure kit, I like to confirm all of the parts are included by checking the contents against the instructions. Downtown Deco's contact information is included should your kit have missing or broken parts.

STEP 2 ASSEMBLING THE WALLS



After reading the instructions, I began work on the kit. First, I used a hobby knife with a No. 11 blade and sanding sticks to remove flash from the window openings ①.

I then test-fit the various Tichy Train Group door and window castings. I had to scrape away some Hydrocal in a few spots to get the parts to seat properly.

It's important to assemble the wall castings in the order outlined in the instructions. I used 5-minute epoxy to secure the wall sections and a machinist's square to ensure the corners were at a 90-degree angle ②.

White or yellow glue can also be used to assemble the Hydrocal parts, but they dry slower. Cyanoacrylate adhesive is another option, but it soaks into the porous material and may cure before the parts are aligned properly.

Though assembling the walls was pretty straightforward, I worked carefully on the rear wall for the main building. The casting fits inside the two side walls. Since Hydrocal is rigid, forcing the rear wall into position could

potentially break the casting or the side walls. Instead, I lightly sanded the edges of the rear wall square on a piece of 80-grit sandpaper ③. I checked my work often to make sure I didn't remove too much material.

Once the rear wall fit between the side walls, I again used 5-minute epoxy to secure the parts. After positioning the wall, I used two small bar clamps to hold the parts in place while the epoxy cured ④.

You may wind up with small seams or gaps where the wall sections meet. I filled in those areas with DAP Dry Dex spackle applied with metal sculpting tools ⑤. The spackle comes out of the container pink, which made it easier to see during the application process. The material turned white when it was ready for sanding and painting.

I finished up this phase of the build by using assorted metal probes to carry the brick detail through the spackle ⑥. Yes, this was a meticulous process, but it was worth the time invested.

STEP 3 PRIMING AND PAINTING



Because Hydrocal is porous, it will quickly absorb any paint and weathering applied to it. To remedy that, the manufacturer recommends priming the castings. I applied two coats of Rust-Oleum Painter's Touch 2X Flat White Primer (334019) to the main building and annex **1**.

I let the Flat White Primer dry for 24 hours before painting the building. I'll admit that I was a little nervous about this, as the technique the manufacturer recommended was one I hadn't tried before. I mixed 1 part FolkArt Terra Cotta craft paint (433) to 3 parts water. Then, using a 1" wide chip brush, I applied the paint in a vertical motion from top to bottom.

I worked on one surface at a time, keeping the building flat and letting the paint dry completely before proceeding. I found one coat of the thinned Terra Cotta looked too light, so I put on a second coat **2**.

Next, I used Vallejo Model Color Neutral Gray (70.992) for most of the trim on the main building. I turned to the

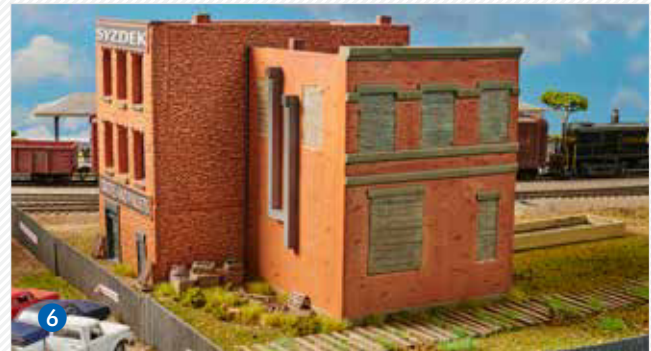
same company's German Camouflage Beige (70.821) for the concrete trim on the annex and below a couple of windows on the main building **3**. You may need to put on two coats to get complete coverage.

The walls on the annex are brick. To add some random pops of color, I used a 10/0 paintbrush to pick individual bricks with Vallejo Panzer Aces Light Rust (301) and Yellowish Rust (303) **4**.

I then applied FolkArt Raw Umber (485), thinned 1 part paint to 3 parts water, using the same techniques as before **5**. The darker paint settled into the recesses, bringing out more of the neat textures on the walls.

Finally, I brush-painted the boarded-up annex windows with Lifecolor Cold Base Color (UA 717) from the company's Weathered Wood set. Unfortunately, the color was almost identical to the concrete trim. To make the boards stand out more, I drybrushed them with Lifecolor Colorless Hemp (UA 757) from its Hemp Ropes and Tarps set **6**.

STEP 4 ADDING DETAILS



I started the final phase of the build by spray-painting the Tichy Train Group door and window castings with Rust-Oleum Painter's Touch 2X Flat Gray Primer (334017) ①. I weathered the parts with the thinned FolkArt Raw Umber from the previous step.

Then I used canopy glue to attach .010" clear styrene to the back of each window. I sprayed the back of the styrene with Testor's Dullcote to frost the material, preventing visitors from seeing that the building interior is empty.

The Downtown Deco kit includes printed paper signs; I used two of them. I attached them to .010" styrene with 3M Super 77 spray adhesive and put them on the building with canopy glue ②.

I trimmed the supplied styrene to size for the roof on the main building and annex. Prior to installation, I spray-painted the styrene with Rust-Oleum Flat Gray Primer. After that had dried, I dusted the roof pieces with Tamiya Color for Plastics Rubber Black (TS-82).

I used a black paint marker to simulate seam sealant. Then, using a paintbrush, I applied FolkArt Pure Black (479) along the edges where the roof meets the walls ③.

To make the model easier to work on, I didn't attach the annex to the main building until after the painting and weathering were completed. I fashioned the wires included with the kit into downspouts that mask the seams between the two buildings ④.

The kit includes five pieces of 1/4" square styrene strip. After assembling the parts into a vent with Plastruct Bondene, I sprayed the styrene with Flat Gray Primer. After that dried, I spray-painted it with Tamiya Color for Aircraft Bare Metal Silver (AS-12) and weathered it with the same company's Rubber Black ⑤.

I attached the building to the layout with white glue. Then I supplemented Steven Otte's scenery work with Hydrocal details from the kit, crates, static grass tufts, and a dog walking through the lot ⑥.



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Jim Hopes shares six tips he uses to realistically weather locomotives and freight cars. Two examples of his work, a ScaleTrains HO scale General Electric C45AH and Athearn Genesis Electro-Motive Division SD90MAC-H, are shown here. Jim Hopes photo

Follow this playbook to add realism to your locomotives and freight cars

By Jim Hopes • Photos by Greg Komar unless noted

As model railroaders, we take many steps to accurately re-create our favorite prototype. We buy the correct locomotives, rolling stock, structures, and vehicles; we make the track arrangements as authentic as possible; and we spend countless hours on research. One area that's too often ignored, or gets cursory treatment, is weathering.

Chances are that even when the locomotive or freight car you're working on rolled out of the paint shop, it didn't look as perfect as a model straight from the box. Most freshly painted locomotives and freight cars have rusty wheelsets and couplers. After just a few trips over the railroad, dust and grime starts to accumulate on areas closest to the rails, such as truck sideframes, locomotive pilots

and fuel tanks, and freight car sides and ends. Why not capture that same look on our models?

In my interactions with fellow model railroaders I've learned that many don't weather their locomotives or rolling stock, even though they'd like to. There are usually two reasons for this. First, they're afraid of ruining an expensive model, which is understandable.

Second, they have such a large fleet of locomotives and freight cars that the job seems daunting.

Below are six tips you can use to become proficient at weathering model railroad equipment. Before you know it, those shiny new locomotives and freight cars in your fleet will look more like their prototype counterparts.

Develop your skills

Though it may seem obvious, don't use a \$300 locomotive for your first weathering project. Instead, start simple. I remember years ago attending a workshop by the late Mac McCalla. He suggested practicing weathering techniques on a coffee can.

If you'd rather practice on locomotives and freight cars in your modeling scale, go to a model railroad swap meet or visit a hobby shop with a consignment section and find inexpensive models **1**. Purchase different car types so you can practice a variety of techniques, such as weathering the inside of a gondola or hopper, adding streaks of spilled cement to the side of a covered hopper, and

enhancing truck sideframes by picking details such as springs and bearing caps in different colors.

Learn from the prototype

Not sure how much weathering is appropriate for a locomotive or freight car? Go trackside. In addition to overall photos, get detail images of effects you'd like to re-create **2**.

If that's not possible, search the various railfan photo-sharing websites, such as LocoPhotos.com, RailPictures.net, and RailcarPhotos.com, among others.

In addition to photos, I've found YouTube videos helpful when weathering models. Danny Harmon's Distant Signal series and Delay in Block Productions are a couple of channels I refer to. Both include drone and overhead footage that show the tops of engines and cars.

If you strike out digitally, check out magazines and books **3**. *Model Railroader's* sister publications, *Trains* and *Classic Trains*, contain prototype photos of equipment past and present.

Use color

I recently purchased a Broadway Limited Electro-Motive Division GP20 decorated for Conrail. The model is gorgeous, but its full-size counterpart didn't stay pristine for long. Fading factory paint is the most important thing you can do to any model, and it's easy. I use a 5:1 mix of Tamiya X-20A thinner and the same company's XF-2 flat white **4**.

The thinned white paint can be applied with a brush or airbrush; I prefer the latter. A few light coats is all it takes.

You can further reinforce the effect by wearing off some of the lettering before applying the thinned white paint. I lightly sand the graphics with 600-grit sandpaper **5** (next page). If you're into operations, make sure the reporting marks and road number are still legible.

In addition to fading, the key to believable weathering is to use at least three or four different colors. Put on washes to create shadows; add rust spots and paint chips; and apply dirt, dust, and mud highlights.

Add texture

Prototype locomotives and freight cars have texture. Testor's Dullcote is a quick and easy way to add some "tooth" to your models. Often times weathering powders are applied over the Dullcote. Remember that most of what you brush



1 Budget-friendly practice. Older models, such as this Athearn HO scale 50-foot mechanical refrigerator car, can be found at model railroad swap meets for a few dollars. Jim used the car to test a fade coat and Tamiya Panel Line Accent Colors.



2 The real thing. Not sure how to weather a freight car? Use prototype images as a guide. Overhead photos are especially valuable for learning how car interiors and roofs weather. Cody Grivno photo



3 Photo resources. Though many prototype images can be found online, don't forget to check books and magazines. These print products often contain hard-to-find photos not available elsewhere. Cody Grivno photo



4 Easy weathering. Jim uses a 5:1 mixture of Tamiya X-20A thinner and its XF-2 flat white to give factory paint a faded appearance. For best results he applies the thinned paint with an airbrush. Jim Hopes photo

on will disappear after you seal the model with a second application of the clear flat finish.

PanPastel products are my favorite for adding texture and color because they don't fade nearly as much after the seal

coat is applied **6**. In addition to weathering sets geared toward model railroaders, PanPastel produces a wide variety of single-sale colors.

Though PanPastel offers the Sofft line of sponge applicators, I've had better



5 Quick and effective. To give the lettering on this Norfolk & Western boxcar a worn look, Jim lightly passed 600-grit sandpaper over the factory printing. He then applied two light coats thinned Tamiya flat white paint.



6 A rusty roof. Various colors of PanPastel applied with a makeup brush gave this boxcar roof a realistic, rusty appearance. Jim reports that if you don't like the look, you can wipe the pastels off with a damp cloth.



7 Simple shadows. Tamiya Panel Liner Accent Color works well for adding shadows to freight cars and locomotives. Here, Jim is flowing some Dark Gray Panel Liner along the exterior posts of a Rock Island boxcar.



8 An unlikely applicator. Random spots of rust and primer are easy to add using acrylic paint applied with a small piece of aquarium filter. After blotting off all but a trace amount of paint on a paper towel, Jim touches the filter to the model.

luck applying the cake-like pastels with makeup brushes and fine paintbrushes. The brushes do a better job of getting into areas that the sponges can't reach.

Create shadows

You've probably seen images of model trains and dioramas photographed outdoors. They look realistic because of the natural light and shadows.

Since most layouts are indoors under incandescent, light-emitting-diode, or fluorescent lighting, we need to create the illusion of shadows on our models. One effective way to do that is with Tamiya Panel Liner Accent Color. The product range is popular with military modelers, and model railroaders are starting to use it to bring out seams, joints, and other details.

Panel Liner is thinned paint with a small brush built into the cap. I like to apply it at the top of a seam and let it flow down vertically **7**. The product works well for creating shadows on exterior posts, along rivet lines, and in seams between diesel locomotive hood doors.

Bring out highlights

Today's models have a lot of fine details. A light pass with an airbrush and thinned weathering colors like grime, mud, and dust will help those items stand out.

If you model diesel locomotives or steel freight cars, paint often peels off, leaving exposed primer, bare metal, or rust spots. To duplicate this effect, I apply a dab of acrylic paint on a small piece of aquarium filter material. Then I blot off most of the paint on a paper towel until all but a trace amount is left. Finally, I touch the filter to the model **8**. A little of this technique goes a long way.

Give it a try

The most difficult aspect of weathering is getting started. Begin by finding prototype photos of locomotives or freight cars you're interested in and develop your methods on some budget-priced models.

Hopefully this article will encourage you to give weathering a try. When people visit your layout and say, "Wow, that looks like the real thing!" you'll know why even if they don't. **MR**

Jim Hopes lives in Tampa, Fla., with his wife, Linda. He's worked in multiple scales over the years, from HO to 1:20.3.



Adam Palmer demonstrates quick and simple fleet weathering techniques on an Amador Central FMC boxcar. Photos by the author

Simple rolling stock weathering techniques

Drybrushing, airbrushing, and powders provide quick and realistic results

By Adam Palmer

In my time weathering locomotives and rolling stock for my HO scale Sierra Central Ry., I have found a simple but effective method to quickly weather a large amount of equipment. These techniques produce results that may not be “contest quality” but work great for fleet weathering. I use a single-action unbranded Badger imitation airbrush that I bought as part of a starter kit. My paints of choice are Vallejo Model Air and Model Color paints. Even though the Model Air colors are intended to be

thin enough to be directly sprayed through the airbrush, I typically thin them with a few drops of Vallejo thinner. I also use Monroe Models Weathering Powder, in particular the Grimy Black, and Light/Dark Rust powders, and a Rust-Oleum spray can of either Matte or Satin Varnish. Other than a light tan color for drybrushing, these materials are all I need for this style of weathering.

In all this weathering technique takes about 30 to 45 minutes to complete from replacing the couplers to the final

dry-brushing. This means that one can weather multiple cars in an evening.

I hope these weathering techniques go to show that weathering does not need to be complicated and is a quick, easy, and most importantly, extremely enjoyable part of model railroading.

Adam Palmer is the owner of the HO/HO_n3 scale Sierra Central Ry. His favorite aspects of model railroading are conceptualization, design, operation, and of course, weathering.

STEP 1 TRUCKS AND COUPLERS



The first step of the weathering process is to remove the trucks and plastic couplers in preparation for installing Kadee couplers ①. In the case of the example car, an Atlas ATSF 40ft boxcar, I used the No. 158 scale couplers with a separate copper spring. To improve operation, I filed the flashing off the top and bottom shank, as well as the back, knuckle face, and inside of the coupler before tossing it in some powdered graphite to keep everything moving smoothly.

I also cut off the trip pins to avoid them catching on turn-outs and possible bumps in the track. Once the couplers were replaced ②, I painted the wheels. In this case I used Vallejo Rust to paint the faces, backs and axles, making sure to get as little paint as possible on the treads ③. This part takes the longest due to the wheels being painted by hand, plus drying time. Once the wheels were dry I reassembled the trucks and tested the coupler height.



STEP 2 AIRBRUSHING



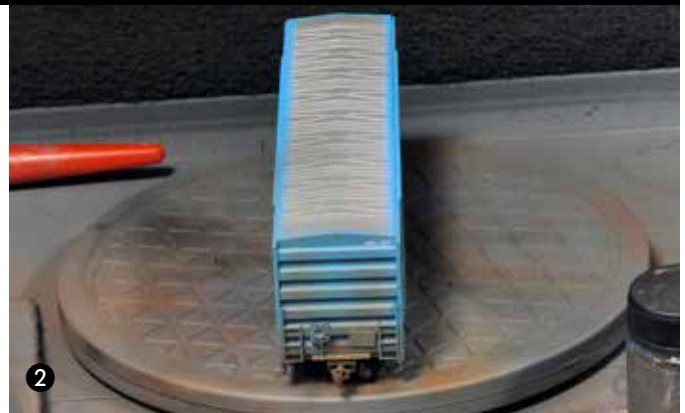
Next, I started the airbrush phase by giving the car a spray with Testor's aerosol Dullcote (1260) to remove the plastic sheen as well as give the paint and weathering powders some tooth to stick to ①. [Do this in a spray booth or well-ventilated area and wear appropriate personal protective equipment, including a respirator, nitrile gloves, and eye protection –Ed.]

After the Dullcote dried, I used an airbrush to spray the roof, sides, and ends of the boxcar with a coat of light gray that I mixed using Acrylicos Vallejo Model Air colors found in the materials list on the next page ②. This simulates the look of faded paint.

I pay particular attention to the trucks, couplers, and bottom part of the car body in preparation for applying the road grime color ③. You can spray as heavy or as light as you want with this coat depending on how faded you want the car to look.



STEP 3 ROAD GRIME



Next came the road grime. For this phase I made a light brown blend to represent dirt being flung up from the wheels and onto the body of the car **1**. I mainly focused on the trucks and couplers for this coat with maybe a small streak along the very bottom of the car.

At this point you could move on from using the airbrush if you wish, but I prefer to paint the underframe of the car black to emphasize the shadows more. If you choose to do this step, you may have to touch up the road grime on the trucks and couplers **2**.

Next I drybrushed Vallejo Rust over the entire car to give it a random pattern, focusing on places where rust would accumulate on the prototype **3**. Once I'm done with the airbrush, I apply another coat of Dullcote.



STEP 4 WEATHERING POWDERS



The last major step is applying weathering powders to simulate rain or rust streaks on the sides of the car. I smeared the powders in with my finger, taking care as to not obstruct items such as the car's reporting marks. The Sierra Central is an operations oriented layout so operators must be able to read the reporting marks regardless of how much I want to weather a car **1**.

The smeared powders add an even more faded effect than just the airbrush, but it's up to you. Whether you just want to have a few streaks or a whole layer of grime on your model is your choice — I prefer the latter.

Lastly, an optional step is to drybrush a light tan across the entire car to bring out details such as the trucks, rivets, ladders, and others **2**. This helps to enhance details that may have been hidden during the weathering process. [MIR](#)

Materials list

Acrylicos Vallejo Model Air paint

71.027 Light Brown
71.036 Mahogany
71.037 Mud Brown
71.039 Hull Red
71.040 Burnt Umber
71.048 Engine Gray
71.056 Panzer Dark Gray
71.069 Rust (metallic)
71.103 Gray Blue RLM84

Monroe Models Weathering Powder

3102 Grimy Black
3105 Dark Rust
3106 Light Rust
3115 Soot Black
3117 Ash Gray

Testor Corp. 1260T Dullcote

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Structures for FREEMONT



Part 3: Adding industries, railroad buildings, and storefronts to our HO scale project layout

By Steven Otte • Photos by the author unless noted

Our HO scale Freemont Mills project layout was truly a group effort. Every member of the *Model Railroader* staff contributed to this build, whether it was in the form of benchwork, track, scenery, rolling stock, or structures.

Some of us, including Editor Eric White, Senior Editor Cody Grivno, and myself, are old hands at layout building. But we wanted to make sure everyone got in on the fun. So I asked Associate Editor Bryson Sleppy to build the yard office, which was his first experience constructing a laser-cut wood kit. Assistant Digital Editor Mitch Horner joined in, too, building and detailing the freight house, despite having never built a structure kit in his life before. Both of them did stellar work.

We also wanted to spread the wealth when it came to manufacturers and materials. The layout includes styrene, laser-cut wood, and cast Hydrocal kits from Blair Line, Downtown Deco, Wm. K. Walther, Woodland Scenics, and

others. A full list is at right. Read on to find out how we assembled, adapted, and detailed the structures for our HO scale project layout.

But what about Syzdek Crates & Pallets and Stern & Childers Plumbing Supply, the two largest structures in the photo above? You might have noticed those two, although listed at right, are missing from this article. That's because we thought their builds were involved enough to be worth Step By Step articles of their own. Look for Senior Editor Cody Grivno's article on the cast-Hydrocal Syzdek building on page 19 of this issue and mine about the laser-cut wood plumbing supply factory in May's Step By Step.

What's next

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

All the members of the *Model Railroader* staff chipped in to build the structures for our Freemont Mills project layout. Cody Grivno photo

Structure list

Interlocking tower

AMB LaserKit 702 Interlocking Tower
AMB LaserKit 388 Thirteen Lever
Interlocking Machine

Stern & Childers Plumbing Supply

AMB LaserKit 715 A.C. Brown Mfg. Co.

Various sheds

Bar Mills 992 Shack Pack

Yard office

Blair Line 2000 Joe's Cabin

Syzdek Mfg.

Downtown Deco DD1057 Syzdek Mfg.

Antique store

Smalltown USA 6028 Rusty's Graphic Arts

Station

Walther 933-2932 Whitehall Station

Freight house

Walther 933-3009 Water Street Freight
Terminal

Diner and barber shop

Woodland 12100 DPM Seymour Block

Paint store

Woodland R4369 The Paint Pros combo

FREIGHT HOUSE

The freight house that anchors the left end of the layout was Assistant Digital Editor Mitch Horner's first ever model railroad structure kit, and in fact the first plastic kit he'd built since the Spitfires, F-14s, and B-25 bombers of his childhood. Because of this long lag in his model-building experience, Mitch wanted to take extra time and care with this Walthers kit, and the results show it.

Mitch sanded all the corners and mating surfaces of the injection-molded styrene parts to ensure an accurate fit before assembly. He also finished the roof with fine ballast to model a gravel roof.

Mitch made a few additions to the kit to make it more visually interesting. He added a styrene floor inside the warehouse half of the building and positioned some of the freight doors open to show this interior. He then added boxes, barrels, bales, and other bundles of freight — some provided with the kit, others from our workshop parts stash — to the interior and the loading dock. He also made some lumber loads by cutting and gluing together 8-scale-foot lengths of stripwood. The warehouse workers came from our collection, and included figures from Bachmann, Merten, and Preiser. The additions gave the building a visual complexity Mitch found satisfying.



Assistant Digital Editor Mitch Horner increased the visual interest of his freight house by opening the freight doors, installing an interior floor, and adding loads and workers to the interior and loading dock.

STATION

Since **Freemont Mills could** conceivably be part of a modular layout set in almost any timeframe, I decided it needed a passenger station along the main line. And I knew just which one I wanted to use.

Whitehall Station from Walthers Cornerstone is the first product I reviewed after joining the MR staff in 2007. The kit I assembled and painted back then has been sitting on a shelf in my office ever since. This project layout was the perfect opportunity to give it a permanent home.

The station needed some work, though. The only customization I had done when building it was to use clear sheet styrene instead of molded plastic window glazing and

to position one baggage room door partly open. A busy city station needed more details. I dug into our stash of HO scale figures from various manufacturers (including Bachmann, Merten, Model Power, and Preiser) and came up with several sets of passengers and station details.

I filled up four green benches with sitting passenger figures, then glued them under the canopies on either side of the station, along with a couple trash cans and a phone booth. I also added some trainman figures and sacks of mail and baggage to the platform. A computer-printed "Freemont Mills" sign for either end of the platform completed the structure.

This Walthers Whitehall Station structure had been sitting in Senior Associate Editor Steven Otte's office since he reviewed it in our December 2007 issue. It finally found a permanent home on our Freemont Mills project layout.



ANTIQUE STORE

For the corner across the street from the rail-served Stern & Childers factory, I needed a wide storefront. I selected a Smalltown USA kit, Rusty's Graphic Arts. These kits are usually not much more complicated than DPM's offerings. That was perfect, because I wanted a quick and easy build for this unobtrusive structure. But I made a number of mistakes that made this building take a lot more time and work than I would have liked.

My first mistake was in not reading the product description closely enough to realize it was more of a kitbash than a kit. Rather than having one-piece front and back walls, the kit came with three back pieces, plus directions to splice them together into a single wall. The front was even more complex, with the bottom to be scratchbuilt from various sizes of strip styrene. I did a pretty good job on the front, but was unhappy with how visible the splice lines were on the brick back walls. I added some strip styrene downspouts to disguise these joints.

The spray paint I chose for the facade of the building came out of the nozzle thick and clumpy, leaving a finish that

could most charitably be described as "textured." After it dried, I scraped the window and door frames with a chisel-bladed hobby knife. I then rubbed the rest with a sanding stick to knock off the biggest lumps. It kind of looks like stone, so I decided to live with it.

I was also not happy with the mortar wash I applied to the brick walls. I scrubbed it off, painted over it, and started over several times. Finally the flat sides looked OK, but the back was still blotchy. I added a Walthers fire escape, some printed paper posters, and a ground-foam climbing vine to draw the eye and distract from the uneven weathering.

The blank side walls of the building looked boring, so I added a billboard to one side. I created the artwork for the furniture store advertisement using creator.nightcafe.studio, a free online artificial intelligence (AI) art generator. I wrote an article showing how I did it for our website, at trains.com/mrr/how-to/expert-tips/making-a-sign-from-an-ai-generated-image/. I also used NightCafe to create three interior scenes for the front windows, as I did with the commercial block (see page 36).



Steve turned to AI art generator Nightcafe to create three store interiors for the antique store. He also made a billboard for the side using AI art. He then printed them both on a color laser printer.

INTERLOCKING TOWER

Editor Eric White built the interlocking tower from an American Model Builders LaserKit, with a couple additions. The most labor-intensive was replacing the staircase's railing. Eric didn't like the one that came with the kit, which was laser-cut from microplywood and, to his eye, too thick and rough. Using the kit railing as a template, Eric bent and soldered together new railings for the stair and platform from brass wire, gluing them to the wooden stair with cyanoacrylate adhesive (CA).

To paint the structure, Eric chose a two-tone gray scheme typical of many Eastern roads like the Chesapeake & Ohio and Southern Ry. He said he wanted the scheme to look generic, since the module could become part of a larger Free-Mo layout someday. He used Rust-Oleum Painter's Touch 2X spray paint in Primer and Winter Gray, setting the standard for the other railroad buildings in the yard scene. He painted all the parts before assembly.

Since the second floor of the tower had a lot of large windows, Eric thought adding an interior would be a good idea. The Armstrong interlocking machine levers, another laser-cut wood product, was also made by American Model Builders (item 388). By themselves, they looked lonely, so Eric looked online and found some cast-metal office furnishings from Scale Structures Ltd. The desk, chair, file cabinet, telegraph repeater, railroad clock, and towerman figure filled the space nicely. But with the roof in place, the interior was dark and all those nice details weren't all that visible.

Eric remedied that by adding a Woodland Scenics JustPlug stick-on light to the interior ceiling. Drilling a hole in the corner of the assembled and furnished interior floor for the wire was difficult, but the structure was sturdy and held together.



Eric White built the interlocking tower that governs the Freemont interlocking from an American Model Builders LaserKit. He enhanced the structure with interior details and a scratchbuilt stair railing.

YARD OFFICE

Associate Editor Bryson Sleppy built the yard office from a laser-cut wood kit, Blair Line's Joe's Cabin. We'd used this kit on a previous project layout, 2012's *Virginian Ry.*, as a company house, but Bryson modified it slightly to represent a yard office.

The kit is designed to be built on posts so it can be installed on uneven ground. Since our yard was flat — in fact, we installed a sheet of cork alongside the yard to bring the ground up to the same level — Bryson omitted the posts, putting the base at ground level. This meant he had to slightly raise the annex on the side of the building, which normally hangs a bit lower. To fit the annex's roof under the eaves of the main building, he had to cut it down slightly.

This was, in fact, Bryson's first ever wood kit. Building it was more complex than the plastic structures he was used to, but he found that aspect satisfying, as it was more like the experience of constructing a real building. Wanting to ensure his first-ever wood kit was sturdy, he reinforced it with additional $\frac{1}{8}$ " stripwood interior bracing.

He assembled the structure without its peel-and-stick trim so he could spray-paint the building and the trim different colors. He used the same two shades of gray Eric White chose

for the interlocking tower, spraying the trim before removing it from its carrier sheet. Since the solvents in the paint have the potential of weakening the adhesive, Bryson added wood glue to make sure the trim stuck. The last step was to glue the screen door swinging half-open, for that poorly maintained vibe.



Associate Editor Bryson Sleppy assembled his very first wood structure kit, Blair Line's Joe's Cabin, to be our project railroad's yard office. He modified it slightly to lower it to ground level.

THREE SHEDS

Shacks, sheds, lean-tos, outhouses — in my opinion, rare is the layout that couldn't use more of them. The Shack Pack from Bar Mills (available in both HO and N scale) includes laser-cut wood kits for three such small structures. I used all three on our module.

The largest (right) became a maintenance shed at the yard. I stained the wood before assembly, then drybrushed it with Polly Scale New Gravel Gray (now discontinued) to come close to the blue-gray color editor Eric White had chosen for the railroad yard buildings. I let the paint taper off down at the bottom of the building to simulate old, peeling paint. A pile of ties and a few junk piles alongside the building established its workaday purpose.

I hinted at the former purpose of the brick Syzdek factory by placing behind it a concrete berm surrounding circles representing the former bases of four removed tanks. I placed the second Bar Mills shed, the one with tar paper sides, next to it as a pump house (below right). I elevated it by gluing cast-metal concrete blocks underneath and making steps out of more concrete blocks and stained stripwood.

I placed the third shack near the yard to represent a tool shed, signal maintainer's shed, or the like (below). As with the other two shacks, this one came with self-stick roofing meant to represent tar paper. To keep the sheds from all looking the same, I made corrugated roofing for this one. I cut a strip of heavy-duty aluminum foil 8 scale feet wide, pressed it between two pieces of corrugated styrene siding, then cut it into 4-foot-wide pieces. I glued the pieces to the shack's roof with wood glue, then heavily weathered them.



Steve used all three of the sheds in the Bar Mills Shack Pack on the layout. The largest became a machine shed in the yard. Junk piles, a workbench, and a figure carrying a box make it look busy.



The Bar Mills kit came with self-stick rolled roofing for use on all three sheds. To make this tool shed look different, Steve made his own corrugated metal roofing from aluminum foil.



Behind the shuttered Syzdek factory, Steve added the bases of removed oil or chemical tanks inside a concrete berm. He used the third Bar Mills shack as a pump house.

COMMERCIAL BLOCK

I've always been partial to Design Preservation Models' structure kits. They're inexpensive, simple to build, and have great molded-in detail. So when I wanted a corner block for the end of Depot Drive, DPM (now owned by Woodland Scenics) was the first place I turned. I quickly settled on the Seymour Block kit, not only because its corner faced the right direction, but also because it was narrow enough to leave room for a back lot between it and the main line.

I assembled the kit as directed and built a sidewalk of Evergreen styrene scribed in 1/2" squares. I gave the building a coat of Rust-Oleum Painter's Touch 2X spray paint in Nutmeg, a muted orange shade. I then brush-painted the windows, doors, and architectural details with hobby acrylics. Next, I applied a thinned wash of Concrete acrylic paint, which settled into the mortar lines and toned down the vivid orange color to a more muted shade. Luckily, it worked a lot better on this building than it did on the antique store.

I added a couple of styrene interior walls to divide it into two storefronts, separated by the stairway to the second floor. To decorate the interiors, I then turned to artificial intelligence, specifically the AI art generator Nightcafe (creator.nightcafe.studio). Experimenting with various text prompts and art styles, I eventually came up with usable interiors of an old-fashioned barbershop and a brightly colored cafe. Not everything in the images was realistic — floor tiles were warped and chair legs vanished into thin air, for instance. With experience, I could have probably gotten more realistic results. But printed at HO scale and placed behind window glazing, they looked good enough. I also used the computer to print window treatments and signs.

To finish the rest of the commercial block, we added The Paint Pros next to the Seymour Block. This is a DPM building Cody had assembled some time ago and equipped with a lighted interior kit from The Electric Wallpaper Co. **MR**



Steve built this two-storefront commercial building from Design Preservation Models' Seymour Block kit. As he did on the antique store, Steve created the interior scenes, signs, and window treatments on his computer.

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20494 Amtrak AMD 103 "Genesis" Diesel Locomotive; Road No. 108
Paint scheme and lettering are prototypical for Era VI. This is a special version of road number 108 for the 50th anniversary of Amtrak.



20493 Amtrak AMD 103 "Genesis" Diesel Locomotive; Road No. 160
Paint scheme and lettering are an adaptation of the Phase III scheme as applied to Amtrak's Dash 8-32BWH locomotives to celebrate the 50th anniversary of Amtrak.



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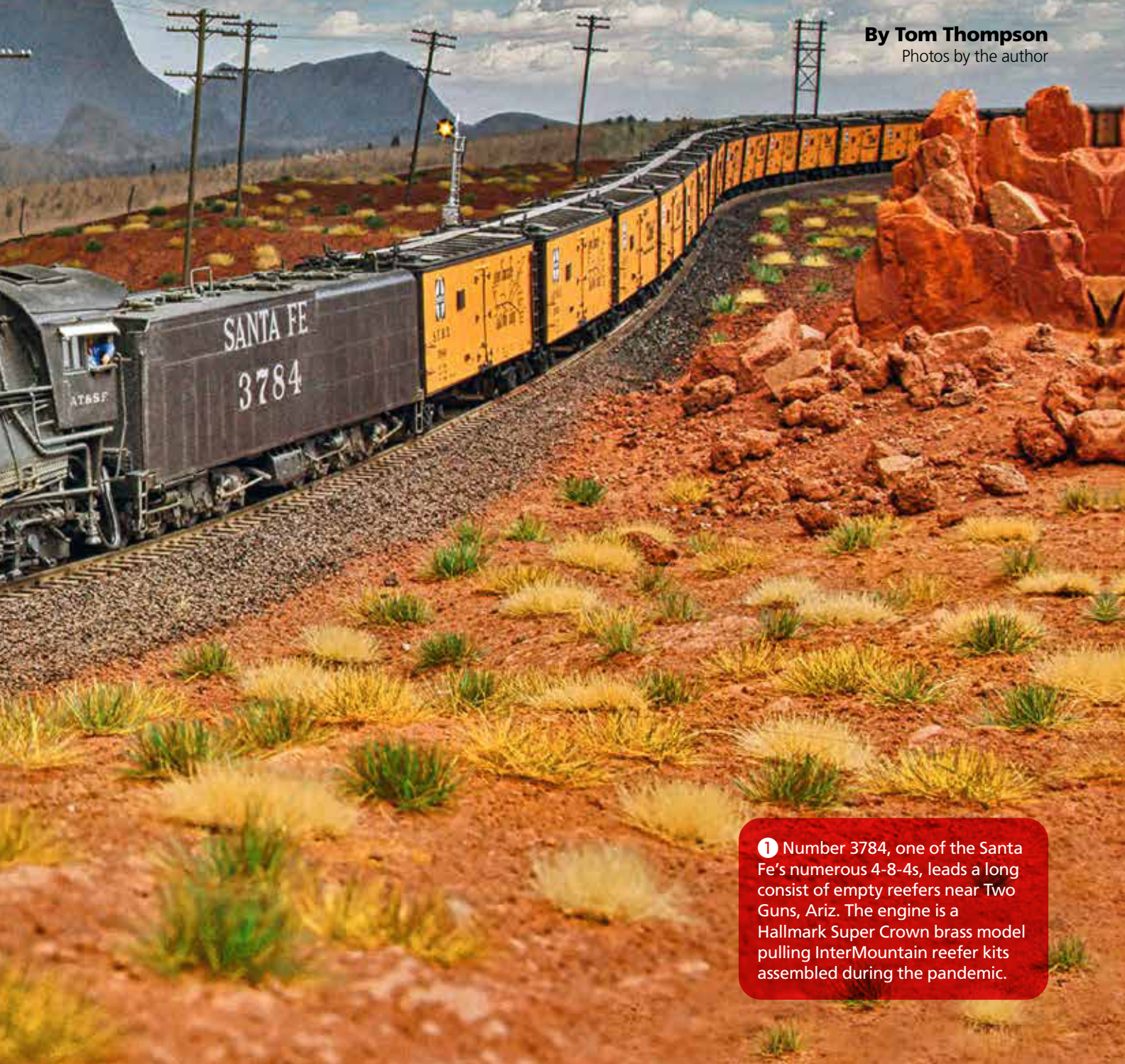
Santa Fe's Albuquerque



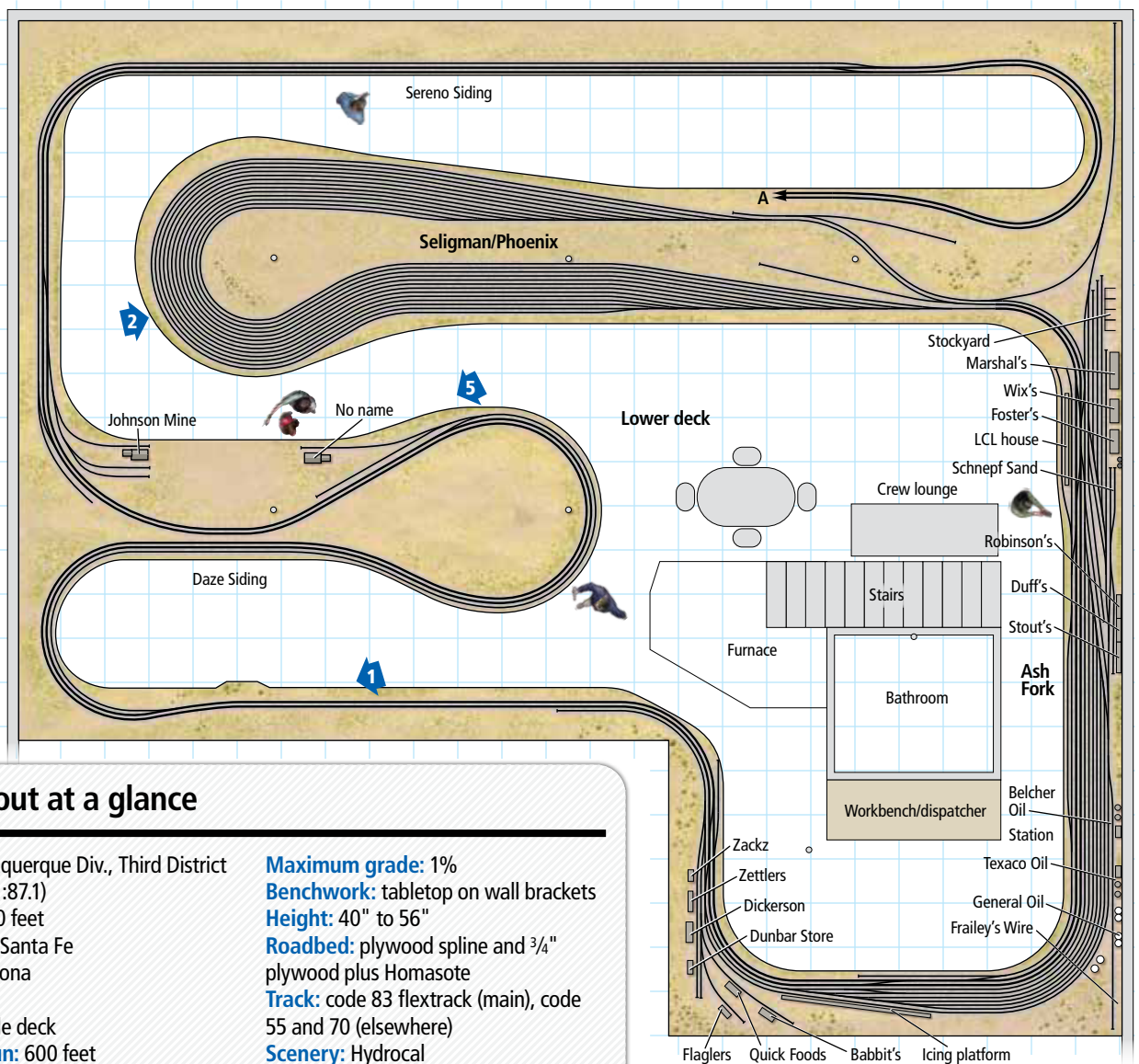
ue Division

Designing and building an HO scale version of the
ATSF's Third District in 1953

By Tom Thompson
Photos by the author



① Number 3784, one of the Santa Fe's numerous 4-8-4s, leads a long consist of empty reefers near Two Guns, Ariz. The engine is a Hallmark Super Crown brass model pulling InterMountain reefer kits assembled during the pandemic.



The layout at a glance

Name: Albuquerque Div., Third District

Scale: HO (1:87.1)

Size: 50 x 50 feet

Prototype: Santa Fe

Locale: Arizona

Era: 1953

Style: double deck

Mainline run: 600 feet

Minimum radius: 48"

Minimum turnout: No. 6

Maximum grade: 1%

Benchwork: tabletop on wall brackets

Height: 40" to 56"

Roadbed: plywood spline and 3/4" plywood plus Homasote

Track: code 83 flextrack (main), code 55 and 70 (elsewhere)

Scenery: Hydrocal

Backdrop: tempered hardboard

Control: CVP Easy DCC

If you build it...

At first I built just the upper deck around the walls, without the long peninsula. I wasn't sure if I could convince enough people to come help me operate a layout as big as I envisioned. If I couldn't, this small portion of single deck would be more than enough to serve my modeling needs.

To my surprise, the layout was very popular and enjoyable. So I enlarged it by adding the lower deck, the long peninsula, and staging at both ends.

One of the things that seemed to be overlooked on many layouts of the day was staging. I decided to over-design my staging so I wouldn't run short. Even so, it's about at capacity today.

My next design choice was to follow the prototype with a balance of both



2 This view from the end of the peninsula shows staging at Gallup, N.M., on the upper deck, with much of the westbound passenger fleet — including the *Super Chief*, *Chief*, and *Fast Mail* — in view. Staging for Seligman and Phoenix is below.



3 A pair of vintage warbonnets meets at the scratchbuilt La Posada station/hotel in Winslow. The E1 (left) is from Broadway Limited; the FT in the passenger scheme is from InterMountain.

passenger operation and freight car switching, thus giving crews full exposure to what the Santa Fe was about. Freight is more of a challenge than passenger operation.

After reading *A Quarter Century of Santa Fe Consists* by Fred Frailey (RPC Publications, 1974), I chose to model the Albuquerque Division's Third District. This was the only stretch on the Santa Fe where I felt I could represent both freight and passenger operations fairly.

Yard design can be difficult, as somehow it's never big enough or has good enough access. My comfortable reach-in distance is about 2 feet. Yard switching requires reading the reporting marks and car number to identify cars. With track centers at the minimum of around 2" in the yard, this can be challenging. Track centers farther apart would make the car markings easier to see, so I chose 2½" track centers in the yards. It's a tradeoff, since the wider the track centers are, the fewer tracks can fit. Even with the wider track spacing, having the adjacent track unoccupied works best, and the extra finger room is helpful to rerail and uncouple cars.

The yard leads at Winslow and Ash Fork are very long in both directions. There are also four arrival and departure tracks in Winslow and two in Ash Fork. This is to allow running freight trains longer than the yard tracks, which are 55 cars long.

I provide guidance in the form of a sign reading SWITCH TRAIN FROM HEAD END ONLY. This tells engineers to bring their train into the yard, clear the ladder

track, then break the train in two and shove the rest into another vacant track. Freight trains aren't allowed to hang their back ends out of the yard and foul the main. Internal yard management is left up to the yardmaster.

Designing from the prototype

Starting with the actual track diagrams and station site plans from the 1950s, I soon realized there was no way to match the size and scope of the actual prototype trackage. But I found I could design a configuration that gave the same feeling as the prototype locations.

Winslow was the division point yard and a marshalling point for passenger operations. In 1957, three westbound *Grand Canyon* trains were consolidated into two westbounds, and the reverse for eastbounds, along with some other interesting passenger car switching. Every day, 14 passenger trains (not counting extra sections) all stopping for six minutes for crew changes make Winslow quite a challenge.

A station with a large hotel called La Posada, designed by famed architect Mary Colter and operated by Fred Harvey, provided first-class food and service. I scratchbuilt this structure from prototype plans.

Winslow was the home base for local trains to Winona, Flagstaff, Bellemont, and Williams, since the road freight trains made no stops there. The only exception is the hot No. 41 Hog Special from Belen to Los Angeles. This picked up loaded stockcars at Winslow,



Flagstaff, Williams, and Ash Fork going to California. Reefer trains from California were iced here; I do this on the main. There was also a stockyard.

Canyon Diablo is a huge canyon in the desert. There were three bridges, but the first was soon replaced by a second with a gantlet track. This required a station to control traffic and was finally replaced in 1947 by a steel double-track bridge. The yard speed restriction over the span was then removed along with the need for trains to stop. The bridge on my layout is an award-winning model built by Gene Wincek.

Winona has a mountain of volcanic cinder they called a cinder pit that provided a low-cost dark volcanic cinder ballast in the '50s. A local runs from Winslow to Winona with 25 empties and brings back loads for a westbound rock-ballast train.

This industry does live loading, which means a mechanical device loads scale cinders into empty cars. The wayfreight sets out empties in the east end of the



4 The east end of Williams shows some of the downtown area, industries, and a Walthers roundhouse and turntable in the distance.

yard and pulls loads out of the west end. Eight empties at a time are taken up the loading track, then the engine runs around the cars and moves them one at a time under the loader. The loaded string is then placed in the west end of the yard for pickup. There's some skill required to throw a switch and move the car under the loader at the same time to distribute the load evenly. There's a catch bin under the track, so any spilled cinders never build up on the ties.

Flagstaff had a lot of freight operations in 1953. This is the most difficult yard to operate on the layout. The main line, with its constant parade of trains, cuts the town in half. The Flagstaff local has industries to switch both north and south of the main line, but by Rule 93 isn't allowed to impede the progress of other trains. It takes the entire session to switch its typical 20-car train.



Belmont is a military ordinance depot and was the reserve for Los Angeles in World War II. It's designed to receive a 20-car train and sort the cars to the freight house and unloading track.

Williams also had a lot of freight operations in 1953. The prototype track

5 The deep Diablo Canyon scene shows how much planning, both structurally and aesthetically, is required when an upper-deck depression encroaches on the lower deck(s).



6 A pair of Broadway Limited Electro-Motive E6s glides to a stop in front of the scratchbuilt Fray Marcos Hotel and station in Williams, Ariz., as a freight in the foreground heads west. The structure is one of three scratchbuilt landmarks on the layout.

diagrams list the customers served by the railroad, including five oil dealers. I managed to model three of them, along with a stockyard.

This is where the branch line to the Grand Canyon began, and with it, passenger operations. There was a daily passenger train between Williams and the Grand Canyon, and in season on weekends there was tour-train business originating from both California and Chicago with an overnight stay at the Grand Canyon.

There's another Grand Hotel and station operated by Fred Harvey there, called Fray Marcos. I scratchbuilt mine to match the prototype. The wye here leading into staging for the national park is similar to the prototype. There's also plenty of local switching to keep a yardmaster and assistant busy.

At Ash Fork, the branchline wye to Phoenix is immediately to the west, with passenger operations and a tower controlling traffic. The reefer express trains originating in Phoenix were iced here, and there was another stockyard.

There was a large less-than-carload lot (LCL) facility here with both open-platform and covered storage. Again, plenty of local switching was included to give operators a challenge and something interesting to do.

Although there was another Grand Hotel and station operated by Fred Harvey at Ash Fork, it fell in the aisle, so just a brick platform is modeled.

Operation

Winslow (mile post 285) to Williams (mile post 378) was an uphill line going west with a varying grade around 1.4%. Beyond Williams is the Arizona divide at Supai Summit. The double-track line splits going downhill with a 1.4% grade on one track and 2.6% on the other. There's nothing but wilderness until Ash Fork at mile post 401.

I created two layout decks with Williams in the middle. The stretch with car switching is on the top deck at 56" high, within easy reach and close to eye level. The lower deck is set at 40". My

operating experience showed steep grades can severely limit train length, so I didn't want to exceed 1%. I needed 1,600", or 133 feet, of run to achieve the desired 16" of vertical separation between decks.

The top deck is flat without grades so a car being switched won't roll away. The grade begins just west of Williams and ends just before Canyon Diablo above it.

The siding at Daze is used by freight trains to stop for 10 minutes to cool their wheels after the long grade. The prototype's westbound descending grade here was 2.6%, and diesels with dynamic brakes requiring retainers based on train tonnage made this stop in 1953.

This is also the reason for left-hand operation over my entire Third District layout. The railroads wanted trains to ascend the 1.4% grade and descend the 2.6% grade.

I follow the prototype sequence of towns, and wherever you face the layout, you are looking north, with east always to your right. This helps operators avoid becoming disoriented.

Signals and operation

Signaling was appropriate but too much like real work for me. However, I found with short distances between towns and the double-track main that signals can be optional. Later I added a few static yellow boards (Rule 285, approach) to slow down trains nearing yard limits, and a stop-and-proceed red board with number plate (Rule 291) was needed on the eastern approach to Ash Fork. There's a simple sign directing the crew to stop, walk around to the other side of the island, and then proceed at reduced speed. If the yardmaster wants an approaching train to stop, he simply places a burning fusee across the rails in the form of a red LED installed at the yard limit.

It's 116 miles between Winslow and Ash Fork, so there's no way to have a scale distance between towns. With Williams in the middle, I use the station time from the actual railroad timetable. Then I measure the time it takes for a model train to reach the next town on the 3:1 fast clock traveling at prototype speed and enter that time in the model employee timetable. The *Super Chief* took two and a half hours to travel from Winslow to Ash Fork, while on my model it takes only 30 fast-clock minutes.

We operate in timetable and train-order (TTTO) fashion with clearance cards and train orders issued by a dispatcher using a phone system. All freight trains on the Santa Fe were operated as extras in 1953, so only passenger trains are listed in the timetable. Our train operation involves running freight trains without impeding the passenger trains. Harold Krewer created a realistic employee timetable using an Excel spreadsheet including some of the pages from the prototype timetable. It's printed out on 11 x 17 sheets folded into a 4 1/4" x 11" document.

After attending some seminars at prototype modeling meets and consulting with other layout owners, I created a custom waybill and had copies printed out as business cards. It's a simple generic waybill using an ink stamp to add the name of the town and a color code using a marker pen. I mark whether it's on the north, south, east, or west side of town. I also block the cars in staging for the proper side of each town.

Staging simply involves flipping the waybills and blocking the trains. The manila car card holders are available from Micro-Mark. Passenger trains use



7 Passengers, baggage, and sacks of mail wait on the platform at Flagstaff station as the passenger train pulls in. Tom had the structure 3-D printed from prototype drawings, and thinks it may be the only one in the world.

waybills and car cards in the same way with only switched cars billed, and they are a different color.

The dispatcher uses a virtual JMRI panel created by Greg Bedlek. There's a button to press for morning or evening trains. When pressed, all the trains show up as flags that can be positioned on the board to show train location.

Alternatively, a more traditional prototype train sheet was provided by Bob Perrin. This is simply a reduced-in-size prototypical train sheet. The train registers (Form 819) at Winslow, Williams, Ash Fork, and both staging yards are filled out only by crews of trains originating or terminating there.

Another item required to operate prototypically is the actual Santa Fe rule book from 1953. There are some rules specific to the district in the employee timetable.

Operating sessions

The railroad can keep a crew of 20 very busy for four actual hours — 12 hours railroad time. From midnight to noon is called the morning trick. During that period, the entire passenger fleet passes eastbound except the *Fast Mail*, which passes westbound. On the evening trick, it's reversed. This is just as it was back in 1953, and it makes the model railroad almost self-staging.

We run all the passenger trains with accurate consists for the period — currently 1953, but I plan to move forward

to 1954. Passenger operations changed seasonally and yearly, with the most traffic in summer and holiday rushes during winter. Looking at the employee timetable, 1953 was the last year No. 3, the *California Limited*, made a 45-minute meal stop in Williams, and No. 4 stopped in Winslow, with passengers eating at the Harvey House. In 1954, the *San Francisco Chief* began service and the *California Limited* was cut back, along with other changes.

The goal is to operate every two months, but at this writing it's been around three. [MR](#)



Meet Tom Thompson

Tom Thompson is an electrical engineer who lives in Hoffman Estates, Ill., with his two cats. His interest in trains started when he was a teenager railfanning near Mayfair Junction in Chicago. He enjoys railfanning, building models, and operating.



① A Class B Shay works the yard on Andrew Dodge's HO scale Ashville Lumber Co. layout. One of the by-products of the lumber operation is sawdust, used by area horse farms and as insulation in ice houses.

Geared steam down South

This 6 x 8 foot freelanced HO scale logging layout fits neatly in the corner of a basement room

By **Andrew Dodge** • Photos by the author



② Andrew used pieces of extruded-foam insulation board and papier-mâché for the scenery. The trees and bushes help mask the joints between sections and make the layout feel larger.

few items as keepsakes, including two geared locomotives I've always loved.

Instead of displaying the models, I began thinking about a small model railroad to run them on. I wanted the layout to be movable, easy to build and maintain, and have operational interest. Further, I wanted it to be something to engage and give to my grandkids.

Inspiration from the past

While everyone has their own priorities and interests, mine took me back to my logging line days. One track plan from *Model Railroader* that always intrigued me was the Gum Stump & Snowshoe by Chuck Yungkurth from the April 1966 issue. The 1 x 6 foot HO scale layout had two small switching areas at either end with a switchback connecting the two yards. I had more room than that to work with, but the plan provided the seed for my layout.

The two ends of the layout connected by the switchback are separated in elevation, which is important when lateral distance is limited. On my model railroad, I have a logging camp at one end and the depot, main yard, enginehouse, and locomotive facilities at the other.

Due to space limitations, selecting structures of an appropriate size was critical. Since most of the layout is set in a wooded rural area, I didn't want the buildings to overpower the landscape.

Finding a space

A corner of my basement living room provided the ideal location for the

layout. After surveying the space, I knew I could extend one end out 8 feet before I ran into the fireplace. The other end could come out 6 feet from the corner.

The 6 x 8-foot layout consists of three 2 x 4-foot sections of 1"-thick extruded-foam insulation board. I wanted the layout to be tall enough to clear the entertainment center below yet allow for a comfortable reach-in distance for lining turnouts and uncoupling cars.

I designed the benchwork with simplicity in mind. Since a model railroad like this would be ideal for someone downsizing, I chose materials that are readily available in hobby shops and home-improvement stores. No special tools are needed, and the materials create little or no mess.

I selected 2 x 3s for the open-grid benchwork since they were cheap and easy to work with. Lumberyards and some home-improvement stores will, for a fee, cut lumber for you. Once I painted the benchwork Forest Green, it blended into the room. If you want to give the benchwork a finished look, you could use any type of hardwood.

For those who can't stand for long periods, the model railroad would fit on a pair of 6-foot bi-fold tables. A chair with caster wheels would make the layout accessible to virtually anyone.

Bring on the foam

I used 1"-thick extruded-foam insulation board as the scenery base. The material is rigid, not susceptible to changes in moisture and temperature, and can be cut with a utility knife. The foam can

Model railroaders come to the hobby from different points of view or objectives. Some just like to run trains.

Others meticulously research and model a specific prototype. A few fill all their available space with as much layout as possible. I'm guilty on all counts. During my years in the hobby, I've built almost a dozen model railroads, ranging from a small German N scale layout in less space than a sheet of plywood to 1½" gauge live steam system with a quarter mile of track around the house, including superelevated curves!

My latest layout, the HO scale Ashville Lumber Co., came to be in a rather backward manner. For more than 30 years I've been an O scale modeler. Then, in 2020, I came into possession of my father's HO equipment from the 1950s and '60s. I decided to hold on to a



③ Ashville Lumber Co. three-truck Climax No. 6, a brass import from the late 1960s, passes the station. The Gulf Oil tank car now serves as fuel storage for the logging railroad, which is set in the southeastern United States.



④ The logging camp is at the opposite end of the line. The Shay is a Pacific Fast Mail brass import from 1961. Most of the freight cars in the scene are from the same period except for the caboose, which is a craftsman kit from the early 1950s.

also be scored with a hobby knife and snapped, similar to styrene.

Since I wanted to be able to disassemble the layout into manageable units, I cut the foam into three 2 x 4-foot sections. This required a way to secure the sections together on the benchwork.

My solution was to glue thin, 1" angled aluminum pieces along the front and back edges of the extruded-foam insulation board with Loctite PL300, a foam-safe adhesive. You can find

4-foot-long aluminum angle at most big box home-improvement stores. The lightweight material is easy to drill and can be cut with attachments in a motor tool [Wear eye and ear protection when working with a motor tool. — *Ed.*]

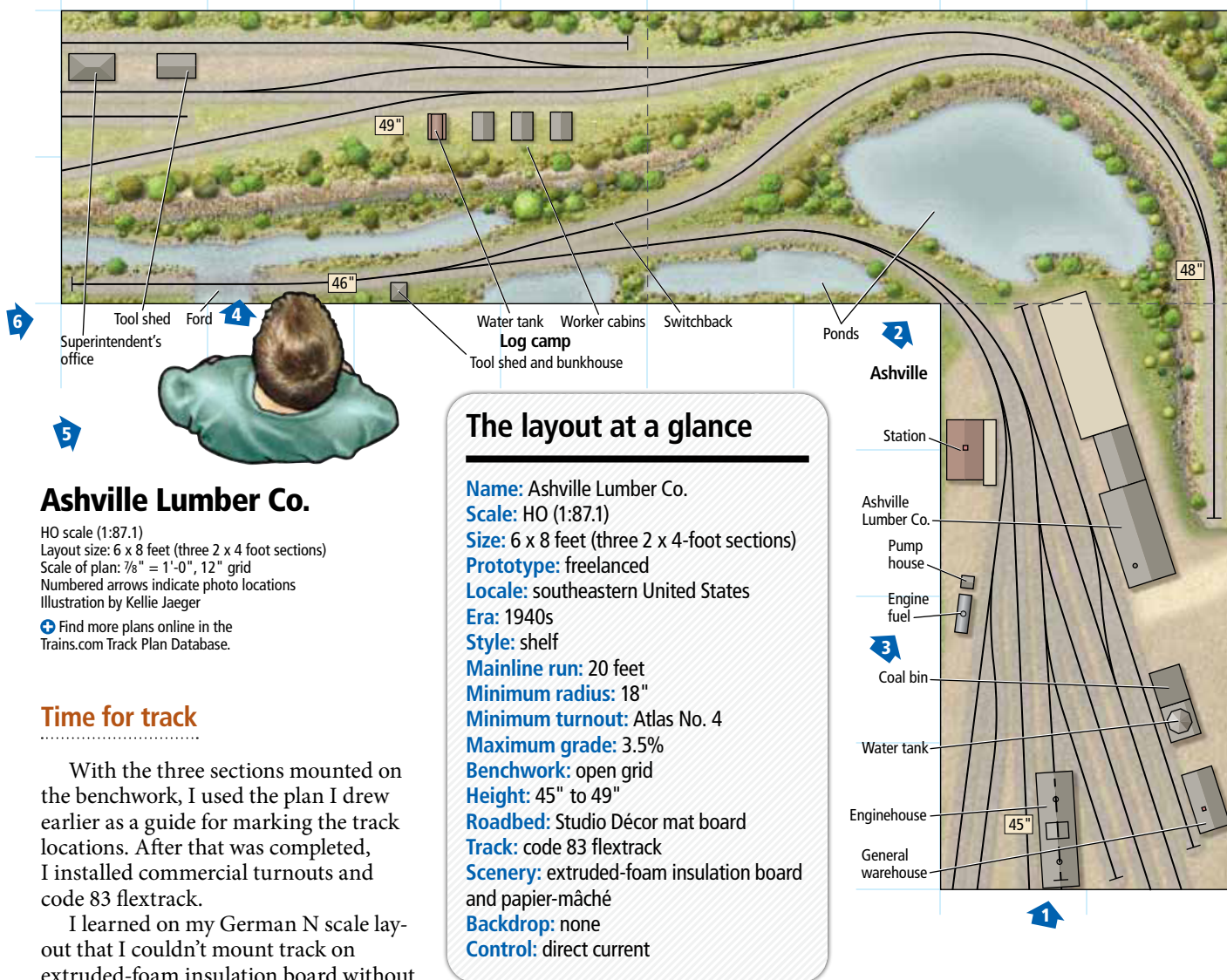
To secure each section to the benchwork, I drilled two holes through the foam and aluminum and into the side girders on the front edge of the benchwork. Clamps or an extra pair of hands might be needed to prevent the foam

from shifting. I confirmed the sections were aligned before drilling the holes.

Next, I inserted metal studs matching the size of the drill bit into the side girders, leaving enough material projecting above the surface so the exposed ends would slide into the holes. The aluminum provides a firm guide when installing the sections onto the frame, and it's not susceptible to wear or other environmental issues that might cause the sections to become misaligned.



5 Andrew designed the model railroad to fit in the corner of his basement living room. At 45" tall, the layout is at a comfortable height for operators without interfering with the entertainment center below.



Ashville Lumber Co.

HO scale (1:87.1)
 Layout size: 6 x 8 feet (three 2 x 4 foot sections)
 Scale of plan: 7/8" = 1'-0", 12" grid
 Numbered arrows indicate photo locations
 Illustration by Kellie Jaeger
 + Find more plans online in the
 Trains.com Track Plan Database.

Time for track

With the three sections mounted on the benchwork, I used the plan I drew earlier as a guide for marking the track locations. After that was completed, I installed commercial turnouts and code 83 flextrack.

I learned on my German N scale layout that I couldn't mount track on extruded-foam insulation board without issues. For this layout, I used Gorilla Glue to attach Studio Décor mat board, which I used for the roadbed. The mat board is stable enough to resist humidity and temperature fluctuations (within reason; you can't pour water on it). The material stays rigid when attached to the foam, holds nails or brads, and is resistant to chemical reactions.

With traditional benchwork methods, changing track elevations can be a delicate, if not frustrating, proposition. The task was much easier since I used extruded-foam insulation board. All I had to do was decide how much change in elevation I wanted and layer on extra foam as needed.

I added one layer of foam under the area of the tail of the first switchback, another 2½ layers on the base of the second tail, and three layers under the log camp. I mounted all of the layers, one on top of the other, with Loctite PL300. Because the foam and mat board were lightweight and easy to cut, it was a

Model a river ford

To model the river ford shown below, I first had to remove some of the extruded-foam insulation board below the rails to create depth. I then placed a piece of mat board between the tracks and foam for the stream bed. I used papier-mâché to fill in around the rough spots and create a natural transition.

To draw the rails into the stream bed, I used thick cyanoacrylate adhesive to attach a short piece of rectangular brass with a threaded rod in the center to the bottom of the track. The threaded rod passed through the foam, which let me to attach a washer and nut on the bottom.

Then I adjusted the threaded rod so the track would have a sag that looked realistic. Don't over-tighten the rod, though, or you'll end up with a V dip that may cause couplers to disengage or foul each other. I tested the various pieces of equipment that would pass through the scene to make sure there were no issues.

Satisfied with the look and operation of the track, I added rocks and dirt to the scene. Then I poured the water material, bringing it to the tops of the ties at the lowest point in the sag. — *Andrew Dodge*



6 Climax No. 7 leads side-door caboose No. 169 over a river ford near the base of the switchback.

Lightweight scenery

In an effort to keep the layout lightweight, I used extruded-foam insulation board and papier-mâché for the scenery. I started by cutting the foam into rough shapes, stacking it as necessary, and securing the pieces with PL300. After the adhesive dried, I applied papier-mâché to smooth the joints.

Papier-mâché is easy to use and has a long working time. Best of all, even your grandchildren can help. Mine did, and they enjoyed getting their hands into the bowl, mixing the material, and applying it to the layout.

Unlike plaster, which I've always used in the past on my bigger layouts, papier-mâché is light and easy to drill when planting trees. It's also generates far less dust if it needs to be cut when it's time to move the layout to a new home.

To add some interest to the scenery, I included ponds and a ford [See "Model a river ford," opposite. — *Ed.*] I surrounded the areas where I added water with trees and bushes. The vegetation also helped conceal the joints between sections and visually increased the perceived size of the layout by tricking the eyes with a variety of focal points.

Planning ahead

The HO scale Ashville Lumber Co. will allow me to continue in the hobby for years to come. This type of layout could be expanded at each end for those who have more space.

On a social level, the model railroad would be fun for a couple of people to operate; a larger group could take turns running trains. As we get older, standing for long periods may become more difficult. Operating sessions of 15 to 20 minutes might be the answer, allowing for more social time over coffee for those who have finished running trains or are awaiting their turn.

I still have a lot of projects to do on the layout. There's no rush, though. The layout runs and can be operated as it is. The fine points and any upgrades can be done while I sit back and enjoy the hobby. After all, that's one of the points of this layout. Have fun! **MR**

Andrew Dodge is a retired educator and historian and an engaged grandfather who lives in Olney, Md. He has been interested in model railroading since he was 3 years old and has built layouts in N, HO, HOn3, On3, Proto:48, and 1½" scale outdoor live steam.

simple process to make sure none of the breaks occurred where there was a change in grade.

No risers were needed except between the level areas of track. I used Atlas plastic bridge piers, cut to length, to support the roadbed and track in these grade-transition areas. The piers should fit securely. Don't force them. Since I had track that was on a grade where the sections met, I had to make sure there was support directly under the roadbed and on both sides of the joints.

I used glue to attach the flextrack to the mat board roadbed. At section joints, I used 4" pieces of removable track with rail joiners at both ends. This made the sections easier to disassemble and protected the track ends from damage.

Going old school

Since the geared locomotives I inherited were from the 1950s and '60s, I left

them as they were and powered the layout with direct current. Two engines are required at Ashville. A single engine is required for the log camp yard.

If you were to bring the layout into the diesel era, a light-duty or industrial switcher would do nicely in the main yard. A 44-ton diesel could take trains up the grade to the logging camp.

Since I used two engines, I installed two block toggle switches for each section. All of the turnouts are operated manually with Caboose Industries ground throws that are secured to the mat board with brads. The frogs are electrically powered through the points.

If I was doing this from scratch with new equipment, I would strongly consider investigating the Dead Rail Society (deadrailsociety.com). Battery power would eliminate all wiring on the layout. The battery would be in the engine's tender. The locomotives would be controlled through a radio or Bluetooth decoder.

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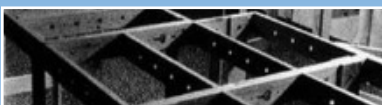
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Artz Lumber, an industry created from several unrelated HO scale structure kits by kitbashing pioneer Art Curren, is seen on the original version of *Model Railroader's* house layout, the Milwaukee, Racine & Troy.

MODEL RAILROADER HALL OF FAME

March's nominees elevated the hobby of model railroading to an art

NOMINEES

By Steven Otte

The Model Railroader Hall of Fame, which we introduced in our 90th anniversary issue, is intended to honor those who have made a substantial and lasting impact on our hobby. This month's nominees include three model railroaders who will be well known to longtime readers of this magazine. Innovators, influencers, and craftsmen all, these three have each elevated some aspect of our hobby to an art form.

Art Curren was the godfather of kitbashing. Though there were doubtless others who also came up with the idea, Art took the technique to a new level. His unique creations, detailed in numerous magazine articles and two books,

showed modelers they didn't have to be constrained by the instructions that came with the kit. When Art opened a new kit, he built the structure he wanted, not the one on the box.

While Art Curren turned structure kits into sculpture, former *Model Railroader* Editor-in-Chief and Executive Editor Andy Sperandio approached model railroading as a performing art. To Andy, the ultimate goal of a model railroad is to operate like a real one would. Andy traveled to operate on layouts all over the country and shared his extensive knowledge in his monthly "The Operators" column. While at the helm of MR, he also launched our two annual special issues, *Great Model Railroads* and *Model Railroad Planning*.

Jack Work was a renaissance man of model railroading. Starting in the mid-1950s, Jack wrote a torrent of articles for MR on every aspect of model railroading from structure building and rolling stock to track-laying and scenery. There were many years that MR published more issues with Jack's byline than without it.

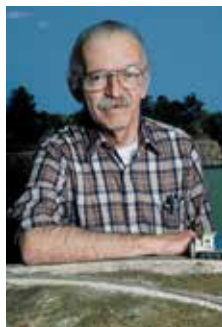
In all aspects of the hobby, all three of these nominees embody the slogan of the magazine they contributed so much to: Model railroading is fun!



Use this QR code to cast your vote for the Model Railroader Hall of Fame.

Art Curren

Art Curren didn't just work in *Model Railroader's* advertising department for 23 years. He was also an innovator in the technique of kitbashing, which involves treating a model



Art Curren

kit as a box of raw materials instead of pieces intended to fit together only one particular way.

Art freely cut apart, repositioned, repurposed, and combined walls, roofs, and fixtures from unrelated kits — sometimes from different manufacturers — to create buildings never seen before. He made many unique structures for MR's house layout, the Milwaukee, Racine & Troy (both versions), as well as for project layouts and photo dioramas. He detailed his builds in dozens of articles for MR and other hobby publications, many of which were collected in two books published by Kalmbach, *Kitbashing HO Model Railroad Structures* and *Realistic Plastic Structures for Toy Train Layouts* (both now out of print).

In a tribute published in MR's January 2001 issue, then-Senior Editor Jim Hediger remembered Art as a soft-spoken man with a wry sense of humor. That personality often came out in the pun names he gave his industries, such as Frenda Mine, Hardly Abel Mfg., and Perry Shibbel Fruit & Produce.

Art died on Oct. 15, 2000, from leukemia. He was 65.

Andy Sperandeo

The consummate model railroad operator, Andy Sperandeo traveled the country visiting and operating dozens — if not hundreds — of layouts in his 32 years at *Model Railroader*, and even after his semi-retirement in 2011. (He continued to edit the annual special issue he founded, *Great Model Railroads*, as well as writing his monthly column “The Operators,” until his death.) He served as editor-in-chief and executive editor of the magazine, during which time he planned and guided the construction of both versions of the MR&T.

Andy was known to all in the hobby as a stickler for realism. Not only did he insist on prototypical accuracy in his locomotive and rolling stock models, he also followed the prototype in the design and operation of his 38 x 44-foot home layout, based on the Atchison, Topeka & Santa Fe's Cajon Pass in 1947.

Andy enjoyed every aspect of operation, from running way freights and yard switching to dispatching and even paperwork. He brought this passion to the magazine in his column “The Operators,” starting in January 2007. The monthly column explored the intricacies of prototype train operations and how they could be incorporated on readers' home layouts.

Andy died in October 2015 at age 70. He is survived by his wife, Arlene.



Andy Sperandeo

Jack Work

Within a few years of his first published article in 1956 — an award-winning scratchbuilt Canadian Pacific business car — MR was already referring to Jack Work as a “master builder.” This multi-talented craftsman wrote many articles for MR and other hobby publications.

Jack's structure building articles, many of which were accompanied by detailed drawings, covered such subjects as bridges, sawmills, coal mines, freight houses, and depots. He also made rolling stock and even wrote about hand-laying turnouts, including scratchbuilt frogs!

Jack's influence wasn't just in the area of scratchbuilding; he was also known for his scenery techniques. Some of these articles dealt with wall signs, figures, plaster rocks, tree stumps, logs, hardshell terrain, and fine detail parts. For decades after Jack's article “How to model pine trees” was published in our May 1958 issue, modelers boasted of building trees using the “Jack Work method.”

Jack even got into track planning. In his article “Track planning for small spaces” (December 1974), he designed a 4 x 8-foot HOn3 layout meant to address the lack of challenge in so many small layouts of the day. His legacy is so durable that as late as 2019, hobbyists writing to the magazine were still citing that article as inspiration for their layouts.

Jack died in June 1996 at age 70. 



Jack Work



Andy Sperandeo works as a dispatcher using a prototypical Centralized Train Control (CTC) machine during an operating session. Andy loved all aspects of operation and shared this passion in his column, “The Operators,” for nine years.



One of Jack Work's best-known articles published in MR was “How to build a coal mine,” a three-part series that ran in October through December 1959. The model was later duplicated as a plastic structure kit in HO and N scales.

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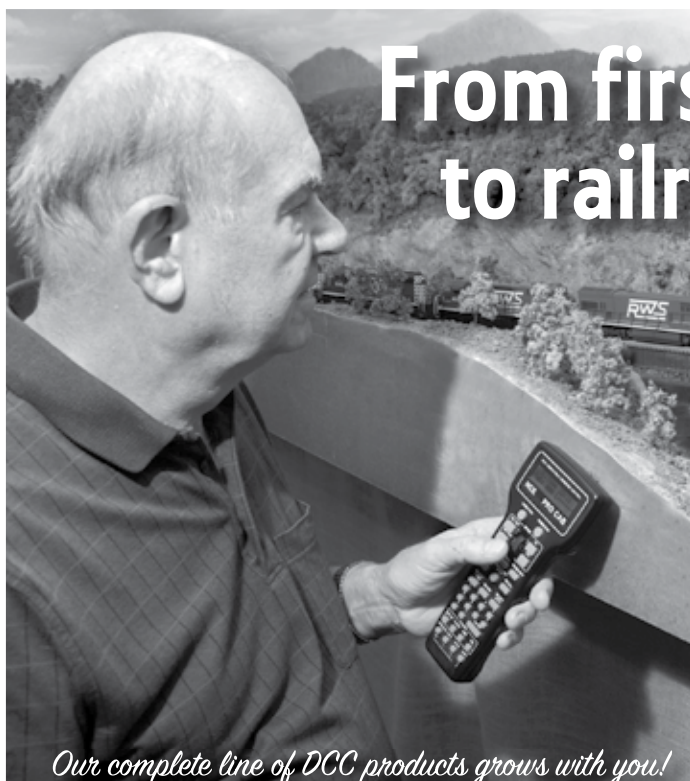
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Ed West passes the National Auto Parts Store in Kingfield on the track mower heading out on the main to Strong on Lou Sassi's On30 Sandy River & Rangeley Lakes RR. After having his friend Rich Cobb scratchbuild the structure, Lou modified it to better suit his layout.

Just because a building is finished doesn't mean it's too late to modify it

Kitbashing a SCRATCHBUILT STRUCTURE

by Lou Sassi • Photos by the author unless noted



① Lou's visit to Williamsburg, Va., where he saw the prototype Prentis Store, inspired him to add the structure to his layout. He bought a book that included this 1928 photo of the building
The Colonial Williamsburg Foundation



② Lou removed and disassembled the structure's dormers to cut them down to the width of their Grandt Line windows.



③ The dormer on the left has been cut down and reinstalled. It doesn't dominate the roof like the unmodified one at right.



④ Adding layers of tape to the valley between the two slopes of the roof built it up to make the transition gentler.



⑤ Lou used tape to extend the barge boards at the end of the roof gables to match the new curve at the bottom end.

While reading Cody Grivno's article in the April 2015 *Model Railroader* on making a unique trackside building by kitbashing BLMA's pre-built modern yard office, I thought readers might enjoy seeing how I used a similar approach when dealing with a scratch-built structure.

After visiting Colonial Williamsburg in Virginia in the spring of 2014, I decided to incorporate a model of one of the buildings I saw there into my On30 Sandy River & Rangeley Lakes layout. While in Williamsburg, I purchased an excellent hardcover book titled *Williamsburg – Before and After* by George Humphrey Yetter (available from the Colonial Williamsburg Foundation). The book is a photo essay of Williamsburg before, during, and after its restoration in the mid-1930s and has numerous photos of the area as it appeared in the 1920s and early '30s. For

those modeling this time period, the book is a gold mine of information.

At the time of my visit to Williamsburg, I was developing structures for the streets of Kingfield on my model railroad. I opted to incorporate a model of the prototype Prentis Store, on the corner of Main and Lewis Streets. During the 1920s, the structure was home to an auto parts store with period signs ①. I decided my model would be the National Auto Parts store.

Up on the roof

When modeling a prototype structure, I usually choose to capture its general appearance while making it fit a specific location on the railroad rather than replicating it exactly. In this case, the building would be next to Kingfield Station. This meant it had to be a bit shorter than its prototype counterpart.

I made a scale drawing of what I wanted. I also copied the page of the

book that featured photos of the Prentis building when it served as an auto parts store. I then asked my friend Rich Cobb to make a model using my dimensions while matching the prototype photo as closely as possible, including the dormers and whitewashed brick facade.

After placing Rich's finished model in position on the layout, I decided to make some subtle – and not so subtle – changes. I started by reducing the size of the dormers. After peeling them off the roof with a hobby knife, I cut down the original parts ② and re-glued them together, making the face of the dormer the outside dimensions of the Grant Line window casting ③. After reassembling the dormer, I added Kappler 1 x 4 trim (part no. KP1103-OP12) to the window frame to make it appear heavier.

I also wanted to replicate the gentle flare at the bottom of the roofline, so I used double-sided tape to build up the curve of the roof surface ④. I cut some more tape to shape and applied it to the



6 The last step on the roof was to replace the shingles with brown ones that Lou thought better matched the building.



7 To thin the paper signs so they would nestle into the walls' brick texture, Lou sanded the backs with fine sandpaper.



8 After applying thinned white glue to the back of the signs, Lou pressed them into the brick with a soft towel.



9 To make the building more interesting, Lou scratchbuilt a wood addition with a foundation of stone-textured plastic.

edge of the eaves to match the new curvature of the lower roof 5.

Then I covered the gray Minuteman Models asbestos shingle roofing with brown 6. I felt the brown shingles better matched the color of the brown trim and brick walls. Minuteman shingles are self-stick, so after peeling the backing away I simply pressed them in place.

Here's your sign

I wanted to add signs to the left side and front of the building to match the prototype, so I used some scrap brick sheet to fill in the frontmost window on the side facing the track. I painted the brick insert and the brick on the front of the building Reefer White to match the painted brick sides. I then gave the entire structure a wash of weathering stain (two teaspoons India ink to one pint rubbing alcohol).

The signs on the side of the building are from sheets that have been in my

parts drawer for years. I made the signs for the front on my computer.

I wanted the brick detail to show through all the signs, so before applying them, I sanded their back sides with a piece of fine (grade 2/0) sandpaper attached to a block of wood 7. I applied a thin layer of white glue diluted with water to the back of the signs and, using a soft towel, pressed them in place 8.

The new addition

I decided a wood addition running along one side and the back of the building would add some visual interest. After testing the configuration with a cardboard mock-up, I cut four walls from a sheet of Northeast Scale Lumber board and batten siding (part no. 316BABB).

Using a no. 11 hobby blade, I cut openings in the siding to accept three Grandt Line double-hung windows (no. 3766) and a door (no. 3634), then stained the siding with my weathering stain. I

brush-painted the windows and door Roof Brown, which was close to the trim color Rich used on the main building.

I found a sheet of stone-textured plastic in my scrap box, from which I built a stone foundation for the addition. Once it was assembled, I painted the stone foundation Reefer Gray and brushed it with Weber Costello Alphacolor Hi-Fi Grays powdered pastels.

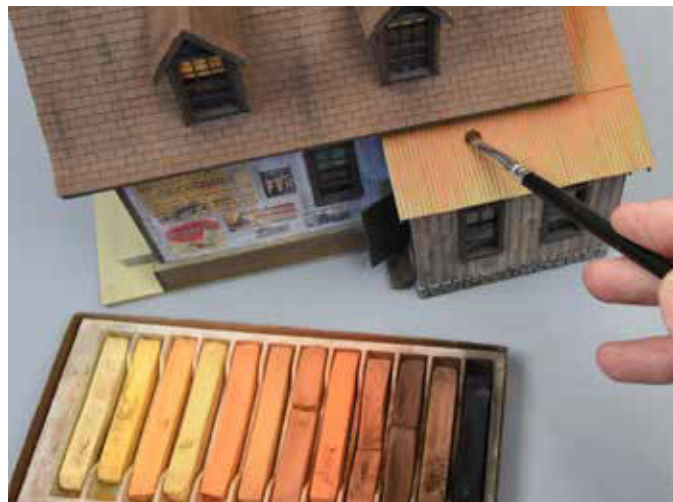
I cut a subroof from a piece of cardboard. Photo 9 shows the parts prior to assembly.

After gluing the assembled addition to the side of the main building, I covered the roof with Builders in Scale Corrugated Roofing (part no. 738). After painting it Reefer Gray, I brush coated the corrugated material and the surface of the subroof with full strength white glue and pressed it into place 10.

Since the upper part of the corrugated roofing would be protected somewhat from the weather by the eaves of the main building, I painted this portion



10 After attaching the addition and its foundation, Lou covered the subroof with corrugated metal siding.



11 Once the roofing glue was dry, Lou made it look rusty with Raw Sienna acrylic paint and powdered pastels.

with a thinned wash of Raw Sienna (I use Liquitex Basics acrylic colors). Once the roof was in place and the glue dry, I finished painting the exposed surface with full-strength Raw Sienna.

To apply the acrylic, I placed a dab of it on the surface with a stiff brush, dipped the brush in water, then drew the acrylic down the surface of the corrugated material. This allowed a bit of the

previously applied base gray color to show through.

When the acrylics were completely dry, I dry brushed on some Weber Costello Alphacolor earth-tone powdered pigments, similar in color to the acrylic, to further blend, flatten, and soften the surface colors and texture. I also dry brushed streaks of black powdered pigments onto the roof 11.

From new to renewed

In this era of factory-assembled, pre-weathered buildings, even though a structure may be finished, it doesn't have to stay that way. Regardless of its origins, there may be room for additional detailing, modification, or even expansion. The process of doing so can be both enjoyable and rewarding. [MR](#)



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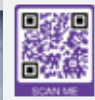


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Camp cars for wire gangs

The forlorn Western Union

(with WUTX reporting marks) material car whose photo illustrated December's "Wreckers and Western Union" begs its own story. After all, the company's white-on-blue enamel sign adorned as many depots as were emblazoned with the Railway Express Agency's white-on-red diamond. Several readers prompted me to hunt down more information on wire gang equipment.

I started by contacting Abe

Burnett, a telegraphy expert with whom I've corresponded occasionally. I also ran across WUTX 3558 in a quick internet search. It was long a tired shop queen in the Southeastern Railway Museum in Duluth, Ga., until it caught the attention of Lloyd Neal, the museum's assistant librarian. Inspired by Western Union lore, he made its restoration a mission, and it's now displayed proudly at the museum. Abe and Lloyd both shared information with me very generously.

Lloyd helped me to learn that the company began experimenting with its own camp car outfits in 1914 when it began heavy reconstruction of its original pole lines. Comfortable living quarters could be sent to remote locations or moved in emergencies, an advantage over housing wire gangs in bare-bones railroad outfits or hotels distant from job sites. The company rushed second-hand

equipment into service but soon began rebuilding and modernizing it at its shops in Chattanooga, Tenn. A sleeping car, dining car, and tool and material car made a typical outfit. This was an impressive undertaking: Its peak between 1925 and 1930 scattered 120 outfits around the country. A Western Union employee wrote a 1924 article in *Railway Signaling* that describes these outfits in rich detail. Find it by searching "Conveniences of W.U. Camp Cars" at books.google.com.

Railroads and telegraphy

have had close ties ever since Samuel F. B. Morse sent his famous "What hath God wrought" message from Washington to Baltimore in 1844, after the Baltimore & Ohio allowed his wire along its tracks. Charles Minot's first telegraphic train order came in 1851 on the Erie. That same year, a Western Union predecessor started its own line between New York City and Lake Erie, and in 1856 the Western Union Telegraph Co. emerged from the firm's success.

I suppose railroad rights-of-way had great appeal to Western Union, saving it the time and expense of acquiring its own. Southern Adventist University's McKee Library near Chattanooga credits Minot for seeing the efficiency in using railroad clerks to transmit messages. Such reciprocal advantages enabled Minot to arrange to have a railroad exchange a right-of-way, transportation of



Sunrise has burned off just enough ground fog to make Kansas City Southern's *Campti Local* gleam, speeding south along a double pole line near McDade, La. on June 11, 1975.

Jerry Dziedzic photo

materials and supplies, and \$30 per mile for a line's construction by a telegraph company.

Indeed, Abe found an 1879 contract between the company and the Shenandoah Valley Ry., now Norfolk Southern's line joining Hagerstown, Md. and Roanoke, Va. It contains key provisions with roots like Minot's, making the railroad responsible for erecting the poles and the company responsible for installing and maintaining the wire.

Another provision gave railroad messages concerning the movement of trains priority over commercial telegrams. Western Union's investment in outfits for its reconstruction project indicates that such arrangements were long-lived. However, outfit use declined after 1930, and the company retired its last in the United States in 1960 and Canada in 1963. During the period of decline and afterwards, material cars

were spotted so vehicle-based crews could reach them for supplies. Perhaps WUTX 7559, the car in December's photo at Boston & Maine's East Deerfield yard, served this purpose.

Pole lines with wires like those seen in this month's photo require painstaking modeling. However, it's easy to honor Western Union by hanging its signs on depots. I'm toying with recording a telegraph sounder module that plays in the background near a station, too. There's also the Ambroid 1-in-5000 kit which depicts 7559 itself. It's no coincidence: East Deerfield was only 90 miles from Ambroid's Methuen, Mass. location when the kit appeared in 1959. Discovering that I can build the very car I encountered 50 years ago hit me like a thunderclap! A lucky eBay strike delivered the kit, so this dreamlike adventure is now almost complete. **MR**



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Streamlined Norfolk & Western 4-8-2

No. 119 races past Muldoon's Distillery, which is located just west of the bridge between Arlington and Fairfax. Veteran model railroader Gary Hoover applied lessons he learned from five previous layouts when constructing this 18 x 48-foot HO scale N&W model railroad, which is featured in *Model Railroad Planning 2024*. Gary Hoover photo



Featuring 11 articles packed with photos, tips, tricks, and track plans for HO, N, O, and On30 scales, *Model Railroad Planning 2024*

is on newsstands now. This month, Trackside Photos features images previewing six of those articles. *Model Railroad Planning 2024* can be purchased from your local hobby store, from our Customer Service hotline at 877-246-4879, or at KalmbachHobbyStore.com.



Backlit by the setting sun, a standard gauge Denver & Rio Grande Western class C-48 Consolidation trundles across a pin-connected truss bridge on professional photographer Erik Lindgren's O scale modular photo dioramas. Their portability allows him to transport them to ideal shooting locations in all types of weather. Erik

Lindgren photo



Raising the entire subroadbed 4 to 6 inches above the benchwork allows scenes like this one on Maynard Mitchell's HO scale Chicago & North Western. The right-of-way is sufficiently elevated to keep it above the topography and make adding waterways much easier. Maynard Mitchell photo





ET&WNC No. 9 leads a mixed train
through Winner, Tenn., on Lee Bishop's
10 x 11-foot On30 tribute to the famous
East Tennessee & Western North
Carolina 3-foot-gauge railroad. This is
the end of a 180-degree curve that is
partially hidden by a cornfield and two
larger structures. Lee Bishop photo



Jim Hertzog models the Reading Co. in HO during the transition era, but he took advantage of the pandemic shutdown time to dramatically enhance the operations of the adjacent Lehigh & New England. This photo shows the coal-loading truck dump switched by the LNE at Chain, Pa. Mike Rinkunas photo



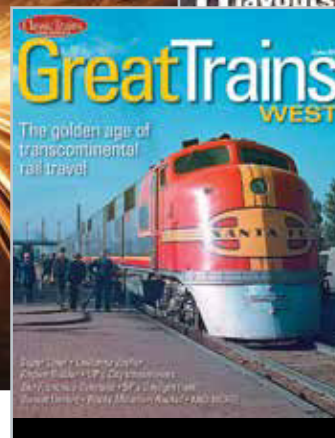
Bathtub gondolas heavy with Monongahela coal follow Conrail SD40-2s 6462 and 6416 on train UBO-2B, enroute to the massive power plant at Bow, N.H., on Dave Abeles' Conrail Onondaga Cutoff. Dave added a "deep staging" yard to his HO scale railroad to accommodate special trains such as this one to add interest to the daily routine.

Dave Abeles photo



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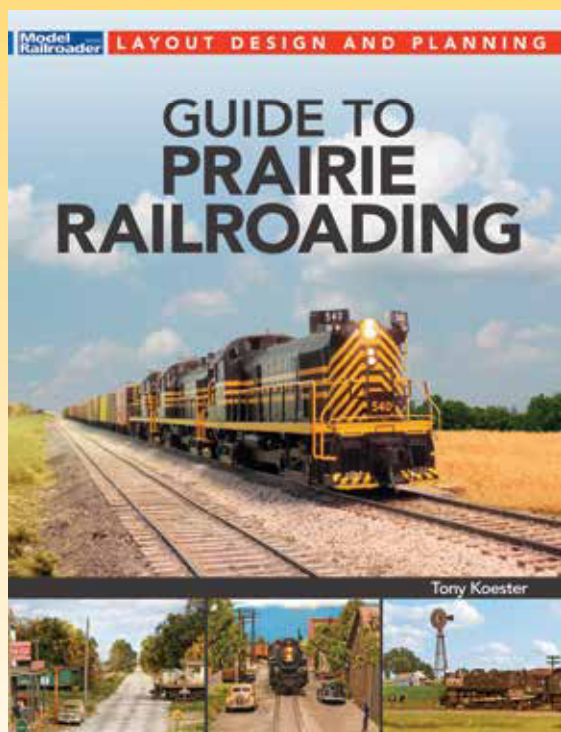
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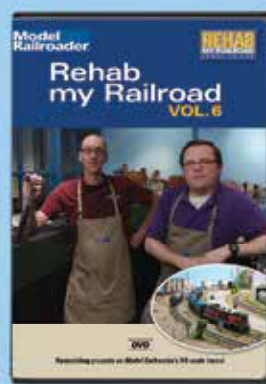
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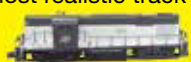
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Classified Advertising

Schedule of Events Rate: \$45 per issue (55 word maximum). Ads will contain the following information about the event: state, city, sponsoring organization and name of event, meet, auction or show, dates, location, times, admission fee, name and/or telephone number and/or email of person to contact for information. Name, daytime telephone number and street address of the person providing the information is also required but need not be included in the ad. Unless otherwise requested, ads will be published in the issue month that the event occurs in. Please specify issue date(s). **Word Ad Rates;** per issue: 1 insertion — \$2.03 per word, 6 insertions — \$1.89 per word, 12 insertions — \$1.77 per word. \$40.00 MINIMUM per ad. To receive the discount you must order and prepay for all ads at one time. Count all initials, single numbers, groups of numbers (i.e. 4-6-0 or K-27), names, address number, street number, street name, city, state, zip, phone numbers each as one word. Example: John A. Jones, 2102 South Post St., Waukesha, WI 53187 would count as 10 words. For MR's private records, please furnish: a telephone number and, when using a P.O. Box in your ad, a street address. *Model Railroad* reserves the right to refuse listing. **All Copy:** Set in standard 6 point type. First several words only set in bold face. If possible, ads should be sent typewritten and categorized to ensure accuracy.

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Schedule of Events

AL, MOBILE: Model Train Show sponsored by South West Alabama Railroad Modelers (SWARM). Via Health, Fitness and Enrichment Center, 1717 Dauphin Street. March 2-3, 2024, Saturday 9:00am-5:00pm; Sunday 11:00am-4:00pm. Admission \$8.00, family \$15.00, under 10 free. Operating layouts, demonstrations, and dealers. Contact Charlie Boyer, 251-454-0572 (before 9pm CST), email: charlieboyer66@att.net, or Glenn Samuel, 205-914-0693, email: gasamuel@aol.com

CA, BAKERSFIELD: Golden Empire Historical and Modeling Society 30th Annual Bakersfield Train Show, Kern County Fairgrounds, 1142 South P Street, Bakersfield, CA 93307. March 2-3, 2024, Saturday, 10am-5pm and Sunday, 10am-4pm. Admission: \$8 for adults, 12 and under FREE. Contact Kevin Birkbeck, 661-496-9514 or kevin4strings@gmail.com, www.gwhams.club

CO, DENVER: Rocky Mountain Train Show. April 6-7, 2024. National Western Complex, 4655 Humboldt St., Denver, CO 80216. Saturday, 9:00am-5:00pm, Sunday 9:00am-4:00pm. 3 acres of model trains, all scales, 30 layouts, 700 sales tables, clinics and more. Admission \$14.00, under 12/scouts in uniform FREE. Discounted tickets available for military/first responders through VetTix.org. Free Parking. 303-364-0274, www.RockyMountainTrainShow.com

FL, KISSIMMEE: Regal Railways Presents Toy Train Collectible & Hobby Show. Columbia Club of Osceola (Knights Hall), 2000 Neptune Road, Saturday, March 16, 2024, 9:00am-2:00pm. Admission: \$6.00 adults, children under 12 free. Vendors and operating layout. Lunch available. Contact Joe: 727-244-1341 or visit: www.regalrailways.com for more information.

FL, MELBOURNE: The Melbourne Train and Toy Show. Azan Shrine Center, 1591 West Eau Gallie Blvd, Melbourne, FL 32935. Saturday, March 2, 2024, 9am-2pm. Admission: \$5, kids under 10 FREE. Vendor tables \$25 each or 3 or more \$20 each. Join us for trains, toys, and fun! Lunch/snacks available. For more information: SchultzSpaceCoastTrains@aol.com or 321-805-1963

FL, OCALA: Lions Tri-Annual Train Show. First Christian Church, 1908 E. Fort King St., Ocala, FL 34471. Saturday, March 9, 2024, 9:00am-2:00pm. Model trains, accessories, detail parts and toys. Admission \$5.00, children 12 and under free w/paid adult. Bring two canned goods and receive \$1.00 off admission. Food/snacks available. Information: Bob 352-694-6381 or cell 813-203-3216

IL, SPRINGFIELD: Springfield Railroad Society Annual Train Fair. Orr Building on the Illinois State Fairgrounds. Sunday, March 10, 2024, 10:00AM-4:00PM. Early bird shopping starts at 9:00AM for \$10.00. Admission fee \$5.00 from 10:00AM to 4:00PM. Free parking. Largest show in downstate Illinois! For info call Ray at 217-544-4295 or Mike at 217-899-3100 or visit www.springfieldtrainfair.com

IL, URBANA: Lincoln Square Train Show, 100 W. High St., Urbana, IL 61801. March 23-24, 2024. Saturday 8am-5pm, Sunday 11am-4pm. Hosted by Illinois Terminal Division, NMRA. FREE public admission. Railroadiana and historical societies. Freemo Set-up and run. Free parking, wheelchair accessible. Vendor table info at <http://ttd.illinoisterminaldivision.org/show/show.htm>

IN, LA PORTE: Duneland Model RR Club Train Show and Swap Meet. La Porte County Fairgrounds Community Building, 2581 In-2, La Porte, IN 46350. Sunday, February 25, 2024, 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. (Masks are optional.)

KS, LAWRENCE: Lawrence Model Railroad Club Annual Train Show and Swap Meet. March 2-3, 2024. Crown Toyota, 3400 S. Iowa St., Lawrence, KS 66046. Saturday 9am-5pm; Sunday 9am-3pm. Admission: Adults \$8.00, children 12 and under free with paid adult. Bring a canned food donation, receive \$2.00 off admission. Contact: Jim Turner, 785-393-6207, bike2turner@gmail.com, or visit: www.lawrencemodelrailroadclub.org

MA, AUBURN: Worcester Model Railroaders Annual Show at Auburn Elks Club, 754 Southbridge St., Auburn, MA 01501. Sunday, February 25, 2024, 10am-3pm. Admission: \$6.00, children under 12 free. Handicapped accessible. Two floors of dealers, exhibits, modular layouts. Contact: Ralph Kimball, 508-868-5189, ralphkimball@charter.net or www.wmrr.org

MI, SALINE: The Ann Arbor Model Railroad Club 54th Annual Train Show & Sale. February 17-18, 2024. Saturday 10:00am-4:00pm and Sunday 10:00am-3:00pm. Saline Middle School, 7190 N. Maple Rd., 48176. Admission \$7.00, under 10 free w/paid adult, Scouts in uniform free. 300+ tables, operating layouts, free clinics, free parking, shuttle buses. Visit: hvrhs.org/annual-train-show.html or, 734-426-5100 Wednesday evenings

MN, ST. CLOUD: Granite City Train Show and Sale. River's Edge Convention Center, 10 4th Ave South, St. Cloud, MN 56301. Saturday, March 9, 2024, 9:00am-3:00pm. \$6.00, kids 10 and under FREE! Buy/sell model/toy trains, books, videos, railroad collectibles. Operating model & toy train display. Win a LIONEL train set! 612-558-6484; GraniteCityTrainShow@gmail.com or visit: www.GraniteCityTrainShow.com

NC, GREENSBORO: Train Show, Lewis Recreation Center, 3110 Forest Lawn Dr. Greensboro, NC 27455. March 23-24, 2024, 9:00am-5:00pm both days. Admission \$10 (includes both days), \$2 off with flyer, children under 12 free with adult. Visit us: www.carolinamodelrr.org. Contact Kenn at kcassell@twc.com, 336-501-0233, or Ron at ronalddidonato195@gmail.com, 336-240-6881

NJ, BRICK: ECTP and Collectibles LLC presents The Brick Train Show. Elks Lodge, 2491 Hooper Avenue, Brick, NJ 08723. Sunday, March 3, 2024, 9:00am-2:00pm. Admission: \$7.00; under 12 free with adult. John LaLima 732-845-5966. Go to www.eastcoasttrainparts.com and click on The Brick Show.

NJ, CLARK: Jersey Central Train Show & Sale. Mother Seton Regional High School, 1 Valley Road, Clark, NJ 07066. Sunday, March 3, 2024, 9:00am-3:30pm. Admission: \$7 adults, children under 12 free, \$14 family. Model trains, railroadiana, photos, slides, books and videos. Refreshments available. For information: Heinz Ricken, hcricken@gmail.com, 908-272-3910, or Mitchell Dakelman, dakelmanm@aol.com, 908-208-2522

NJ, WAYNE: ECTP and Collectibles LLC presents The Wayne Train Show. P.A.L. Hall, 1 Pal Drive, Wayne, NJ 07470. Sunday, March 24, 2024, 9:00am-2:00pm. Admission: \$7.00; under 12 free with adult. John LaLima 732-845-5966. Go to www.eastcoasttrainparts.com and click on The Wayne Show.

OH, TOLEDO: Greater Toledo Train & Toy Show. Owens Community College (SHAC), 30335 Oregon Rd., Painsburg, OH 43551. Sunday, March 10, 2024, 11:00am-3:00pm. "Early Birds" 9:00am-3:00pm. Adults \$7, Early Bird Adults \$10, Children 12 and under FREE w/paid adult. Contact: Randy Ramsey, 1566 South Ave., Toledo, OH 43609, 419-215-4181, email: toledotoymasters@gmail.com, website: www.toymasters.org

OR, PORTLAND: Willamette Model Railroad Club Swap Meet. Kliever Armory, 10000 NE 33rd Dr., Portland, OR 97211. Saturday, March 2, 2024, 9:00am-3:00pm. Admission: \$6.00 Adults, 12 and under free w/paid adult. Free Parking. Food available. Over 114 Tables, all gauges. 8-ft vendor tables: \$30/\$35. Website: wmrrc.com For Table Reservations contact: Roger Rees, wmrrcswapmeet@gmail.com, or 503-256-2248

PA, BEAVER FALLS: BLRHS Frosty Rails Train Show. Saturday, February 10, 2024, 10:00am-3:00pm. Chippewa Township VFD Social Hall, 2568 Darlington Rd., Beaver Falls, PA 15010. Adults \$5.00 (\$4.00 if you mention Model Railroad ad). Children under 12 free. Tables \$25 each. For show info: blrhinc.org or table reservations: Tom Bianculli, tbian64@gmail.com or 412-585-3614

TN, JOHNSON CITY: BIG TRAIN SHOW. May 31-June 1, 2024. Host: George L. Carter Railroad Museum. 300+ tables, 64,000 sq. ft. All scales, operating layouts, vendors, memorabilia, books, food. ETSU "Mini-Dome" Noon-6pm Friday, 10am-4pm Saturday. Admission: \$8 per day, under 12 Free. Free covered parking. Contact Roger Teinert 423-791-4937 or www.etsu.edu/railroad

UT, OGDEN: 34th Annual Hostlers Model Railroad Festival. Ogden Union Station, Historic 25th St. & Wall Ave. March 1-2-3, 2024, Friday 3:00pm-8:00pm; Saturday 9:00am-6:00pm; Sunday 9:30am-3:00pm. Admission: adults \$8, weekend pass \$12, 12 and under FREE. Layouts - all scales, many vendors, LEGO layout. Biggest train show in the Intermountain West. Information: 801-394-4952, 801-544-5749, www.hostlers.info

VT, ST. ALBANS: Vermont Rails Show. Collins Perley Sports & Fitness Center, 890 Fairfax Rd., St. Albans City, VT 05478. (Interstate 89, Exit 19). Saturday, March 9, 2024, 10:00am-4:00pm. Adults \$8.00, children 6-12 \$2.00, children under 6 free. Sponsor: NWV Model Railroad Association. Contact: Ron Piro, 802-598-0905, or visit: www.nwvrailroad.org

WA, CHEHALIS: Lewis County Model Railroad Club, Annual Spring Train Show and Swap Meet. Southwest Washington Fair Grounds, Blue Pavilion Building, 2555 N. National Ave., Chehalis, WA 98532. April 6-7, 2024. Saturday 10:00am-4:00pm and Sunday 10:00am-2:00pm. Admission \$5.00. Free parking. Contact information: Ted, 360-985-7788, or email: TedsTrains@LewisCounty.com

WA, SPOKANE: River City Modelers Spring Model Train Show. Spokane Fairgrounds, 404 N. Havana. Sunday, March 3, 2024, 9:30am-3:30pm. Admission: adults \$8, 12 and under free. 200+ tables of Railroad-related items for sale, operating layouts, Free-MO, Operation Lifesaver & more. Free Parking. For table rental or general info, contact: Shirley Sample, 509-991-2317 or shirleysample13@gmail.com

WI, LA CROSSE / ONALASKA: La Crosse & Three Rivers Railroad Club's 43rd Annual Model Railroad Show. Omni Center, 255 Riders Club Road, Onalaska, WI 54650. March 16-17, 2024. Saturday 9:00am-5:00pm, Sunday 10:00am-3:00pm. Adults \$8.00, \$7.50 with a non-perishable food item, 2-day pass \$12.00, children 11 and under free w/adult. Info: Belva Thompson, 608-780-7364

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

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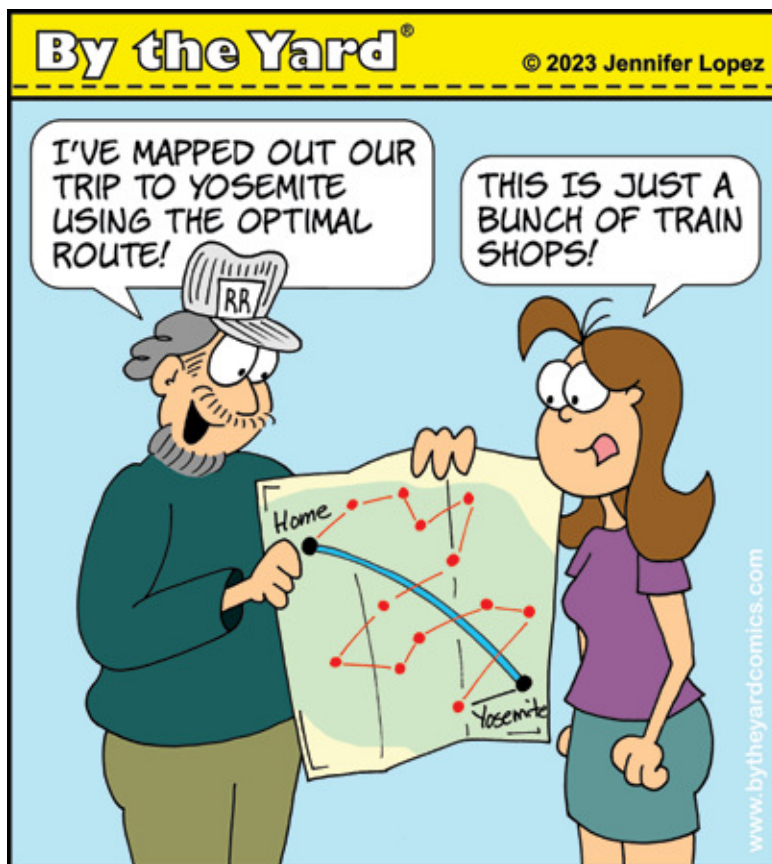
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Matching paint



A CSX freight heading east from Marion to Cleveland, Ohio, in August 2010 clearly illustrates why matching prototype paint colors is at best an elusive quest. Bruce Ernatt photo

One of the easier ways to start a heated argument among modelers is to ask what color a railroad painted its stuff. It doesn't matter whether you're asking about locomotives or passenger cars or freight cars or cabooses or even lineside structures. The debate will begin. And never end.

One of the classic examples is Pennsylvania RR's Brunswick Green. Seen in the proper light on a clean locomotive, the greenish hue is quite apparent, but it's also easy to understand why those with less discriminating eye for color might say, "Sure looks black to me!"

Those of us who model a smaller railroad have our own color wars. I'd say that 90% of the Nickel Plate Road cabooses now on display have a white stripe along the roof emblazoned with the railroad's famous and well-earned "Nickel Plate High Speed Service" slogan. The problem is that those stripes were painted a color called "aluminum gray," the silver version of Dulux (or imitation) gold.

The railroad's original goal, of course, was to have the stripes look "nickel." Alas, the metallic paints of the late

1940s quickly oxidized to a blackish color, as correspondence from the Frankfort, Ind., shops reveals. Photos confirm that the light-gray (not silver!) stripe was noticeably darker than the pure-white "NICKEL PLATE ROAD" road-name lettering directly below it, but somehow otherwise accuracy-minded folks didn't seem to notice that. Model manufacturers often make the same mistake.

While I was researching paint colors back in the 1960s, I stumbled across the fact that the blue used on NKP's Alco PA1s is the same DuPont paint-chip number as the blue used on Chicago & Eastern Illinois cab units. In 1970, I discovered that the orange "bib" on the nose of New York, Ontario & Western EMD diesels is the same as the orange on C&EI cab units.

Just as the small band of graphic artists at EMD and other builders reused the striping patterns on various customers' diesels, they reused the same paint colors, as well. So when a paint company releases, say, "C&EI Orange," the O&W modeler can take advantage of that windfall.

But this quest for authentic paint colors has a number of hidden pitfalls. First, as any experienced military modeler will tell us, we have to build in "atmosphere." More than most model railroaders, military modelers realize that our models need to be painted as they would be seen from scale distances. As a train rolls by maybe 3 feet from our eyes, that actually represents, for example, 87 (HO) or 160 (N) times 3 feet of atmosphere between us and the model. Our model paint should therefore be lightened to show the effects of haze.

Our lighting systems are also woefully underpowered compared to the sun. When I inspected a paint chip obtained from International Car Corp. for the gray stripe, my eyes told me it was much too dark. But when I butted it against a chip of NKP blue or caboose red and took them out into bright sunlight, everything looked right.

Our lighting isn't pure white, either. I prefer cool-white

fluorescents, which produce light rated at about 4100 kelvins (K). I can get a replacement CW fluorescent tube in almost any diameter and length on a weekend. You can start another argument about the color of sunlight, but good numbers to use are 5000 to 6000K.

Fluorescent tubes and compact fluorescent lamps (CFLs) are available in that range, and they are bright — and, ironically, look a bit too "cold" for my tastes.

There's also the little matter of fading. Harsh cleaning chemicals and ultraviolet rays (which fluorescents also produce) will cause considerable fading to many types of paint.

So no matter how perfectly you match the actual paint chips, no matter how you compensate for indoor lighting, you're still going to have to ask yourself how long whatever you're painting has been in service.

And then you can sit back and wait for the experts to tell you you're wrong. 



**MILITARY
MODELERS
REALIZE OUR
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AS THEY
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