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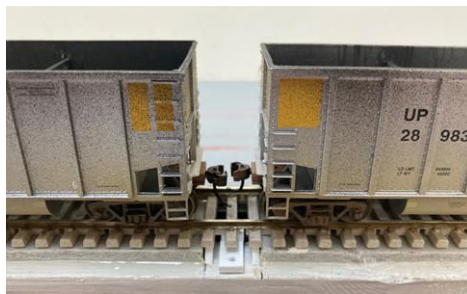
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'Pushing' large layouts



On the cover: The Willoughby Line hosts Yosemite Valley No. 26 as it rolls through Hetch Hetchy. Guy Cantwell photo



Next issue

In September, check out the Greater Kansas City Model Railroad Club, improve realism on your layout, create an O scale ball signal, try dyeing your track, and more!

Model Railroader (ISSN 0026-7341, USPS 529-810) is published monthly by Firecrown Media Inc., 405 Cherry Street, Chattanooga, TN 37402. Periodicals postage paid at Chattanooga, TN and additional mailing offices. POSTMASTER: Send address changes to *Model Railroader*, PO Box 850, Lincolnshire, IL 60069.

100 Years on the Right Track... and Counting!



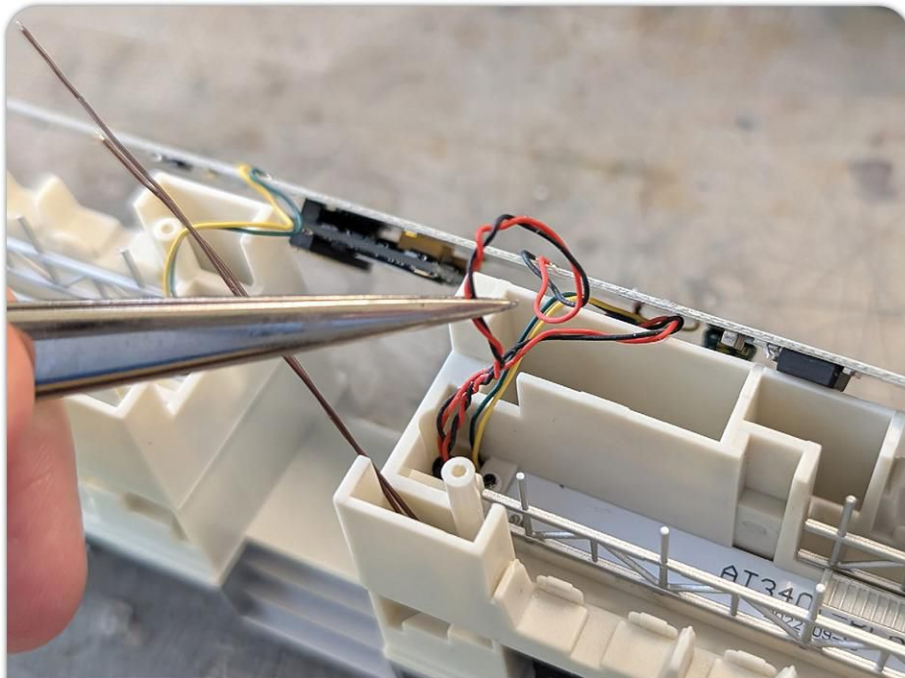
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Wired for sound

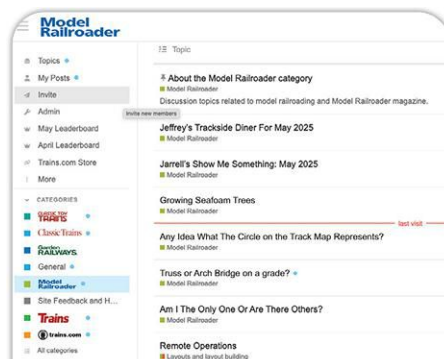
Bryson Sleppy shows how he installed an ESU LokSound decoder in an Atlas Nippon Sharyo Metra cab car. Bryson is a fan of modern commuter and passenger equipment, and these cars are part of the push-pull service that takes commuters to and from Chicago. For these cars to deliver the ultimate in realism, they need to be able to sound the horn and bell for grade crossings and other situations. Bryson takes you step by step through the process of taking apart the Atlas model and installing the sound decoder. If you've never tried installing a sound decoder before, this might be a great place to start. Read more about it on Trains.com.



On the straight and narrow

Trains.com Director David Popp and Bryson Sleppy take up their track gang skills to get trains on the East Troy Industrial Park project moving. In this video, you can learn all the tips and tricks for laying track on a new layout.

Highlights include working with flextrack, laying turnouts and making provisions for using turnout motors and wiring frogs, and installing track with adhesive caulk and/or track nails. Check out the East Troy Industrial Park series on Trains.com Video!



The forums are back!

You might have heard this already, but if you haven't, the popular *Model Railroad* forums have been rebuilt, with much of the original content saved, and are now open for business. There are sub-categories for general discussion, layouts and layout building, electronics and DCC, prototype information for the modeler, and a beginners area. In addition, there are forums for our other railroad magazines as well. Traffic is getting heavy, so be sure to check them out.



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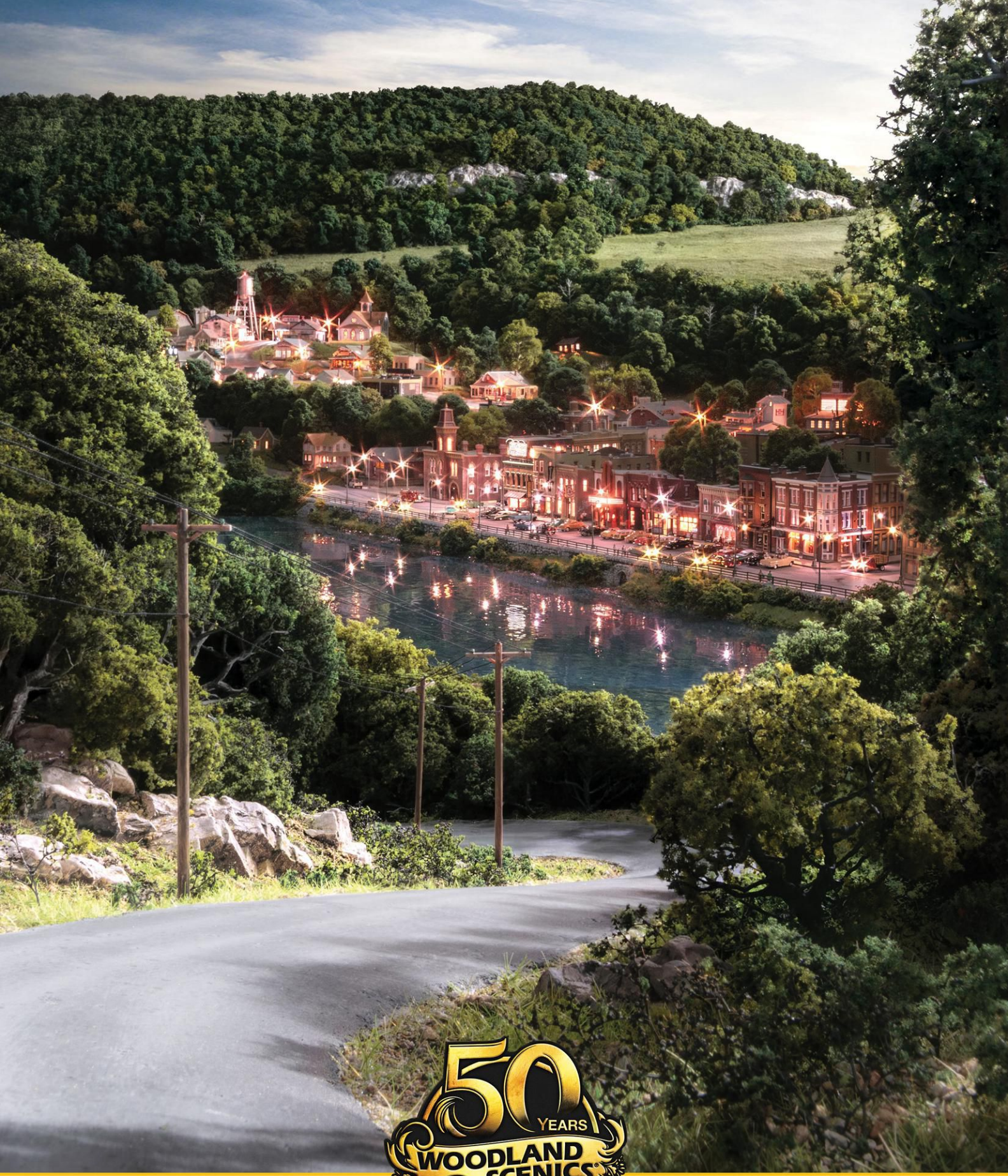
Gordy Robinson - NMRA
Orkney Isles, Scotland



Lucas Iverson - Trains.com
Brookfield, Wis.

Trainfest update

National Model Railroad Association President Gordy Robinson chats with Trains.com Staff Writer Lucas Iverson about plans for Trainfest 2025. The NMRA has taken over organization of the event, and it's a big part of the NMRA's 90th anniversary. Check out the video to learn more!



Actual HO scale model photograph.

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What's the right size layout for you?

Our Trains of Thought columnist, Tony Koester, addresses the idea that *Model Railroader* is a champion of large, basement-filling layouts. As he points out, there are a number of reasons for this, but we know a basement empire isn't the best solution for everyone.

In 1951, Linn Westcott, before he became editor of *Model Railroader*, wrote about his ideas for a "Million-dollar layout." This grand thought experiment imagined a purpose-built structure to house the layout, which would have been comparatively vast.

We've probably all daydreamed about building a layout without limits, but few of us have the resources of money or time to realize those dreams. Though I have a basement at my disposal, I have yet to set the first L-girder, let alone get started laying track. Instead, I have a

much more manageable shelf layout in my living room.

When I wrote about Linn's idea on Trains.com a few years ago ("Thoughts on Linn Westcott's ideas for a million-dollar model railroad"), I reached out to layout designer and builder Lance Mindheim of The Shelf Layouts Co. He pointed out that it's not just building a big layout that's a significant commitment, but also maintaining it.

But that's not all. Younger modelers are less likely to own their own homes, which puts further restrictions on what they can, or might want to, do. If you're renting a home, be it an apartment or a house, do you feel confident that you'll be there long enough to complete a large layout project to a point where you can enjoy it?

Even if you own your home, do you work in a field where you can expect to stay

in the same area long-term? Maybe smaller layouts are a better answer for you.

Smaller layouts make smaller demands on your resources. They don't cost as much to build as there's less lumber and track, and probably fewer pieces of rolling stock and locomotives required. You probably won't need as many structures either, unless you're modeling an urban setting.

If a layout is small enough, it can be made to be moveable. You'll want to design it so it's self-supporting, rather than attached to the walls. This way, you could take it with you if you relocate.

And smaller layouts are easier to maintain. There's less track to clean, and maybe fewer turnouts.

But what is a small layout? We've run stories on spare-bedroom sized model railroads we've called small and



heard from readers that's too much space to devote to a layout. Some layouts blur the boundary between diorama and model railroad. To me, if you can do some sort of railroad operation, then it's a model railroad.

And if it's a model railroad, we're interested in hearing about it. Let us know what you're doing!

Model Railroader

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We welcome contributions from readers, including articles, photographs, and drawings. For more information on submitting material, email Editor Eric White at eric.white@firecrown.com. Model Railroader assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Firecrown Media unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

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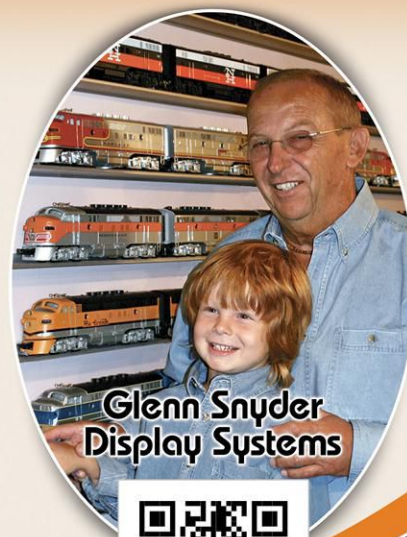


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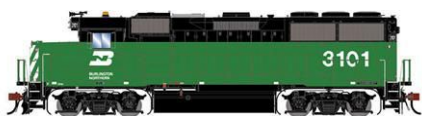
HO scale



Electro-Motive Division GP9 diesel locomotive. This Walther's Mainline road switcher is decorated for Central Vermont, Chesapeake & Ohio, Denver & Rio Grande Western, Illinois Central, Louisville & Nashville, Soo Line, Southern Pacific, and Union Pacific in two to four road numbers per scheme. The HO scale model features plastic and die-cast

metal construction, see-through steps, prototype-specific details, and molded drill starter points for grab irons (detail kit No. 910-258, sold separately). Direct-current models with a 21-pin DCC plug and factory-installed 28-mm round speaker sell for **\$159.98**. Versions with ESU Sound and DCC are priced at **\$214.98**. Wm. K. Walther's Inc., 414-527-0770, walther's.com

HO scale locomotives



• **Electro-Motive Division GP50 diesel locomotive.** Burlington Northern; Chesapeake & Ohio; Toledo, Peoria & Western; Southern Ry.; and St. Louis-San Francisco (Frisco). Full cab interior and see-through cab windows. Detailed fuel tank with fillers, gauges, and breather pipes. Factory-applied uncoupling levers; wire grab irons; see-through, etched-metal steps; and flexible rubber m.u. hoses. Direct-current model, \$249.99; with DCC and sound, \$349.99. Genesis series. Athearn Trains, 800-338-4639, athearn.com

Wisconsin Central. Road-specific details; factory-installed rubber air hoses, metal grab irons, and uncoupling levers; and see-through metal crossover platforms. Single car, \$59.95; six-pack, \$359.70. Rapido Trains Inc., 905-474-3314, rapidotrains.com

green but unlettered. Detailed interior with factory-equipped light-emitting diode illumination; factory-installed grab irons; and freestanding brake gear, steam traps, and generator. \$109.98. Walther's Proto. Wm. K. Walther's Inc., 414-527-0770, walther's.com

HO scale rolling stock



• **National Steel Car 73-foot center-beam flatcar.** Trailer Train, BC Rail, BNSF Ry., Canadian National, Copper Basin Ry., Norfolk Southern, Ontario Northland, Union Pacific, and



• **Trinity 5,161-cubic-foot capacity three-bay covered hopper.** Crab Orchard & Egyptian Ry., Kansas City Southern, Missouri Pacific, Potash Corp., Southern Pacific Santa Fe, and Union Pacific. Photo-etched metal running boards, 100-ton roller-bearing trucks with rotating bearing caps, and body-mounted McHenry scale couplers. Single car, \$64.99 (Primed for Grime, \$69.99); three-pack, \$149.99 (Primed for Grime, \$164.99). Genesis series. Athearn Trains, 800-338-4639, athearn.com

HO scale passenger equipment



• **85-foot heavyweight paired-window coach.** Chesapeake & Ohio, Milwaukee Road, New York Central, and Union Pacific. Also available painted

HO scale structures



• **Sinclair station.** Factory-assembled, limited-edition structure with illuminated interior and exterior, two service bays (service and washing), rooftop details, and three gas pumps. Includes two vehicles. Lights require 4.5 volt power supply, available separately. Measures 6 3/4" x 5" x 2 5/8". \$39.99. Menards, menards.com/trains

• **Plastic pellet plant background building.** Injection-molded plastic kit. Brick-and-metal processing structure with sliding access doors and rooftop air conditioner, four tall storage silos, loading rack with piping for two cars, overhead walkways, and decal signs. Main

building measures $15\frac{3}{8}" \times 1\frac{3}{8}" \times 4\frac{1}{2}"$. Silos measure $27\frac{9}{16}" \times 2\frac{3}{8}" \times 8\frac{1}{4}"$. \$49.98. Cornerstone series. Wm. K. Walther's Inc., 414-527-0770, walther's.com

HO scale accessories



• **Ford F-850 box van.** Bekins, Denver & Rio Grande Western, Great Northern, Katsburg Brothers, Penguin Ginger Ale, Penn Central, Pennsylvania RR, and Union Pacific. Also available painted gloss black and white but unlettered. Molded cab interior with factory applied steering wheel, clear window glazing, and rolling vinyl tires. \$39.99. Athearn Trains, 800-338-4639, athearn.com

HO scale track

• **Code 83 No. 5 single crossovers.** Left- and right-hand versions with 2" centers. Fully assembled with snap-action points, solid point rails, and insulated frogs with built-in jumper for powering as desired. Current jumpers entering and leaving frogs. Insulated tie bar. Thin-profile ties molded in dark brown plastic with woodgrain detail. Spike-mounting holes next to the rail. Molded drill-starter points on bottom of ties for track nails (No. 948-83106, sold separately). Custom formulated nickel silver rail. Walther's Track. Wm. K. Walther's Inc., 414-527-0770, walther's.com

N scale passenger equipment



• **Bombardier LRC coach car.** VIA Rail Canada (multiple paint schemes). Available in Coach, VIA 1, and Business Class configurations. Working marker lights, etched-metal stirrup steps, detailed interior with prototype colors, and tinted window glazing. Track-powered interior lighting compatible with direct current and Digital Command Control. Suggested minimum radius, 14". \$79.95. Rapido Trains Inc., 905-474-3314, rapidotrains.com

N scale



Electro-Motive Division GP60 diesel locomotive. Atlas recently released the first run of this four-axle road locomotive in its Master Line. The N scale GP60 is decorated for Denver & Rio Grande Western, BNSF Ry., Green Mountain RR, Southern Pacific, Texas Mexican Ry., Union Pacific, and Vermont Ry. The model is offered in one to three road numbers per scheme; an undecorated version is also available. Product features include a Scale Speed motor, blackened metal wheels, and body-mounted Accumate couplers. Direct-current models with a factory-installed speaker retail for \$144.95. Versions with an ESU sound decoder are priced at \$254.95. Subtract \$10 for undecorated models. Atlas Model Railroad Co., 908-687-0880, shop.atlasrr.com

N scale details and accessories



• **Wrapped lumber load for 73-foot center-beam flatcar.** Canfor, Domtar, Georgia Pacific, Idaho Forest Group, Irving, Sierra Pacific, Tembec, and Tolko. Four pattern designs, two designs per package (Each package loads one modern 73-foot center-beam bulkhead flatcar [sold separately]). Loads are held together and to car by magnets. \$14.95. Rapido Bits line. Rapido Trains Inc., 905-474-3314, rapidotrains.com

Z scale locomotives



• **Electro-Motive Division SD50 diesel locomotive.** Denver & Rio Grande Western (black and orange with large "Flying Grande" lettering). Two road numbers. Prototype-specific details, directional light-emitting-diode lighting, blackened metal wheels, traction tires, and AutoLatch couplers. Vertical handrails and step faces painted white. Factory-printed EMD builder's plates and trust plates. Contact manufacturer for pricing information. American Z Line, americanzline.com

Club offerings



• **Chicago & North Western Pullman-Standard 4750 three-bay covered hopper.** Accurail HO scale kit custom decorated for the Chicago & North Western Historical Society. Three road numbers. Single car, \$40; three-pack, \$105 (shipping included). Illinois residents add 8.25% tax. Complimentary INTX remark decals also available. Please send stamped, self-addressed envelope to address below. C&NWS Company Store, P.O. Box 406, Union, IL 60180; cnwhs.org

Z scale freight cars

• **Modified 1937 Association of American Railroads 40-foot boxcar.** Chicago & North Western (brown with "Route of the 400" slogan). Etched-metal running boards, positionable doors, solid-bearing trucks with blackened metal wheelsets, and truck-mounted AutoLatch knuckle couplers without trip pins. Single car and two-pack. Contact manufacturer for pricing information. American Z Line, americanzline.com

Aurora Miniatures HO scale GMD SD50F



A General Motors Diesel Ltd. SD50F is the second HO scale road locomotive released by Aurora Miniatures North America Inc. The six-axle unit, based on a prototype built for Canadian National, features an injection-molded plastic body; a heavy, die-cast zinc alloy chassis; and an assortment of light-emitting-diode lighting features.

Canadian National ordered two groups of SD50F diesels. The initial 40 units, constructed between April 1985 and February 1986, were built under order number C-455. The locomotives were numbered 5400 through 5439 and assigned to the railroad's GF-636a class.

An additional 20 units were produced between February and July 1987 under order number C-461. The diesels, 5440 through 5459, were assigned to the GF-636b class.

Our sample is decorated as Dakota, Missouri Valley & Western 5454. The SD50F was built in March 1987 for CN with the same number. It was sold to the regional carrier, based in Bismarck, N.D., in 2008.

The Aurora Miniatures model features many factory-applied parts, including a snow plow, m.u. and train line hoses, and formed wire uncoupling levers. The 5454 accurately has the horn adjacent to the exhaust stack on the carbody and the ditch lights mounted on the deck.

The front and rear handrails and stanchions are painted plastic. Formed wire was used for the body-mounted vertical handrails and grab irons.

The SD50F has a four-piece windshield with flush-fitting glazing and freestanding wipers. Among the items in the detailed cab interior are three seats, consoles, and an electrical cabinet.

The operating radiator fans are certainly the star of the show on this model. The improved fan drive unit is much quieter than on Aurora's previously released HO scale SD60F.

Our review sample is neatly painted in DMVW's orange-and-gray paint scheme. The orange is opaque, and the color separation lines are crisp.

The model we received is equipped with an ESU LokSound V5 sound decoder. The instruction manual is available under the Product Support tab on the manufacturer's website.

Aurora doesn't recommend running DCC models using direct current. For workbench testing, I used an NCE Power Cab. At step 1, the SD50F moved at less than 1 scale mph. At step 28, the model achieved a top speed of 51 scale mph.

For real-world testing, I took the SD50F to the Winston-Salem Southbound. The six-axle unit had no issue navigating the No. 4 turnouts and 30-degree crossing while switching industries on the Tar Branch.

I've always been a fan of cowl-bodied diesels, and Aurora Miniatures has done a fine job on its HO scale SD50F. The freestanding detail parts, combined with lights, sounds, and animation, make this six-axle road unit a real eye-catcher. — *Cody Grivno, senior editor*

Facts & features

Price: Direct-current model with 21-pin MTC connector and dual sugar cube speakers, \$249.99; with ESU LokSound V5 sound decoder, \$349.99

Manufacturer

Aurora Miniatures North America Inc.
20 Kilchurn Castle Dr.
Toronto, Ontario, Canada
M1T 2W4

na.auroraminatures.com

Era: April 1985 to present (varies by road name)

Road names: SD50F — Dakota, Missouri Valley & Western (gray and orange with reporting marks on body) and Canadian National (North America, single stripe, and zebra stripes). SD50AF — CN (zebra stripes) and DMVW (herald on body). One to four road numbers per paint scheme.

Features

- Body-mounted AuroraJanney couplers, at correct height
- Metal wheel stubs mounted on plastic axles, two out of gauge
- Minimum radius, 18"; recommended radius, 22"
- Weight: 1 pound, 5.7 ounces



Trains.com members can see the Aurora HO SD50F in action with this QR code.

Atlas HO NSC newsprint boxcar



The National Steel Car Corp. 50-foot newsprint boxcar is the latest addition to the Master Line from Atlas Model Railroad Co. The model, based on tooling the manufacturer acquired from True Line Trains in 2020, features molded and separate, factory-applied detail parts; 33" metal wheelsets; and body-mounted Accumate couplers.

Between 1967 and 1971, National Steel Car constructed 3,592 newsprint boxcars at its plant in Hamilton, Ontario, Canada. Original owners were Canadian Pacific; Canadian National; Central Vermont; Duluth, Winnipeg & Pacific; Minnesota, Dakota & Western; and Pacific Great Eastern. To learn more about the full-size cars, read John Riddell's article "Newsprint boxcars" in the June 2002 *Model Railroader*.

The sample we received is decorated as CP 81061, part of the railroad's 80967 through 81216 series built in April 1967 under lot P-6320/67. The prototype cars, which stayed in service into the 2000s, were equipped with Youngstown plug doors and a Hydra-Cushion underframe.

The Atlas Master Line model has an injection-molded plastic body with separate, factory-applied plastic four-rung side and end ladders; door rods; brake wheel; and see-through, etched-metal crossover platforms. Molded details include the stirrup steps, placard and route boards, and door tracks.

The underbody is a multi-piece plastic casting. The floor boards, stringers, and crossies are molded. The center sills and crossbearers are cast a single unit. Attached to the casting are the brake cylinder, control valve, levers, lever support brackets, and formed wire brake rods.

The air reservoir is mounted on molded stand-offs. Formed wire auxiliary and emergency reservoir pipes run from the air reservoir to the control valve; a brake cylinder pipe links the control valve with its namesake.

Information in Riddell's article noted that boxcars from CP's 80967 through 81216 series were equipped with a Hydra-Cushion underframe. That detail was omitted on the Atlas model.

A separate plastic casting consisting of the body bolsters, bolster block, and draft-gear box is attached to both ends of the underbody with a screw. A plastic washer, placed around the bolster, is located under the casting.

The car rides on screw-mounted Symington roller-bearing trucks. The trucks are cast in engineering plastic with crisp spring and bearing detail.

Our review model is decorated in Canadian Pacific's 1967 as-delivered scheme. The paint is smooth and evenly applied, and the color separation lines are crisp.

I found a prototype image of car 81061 online. The script lettering looks a touch bolder than what's found on the full-size car, and the road number on the side is shifted too far right (the 0 should be to the left of the rivets). In addition, the top of the pine tree herald should be solid black.

The route board on the sides of the car should be below the placard board. The placard board on both ends is also misplaced. It should be located between the third and fourth corrugations, above the ladders, along the right edge.

I compared the model to drawings in the June 2002 MR. The truck centers are

a scale 40'-8". That is correct for NSC newsprint boxcars that were built between 1968 and 1971; the centers on the full-size 1967-built CP cars measured 38'-10". The other dimensions closely followed published data.

I'm glad that Atlas Model Railroad Co. has brought the former True Line Trains 50-foot newsprint boxcar back to HO scale. The full-size boxcar was the first purpose-built car for newsprint. Examples of the prototypes could be found on railroads throughout the United States and Canada into the early 2000s. — *Cody Grivno, senior editor*

Facts & features

Price: \$36.95 (undecorated, \$29.95)

Manufacturer

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

Era: 1967 to 2000s

Road names: Canadian Pacific; British Columbia Ry.; Canadian National; Central Vermont; and Minnesota, Dakota & Western. Three road numbers per scheme; also available undecorated with exterior-post and flush doors.

Features

- 33" metal wheelsets, correctly gauged
- Body-mounted Accumate couplers, at proper height
- Minimum radius, 18"
- Weight: 4.9 ounces, .4 ounce too heavy per National Model Railroad Association Recommended Practice 20.1

QUICKLOOK

Athearn N scale F89-F flatcar

Price: Flatcar only, \$43.99; flatcar with 45-foot trailer, \$69.99

Manufacturer

Athearn Trains
2904 Research Rd.
Champaign, IL 61822
athearn.com

Road names: Trailer Train (mineral red and yellow schemes), Kansas City Southern, and Southern Pacific. Three road numbers per scheme (two without trailer, one with).

Era: 1960s+ to 1990s+ (varies by paint scheme)

Comments: Athearn Trains recently released a new run of its N scale F89-F flatcar. The upgraded model, part of the Genesis line, features new detail parts. In addition, one road number per paint scheme is offered with the manufacturer's newly tooled 45-foot Fruehauf Z-Van trailer.



Our review sample is decorated as TTX 153322, part of the freight car leasing company's 153242 through 153566 series built by Bethlehem Steel Corp. under Lot 3400-010 in May 1966.

The Athearn model has a die-cast metal body that's painted mineral red with a white deck. The flatcar features raised trailer hitches and a bridge plate on both ends. Other freestanding parts include plastic riser boards, formed-wire side grab irons, and a brake ratchet. Modeler-installed lowered hitches and Automatic Car Identification plates are included.

End details include newly tooled plastic uncoupling levers and rubber train line hoses with the glad hands painted silver. The stirrup steps and end grabs are cast as part of the carbody.

Underneath, the flatcar has cast stringers and crossmembers. The air

reservoir, brake cylinder, control valve, and related pipes and levers are separate parts.

The flatcar has screw-mounted 70-ton trucks with correctly gauged metal wheelsets. The body-mounted McHenry scale couplers are at the correct height. At 1.3 ounces, the F89-F TOFC flatcar is .2 ounce too light per National Model Railroad Association Recommended Practice 20.1. The trailer brings the weight up to 1.6 ounces.

The model's dimensions closely follow data published in the *Trailer Train Equipment Guide* (Trailer Train Co., November 1987). The model has a minimum radius of 9¾" and a recommended radius of 12+."

Whether loaded or empty, the upgraded Athearn F89-F flatcar will be an attention getter on your N scale layout. — *Cody Grivno, senior editor*

QUICKLOOK

Otter Valley Railroad NSC 6,000-cubic-foot capacity gondola

Price: Single car, \$37.99; six-pack, \$219.99

Manufacturer

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

Road names: American Iron & Metal Co. (20000 and 21000 series), Midwest Railcar Corp., Triple M Metal, and XRMX. Also available painted black with data only. Six to 12 road numbers per paint scheme.

Era: 2022 to present

Comments: A National Steel Car (NSC) 6,000-cubic-foot capacity scrap metal gondola marks the first N scale release from Canadian hobby shop Otter Valley Railroad. The model features a plastic body, metal wheelsets, and body-mounted couplers.

The sample we received is decorated as American Iron & Metal No. 21200,



part of the metal recycling company's 21001 through 21300 series built by NSC under Job P4255/21 in 2022.

The Otter Valley model has a one-piece body with molded and separate, factory-applied details. Among the molded details are Automatic Equipment Identification tags, billing card holders, and end grab irons and cross-over handrails. Freestanding parts include see-through, etched-metal crossover platforms and a plastic brake housing, brake wheel, and side ladders.

Underneath, the model has a one-piece plastic casting consisting of the center sills, crossmembers, body bolsters, and bolsters. Pins on the casting fit into holes on the car's underbody. The air reservoir, brake cylinder, control valve, equalizing reservoir, and related pipes, rods, and levers are molded, but many have a freestanding appearance. The brake pipe and release rod are formed wire.

The screw-mounted trucks feature separate brake beam detail. Two-piece plastic couplers, without trip pins, are body-mounted in plastic draft-gear boxes attached to the car ends with screws. The couplers, which are .010" low, have a scale-size appearance. Because of this, more manual assistance is required when coupling cars.

At 1.5 ounces, the NSC gondola is .3 ounce too heavy per National Model Railroad Association Recommended Practice 20.1. All four wheelsets were tight against the NMRA Standard Gauge from the box. I was able to fix this with a quick twist of the wheels on the axle. The model's dimensions closely follow published data.

If you model the modern era in N scale, this gondola is a must-have car. Otter Valley also offers the 6,400-cubic-foot capacity version of the NSC car in 1:160. — *Cody Grivno, senior editor*

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Aug 16-17 Chantilly, VA - Dulles Expo Center
Sep 7 Wheaton, IL - DuPage County Fairgrounds
Oct 4-5 Del Mar, CA - Del Mar Fairgrounds
Oct 5 Wheaton, IL - DuPage County Fairgrounds
Oct 25-26 Shakopee, MN - Canterbury Park
Nov 1-2 Monroeville, PA - Convention Center
Nov 2 Wheaton, IL - DuPage County Fairgrounds
Nov 22-23 Wilmington, MA - Shriner's Auditorium
Nov 29-30 Edison, NJ - New Jersey Expo Center
Nov 29-30 Collinsville, IL - Gateway Center
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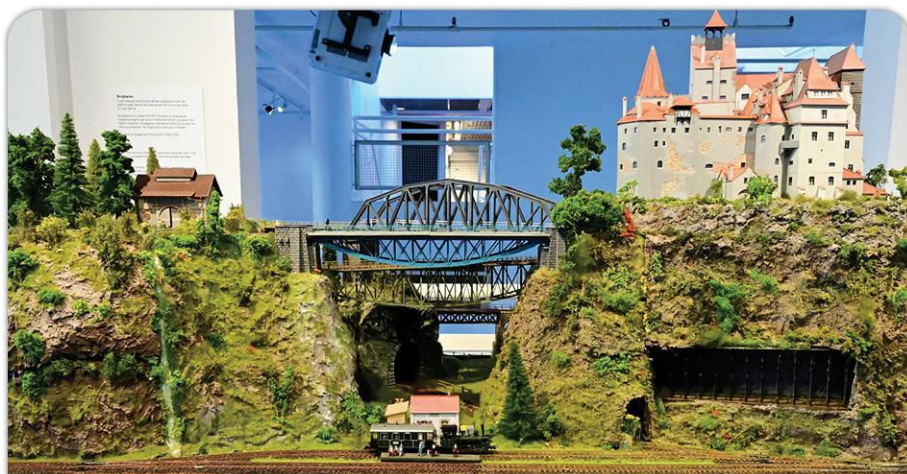
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Erik Solhjell built this layout for the Oslo Technical Museum. Visitors can start the train by waving their hand over a sensor. Erik Solhjell photo

Examples of small layouts

When I received the February 2025 issue of *Model Railroader* I was pleasantly surprised to read the reactions of several of your readers regarding my thoughts on how we can increase interest, especially among young people, to our fine hobby. Several of the comments pointed out that we should focus more on small layouts, and I completely agree with that.

Earlier this year, I donated a small layout I built to the Technical Museum here in Oslo, where it is now on display. The dimensions are only 0.80 x 2.00 meters (approx. 31.5" x 78.7"), but it has aroused great interest among the visitors and has already been run several hundred times. And I have received many positive comments that it is important to showcase such small layouts in order to get more people actually trying to build their own model train layouts. Therefore, I recommend *Model Railroader* also focus more on small layouts.

Erik Solhjell, Oslo, Norway

Watch your speed

There is a much simpler way to measure speed on the fly [On Operation, April 2025 — Ed.] Since 60 mph is 88 feet per second, in HO covering 1 foot in 1 second is essentially 60 mph, 2 seconds is 30, and yard speed is 8 seconds per foot, seemingly very slow. You could space some signs a foot apart for an invisible gauge anywhere on your layout.

Ray Meyer

Finding a missing circuit

I enjoyed reading George Vesley's article "Upgrade a modern passenger car" in the April 2025 issue. As a neophyte with electronics, I'd like to see a

schematic and parts list for the small bridge rectifier and voltage regulator that he built. Thanks for all the great articles.

*Pete Schmidt
Hydesville, Calif.*

I reached out to George to refresh my memory of the circuit. He found it online here: mrollins.com/pwrsp3.html. It's the 5VDC power supply on Mark Rollins' site. — Ed.

Getting older and smarter

"Too Old Too Soon; Too Late Too Schmart"

—PENNSYLVANIA AMISH SAYING

The June issue of *Model Railroader* arrived with its numerous articles,

editorials, beautiful big layout spreads, and sage advice from folks like Tony Koester. They all reinforced a basic question I have been pondering ...

Why?

After more than 40 years of several layouts and collecting hundreds of cars, engines, miniature people, building kits, track, and switches, the "Greater Nickel Plate" is coming down. The railroad my dad and I worked for is in my blood and memories which resulted in a 2½ x 42 foot point-to-point layout that will not be moved next spring when we move to a smaller retirement home.

Again, the question — why? What is it I really was trying to accomplish over the past decades? I've belonged to several clubs and ran trains there. I've helped friends build and run their layouts. I've gone to Timonium and other shows repeatedly.

The June editorial and Tony's columns brought clarity to my thinking. As nice as the big model railroads are with all that action, I realize that I will never have the resources to duplicate my beloved railroad. What is needed is clarity.

Decisiveness. A goal. A plan for making things. To that end, I've already started working on portable benchwork (2½ x 10 feet) that can be disassembled and moved to a new space. I have a plan for a small switching layout after pouring through tons of articles and reams of drawing paper.

What struck me was that the times I helped put together and break down trains for the yardmaster at E. 55th Street in Cleveland and make up locals to deliver cars to customers was the crux of my background in railroading. It was what I did.

I still enjoy looking at the large layouts and reading pertinent articles. Now, however, my focus is on taking things slowly, making things, adding details I hadn't done so well in the past, and putting more of ME into honoring what my father and I did on the Nickel Plate Road all those years ago.

At 80 years old, maybe it's not "too late" to be "too schmart."

*David Calhoun
Lebanon, Pa.*

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

Memories of V.S. Roseman

I was saddened to read about the passing of Vic Roseman. I remember his work, especially his fabulous photography, going back many years. Long ago, he was kind enough to correspond with me briefly when I had questions about pinhole photography. A generous man, a talented modeler, and an amazing photographer.



Joe Devlin
Anaheim, Calif.

The perfect scale

I'm a new (actually returning) subscriber. It's good to be back. I read your recent column [May 2025 — Ed.] about our choices of scale. I model the Erie/Erie Lackawanna RR from the late 1950s through the end of the railroad in 1976. I

don't have the room to model a specific location, so I try to capture the "feel" of the railroad. My parents and grandparents worked for them, so I had some experiences riding their trains as a child.

I also collect Marx tinplate trains. I have a tiny layout (fits in the bed of my pick-up) that I take to church events for the kids. They love it...it's so noisy and big! Good news for me is that the stuff is very inexpensive. I buy Dumpster bait models then strip and repaint them using S scale decals. It's easier on the old eyes than the HO stuff, which I also paint and letter.

Keep up the good work!

Ken Bolt
Marietta, Ga.

You pointedly asked us to let you know about our ideal scale. Here it is: On30. Perfect in every way for those of us enamored of narrow gauge trains. The compromise gauge of 30 inches allows followers of 2-foot gauge and 3-foot gauge railroads an affordable way to model to our heart's

content using readily available HO track and mechanisms to build our dream layouts. The important caveat here is "rivet counters are not permitted". We are willing to overlook the 6 inch fault in our track gauge, and when you look at an On30 layout you won't notice that 1/8 inch too wide or too narrow compromise to even care.

For those of us 70+ years of age, O scale (1/4" = 1 foot) really matters as well — we can actually see what we're working on and can better work with it as well. As a follower of all things Maine 2-foot, using On30 has been a dream — no handlaying track, no brass locomotives that cost a fortune and never seem to run without a small fortune spent trying to fine tune them. Bachmann's Forney was the best thing that ever happened to our end of the hobby, and now all we need is a Prairie to complete the dream. It's been a great ride for the past 25 years.

John Tumolo
Fleetwood, Pa.
P.S. Yes I'm a subscriber to MR!



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This Broadway Limited Imports HO scale Electro-Motive Division GP30 depicts a former Chicago, Burlington & Quincy unit that has been renumbered for Burlington Northern. The road numbers were 9" tall, while the reporting marks were 4". The digits in the number boards measured 7". Cody Grivno photo

Burlington Northern renumbering

Q I'm building a layout based on the early Burlington Northern in Idaho. I've seen a number of photos of renumbered locomotives and cabooses. Most have white numbers and reporting marks, but I've seen a few prototype photos online with the data in black. Did BN have a standard font and size for renumbering equipment, or did they just use whatever was laying around at the time. Do you have any tips for modeling these renumbers?

Mike, via email

A Dan Holbrook, a retired Burlington Northern employee who models the Twin Ports of Duluth, Minn., and Superior, Wis., in HO scale, has a website covering the early years of the BN (danielholbrook.smugmug.com). The site is neatly organized into folders covering a variety of topics, including diesel locomotives, cabooses, operations, modeling, and more.

The folder you'll be most interested in is BN Painting Diagrams. Inside, there's a subfolder called Stenciling Details. There you'll find four downloadable files with BN diagrams that show where the road numbers and reporting marks were to be applied to road switchers, cab units, road locomotives, and end-cab switchers.

Burlington Northern used a standard font (name not known) and size for renumbering diesels and cabooses. On locomotives, the road numbers on the sides were 9", while the reporting marks below were 4". On units with numbers and marks on the ends, all data was 4" tall.

Most number boards had 7" digits. If the numbers were smaller than 7" (think switcher number boards), the digits were "to be stenciled in the form presently used on the parent road."

After studying images in *Burlington Northern Railroad Cabooses 1970-1995* by Robert C. Del Grosso, it appears cabooses followed a similar practice, with 9" road numbers and 4" reporting marks on the sides of the body and ends of the cupola. However, there were some variations. That's why it's important to use prototype photos as a guide.

The renumbering information was applied in white when the background color was black, blue, or red. Black was used on aluminum, orange, stainless steel, white, and yellow backgrounds.

Rail Train Hobbies offers two HO scale Burlington Northern decal sets, NJ-010 and NJ-011. Both of these sets contain what the manufacturer refers to as "Hill Lines Patch Numbers" as well as digits for the number boards. Microscale Decals produces several BN locomotive and freight car sets in HO and N. The numbers and reporting marks in these sets can be harvested for renumbering projects.



The upper deck on Contributing Editor Tony Koester's layout is $\frac{3}{4}$ " birch plywood overlaid with Homasote roadbed. He screwed the plywood to stamped-metal shelf brackets that extend out 12" from the wall. Tony Koester photo

Q I have a bedroom sized N scale railroad with a four track staging/fiddle yard on one wall. I would like to run a branch line to a quarry over the staging, but I am concerned about the gradient to get the tracks to the right height. I will need about 6" clearance for my hands in the staging. What is the thinnest support structure you would recommend?

Gary Richards

A Marine plywood $\frac{3}{4}$ " thick will support anything as long as it's supported every 16" or so, Gary. It doesn't need a frame; my upper deck is $\frac{3}{4}$ " birch plywood overlaid with two layers of $\frac{1}{4}$ " milled Homasote roadbed (now available from HomaRoad) for the main and one layer for side tracks. You could use thinner cork for the roadbed, or even no roadbed at all in staging; foam can be noisy. The plywood is screwed to inexpensive stamped-metal shelf brackets and extends out 16" from the wall — even 24" for short lengths in towns where the depot is on the aisle side of the main line.

You might get away with $\frac{5}{8}$ " plywood (but why skimp on the foundation of your railroad?) and slightly wider support spacing. But I once tried 24" spacing with lower-quality $\frac{3}{4}$ " AC-grade plywood and soon discovered there was a noticeable sag.

If you can't support the staging yard with shelf brackets at frequent intervals, I'd get some 1" or wider aluminum channel and fasten it to both edges of the $\frac{3}{4}$ "

Send questions on model, prototype, and toy trains to AskTrains@Trains.com.

marine plywood. Let us know how this works out for you. — *Tony Koester, contributing editor*

Q What website is best for finding prototype photos of freight cars to help with realistic weathering?

Jim Veronico

A Though some websites are certainly better than others, I'm reluctant to declare a single website as the "best" for finding prototype freight car photos. Over the years, I've found that using multiple sites helps give me a more complete understanding of freight cars. Here are some of my favorite sites for finding rolling stock images:

RailCar Photos (railcarphotos.com).

The site has nearly 125,000 images and a variety of search options, allowing users to look for images by road name, road number or number series, equipment type, and much more. The roster-type color images on the site are well lit and well composed, and the prototype infor-



Looking for ideas on how to weather freight cars, such as Helm Leasing three-bay hopper 43259? Cody Grivno shares some websites where you can find prototype rolling stock images similar to this. *Cody Grivno photo*

mation is valuable if you're trying to track down build dates, equipment lineage, and other data.

Canadian Freight Railcar Gallery

(canadianfreightcargallery.ca). Don't let the website's name fool you. The page features equipment from railroads in Canada, the United States, and Mexico. There are also sections on the site dedicated to intermodal containers and

builders logos. Though the images are largely in color, some photos are in black and white.

Railroad Picture Archives.net

(rrpicturearchives.net). This website contains a variety of railroad photos, not just rolling stock. When I use it to re-search freight cars, I do the initial search by railroad. Then I look at the rolling stock roster. The equipment is listed in

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numerical order. However, you can also search by car type, Association of American Railroads type, and number range.

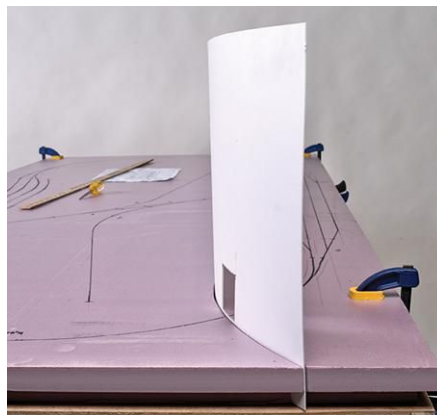
In addition, non-train photo-sharing websites like Flickr can be used to search for freight car images. On self-indexed sites like these, you may have to try various search terms to find the photos you're looking for.

And don't forget railroad historical societies as well. Some groups have prototype images and diagrams that are handy for building accurate models.

Q I'm trying to locate a source for large sheets of styrene. I can find the smaller sheets marketed by Evergreen, but I have been unsuccessful in my search for 4 x 8-foot sheets. Do you know of an online source? I live in the Toledo, Ohio, metro and there aren't any plastics dealers in my area.

John Roth

A Purchasing large sheets of styrene online is an option, though you are probably going to pay a lot to have it



Large sheets of styrene can be used for backdrops, as shown on our 3 x 7 foot N scale Chicago, Burlington & Quincy Red Oak project layout from 2015. The .060"-thick sheet measured 14" tall and 81½" long. Bill Zuback photo

shipped because of the size. We reached out to some contacts who are familiar with the Toledo area to see if they could provide any leads. Doug Tagsold, a frequent contributor to *Model Railroader* and our special issues, said that United

States Plastic Corp. in Lima, Ohio, about an hour from Toledo, sells styrene in 48 x 96-inch sheets. To learn more about its offerings, visit usplastic.com or call 800-809-4217.

Additional info. On page 22 of the May 2025 issue, we showed a picture of Great Northern 2 roomette-buffet-lounge observation car *Appekunny Mountain*. Ben Ringnalda, who owns sister cars *St. Nicholas Mountain* and *Going-to-the-Sun Mountain*, provided additional information on how the lights at the rear of the GN cars worked. "The red Gyalite came on at speeds below 28 miles per hour," Ben wrote. "The marker lights could display red or green to the rear as selected from inside the car. They also indicated green to the sides and front."

"For more information, here is my friend Jon Snyder's webpage on the restoration of the Gyalite that he did for one of my cars: trainsbyjon.myportfolio.com/gyalight"

Thanks for sharing those additional insights, Ben! **MR**

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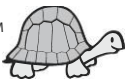
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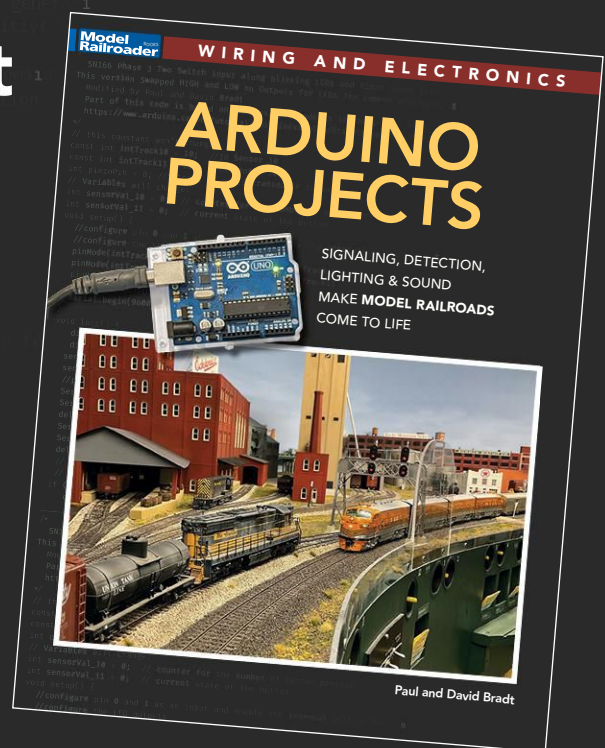
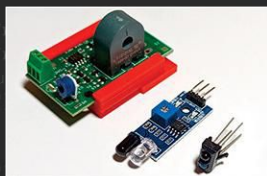


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When modeler Paul Rising wanted to uncouple cars and locomotives hands free to prevent damage to them, he created this rare earth magnet uncoupling mechanism from discarded electric toothbrush parts. Paul Rising photos

Rare earth uncoupling

I've had mixed results using manual uncoupling tools and find a lot of derailments can be caused by the twisting motion that occurs when using picks. Also, reaching over equipment at the height of my layout's 56" benchwork seemed like a disaster waiting to happen, so I decided that magnetic uncoupling was my best option.

Over the years, I've heard complaints about locomotives being hung up on fixed, top of tie magnetic uncoupling ramps. If the undercarriage of a locomotive sits low, the magnets can rub along the bottom of it or even stop it completely. I wanted a better solution.

Our family has used Sonicare brand electric toothbrushes for decades, and I've always thought the super magnets (rare earth) at the base of the replacement brush heads might come in useful sometime. When I decided to make my own under track magnets, it appeared that now was that time!

Paul Rising lives in Washington state. This is his first byline in the pages of Model Railroader magazine.

BUILDING THE UNCOUPLING MECHANISM



With a little experimentation I found that if set below the ties, the magnets used in Sonicare toothbrush heads will easily open the Kadee No. 5 couplers on my rolling stock. I set the magnet's depth to the same as the roadbed's by cutting a notch in the subroadbed. To prevent unwanted uncoupling when a train rolls over the magnet's location, I made it movable. I cemented a styrene tab with a small hole in one end so an operator can use a pin to pull the magnet off center when it's not needed. To make sure the magnet moves back and forth smoothly, I made a three-sided styrene sleeve, which keeps the adjacent ballast from interfering with its movement. For best uncoupling, I adjusted my coupler's trip pins to hang $\frac{1}{16}$ " from the tops of the rails. **MIR**



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James Lund shares the techniques he used to weather a Thrall 40-foot rebuilt well car and two intermodal containers, all HO scale models produced by Wm. K. Walther's Inc. The inset image shows what the car and containers looked like straight from the package.



How to weather intermodal equipment

These easy-to-follow techniques are designed for all skill levels

By **James Lund** • Model photos by the author, prototype images by Cody Grivno

Solid trains of well cars loaded with intermodal containers are common sites on today's railroads. Full-size cars (single and multi-unit articulated) built by manufacturers such as Gunderson, National Steel Car, Thrall, and Trinity are loaded with containers ranging from 20 to 53 feet in length. Though the cars and containers are clean when delivered, over time the paint fades and road grime accumulates. The latter was the effect I wanted to

re-create on a Walther's HO scale Thrall 40-foot rebuilt car and two of the manufacturer's intermodal containers.

For this project, I used acrylic and artists' oil paints, weathering powders, an airbrush, paint brushes, and a small sponge to make the bright yellow TTX Co. well car and clean containers look like they've been in service for a while. The addition of self-adhesive reflective yellow FRA-224 stripes puts the well car squarely in the post-2005 era.

If you model a Class I railroad in the present day, you'll most likely need some intermodal equipment. With these easy-to-follow techniques, you can make your well cars and containers look more like the real thing.

James Lund has been an avid model railroader since he was a child. He has concentrated on perfecting his weathering skills over the past 20-plus years. James is a manager for a major insurance company.

Step 1 Weathering the well car

First, I removed the trucks from the well car and set them and the mounting screws aside. Then I placed the well car in a jig, setting the bolsters on two wires to hold the car steady.

Next, I used an airbrush to apply even coats of thinned Vallejo Model Air white paint (about 80% thinner and 20% paint) to the car. This gives the bright yellow factory paint a faded appearance.

I then sprayed the bottom, lower sides, ends, and walkways with a mix of the same manufacturer's dark brown and black paint, thinned to the same ratio. This captures the look of road grime that quickly accumulates on these cars.

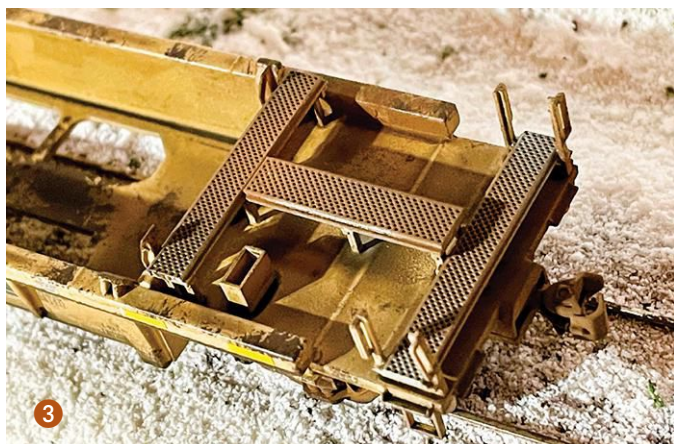
Once I was satisfied with the fade and grime coats and the paint had dried, I sprayed the car with a light application of Testor's Dullcote.

I used the same dark brown mix to simulate rust, chipped paint, and scratches on the carbody. Following prototype photos, I used a fine pointer brush to add rust spots and scratches as appropriate.

To capture the look of chipped paint, I turned to a small sponge. After dipping the sponge in the paint, I blotted most of it off on a paper towel. Then I touched the sponge to the model **1**.

After the acrylic paint had dried, I applied a wash of Windsor & Newton Burnt Umber oil paint to the car with a wide paintbrush **2**. I mixed the wash (20% paint, 80% Mona Lisa odorless paint thinner) in a disposable bowl. You can apply the wash as many times as you want to achieve the desired results. The wash settles nicely on flat surfaces and complements the effects applied with acrylic paints **3**.

I let the oil paint wash dry thoroughly before proceeding (this may take several days). Then I sealed the weathering with another application of Dullcote.



Step 2 Wheels and trucks

Next, I turned my attention to the wheels and trucks, again following prototype photos **1**. Using the dark brown and black acrylic paint mix and a small round brush, I carefully painted each wheel face in a circular motion **2**. Remove any paint that gets on the axle tips and wheel treads.

I then worked on the roller-bearing trucks. First, I made a small jig by drilling some drywall screws in a scrap piece of plywood. Then I set the trucks on top of the screws and sprayed them with Dullcote **3**. The flat finish gave the slippery engineering plastic parts some tooth for subsequent weathering effects.

After the Dullcote had dried, I used a flat brush to apply Monroe Models Dark Rust weathering powder to the sideframes **4**. Be sure to mask the sockets on the back of each casting so the wheelsets remain free-rolling. I used a smaller brush to apply Monroe's New Fresh Rust to the wheel faces **5**. One of the completed trucks is shown in **6**.



Step 3 Well-traveled containers

Before weathering the containers, I randomly applied square- and rectangle-shaped pieces of masking tape to simulate areas that had been repaired **1**. Then I used an air-brush and the same thinned acrylic colors as before to fade the paint and add grime **2**.

I returned to the mix of dark brown and black acrylic paint to add various effects. I used a fine pointer brush to add rust spots and scratches. Some of the areas I focused on were the corner fittings, corner posts, and headers **3**.

I also added some rust patches and scrape marks on the side panels **4**. Once the acrylic paint had dried, I dabbed Windsor & Newton Raw Sienna oil paint on those locations and slowly streaked it down the sides by dipping a flat brush in odorless paint thinner **5**.

After giving the oil paint wash sufficient time to dry, I sprayed the containers with Dullcote. This sealed the weathering and gave the models a uniform, flat finish. I set the containers aside for now to finish the well car.



Step 4 Finishing touches

A modern detail (post-2005) on prototype well cars is FRA-224 yellow reflective stripes on the sides **1**. I added them with Smokebox Graphics reflectors (R187) **2**. Once I had the self-adhesive stripes in place, I burnished them with the rounded edge on a pair of tweezers.

I used a paint pen to add few more random rust pits. After the paint had dried, I reinstalled the trucks. I then brushed assorted black and rust weathering powders from Monroe Models on the couplers and walkways **3**.

With that, the 40-foot well car was ready to enter service. Though I weathered the model so it can run empty, the two containers add to the realism of this modern freight car. **MR**



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PROTECTING YOUR RAILROAD DURING HOME IMPROVEMENTS

When construction knocks, it helps to be prepared

By Dave Abeles

Minoa & Euclid's ME-1 is running through newly renovated scenery on Dave Abeles' HO scale Onondaga Cutoff just days after major home construction. Careful preparations and protective measures helped to ensure not only a successful construction project, but also no layout damage.

Dave Abeles photos

Next to "we are moving," some of the most disconcerting words a model railroad owner can hear is "we need home improvements."

Major changes to the house around a layout bring fear to our hearts: though the trains can be moved, home renovation puts all our hard work on track and scenery in sudden peril and at the mercy of much larger construction work. "Prototype" heavy tools and new appliances or fixtures tend to win whenever they come in contact with a modeled world.

When my wife and I decided to go ahead with the installation of a ductless air conditioning system for our

home, it meant that the basement that contains my HO Onondaga Cutoff was to be the location of extensive work on the electrical system to support the new machinery. Contractors (full size ones) needed to run new lines above and around the railroad and replace the electrical panel immediately above it.

All was not lost, however, for with careful consideration of what would be affected at each stage of the project, I was able to minimize the damage to the layout, as well as the cleanup that would be needed afterward.

Much like any construction project, walking through the process before the work

begins is essential. We had several contractors quote the job, and each was required to make a site visit first. I took them through the layout space and explained that we would need to protect it as much as feasible. Then, with the start date set, I took a day to contractor-proof the railroad before the work started.

Some of the steps I took to prepare the layout may well help you if you find yourself in a similar situation. Take it from me: a few minutes prevention will save you hours of cleanup (or repairs) later!

Dave Abeles is a frequent contributor to MR and author of two Firecrown books.

1

ELECTRICAL PANELS
AND DUST COVERS

The old electrical panel had suited the home well since we purchased it in 2004, and I removed the modular backdrop that covered part of it before the contractor arrived ①. Unfortunately, upon inspection, the old panel did not have the number of breaker spots needed to supply the new air conditioning units. There was no way around it; the panel had to be replaced with a larger one. Once plans were approved and permits filed, we set the construction date.

Many of the preparations can be made ahead of time. Activities like removing models from the layout, adding dust covers, and protecting track and permanent structures should all be accomplished before a contractor starts work. I used painter's plastic sheets as disposable dust covers, such as the one shown over the island yard tracks ②. The material is both simple to use and effective.

Euclid Yard would be adjacent to the construction site, not under it. I used old paint cans and more painter's plastic sheeting to ensure dust and debris would not affect any permanent structures on the layout surface ③. Rolling stock, such as Conrail gondola No. 600856 seen in the photo, was removed and stored safely off the layout surface and far away from the construction area to ensure no damage.

2

A WOODEN
SARCOPHAGUS

Unfortunately for me, the area where the new electrical box would be mounted was right above the big through-truss bridge over Onondaga Creek on the M&E. The bridge couldn't be removed without major surgery. Chances were good that without protection, it would be damaged.

I used lumber scraps from previous jobs to construct a timber frame and created a sort of wooden sarcophagus around the bridge. I attached the wood pieces directly to the subroadbed with screws through the scenery, being careful to avoid the track and details below. A top piece relies on a few small spots of carpenter's glue to secure the joints ①.

The goal of the wooden sarcophagus was to support the weight of a tool or the whole electrical cabinet in case it slipped or was dropped during construction. I wanted to ensure any weight placed on the top of the sarcophagus was not transmitted to the track or the bridge. I used timber shims inserted below the main support member to ensure the frame rested only on the subroadbed ②.

3 MINIMIZE DAMAGE

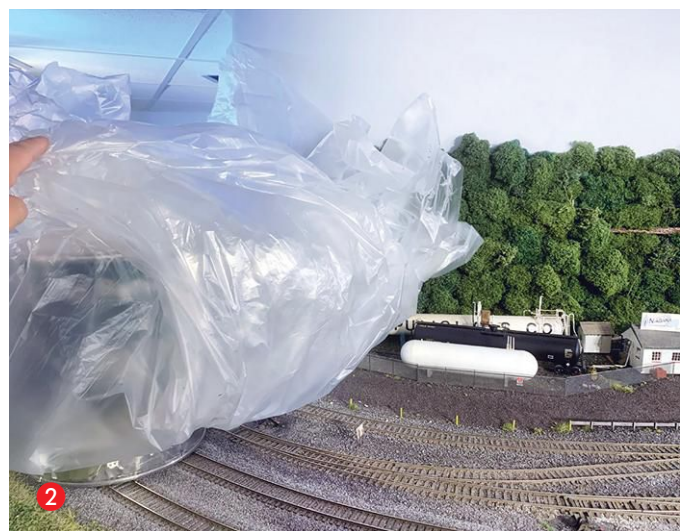


I protected other track in the work area with scraps of $\frac{3}{4}$ " plywood that I screwed in place over the scenery ①. If a heavy tool or panel fell on the layout, the wood would help absorb and evenly distribute the load of the impact to minimize damage to the layout.

On a railroad as far along as the Onondaga Cutoff, there are certain things that can't be moved out of the way during construction. Signals, light towers, lit structures, and trees — all of these had to remain. To protect against accidental impacts that could destroy fragile objects, such as a signal bridge, I placed old paint cans adjacent to each side of them, such as the one shown at CP 280 ②.

Ceiling panels can be removed ahead of time, which can help minimize damage. However, as the crew ran new wire, pieces of the plaster wall crumbled and landed on the layout ③. What a mess! It was hard to witness the layout space in this condition, but fortunately things got better from here.

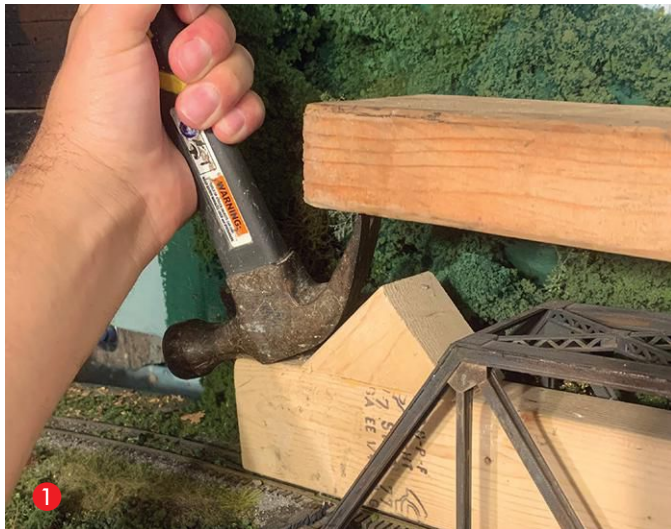
4 A NEW PANEL AND SNOW



After two full days of work, the new electrical panel had been mounted in place. Normally it would have been mounted vertically, but that would have required severing the M&E main line. Thankfully local building codes didn't forbid mounting the panel horizontally, and the contractor worked with me to ensure the best possible placement of the new breaker cabinet in relation to the layout ①.

Even with the best preparations, some cleanup is inevitable ②. The contractor worked hard to ensure minimal damage to the railroad. And although nothing was broken, plaster dust is insidious. As shown in the lower image, CP 280 appears to have had an early dusting of snow. Careful vacuuming was the name of the game to remove the plaster dust from the track, scenery, and structures in this area.

5

CLEANING
UP

With the heavy work finally complete, it was time again to return the railroad to operation. I started by disassembling the sarcophagus on the Onondaga Creek bridge. Thanks to a sparing use of glue, a quick pry with a hammer was all that was needed to pop the top piece loose ❶. I then removed the screws from the other areas, as well as the protective wood pieces from the rest of the layout.

The best cleanup by contractors will still leave an owner a few items to handle. I found and removed castoff screws, wire clippings, zip-tie straps, and connectors that had landed in and around the foliage at the work areas ❷. Everything then received a gentle vacuuming to remove the last of the dust before I ran any trains.



Dave Abeles' new book, *Designing & Operating Yards*, is available now at Firecrow Media retailers and Shop.Trains.com.

6

BACK TO
NORMAL

With the new panel installed and cleanup completed, I checked that everything was in working order. Just as on a prototype railroad, before the line was returned to regular service, I ran a few closely-supervised trains to test the track and signals to ensure no unseen damage would suddenly be discovered during an operating session.

However, the new panel also presented a new scenery challenge ❶. Future access to the breaker cabinet demanded a removable cover. To make this work, I used cardboard sheets and covered them with a poly fiber forest canopy and scale leaves. On the back, I hot-glued several strong magnets to the cardboard, which in turn hold the "forest" in place to hide the panel ❷. During normal operation, the new cabinet is nicely hidden by the scenery, but with the magnets, it can be accessed quickly when needed.

Thanks to my protective measures, no repairs were needed to the layout's track or structures after the construction project. And the Onondaga Cutoff was back up and running after just a few evenings of cleaning up. At the next operating session, no one even commented on the new panel, which was the best possible outcome! [MR](http://www.mrtrains.com)

One model railroad, two interests



1 As a Pennsylvania RR passenger train eases away from the platform at Crawford Notch, a pair of Wellsville, Addison & Galetton Electro-Motive Division F7s rumble past with a freight train on the opposite side. The scene takes place on Art Kear's multi-level HO scale model railroad set in north central Pennsylvania.





2 This overall view shows Art's train room from the entrance door. The recessed display cabinets with glass sliding doors at right are used to store extra engines and rolling stock.

This 12 x 32-foot HO scale layout re-creates a logging line and the steam-to-diesel transition era

By Art Kear

Photos by Lou Sassi

Similar to many hobbyists my age, my journey in model railroading started with a Lionel train set. I received mine for Christmas in 1960 when I was 7. My second layout was an HO scale Aurora race car set that also had model trains. After my wife, Laurie, and I were married, I built another HO layout.

Fast forward to 1995. I designed and built my new home. After work on the rest of the house was finished, I started construction on the dedicated space for my 12 x 32-foot HO scale dream layout. My wife knew that if I started building the train room first, the rest of the house was in jeopardy of not getting done.

Once the train room was completed, it was time to get started on the layout. Potter County in north central Pennsylvania would be the setting. The next step was figuring out what to model.



3 Johnny Morrison and his assistants are busy shoeing horses at his blacksmith shop as a Climax passes by in the background. The logging portion of the layout is 52" off the floor, approximately 4" above the middle level.

Pairing interests

As you probably guessed by the headline, I couldn't settle on one theme. In my youth, I enjoyed watching trains on the Wellsville, Addison & Galeton (WAG). The memories of seeing trains rumble over grade crossings, through pastures, and along streams made a lasting impression on me.

The WAG's hub of operations in Galeton, Pa., checked many boxes for a layout. It had an enginehouse, sanding facility, station, office building, reversing track (a circle track in WAG parlance),

maintenance and storage buildings, and a yard.

In addition to the WAG, my other interest is logging railroads in the 1910s. Climax, Heisler, and Shay locomotives, along with Barnhart log loaders, were all items that I wanted to model. Though the full-size logging lines were mainly temporary, they could be found throughout the hills of Pennsylvania.

Combining two eras

With my prototypes selected, I had to determine how to blend two very

The layout at a glance

Name: Buffalo & Susquehanna to Wellsville, Addison & Galeton

Scale: HO (1:87.1)

Size: 12'-4" x 32'-0"

Prototype: Buffalo & Susquehanna and Wellsville, Addison & Galeton

Locale: north central Pennsylvania

Era: spring 1910 and spring 1950

Style: multi-deck walk-in

Mainline run: 96 feet

Minimum radius: 22"

Minimum turnout: No. 8

Maximum grade: upper level and lower staging, 2%; middle level, none

Benchwork: wall mounted

Height: 24" to 52"

Roadbed: Homasote

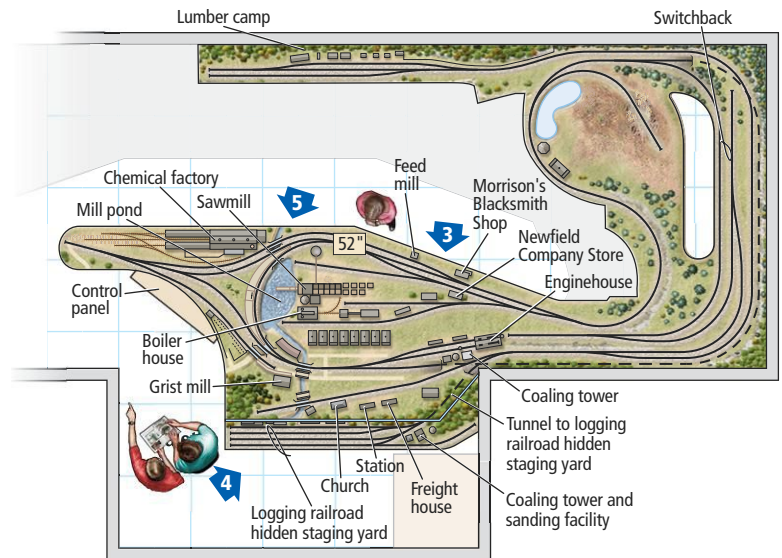
Track: Atlas and Shinohara code 83 flextrack

Scenery: window screen covered with joint compound

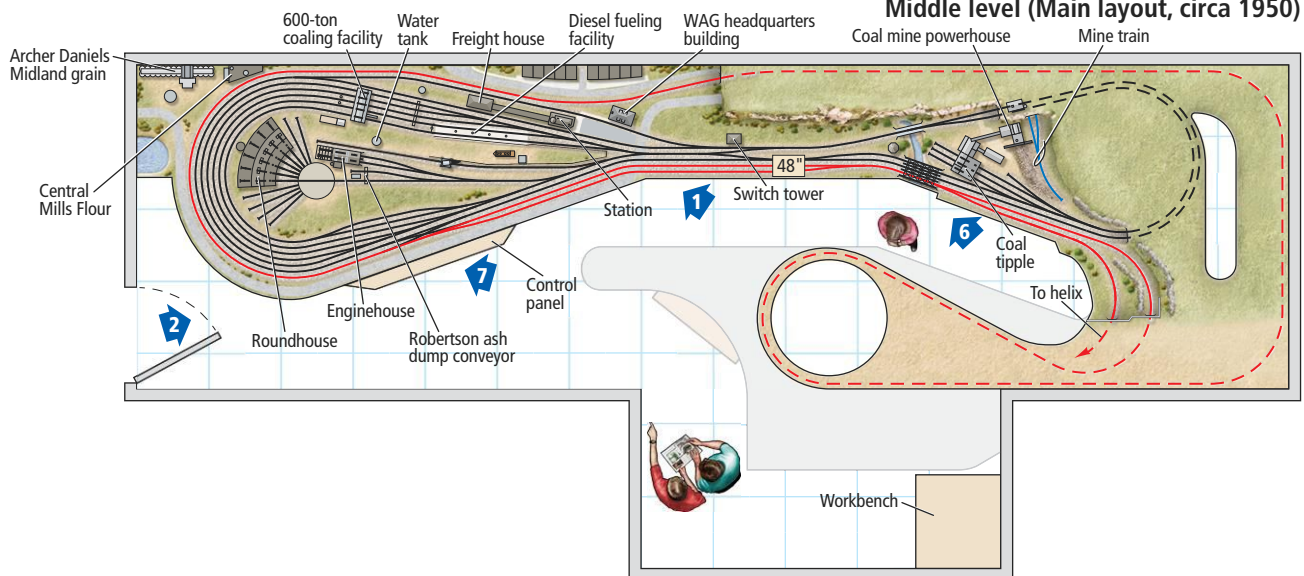
Backdrop: hand-painted and commercial

Control: Direct current, Model Rectifier Corp. Tech II power packs

Upper level (Logging railroad, circa 1910)



Middle level (Main layout, circa 1950)



Buffalo & Susquehanna to Wellsville, Addison & Galeton

HO scale (1:87.1)

Layout size: 12'-4" x 32'-0"

Scale of plan: $\frac{3}{16}" = 1'-0"$, 24" grid

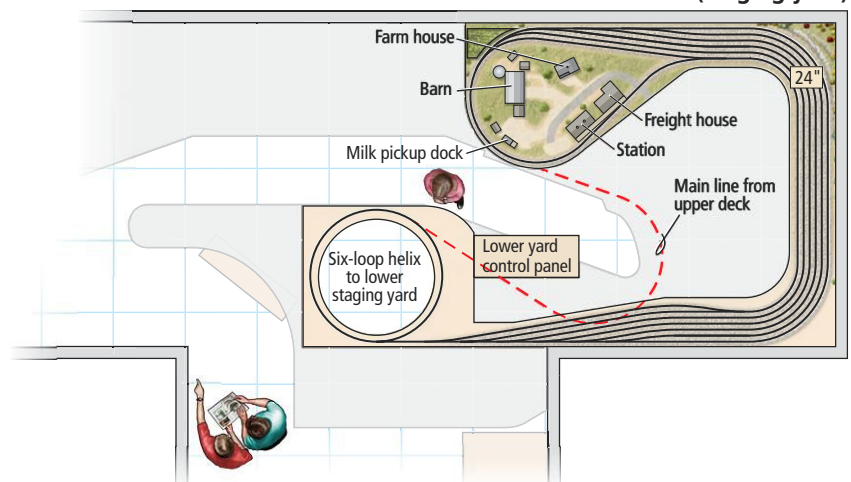
Room sizes: 9 x 32 feet and 5 x 10 feet

Numbered arrows indicate photo locations

Illustration by Kellie Jaeger

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

Lower level (staging yard)





4 This 10 x 72-inch shelf depicts the town of Galetton and serves as a four-track staging yard. The scene connects to the logging portion of the layout via a hidden tunnel.

Modeling Galetton

The town of Galetton on the Buffalo & Susquehanna is a four-track staging yard on a 10 x 72-inch shelf. I added a factory, warehouse, station, and freight house in the 1½" space between the backdrop and track.

I built kits of the factory and station and ripped them in half with a band saw. Then I used the back of the factory for the warehouse and the rear of the station for the freight house. The small staging yard also features a switch tower, coaling and sanding facilities, and a water tower.

The staging yard connects to the logging railroad via a single track through a hidden tunnel. — *Art Kear*

different prototypes and eras on one model railroad. I worked as a self-employed carpenter for 25 years, so the benchwork came easy for me. I built wall-mounted 2 x 4 framing with 2 x 4 legs and a ¾" plywood top. I wanted the structure to support my weight if I needed to get on top of the layout.

I started with the middle level, which depicts the WAG in 1950. The benchwork, set at 48" high throughout, runs along three walls of the layout room. I used broad-radius curves and No. 8 turnouts on this section of the model railroad. The middle level lets me run long trains in a continuous loop.

Hidden track was another thing that was important to me because trains come and go and shouldn't be seen all the time. The lower level, set at 24" from the floor, is a five-track staging yard that connects with the middle level via a six-loop helix with a 2% grade.

To help trains negotiate the helix, I stage two helper engines in a dedicated track on the lower level. The locomotives

are uncoupled from trains once they reach the summit and return to staging. Helpers were used on the full-size Wellsville, Addison & Galetton, so there's prototype basis for this practice.

After I finished the benchwork for the middle level, I turned my attention to the upper level. This part of the layout features a detailed depiction of Newfield, Pa., in 1910. Scenic highlights on this portion of the model railroad, served by the Buffalo & Susquehanna, include a sawmill, log pond, company row houses, and town structures.

Similar to the middle level, I used broad curves and turnouts for the logging railroad. The big difference is this part of the layout has elevation changes and switchbacks.

The upper and middle levels of the model railroad have reversing loops, reversing wyes, small towns, factories, staging yards, and sidings. These features provide many interesting switching opportunities for trains on the B&S and WAG.



Track and equipment

I used code 83 flextrack and No. 8 turnouts throughout the layout. Approximately 90% of the track is Shinohara. The rest is Atlas.

Tortoise by Circuitron slow-motion switch machines are used to control the turnouts. The devices also route power to the appropriate tracks in staging.

There are four direct-current control panels at strategic points around the layout with toggle switches for block control. Red and green lights show the different power to the blocks.

With two distinct prototypes and eras, the equipment varies on the layout. One of my favorite logging locomotives is a brass Pacific Fast Mail Climax that I hand-painted, numbered, and lettered for Newfield Lumber Co. Rivarossi Heislars, Bachmann Shays, and a Bachmann Climax round out the power for the logging line.

The 1950 section features a mix of steam and diesel power. Special run



Bowser and Stewart Electro-Motive Division F7A diesel locomotives lettered for the WAG feature number-specific paint and details.

The rolling stock is off-the-shelf kits and ready-to-run models. If there are specific cars I need for the Buffalo & Susquehanna or WAG, I turn to kitbashing. Chalks, dyes, stains, and paints are my preferred weathering methods.

Multi-step scenery

To model the rolling hills of north central Pennsylvania, I used a multi-step technique. First, I sketched where I wanted the hills on the room's blue walls. Since I'm modeling spring, I used light green paint on the far hills, medium green for the intermediate hills, and textured dark green for the closest hills. I used different shades of white paint to represent atmospheric haze.

After the paint had dried, I stapled metal window screen to the base of the hills. I formed the screen to the desired

shape and stapled the other end to the wall or backdrop.

With the forms in place, I applied a thinned (and very light) coat of non-shrinking, 45-minute set drywall joint compound over the screen and let it dry. The easy-to-sand material gave the hills form and strength.

Next, I brushed a full, heavy coat of joint compound over the shell. I installed rock castings as necessary, blending the edges into the hill with additional compound. In some locations I let the plaster partially harden and carved the rock formations myself. I used washes and gray paint to highlight the rocks.

For the wooded areas, I attached hand-size pieces of poly fiber to the hill forms with white glue. I blended the poly fiber with the textured hills on the walls.

Then I applied a heavy coat of dark green spray paint on the poly fiber [Make sure the room is adequately ventilated and wear personal protective equipment when using spray paint indoors. — Ed.] While the paint was still

5 The upper level of the layout is set in 1910 and is centered around logging operations. Here, Newfield Lumber Co. Climax No. 4 brings a cut of loaded cars to the log pond. The geared locomotive is a custom-painted Pacific Fast Mail brass import.

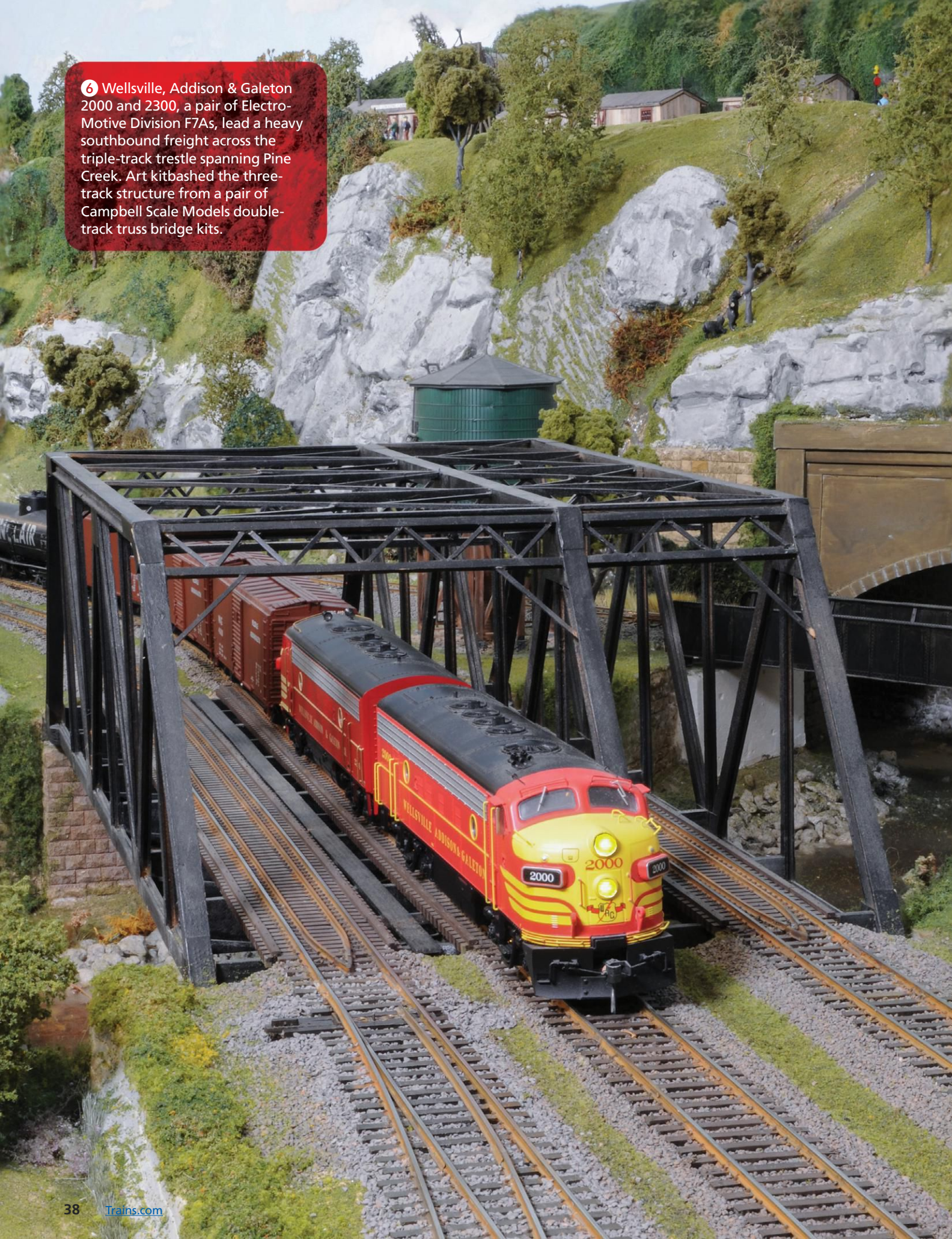
wet, I used a plastic squeeze bottle to puff a layer of Woodlands Scenics Green Blend turf (T-49) on the poly fiber. This yielded a quick and easy forest canopy.

At the front edge of the wooded scenes, I inserted small sticks into the bottom of the poly fiber to represent trees. I then added various textures and colors of ground cover until I achieved the effect I wanted.

For grass fields, I applied medium-brown paint on the joint compound. While the paint was still wet, I applied Green Blend turf. After the paint had dried, I swept off the excess turf. Then I added other colors of ground cover to give the scenery a variegated look.

I used Enviro-Tex two-part epoxy for the water scenes. On top of that I added

⑥ Wellsville, Addison & Galetton 2000 and 2300, a pair of Electro-Motive Division F7As, lead a heavy southbound freight across the triple-track trestle spanning Pine Creek. Art kitbashed the three-track structure from a pair of Campbell Scale Models double-track truss bridge kits.





7 A mix of steam and diesel locomotives occupy the six-stall roundhouse on the middle level of Art's layout, which is set in 1950. The Walthers Instant Horizons backdrops make the scene appear deeper than it really is.

Mod Podge to simulate small ripples. For waterfalls, I attached Scotch tape to the edge of the scene. Then, with my finger, I wiped clear silicone caulk on the tape. This technique also secured the tape at the top and bottom.

Structure showcase

The structures on the layout are a mix of kit-built, kitbashed, and scratchbuilt. I enjoy drawing and scratchbuilding structures based on WAG prototypes. My preferred building materials are wood siding sheets and scale lumber from Micro-Mark and windows and doors from Tichy Train Group.

One of my favorite scratchbuilt structures is the WAG headquarters. I measured the prototype building and scaled it down to fit the available space.

Another building I'm proud of is the JV Models band saw mill. I filled the interior with Keystone Locomotive Works details, such as cutoff saws, live roll conveyors, and a shotgun carriage.

The National Chemical Co. is the largest scratchbuilt industry on the layout. It was scaled down to HO from pictures in a book. The history of these and other structures help bring the railroad to life.

Realistic sounds

Though I prefer the quiet, relaxing environment of my train room, I do have steam and diesel Maxx Traxx sound boxes on all of my main lines. Activation buttons are spread throughout the layout. I also have a yard chatter box that provides background sounds to that part of the model railroad.

The sound effects add to the enjoyment and experience of running trains. The buttons allow younger visitors to be hands-on while watching trains.

Leave them smiling

When it comes to running trains, nothing is off the table. Passenger trains, local freights, unit trains, and work extras can all be seen on the layout. I don't host formal operating sessions, but I do enjoy running trains for visitors and guests. My grandson, Joshua Kear, is the only other operator.

I can loop run three trains at once, and can swap out full trains on any of the three tracks as needed. I find that visitors mostly like to watch trains go in a loop while studying the many details on the layout. It makes all the hours spent building the railroad worth it.

Similar to other layouts shown in the hobby press, the HO scale Buffalo & Susquehanna to Wellsville, Addison & Galetton will never be done. There's always another detail or structure to add and another smile to put on someone's face when they come to visit. That's what gives me the greatest pleasure of all. **MR**



Meet Art Kear

Art Kear lives in Newfield, Pa., with his wife of 50 years, Laurie. The couple has two grown sons, Andy and Tom, and one grandson, Joshua (left), who likes to operate the layout. Art also enjoys rebuilding classic cars, watching sprint car racing, and camper camping with his wife.

TAKE THE TRAIN TO Willoughby

Using prototype elements in
freelanced HO layout design

By **Guy Cantwell**

Photos by the author

The Willoughby Line is my third large layout and by far the most ambitious I have undertaken. I tore out a nearly complete layout and started work on the HO scale Willoughby Line in 2004 when I realized that it wasn't going to be possible to hold operating sessions on the old layout. I designed the Willoughby Line with the intention to hold operating sessions with my friends. In addition to operations, my other goals for this layout were to build well detailed models and to accurately depict the West Coast scenery found in California's Central Valley and Sierra foothills and mountains.

The name of the layout is a reference to a rather dark *Twilight Zone* episode in which the main character seeks to escape his stressful situation by taking the train to an imaginary town called Willoughby. I liked the sound of the name and wanted to go with a freelance approach, so Willoughby fit the bill. As things progressed, I ended up using a mix of freelance and prototype approaches on the layout. One of the main design features was to give the operator the experience of driving a train from the valley, through the foothills, and into the mountains. In order to get a sense of

traveling some distance on the journey, I decided to build a double-deck layout. While two decks did give me the running length I wanted, the design and construction turned out to be complex.

As the design took shape in my two-car garage, I tried to shoehorn as much as I could into the room without making things feel crowded — certainly a difficult balance at best. I had varying degrees of success realizing this design goal as I finished the scenery along the line. My task was made more difficult by the inclusion of a helix in the corner to climb between decks and the addition of a third staging deck below the lower level. As it turned out, the track plan may be a little overly complex with hidden sidings at every level, hidden wyes, return loops, and more than 300 feet of hidden track. Recent experiences have revealed that the track plan can support a density of operations that exceeds the room capacity in terms of operators and how many people can fit in the space.

Design and operating plan

The layout is organized into 12 scenes. These are a combination of real and imagined locations from various

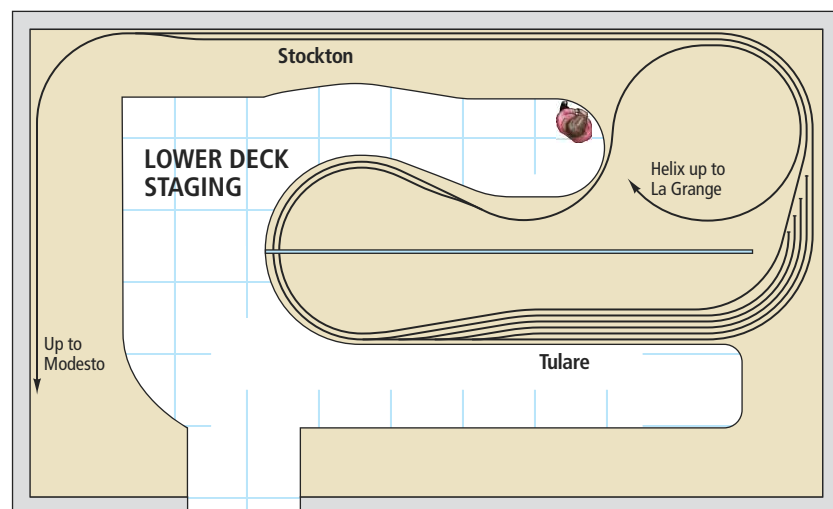
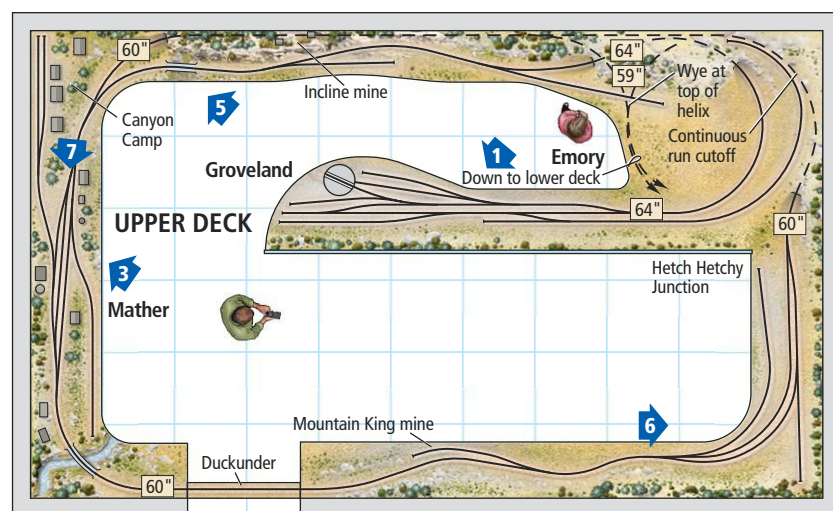
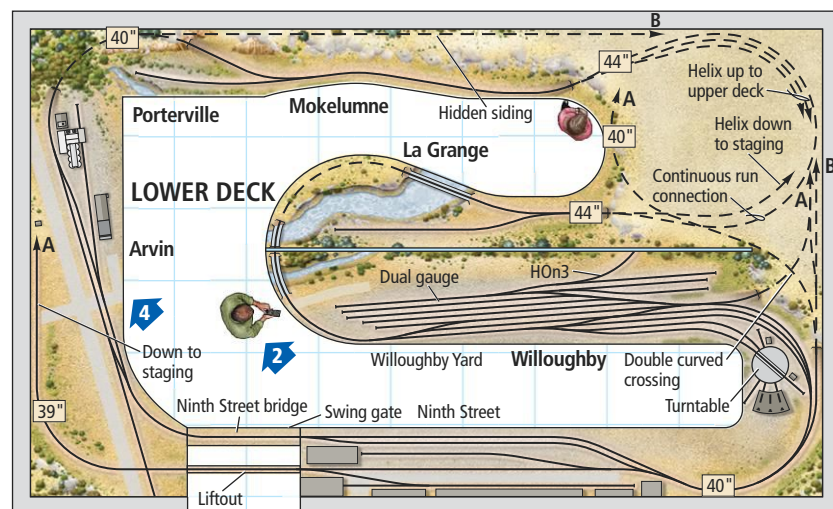
❶ Hetch-Hetchy RR 2-6-2 Prairie No. 5 prepares to take water in Groveland after the long climb up the hill on Guy Cantwell's HO scale Willoughby Line. The water tank is scratchbuilt from plans of the Jefferson tank on the Rio Grande Southern.





Willoughby Line

HO scale (1:87.1) and HOn3
 Size: 13" x 22", Scale of plan: 3/16" = 1'-0", 24" grid
 Numbered arrows indicate photo locations, Illustration by Kellie Jaeger
 + Find more plans online in the Trains.com Track Plan Database.



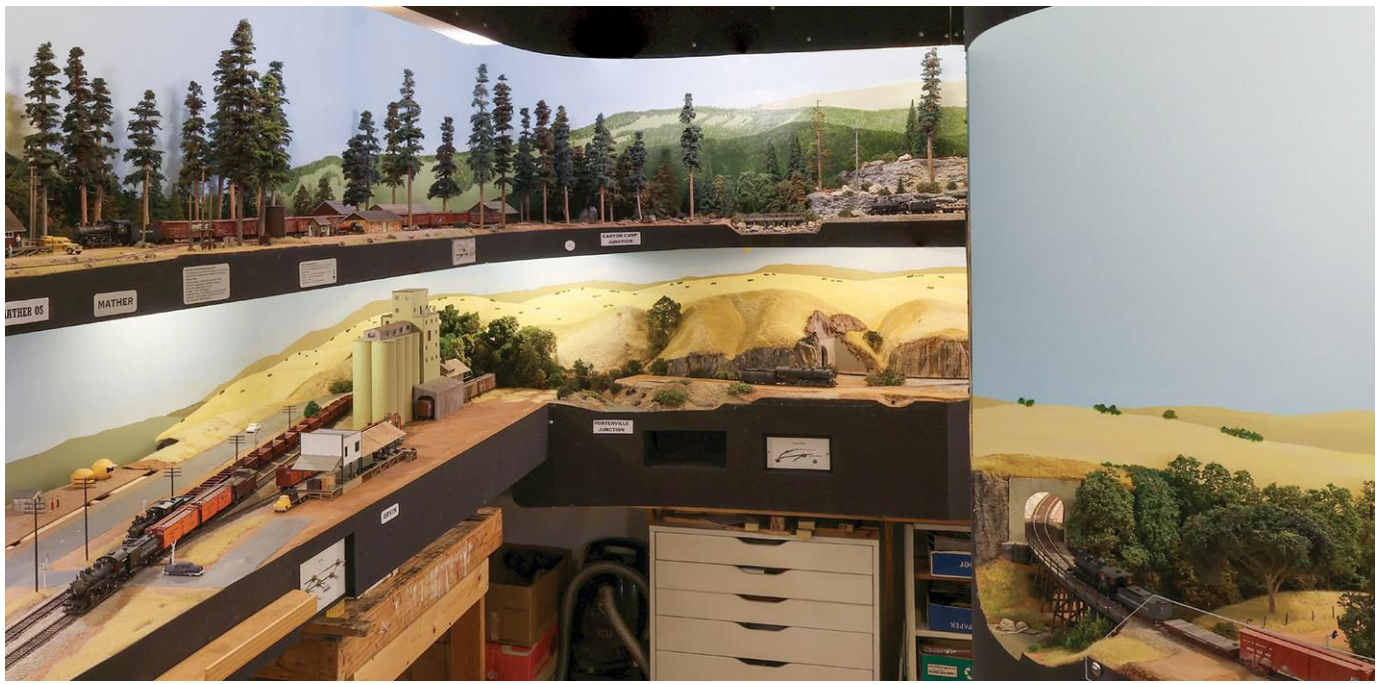
The layout at a glance

Name: Willoughby Line
Scale: HO and HOn3 (1:87.1)
Size: 13 x 22 feet
Prototype: proto-freelanced
Locale: California's Central Valley and Sierra Nevada
Era: 1935-1950
Style: multi-deck walk-in
Mainline run: 180 feet
Minimum radius: 30"
Minimum turnout: No. 6
Maximum grade: 2%
Benchwork: L-girder and plywood brackets (upper deck)
Height: 40 to 60 inches
Roadbed: Homasote
Track: Micro Engineering codes 55, 70, and 83 flextrack
Scenery: Hydrocal hard shell on wire screen
Backdrop: hand-painted tempered hardboard and drywall
Control: CVP Easy DCC

California short lines. The rolling stock is a mix of several California prototypes along with other equipment that is lettered for the catch-all Willoughby name. I run a combination of my favorite trains and specific equipment from railroads that ran in the area of my hometown. I love steam, so motive power is all steam locomotives from the '30s to '50s. Trains run behind everything from Shays to Cab-Forwards. Using this mix of motive power and locations, it's possible for a specific train to be prototypically correct in one scene on the layout and only reasonably plausible over the rest of the line.

The operating plan has developed over the years as each session reveals new things to be tested and refined. We use timetable-and-train-order operation (TTTO) with a dispatcher to control the movement of trains during our sessions. The basic concept of the layout is to run small trains into the woods while dodging Class I trains on the mainline. We use a fast clock and a car card system developed by a friend of mine.

The last few years have been spent fine-tuning the reliability of the layout and developing signage and other materials to help operators decipher layout locations and the way each train is supposed to operate. I have found that regardless of how well things run or how far we get into the schedule, we all have fun getting together. I work on things between sessions to make a better



② In this view of the layout from the doorway, Mather is on the deck above Arvin on the left. The north end of Willoughby yard and the end of the peninsula are on the right. Guy used a shadow box technique for his fascia and lighting valance. Storage and a rollout workbench (lower left) are visible under the model railroad.

experience for crews running the layout at the next session.

Constructing the layout

Construction of the Willoughby Line has switched many times over the years from working on the layout itself to building detailed models to doing myriad other tasks that go into creating an operations-based layout — the list is quite long. I'll start on a large structure and get to a certain point in the build, then leave it to work on something else. Sometimes these models sit for years. I recently have completed some models that have been in progress for a decade or more. I used to worry about this approach and sometimes still have to remind myself that it is, after all, a hobby. The upside of this method is that I am almost always inspired and working on something train-related.

I started construction on the layout in 2004 and by 2007 the benchwork was done and the main line completed. The design process of the layout encountered several of the classic double-deck challenges: how to climb between decks, how to illuminate the lower deck, and how to enter the room with a walk-in plan. I



③ Hetch Hetchy No. 5 switches the stock pen siding at Mather, while a horse tethered nearby eyes the locomotive and the tall grass with equal interest. Guy scratchbuilt the power poles shown here, working from photos of those at Mather.

solved these issues using mostly traditional methods.

For the main room entry point, I used a swing gate, a tall duckunder, and a lift-out for use in operating sessions.

When considering options for climbing between decks, since I didn't have room for a noli [continuous climb instead of a spiral helix — *Ed.*] I wanted to keep grades reasonable on the rest of the layout, so I decided to use a helix. I made the most out of it by building two helixes in one vertical stack. I also included a serial-staging siding, run-arounds on three levels, and hidden wyes at the top and bottom.

After evaluating the lighting options available at the time, I decided to illuminate the layout with compact fluorescents. These produce bright, even lighting with a minimal power draw.

The benchwork for the bottom deck is L-girder with plywood brackets supporting the upper deck. The subroadbed is cabinet-grade plywood topped with Homasote. I started construction with the staging deck (lowest deck) and built up from there.

Most of the hardshell scenery was finished by 2011 and the upper deck and was completed in 2018. I'm now working on the bottom deck's scenery.



4 A pair of Southern Pacific Cab-Forwards meets in the valley at Arvin along Highway 99 on the layout's lower deck. Static grass, a golden hued backdrop, and real dirt help to create the feel of summer in California's Central Valley.

California scenery

Scenery is one area of the hobby that I enjoy quite a bit. Most of the scenery methods used on the layout are variants of old-school techniques with the exception of SuperTrees and static grass. I leveraged these two products as much as possible. SuperTree material is great for making smaller trees and is also useful for creating foliage on tree armatures and modeling ground-cover plants.

Most of the trees on the layout were built using traditional methods, but large pines and oaks presented special challenges. Finding suitable commercial model trees was difficult and costly.

Many of the pines in the Sierras in the areas I am modeling are quite big. Ponderosa pines, white fir, and cedar trees can grow to more than 150 feet tall. After exploring the options, I built more than 100 big pine trees for the layout using the furnace filter method with some of my own modifications.

One of the other classic California trees is the valley oak. I built a batch of large oak trees using sagebrush armatures with SuperTree material for the foliage. Though they took some time to build, I felt that both the pines and the oak trees hit the sweet spot between looking good and getting them done during my lifetime.

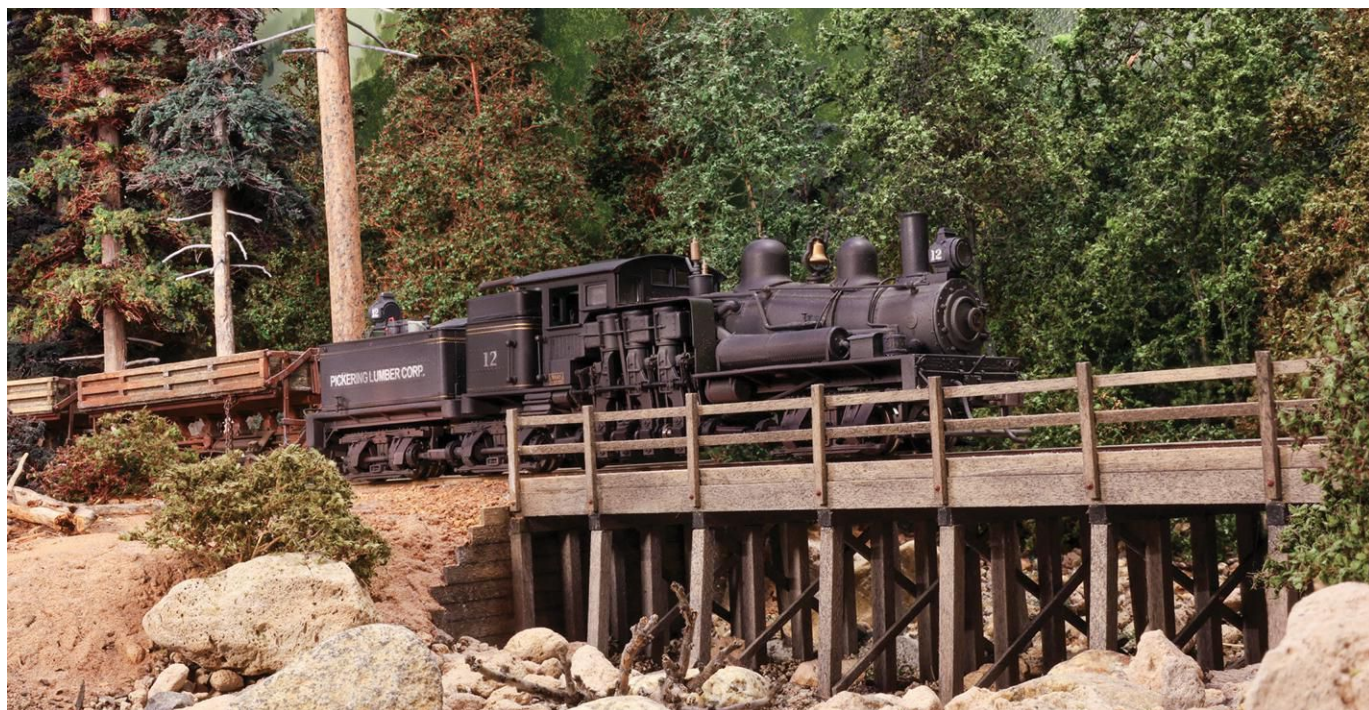
Static grass solved one of the biggest challenges for those of us modeling California: how to model the golden dry grass that is the signature element of the foothills and valleys in the state. Silflor introduced its California Gold Grass static grass color in 2007; since then, other companies have stepped in with a variety of colors and lengths that are suitable for modeling dry grass.

Improving modeling standards

Another one of the original goals was the improvement of my modeling standards. I am not a contest-quality modeler, but I did want to have well-detailed models on the layout. I adopted fine-scale standards for most of the structures and other models on the railroad as well as raising the standards for my rolling stock. I've built and painted thousands of detail parts for the layout so far.

Details are a lot like trees in that you need more than you thought you would at the beginning of the process. On this layout, I also reset my own rolling stock standards to include more accurately proportioned and detailed models with separately applied grab irons and other prototype features.

I ended up scratchbuilding many of the signature structures on the layout because kits didn't exist. I've found that scratchbuilding isn't that much more difficult than assembling craftsman kits, and you end up with something that



5 Pickering Lumber Corp. Shay No. 12 crosses the creek at Canyon Camp Junction. The bridge was scratchbuilt from photos of the prototype on the Hetch Hetchy RR. Ground cover and rocks are all natural items. The Shay is a Bachmann Spectrum model.

makes your layout unique. I typically use photo interpretation to figure out the dimensions for my structures. The method involves working with known measurements for doors and other architectural features to figure out the dimensions for the rest of the building. Occasionally, plans from prototype sources such as the SP standards book and Jack Burgess' Yosemite Valley drawings saved the day. For my scratchbuilt structures, I put the drawings under a sheet of glass to protect them while I built the models on top.

The challenges

There were several challenges I faced when building the layout: most notably was the lack of space. Every model railroader faces this issue in some way. I wanted to fit as much as I could in my layout room. Whether we are talking about the track plan, benchwork, or the storage and model building areas in the layout room, it has been a challenge to make it all fit. I employ rollout desks, cabinets, and rolling carts to try to effectively utilize the space around the layout. A space-related side issue is that I now have to find ways to protect the finished areas of the layout while doing things that create dust or make a mess while completing the rest of the layout.

Another challenge I faced is inherent in double-deck layout design and construction. Multideck layouts are more



6 Yosemite Valley Mogul No. 26 rumbles through Hetch Hetchy Junction on the upper deck of the layout. The prototype location included cabins for workers on the line. Guy modified AHM cabin kits and added scratchbuilt decks.

time consuming and complex to build than my past single-deck layouts were. While this makes sense, it can also be overwhelming at times when facing the enormity of the project. Everything is interconnected and thus I made mock-ups of things on one deck to see how they affected the other. Stuff had to be built in a certain order and I had several puzzles to solve along the way. The process was much more work than I had initially anticipated.

Though I am happy with how things turned out, if someone asks me now if I recommend building a double-deck layout, my answer is to avoid them unless you really need the extra mainline run.

When I survey the layout room late at night or watch my friends run trains during a session, I am pretty satisfied with the way things turned out. While building the layout has been mostly a solo effort, I can't take credit for building the entire thing by myself. Most projects this size don't happen without assistance. Many of my friends have helped in various ways, including putting plaster on screen and teaching me how to do a certain modeling techniques. I am grateful for all of their advice over the years.

At this point, I still have some areas to finish and models to build, but I am looking forward to more ops sessions and sharing the hobby with others. [MIR](#)



Meet Guy Cantwell

Guy lives in Soquel, Calif., with his wife, Nancy. He has been performing at Bay Area events and running a guitar teaching studio for the last 35 years. His other interests include photography, hiking, skiing, and gardening. Guy has been active in the Bay Area hobby scene for the last 20 years — building models, presenting clinics, writing articles, and participating in operating sessions and layout tours.



7 Yosemite Valley No. 26 stops for water and train orders across from the depot at Mather. The main line on the prototype ran on the track farthest away from the station so that freight shipments wouldn't interfere with passenger service.



Creating composite photographs



Brooks Stover paired an image of the Swandale sawmill on his S scale Buffalo Creek & Gauley with a prototype photo of autumn trees in West Virginia to create this scene. Keep reading as he shares his easy-to-follow techniques for creating composite photos.

For nearly 40 years I've been modeling the Buffalo Creek & Gauley (BC&G), a short-line railroad in West Virginia. I'm on my fourth S scale layout depicting the line, which operated approximately 20 miles of track in the central part of the Mountain State.

I've long enjoyed combining my interests in photography and model railroading to create images of my layouts. And like most modelers, I strive for as much realism as possible in the photos. However, I've always felt that the hillsides covered in poly fiber trees were the biggest giveaway that the images are of a model and not the real thing.

After some experimentation I developed a technique for placing the modeled portion of layout photos onto images of real wooded background scenes to dramatic effect. Follow along as I share my methods.

How to do it

The composite photograph technique is pretty straightforward using Adobe Photoshop or similar photo-editing software. First, I select a portion of a layout photo that includes the foreground, trains, and structures but no background. Next, I paste that part of the image on a photo of natural trees and sky. The layout image can be repositioned against the trees as necessary to get the desired composition. Finally, I save the composite image as a JPEG or TIFF. Any excess parts of the background image are cropped to create the final scene. The step-by-step process is shown in ❶, next page.

Gathering photos

Over the years I've developed a library of images featuring wooded scenes from various locations taken at different times of the year. The composite technique works well with photos of trees taken in summer, but it's particularly effective with autumn scenes, since nature has color variations and fine textures ❷.

Though photos of trees during summer and fall are colorful, don't overlook

How to merge model and prototype images to produce dramatic scenes

By Brooks Stover

Photos by the author

Two photos, one scene

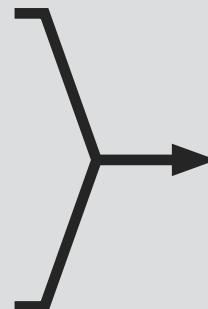
Step 1



Step 2



Step 3



① Merging images. Here is the five-step process Brooks used to create composite photographs. **Step 1:** Open the layout photo. **Step 2:** Select the portion of the layout photo using the lasso or similar tool and copy that part of the image.



② Fall foliage. Brooks took advantage of the overhanging branches in the photo of a waterfall in West Virginia (left) to frame Buffalo Creek & Gauley No. 13 at the Swandale sawmill. The prototype image was taken for the waterfall scene, but that part of the photo was covered and cropped.



Step 4



Step 5



Step 3: Open the prototype tree image. **Step 4:** Paste the layout photo on the tree image. Move and resize to get the desired composition. Save the composite image as a JPEG or TIFF. **Step 5:** Crop the extraneous portions of the tree image.

barren trees common during late fall, winter, and early spring. Just a few leafless trees in the background of a model photo adds interest to the image **③**. Replicating the level of branch detail shown in the prototype photo would be difficult in model form.

Next-level realism

In addition to generic background scenes, I've also used photographs of prototype locations to enhance my layout images. In 2007 I went to Dundon, W.Va., to take pictures of the area where the full-size BC&G enginehouse once stood. When I paired a photo of the same location on my S scale layout with that image, it was like turning the clock back to 1964 **④**. Adding smoke and steam effects to the locomotives with photo-editing software further enhanced the realism.

If you're looking to take images of your layout to the next level, try creating composite photos. [MR](#)

Brooks Stover models the Buffalo Creek & Gauley. His 12 x 25-foot S scale layout was featured in Great Model Railroads 2023. The retired General Motors engineering executive is a National Model Railroad Association Master Model Railroader.



③ Leafless trees. It may be tempting to overlook images of trees that have dropped their leaves, but they can add interest to the background of model scenes, too. Replicating that level of branch detail on scale trees would be difficult.



④ Model meets prototype. Brooks combined a photo of his BC&G enginehouse with an image he took at the site where the prototype structure once stood. He added smoke and steam effects to further enhance the scene.



By mounting a toggle switch in a recessed housing made from a medicine bottle cap, Jim Zinser was able to protect the switch from being lined accidentally by people brushing up against it. This one operates an automated interchange on his layout.

BUILDING RECESSED SWITCH HOUSINGS

Common pill bottle caps can protect toggle switches from accidental bumps

By Jim Zinser
Photos by the author

Toggle switches protruding from the fascia of a model railroad have always been a problem. Brushing against them while running trains can easily cause all kinds of unwelcome outcomes, such as accidentally setting a powered turnout that sends your fast freight hurtling off the main into a row of boxcars parked on a siding.

Until recently, I'd been able to avoid such catastrophes by keeping the fascia of my HO scale Copper Valley Ry. devoid of all toggle switches. I align most of my

turnouts by hand, and the rest are equipped with Tortoise by Circuitron switch machines controlled by stationary DCC (Digital Command Control) decoders. Additionally, I use mobile decoders to control the speed and direction of my layout's two turntables. Using decoders to operate these items from my DCC cab, has allowed me to avoid fascia-mounted toggle switches.

Since the turnouts and turntables see a lot of use, it was easy for me to justify the cost of adding DCC control to them. But I couldn't see my

way clear to spend the extra money for a limited-use operating item. For example, when it came time to install an automated interchange on my layout (see sidebar on page 52), I needed to mount a control switch for it on my otherwise clean fascia.

To prevent accidental activation of the toggle switch, I decided it should be recessed. To do this, I wanted something simple, quick, and inexpensive to build. After looking around for a bit, one morning I found exactly what I wanted sitting in my medicine cabinet.

Automated interchange operations

The recessed switch shown in the lead photo is used to control an automated interchange. In the "Auto" position, the Duluth, South Shore & Atlantic Baldwin AS616 will shove one or more cars out onto the interchange track until the lead car covers an infrared sensor located between the ties. This causes the sensor circuit to cut off track power and the engine stops. When a train from my interchanging Copper Valley Ry. picks up the cars, the sensor is again uncovered and the action is repeated, delivering the next set of cars for pickup.

This continues automatically until only the engine remains. However when a new set of cars need to be staged on the interchange track, or if an operator prefers to control the engine manually, the toggle switch can be set to the down position to turn off the sensor circuit.

For more details, see the two articles by Tony Koester that were the inspiration for this project. They appeared in the September 2006 and December 2016 issues of *Model Railroader*. — Jim Zinser

One of the medications I take every day comes in a bottle with the unique cap ①. The cap can be made to be child resistant or non-child resistant, depending on which way it's screwed onto the bottle. With no children in my household, I prefer the easy-to-open option. That morning, when I picked up the bottle, I realized I was looking at what could easily be used as a recessed toggle switch housing. The result of my efforts can be seen on the previous page, dressed up with a label created by my friend, John Grubb.

Making the housing

Making your own bottle cap recessed switch housing is easy. First, locate a source for the caps. Chances are good you already have several around your house, as most pharmacies use the same kinds of bottles. Also, check with friends and family members, as they may be able to provide you with the caps from their empty bottles.

Begin by selecting a switch small enough to mount into the cap without the toggle

projecting out. Miniature toggle switches fit the bill nicely. Next, drill a hole in the center of the cap that's large enough to mount your switch. The manufacturer thoughtfully provides a "dimple" in the center, making it easy to drill an accurate hole.

You can leave the caps the color of the molded plastic, or you can paint them. I used spray paint and picked a color that matched my fascia ②.

Depending on your color choice, painting the caps may actually make the safety warning embossed on the underside more visible, as shown in the photo. However, once mounted on the fascia and viewed normally, the raised lettering is hardly noticeable. As shown, this technique also works well for push-button switches ②.

With the cap now painted and the switch installed, the next step is to mount it on the fascia. I used a hole saw in a power drill to make the opening ③. Select a size large enough to pass all of the cap but its lip that projects out from the side. This serves as a mounting flange. I found that a 1½" saw worked perfectly



① Reversible medicine bottle safety caps, which can be made child-resistant (left) or not (right), provided the raw material for Jim's easy-to-build recessed switch housings.



② The bottle caps can be fitted with either toggle or push-button switches. Jim painted his before installing them.



③ Jim used a 1½" hole saw to cut the opening for the cap. He applied silicone caulk from the back to glue it to the fascia.

for the cap I used.

Once you've drilled the hole, push the new recessed switch housing into it until the lip is flush with the surface of the fascia. Secure the cap from the rear with an adhesive. I used a silicone sealant, but construction adhesives will also work.

I'm quite satisfied with my medicine bottle cap recessed

switch. In more ways than one, it was just what the doctor ordered! **MR**

Jim Zinser is a retired advertising copywriter. He lives with his wife, Andrea, in suburban Detroit. His free-lanced HO scale Copper Valley Ry. is set in Michigan's Upper Peninsula in 1954. This is his second MR byline.

Eldon C. Stutsman Inc. – Hills, Iowa, 2012



A long string of covered hoppers sits alongside the massive Eldon C. Stutsman agriculture complex. The hoppers are awaiting their turn to unload their contents to be distributed to farmers throughout eastern Iowa. This scene is a regular occurrence on The Hills Line, my HO scale version of the Iowa Interstate's Hills Industrial Spur. Stutsman is at the southern end of the spur in the small village of Hills, and is the reason for the line's existence on both the prototype and the model.

Planning began with a series of site visits to the prototype, attempting to document as much as I could about the overall arrangement and purpose of each building. Aerial photos from Google Earth provided additional information on the size and shape of the entire complex. Although the overall length is compressed to fit my available space, the ratios and distances between the individual elements are to scale to help give the proper sense of size.

Though only the two-story office building is visible above

the cuts of cars, the entire main structure features a PVC board core to support the nearly 7-foot-long building. I cut styrene joists to prop up the various rooflines. Rix Products board-and-batten walls and ribbed roof sheets were used for the exterior, which are a near-perfect match to the prototype. Additional styrene strips, along with details parts from both Rix and Walthers, complete the look.

The elevator was scratch-built from styrene and covered with Plastruct siding. A Rix

Eldon C. Stutsman Inc. takes up more than 7 feet of space on The Hills Line, James McNab's HO scale version of the Iowa Interstate's Hills Industrial Spur. The line's existence is dependent on Stutsman's success as a customer. Photos by the author

grain elevator kit was heavily modified to match the convoluted arrangement of pipes and chutes. Weathering was done with PanPastel chalks, oil-based paints, and an India ink and rubbing alcohol wash.

Hills City Park is just to the south of the industrial

Send us your scenes

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



spur. Though I didn't have the space to include much more than an inch of the playground, the parking lot that backs up to the right-of-way is prominently featured. The playground would be a great starting point for a future railfan.

The last detail removes all doubt as to our locale. The large Stutsman sign was modified in Photoshop from a photo of the original, printed

on copy paper, and mounted to the elevator, serving as a towering reminder of Stutsman's importance to the scene. **MR**

James McNab is an award-winning producer and video editor with more than 800 production credits to his name. He served as a Contributing Editor for Trains.com Video, producing The Hills Line series of videos.

▼ As part of his research on the prototype, James took a series of photos of the Eldon C. Stutsman agriculture complex in Hills, Iowa. Stutsman receives regular shipments of numerous commodities, including phosphates and potash, for reselling to farmers throughout the state.



Mail Call

Don't we all look forward to opening the mail? Coffee and the inbox have become a comfortable morning routine for me. There's even more delight in finding a letter in the mailbox, addressed in familiar handwriting, spilling out a handful of railroad slides or prints.

May's "Checkbox train orders" about Illinois Railway Museum's method of operation prompted a note from Jim Providenza. Hats off to Dave Clemens and him, way ahead of me about model railroad applications for checkbox orders! They delivered a 2012 clinic, "Speeding Up Timetable and Train Order Operations," during an NMRA Pacific Coast Region weekend event about layout design and operation. The talk addressed the almost irreconcilable difference between fast clocks and train orders during operating sessions. Most of us can't fast talk the way announcers do when they're reciting the strings attached to an advertisement. This means the speed of speech and handwriting governs, frustrating crews waiting for orders and delaying movements. Jim and Dave described how several prototype checkbox-type examples could be adapted to operating sessions.

Jim admitted that he's somewhat of a checkbox skeptic. I am, too. The train order ritual of dictation and repetition, saying and spelling key words, pleases me. Naught n-a-u-g-h-t has the staccato of a drum roll; Woodville double-u-double-o-d, v-i-double-l-e, the soft rhythm of a nursery rhyme. However, checkbox train orders very much resemble their track warrants or Form D successors in substance, if not form. If they make TTTO



A New Orleans Union Passenger Terminal platform bustles with activity in 1954 with mail carts scattered around like baggage carts surrounding an airliner. As much as this columnist enjoys hearing from readers, such a volume of mail would be overwhelming. James G. La Vake photo

operation easier to practice, why not?

Like any for-profit enterprise seeking lower costs, railroads test ways to make safe train operation more efficient. Timetable-and-train-order operation relied on stations and operators; saving money by eliminating them was long a target. I wrote about Louisville & Nashville's 1979 experiments with radio dispatching in "The mother of invention" in July 2019. As soon as it went to print, Harold Krewer emailed me about efforts Rock Island made in 1974, which I covered the next month in "Stop the presses!" More new material turned up. Jim pointed me to a July 2004 *Trains* magazine article, "Ahead of our time on the Baltimore & Ohio." Author H. E. Meeker belonged to a B&O team which explored radio dispatching on selected Monongah Division lines in 1964.

The team developed pre-printed, color-coded cards on which crews would record train orders radioed by dispatchers, bypassing operators. The cards never made it into the field because word leaked

out and a telegrapher's union objected. The team turned its attention to automation of manual block territory, successfully testing a Remote Control Train Operating System that depended on radio control of lineside signals. This foreshadows today's Positive Train Control and the team dreamed about radio control of locomotives and car identification readers, which we also take for granted half a century later. How true is the old Peter Allen song, "Everything old is new again," which he performed flamboyantly with the Rockettes at the Radio (ahem) City Music Hall!

Mark Salter sent a note correcting me on my mention of the Cascades wreck in April's "Watch your speed." I located it on the Port Defiance Bypass near Portland, Ore. This isn't close. It's not even the right state! The train

derailed on the Point Defiance Bypass between Olympia and Tacoma, in Washington! I rushed this out without fact-checking myself. Had I followed my own advice and watched my speed, I'd have saved myself the embarrassment of committing two errors on the same play.

Bloopers are one thing, but typos are another. How do they survive artificial intelligence-driven grammar and spell checks and so many editors' eyeballs? I found one in "Checkbox train orders"

after it reached print and grumbled about it to Harold, a former newspaperman. He comforted me with a law of nature he learned in copy editing class: "The number of typos in the universe is a constant. For each one you fix, another must crop up to keep things in balance." Let's make that b-a-double-l-a-n-c-e. **MR**



LIKE ANY FOR-PROFIT ENTERPRISE SEEKING LOWER COSTS, RAILROADS TEST WAYS TO MAKE SAFE TRAIN OPERATION MORE EFFICIENT. — JERRY



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VIDEO**





The miners at the Devin Coal Co.

tipple at Kelly, W.Va., have finished loading the empty hoppers and all that's left to do is some cleanup. The HO scale hoppers are by Walthers and InterMountain. The Walthers car on the left was super detailed with grab irons, slope sheet braces, uncoupling levers, and air hoses. The truck dump tipple is an Industrial Heritage kit. The scenery in this area was recently redone to replace the lichen and puff-ball trees with Super Trees. The scene is on Brian Kelly's HO scale Kanawha Subdivision layout and set in the summer of 1971. Richard (John)

Seabrook photo

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Rio Grande Alco PA 6013 drifts

downgrade with the eastbound *West Elk Mail* in the fall of 1952, just west of the aptly named town of Redstone. The action takes place on Casey Dowling's N scale Colorado Midland Western layout, set in western Colorado. The rocks are carved foam insulation board covered with soil and rock collected from various locations throughout Colorado. The locomotive is from Broadway Limited Imports and the passenger cars are Micro-Trains. Casey took the photo.

The pull-through maintenance night shift is finishing its inspection of a new Electro-Motive Division SD45 as dawn breaks in the Midwest. It's the late 1960s and this 3,600hp engine is beginning its role as the latest contestant in the horsepower wars. The enginehouse is a Wm. K. Walther's kit that has been fitted with a compliment of maintenance equipment and staff. The engine is a ScaleTrains Rivet Counter model. The scene was built by Alex Derry.

David Derry photo



A pair of ITLX (Industrial Transportation Leasing Corp.) leased units brings a local into Gary Yard (known as Kirk Yard on the "J") from Joliet Yard on John Depauw's HO scale Elgin, Joliet & Eastern Ry. in fall 1973. The yard's 10 tracks hold around 16 cars each. Four arrival/departure tracks and a run-around track complete the scene. The U.S. Steel Gary Works dominates the backdrop behind the yard. Larry Burk photo



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Schedule of Events

FL, PINELLAS PARK: Regal Railways presents Toy Trains & Hobby Show. Lopez Inc. Hall, 7177 58th St. North, Pinellas Park, FL 33781. Saturday, August 16, 2025. 9:00am-2:00pm. Admission: \$6.00 adults, children under 12 free. Vendors and model train layout. Lunch available. Contact: Joe at 727-244-1341 or visit: www.regalrailways.com for more information.

IA, ELKADER: 13th Annual Elkader Model Train Show-Swap Meet. Sunday, August 17, 2025. 10:00am-3:30pm. Johnson's Reception Hall, 910 High Street. Adults \$5, children 6-12 \$2, under 5 FREE. Free parking, lunch stand available. Information: Larry Lerch, 563-880-2066 or 563-245-3345

ID, CALDWELL: Southwest Idaho Train Show. O'Conner Fieldhouse, 2207 Blaine St., Caldwell, ID. September 20-21, 2025. Saturday, 10AM-5PM; Sunday, 10AM-5PM. Admission \$5.00, \$6.00 w/card. Under 12 free w/adult. Clinics, operating layouts, exhibits, rides, vendors, all scales. Concessions available & free parking. Sponsored by Caldwell Model Railroad Club & Historical Society. Contact Dave 208-936-5730 or visit www.cmrcs.org

MO, JOPLIN: Joplin History & Mineral Museum Model Train Show and Swap Meet. Saturday, August 9, 2025. 9am-3pm. In Schifferdecker Park, 504 South Schifferdecker Ave., Joplin, MO 64801. Admission: \$5 adult, 12 and under admitted free with paid adult. Swap Tables \$20 each. Contact Steve Gardner, 620-230-9545 or email: sogardner1@att.net

OH, VAN WERT: Van Wert Railroad Heritage Weekend Model Railroad Show & Swap. Van Wert County Historical Society, Van Wert County Fairgrounds, 1055 S. Washington St., Zip: 45891. August 16-17, 2025. Saturday 10am-4pm & Sunday 10am-3pm. Adults \$7. Children 12 & under/ Scouts in Uniform: FREE. Early Bird 9am admission: \$10. Info: Chuck White, railcarman@frontier.com, 260-760-1666, www.vwrrhw.com

TX, AUSTIN: Austin Train Show. Over 25,000 sq.ft. of railroading fun for the whole family! Palmer Events Center, 900 Barton Springs Road, Austin, TX. August 23-24, 2025. Saturday 10am-5pm, Sunday 10am-4pm. Admission: \$8 online, \$10 at the door (includes both days), 12 and under FREE w/adult. Kids train ride, vendors, model/Lego railroads, tour, clinics. Visit: austintrainshow.org

WI, LA CROSSE: Rail Fair, Copeland Park, Rose & Clinton Streets. Saturday, July 19, 2025. 10am-4pm. Admission \$8.00, under 12 free with adult. Railroad Show-Flea Market-Swap Meet. BUY/SELL/TRADE. Model, Toy & Antique Trains & Memorabilia, Railroad Exhibits & Displays. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383 or 608-498-9522. www.4000foundation.org

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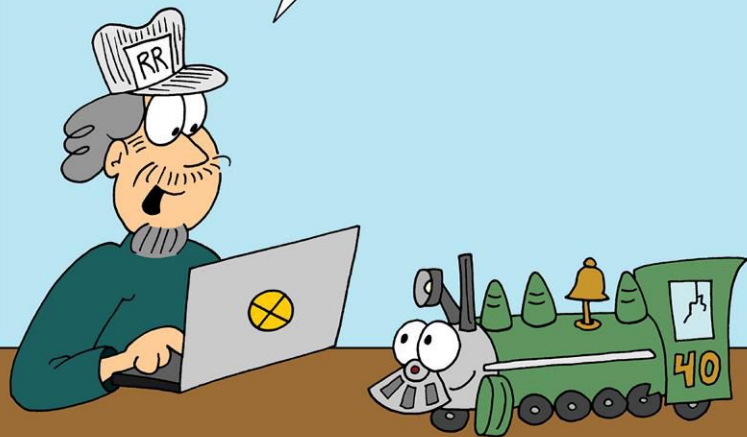
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'Pushing' large layouts



It's hard to believe Australian Tim Nicholson could build such an evocative HO depiction of Midwestern branchline railroading on a 13¾" x 9'-10" plank. Tim Nicholson photo

A group of us were discussing layout planning, and someone mentioned that the magazines are "pushing large layouts." That's not the first time I've heard or read a similar remark, so that's a topic that we need to chat about for a whole host of reasons.

First, it simply isn't true. No editor I know, and I know all of the ones you are familiar with, has such an agenda. But I can understand why some of you have formed the impression that our eyes light up like a kid's on Christmas morning when an article about the Continental & Orient shows up.

So let's discuss impressions first and then look at what we're doing to change them. For starters, the guys and gals who build large layouts are obviously ambitious and have the resources to get things done. So it's second nature to them to record their accomplishments and send them to their favorite magazine for publication. If the modeling

is good, no editor is going to veto the article just because the layout happens to be a large one.

And that's as it should be, since you can be inspired by and learn from a well-designed and executed model railroad of any size and scope. Look at each element of the railroad rather than the entire layout as a whole. Is there a yard, junction, branch, or major industry that could stand alone as the basis for a small layout?

I'm quite sure that one could keep quite a few crew members busy on a model railroad that comprised nothing more than the Frankfort, Ind., yard on my Nickel Plate Road, for example. With staging at both ends, you would need a staging crew, an eastbound yardmaster, a westbound yardmaster, a Commercial Engine crew, a soybean plant crew, and a roundhouse foreman. The yards and train car-counts could be shortened to save some space.

But what about small-layout coverage? In the 2025 issue of MR's annual *Model Railroad Planning*, there are several stunning examples of small layouts, including the one pictured here. I can't tell you how excited I was when builder Tim Nicholson agreed to share his story and photos with MRP readers, and more coverage will be in my 2026 book, *Guide to Modeling Branchline Railroads*. I hope those of you looking for information on small — and larger, for that matter — model railroads will pick up the MRP 2025. I've been editing it since we launched it in 1995, and I can't tell you how much I've learned from its authors.

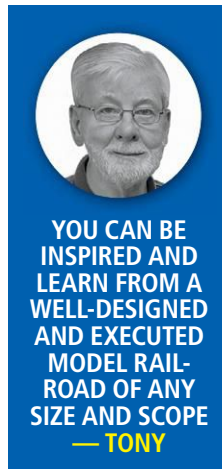
I have stumbled across a lot of other small layouts that the builders felt were

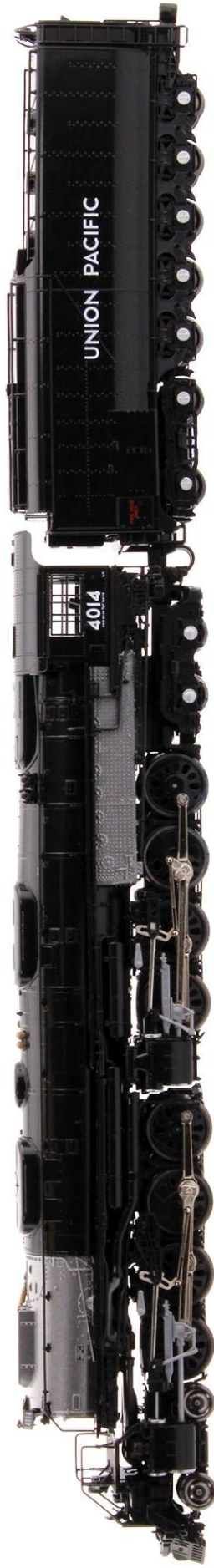
too insignificant to warrant coverage in a magazine. I disabuse them of that misconception immediately, and you'll see them in future issues of MRP as well. I know MR editor Eric White is equally enthusiastic about covering small layouts in both MR and *Great Model Railroads*. Don't be shy; show us what you've been doing!

I've never believed an editor can successfully fill the pages of a magazine by looking hopefully at the mailbox. I have found that it is extremely helpful to have friends, almost all current authors, who keep their eyes open for good article candidates. As they say, if you see something, say something.

So what are you up to these days? If you're planning or building a relatively small layout, and you're a reasonably good planner and modeler, the odds are good that we'll be interested in what you're doing. No, you folks with a basement or two-car garage at your disposal are not suddenly *persona non grata*, and we invite you to continue to share your work with us. But it's the guys and gals with compact layouts who may need more encouragement to contact an editor.

If so, this is it. We are extremely interested in well-designed small layouts for our three magazines: *Model Railroader* and the two annuals, *Model Railroad Planning* and *Great Model Railroads*. I don't know how to make it any more succinct than that. **MR**





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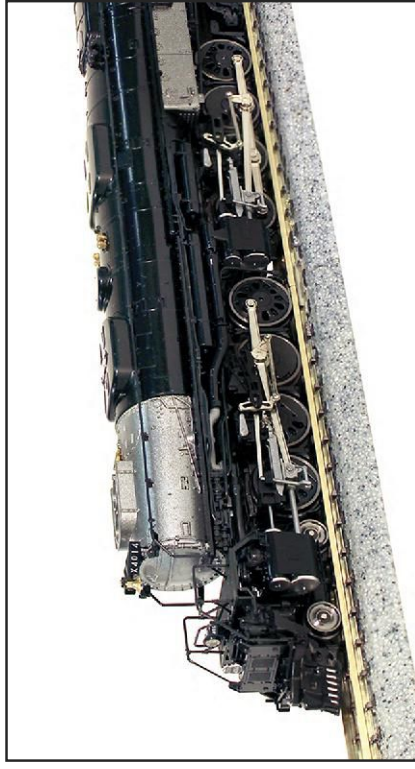
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