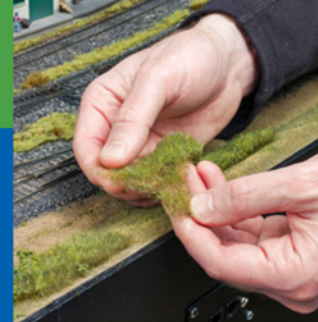


#998  
AND COUNTING

**HOW TO:** Easy weeds & grass p.32



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February 2017  
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## This layout has it all!

Two decks, staging elevators,  
plus day and night operations p.46



**Benchwork  
for a sectional  
layout** p.36

Learn from Jim  
Heidt's double-deck  
HO layout modeling  
upstate New York.  
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**BONUS  
ONLINE  
CONTENT  
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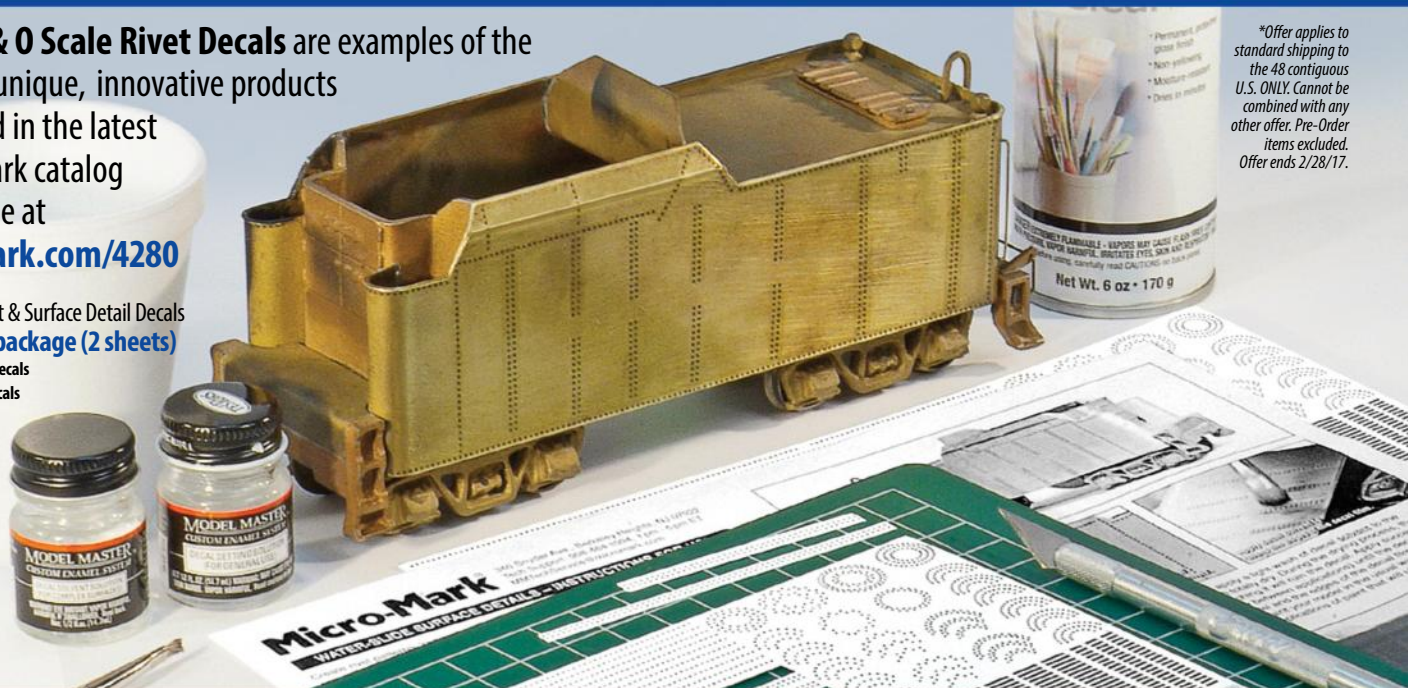


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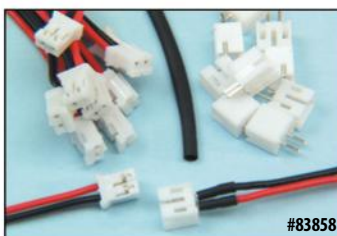
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910-9828 #8485 Standard DC

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910-19830 #4405 Sound & DCC  
910-9829 #4404 Standard DC  
910-9830 #4407 Standard DC

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910-19832 #8401 Sound & DCC  
910-9831 #8387 Standard DC  
910-9832 #8422 Standard DC

### Union Pacific<sup>†</sup> Heritage Units

#### Missouri-Kansas-Texas<sup>†</sup> "Katy"

- High headlight



910-19824 #1988 Sound & DCC  
910-9824 #1988 Standard DC

#### Missouri Pacific<sup>†</sup>

- High headlight



910-19825 #1982 Sound & DCC  
910-9825 #1982 Standard DC

#### Western Pacific<sup>†</sup>

- High headlight



910-19826 #1983 Sound & DCC  
910-9826 #1983 Standard DC

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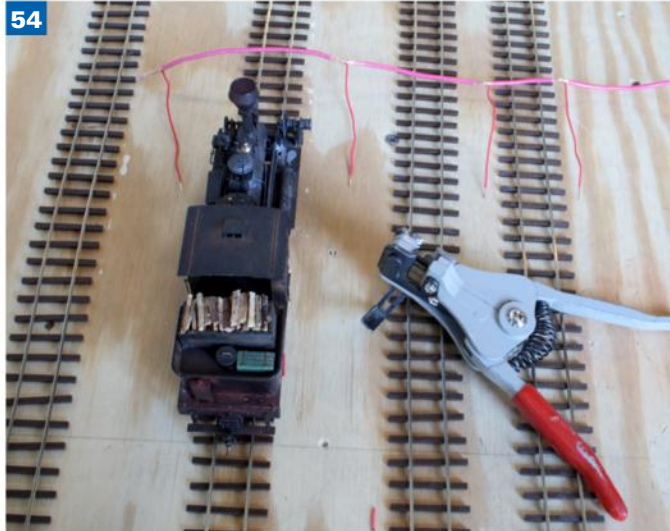
Availability and prices shown were accurate at press time, for updates, please visit [walthers.com](http://walthers.com). Preproduction models shown, some details and colors may vary.

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# GOT TRACK?

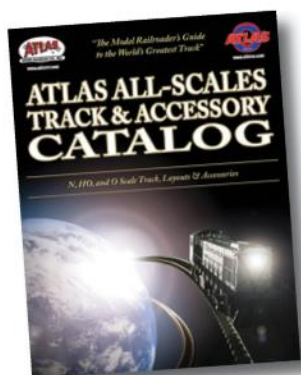
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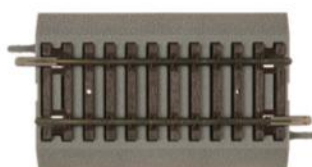
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## New layout video tour



### Upstate New York in 1948

**Jim Heidt's HO scale** Ogdensburg & Norwood Ry. features two decks and a mainline run of more than 400 feet. *Model Railroader* subscribers can watch trains run through the small towns and stunning Adirondack scenery. Click on the link under Online Extras to watch this subscriber exclusive.

## New photos every month



### Free computer desktop wallpaper

**Each month the editors** at *Model Railroader* choose an exceptional layout or trackside photo to feature on [www.ModelRailroader.com](http://www.ModelRailroader.com). You can use this photo as a background on your computer screen. This month's featured photo is of Eric Brooman's always-current Utah Belt RR. Click on the link under Online Extras to download this image in a size that best fits your computer monitor.

## New product video



### Rapido N scale FL9

Visit [www.ModelRailroader.com](http://www.ModelRailroader.com) to find a searchable database of more than 1,000 model railroading product reviews, including videos. This month don't miss a demo of the ESU LokSound-equipped N scale FL9 from Rapido Trains.

## Track Plan Database

### More than 500 plans

**Looking for layout ideas?** The *Model Railroader* Track Plan database features more than 500 track plans, including those from the latest issue.



## More from Trainfest



### More new products

**Back in November** the *Model Railroader* staff attended Trainfest at State Fair Park in West Allis, Wis. Click on New Products to see an expanded show report highlighting all the new products featured, including this HO scale United States Railroad Administration light Pacific steam locomotive from Bachmann Trains.

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## But how did he build that?



**Jim Heidt's HO scale layout** is featured on this month's cover and on page 46. Indeed, Jim's sprawling layout has it all: a 400-foot main line, two decks, a helix, staging elevators, and a busy operating scheme.

How do Jim and other model railroaders with top-notch layouts figure all of this out? Good question.

While the guys on the *Model Railroader* staff were editing this particular issue, they also were preparing the new *Model Railroad Planning 2017* issue, with guidance from its editor Tony Koester, who also writes our monthly Trains of Thought column.

Back to the question about how Jim Heidt and others figure it all out.

Well, some of the answers lie in *Model Railroad Planning* magazine. For those of you unfamiliar with the magazine, it comes out once a year in January. The annual 100-page issue contains ideas, strategies, concepts, and designs for model railroads in all scales.

This year, the issue contains stories about freight yard design, using mirrors to enhance scenery, using track wyes on a model railroad, building a free-standing switching layout using "found" space in a train room, and advice on disguising tunnel openings to avoid the Swiss cheese look.

On the cover is a photograph of the layout that *Model Railroader* Video Plus

producer David Popp built modeling a portion of the Winston-Salem Southbound Ry., a North Carolina connecting line between the Norfolk & Western Ry. and the Atlantic Coast Line.

David was inspired by a single black-and-white photo, which led to the discovery of a book written by about the little-known railroad, which led to a track plan, and so on. David explains in detail the design process behind the small switching layout he built, which models the railroad's southern terminus. (For more on this layout, subscribe to MR Video Plus at [www.ModelRailroaderVideoPlus.com](http://www.ModelRailroaderVideoPlus.com).)

Even if you have no interest in modeling the Winston-Salem Southbound, the process – from photograph, to research, to design, and ultimately to construction – can be applied to nearly any layout in any scale.

*Model Railroad Planning* is all about ideas. So if you are thinking about your next layout, or making changes to your existing layout, be sure to buy a copy.

The magazine is available in stores that sell *Model Railroader* starting in mid-January, or order a copy direct at [www.kalmbachhobbystore.com](http://www.kalmbachhobbystore.com) or by calling 800-533-6644.

**"998 and counting"** is on the top left corner of this month's cover. What does that mean?

If you missed the January issue, you may not know that *Model Railroader* is closing in on its 1,000th issue. In two more months, if you stacked every issue on top of one another, the pile would be 1,000 magazines tall. We have surprises in store, so be sure to pick up the April issue or keep your subscription current.

NEIL BESOUGLOFF

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**Trainfest special!**



**HO scale Bombardier Transportation ALP-45DP dual-mode locomotive.** Atlas is offering this modern commuter engine decorated for NJ Transit in four road numbers. The ALP-45DP has illuminated, directional light-emitting-diode headlights, ditch lights, and red marker lights; a positionable non-functioning pantograph at the rear of the hood; factory-applied railings, air horn,

and antenna; modeler-installed grab irons with drilling template; and Kadee couplers. Direct-current models with an 8-pin socket and a 21-pin plug for Digital Command Control decoder and space for a speaker sell for \$169.95. Versions with an ESU LokSound Select sound decoder retail for \$279.95. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

## Freight cars dominate at Trainfest

**Trainfest, America's largest** operating model railroad show, was held in early November at State Fair Park in West Allis, Wis., a suburb of Milwaukee. The two-day show featured 110 hobby manufacturers and vendors, 70 operating model railroads, more than 50 clinics and how-to demonstrations, and railroad historical societies.

Freight cars took center stage at Trainfest. Spring Mills Depot released its Baltimore & Ohio class N-34 wagontop covered hopper in HO scale (below), Micro-Trains Line Co. unveiled its new N scale 70-foot Gunderson Husky Stack

well car (page 11), Tangent Scale Models added to its HO lineup with a General American 8,000-gallon 1917-design radial course tank car (page 12), ScaleTrains.com debuted two new HO scale carbon black covered hoppers (page 14), and Accurail had pre-production artwork for its new HO scale 36-foot double-sheathed boxcar kits (page 16).

Though freight cars were the star of the show, locomotives weren't to be overlooked. Atlas had its HO scale Bombardier ALP-45DP (above), Walthers announced the Electro-Motive Division F7A and F7B diesel locomotives for its

1956 Santa Fe *Super Chief* (page 11), Athearn had pre-production samples of its General Electric ES44DC diesel locomotive in its HO scale Genesis series (page 11), MTH showed its Pennsylvania RR K4s steam locomotive (page 12), and Bachmann displayed a sample of its HO scale Alco 2-6-0 steam locomotive with E-Z App technology.

We fit as many of the items featured at Trainfest as we could into this installment of News & Products. For full product coverage and additional photos from Trainfest 2016, visit our website, [www.ModelRailroader.com](http://www.ModelRailroader.com)



**HO scale Baltimore & Ohio class N-34 wagontop covered hopper.** Spring Mills Depot's wagontop covered hopper, priced at \$54.95, is offered in six different B&O paint schemes (eight road numbers each) and an undecorated kit (\$49.95). The hopper has wire grab irons, metal wheelsets, and Kadee couplers. Spring Mills Depot, [www.smd.cc](http://www.smd.cc)

## Trainfest 2017

**It's not too early** to start thinking about Trainfest 2017. The event will be held Nov. 11-12 at State Fair Park in West Allis, Wis.

In addition to the manufacturers, vendors, clinics, and operating layouts, the 2017 show will feature the inaugural Trainfest Photo Contest. The event is open to amateur photographers and will feature 10 categories, including model railroads, steam and diesel locomotives, revenue and non-revenue rolling stock, passenger cars, people, structures, general, and celebrate a railroad.

Entry forms for the photo and more information can be found online at [www.trainfest.com](http://www.trainfest.com)



## ► Mobile Updates



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Cody Grivno

## ► In Memoriam

### Horst Preiser 1934-2016

Horst Preiser, who oversaw the growth of the model figure company Paul M. Preiser GmbH in the 1970s and '80s, died Aug. 8 in Germany. He was 82.

Horst worked for the company started by his father as a young man, eventually opening up new markets for Preiser's vast figure line and other products. A passionate modeler himself, he sketched thousands of figures and worked with sculptors and toolmakers to produce them. Many of the figures that now inhabit model railroaders' layouts started as ideas for populating Horst's dioramas.

Horst's sons, Volker and Jürgen, have been part of the operations since 1990 and continue to run the company that produces figures, vehicles, and architectural models.

## Beer Line takes first

**Trainfest 2016** celebrated the Milwaukee Road, so the *Model Railroader* staff brought its Beer Line project layout (see page 36) to the show. The model railroad, one of 70 operating layouts at Trainfest, took first place in the Layout category. National Model Railroad Association Wisconsin Southeastern Division Superintendent Reid Kahrs is shown presenting the award to David Popp, *Model Railroader* Video Plus producer.



### HO scale Electro-Motive Division F7A and F7B diesel locomotives.

Santa Fe 300-series covered wagons will lead Walthers next name train, the 1956 *Super Chief*. The F7s, scheduled for release in April 2017, will have vertical Farr-type etched-stainless steel grills, a door-mounted headlight and Mars light, and 36" dynamic brake fans. A units will be priced at \$179.98 (DC) and \$279.98 (with dual-mode SoundTraxx Tsunami sound decoder). A-B sets will sell for \$349.98 (DC) and \$549.98 (DCC and sound). Wm. K. Walthers Inc., 414-527-0770, [www.walthers.com](http://www.walthers.com)



**HO scale General Electric ES44DC.** Athearn is adding another modern road unit to its Genesis series. The ES44DC will be decorated for Norfolk Southern, BNSF Ry., and CSX. The model, scheduled for release in September 2017, will have a detailed cab interior, illuminated ditch lights, and railroad-specific cab detail. Direct-current models will be priced at \$199.98. Versions with a dual-mode SoundTraxx Tsunami 2 Digital Command Control sound decoder will have a manufacturer's suggest retail price of \$299.98. Athearn Trains, 800-535-5551, [www.athearn.com](http://www.athearn.com)



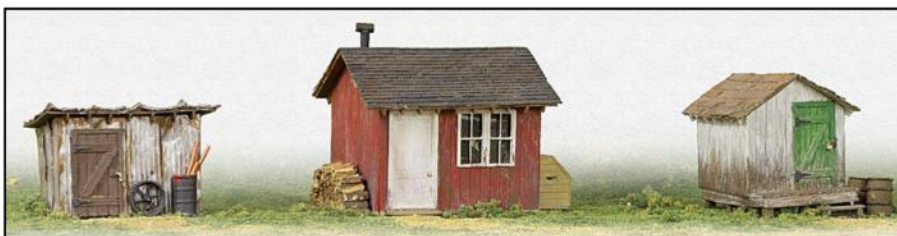
**N scale Gunderson 70-foot Husky Stack well car.** Micro-Trains displayed a pre-production sample of its next freight car, due out in 2017. The 70-foot Husky Stack well car will feature a die-cast metal body, body-mounted Magne-Matic couplers, and new American Steel Foundries Ride-Control trucks. Micro-Trains Line Co., 541-535-1755, [www.micro-trains.com](http://www.micro-trains.com)



**Trainfest special!**



**HO scale Pennsylvania RR K4s 4-6-2 steam locomotive.** This Pennsy steam locomotive from MTH is in hobby shops now. The K4s 4-6-2 is offered in four different paint schemes (one road number each). The model features a die-cast metal boiler, chassis, and tender body; metal handrails, whistle, and bell; and operating firebox glow. Models with Digital Command System/Digital Command Control Proto-Sound 3.0 sell for \$499.95. European versions with DCC/DCS/Motorola 1/2 Proto-Sound 3E+ are priced at \$529.95. MTH Electric Trains, 410-381-2580, [www.mthhotrains.com](http://www.mthhotrains.com)



**Assorted N scale structures.** Three new structures have been added to the Woodland Scenics Built-&-Ready Landmark Structures series. The tin shack, work shed, and wood shack are factory-painted and weathered structures and have separate detail parts. The buildings retail for \$19.99 each. Woodland Scenics, 573-346-5555, [www.woodlandscenics.com](http://www.woodlandscenics.com)



**HO scale General American 8,000-gallon 1917-design radial course tank car.** Tangent Scale Models continues to add to its lineup of well-detailed freight cars. The General American 8,000-gallon tank car (\$44.95) is lettered for Deep Rock, Cushing, Okla. (six numbers); A.E. Staley Manufacturing Co. (four road numbers); Globe Soap, Cincinnati (two numbers); and Union Tank Car Co. (original 1920+ scheme in six numbers and 1958+ black repaint in four numbers). The model features prototype-specific brake variations, 33" metal wheels, and Kadee scale couplers. Tangent Scale Models, 828-279-6106, [www.tangentscalemodels.com](http://www.tangentscalemodels.com)

## HO scale locomotives

■ **Alco RS-3 diesel locomotives.** Boston & Maine; Burlington Northern (Spokane, Portland & Seattle patchout); Central Vermont; Delaware & Hudson (one road number); Erie Lackawanna (one number); Grand Trunk Western (two numbers); Green Bay & Western (two numbers); Louisville & Nashville (two numbers); Milwaukee Road (two numbers); Nickel Plate Road; Northern Pacific; Norfolk & Western (two numbers); Pennsylvania RR (with train-phone antenna); Spokane, Portland & Seattle; and Western Maryland (two numbers). Three numbers per scheme unless noted. Prototype-specific details, can motor with flywheels, and RP-25 contour nickel-silver wheels. Direct-current model with 21-pin plug for Digital Command Control decoder, \$199.95; with ESU LokSound Select sound decoder, \$299.95. Late 2017. Bowser Manufacturing Co. Inc., 570-368-2379, [www.bowser-trains.com](http://www.bowser-trains.com)

## ■ Union Pacific 3900-class 4-6-6-4 Challenger steam locomotive.

Freight version. Märklin model (for European three-rail) features mfx+ digital decoder with sound functions. Trix model (for North American track) has digital sound decoder. Both models have a motor in the boiler, six powered axles, traction tires, and two smoke generators. \$799.99 each. Märklin Inc., [www.marklin.com](http://www.marklin.com)

## HO scale freight cars



■ **Assorted Pullman-Standard boxcar kits.** 40-foot PS-1 (narrow and wide tab) with seven-foot Youngstown doors, American Steel Foundries A-3 Ride-Control trucks, and Ajax hand brake (\$25.95 each) and 50-foot PS-1 with nine-foot Youngstown doors, Barber S-2 trucks, and modern hand brake (\$26.95). Kits include ladders and/or grab irons as appropriate, scale couplers, and Apex running boards. Kadee Quality Products Co., 541-826-3883, [www.kadee.com](http://www.kadee.com)

■ **Gunderson 48-foot as-built all-purpose well car.** Burlington Northern (red), BNSF Ry. (BN patchout), Coe Rail Inc., and TTX (DTTX reporting



marks, four road numbers). Two number per scheme unless noted; also available undecorated. Die-cast metal body, etched-metal see-through walkways, and Proto-Max couplers. \$39.98. March 2017. Walther's Proto. Wm. K. Walther's Inc., 414-527-0770, [www.walthers.com](http://www.walthers.com)

## H0 scale passenger equipment



■ **NJ Transit multi-level cab car, trailer coach, and trailer coach with toilet.** Multi-level cab car and trailer coach with toilet in four road numbers each; multi-level trailer car in 16 numbers (12 in standard scheme, four with safety slogans). Cab car features illuminated, directional light-emitting-diode (LED) headlights, ditch lights, and red marker lights; 21-pin plug for Digital Command Control; and provisions for mounting a speaker. All cars have interior seat detail, LED interior lighting, separately applied end barriers and diaphragms, metal wheels, and Kadee couplers. Cab car, \$99.95; trailer car, \$84.95 (\$89.95 with safety slogan); three-pack (cab car, trailer coach, and trailer coach with toilet), \$269.85. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

■ **Atchison, Topeka & Santa Fe 1956 Super Chief.** Budd-built cars: 63-foot Railway Post Office (June 2017); 73-foot baggage car (July 2017); and 85-foot *Pine*-series 10-roomette, 6-double-bedroom sleeper. Pullman-Standard cars: 85-foot 29-seat dormitory lounge (September 2017); 85-foot *Regal*-series 4-bedroom, 4-compartment, 2-drawing-room sleeper (October 2017); 85-foot 36-seat diner (November 2017); 85-foot Pleasure Dome bar-lounge (\$89.98, December 2017); and *Vista*-series blunt-end 4-drawing-room, 1-double-bedroom sleeper-lounger-observation (\$84.98, January 2018). \$79.98 each unless noted. Metal finish, modeler-installed extended drawbar for 22" radius curves included, and tinted windows as appropriate. Two deluxe-edition 10-car sets (limited run of 200 each) with 100 factory-installed Preiser passenger and crew figures, two SoundTraxx Tsunami SoundCar-equipped cars, and factory printed car names and numbers, \$1,264.96. Wm. K. Walther's Inc., 414-527-0770, [www.walthers.com](http://www.walthers.com)

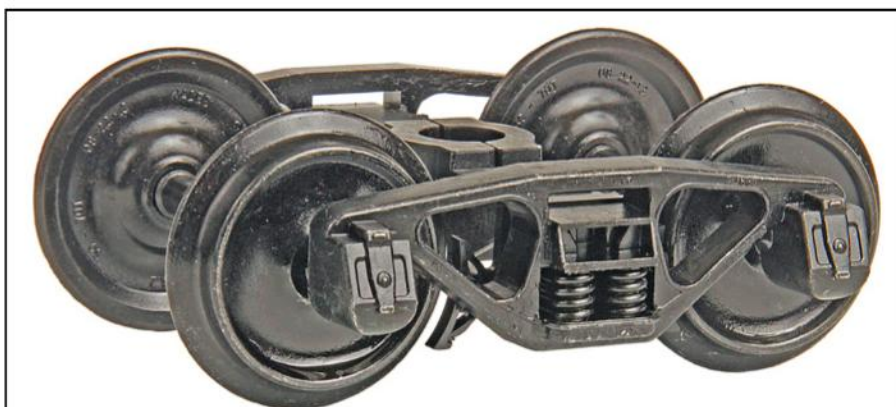


## O scale Electro-Motive Division F7A and F7B diesel locomotives.

Coming soon to hobby shops are these new four-axle units from Atlas O. Powered F7A and F7B units (\$499.95) will be decorated for Denver & Rio Grande Western (three numbers on A unit); Amtrak; Atchison, Topeka & Santa Fe (three road numbers on A unit); Erie Lackawanna; Milwaukee Road; and Pennsylvania RR. The models will be offered in two road numbers per scheme unless noted. The F units will have road-name-specific details; a die-cast metal chassis, fuel tank, and trucks; and directional golden-white light-emitting diode lighting. Atlas O, 908-687-9590, [www.atlaso.com](http://www.atlaso.com)



**H0 scale New York, New Haven & Hartford 36-seat parlor car.** Rapido Trains is adding to its lineup of New Haven commuter cars. The 36-seat parlor car (\$99.95) is decorated for New Haven (McGinnis scheme without skirts and green with skirts in six car names per scheme plus painted but unnamed), Amtrak (72-seat coach in six numbers), and Penn Central (72-seat coach in three numbers, three names, and painted but unlettered). The car, scheduled for release in fall 2017, has track-powered constant lighting for direct current and Digital Command Control, a detailed interior, and 41-BNO-11 trucks. Rapido Trains, 905-474-3314, [www.rapidotrains.com](http://www.rapidotrains.com)



**1:29 proportion freight car trucks.** Kadee has released new large scale trucks, including American Steel Foundries 100-ton roller-bearing trucks with 36" smooth-back metal wheels and A-3 Ride-Control 50-ton trucks with 33" smooth-back metal wheels, archbar trucks with 33" ribbed-back metal wheels, and Barber S-2 70-ton roller-bearing trucks with 33" smooth-back metal wheels. The trucks (\$44.99 per pair) feature no. 4 mounting screws and mounting adapters for Bachmann, USA Trains, Aristo-Craft, and LGB. Kadee Quality Products Co., 541-826-3883, [www.kadee.com](http://www.kadee.com)



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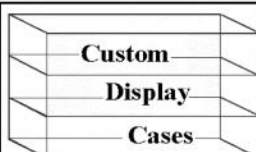
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## NEWS&PRODUCTS

**Trainfest  
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**HO scale Alco 2-6-0 steam locomotive.** Bachmann has introduced its first steam locomotive with E-Z App technology. The 2-6-0 (\$249) is decorated for Pennsylvania RR; Atchison, Topeka & Santa Fe; Louisville & Nashville; New York Central; and Union Pacific. The E-Z App allows wireless touch-screen control of speed, direction, lighting, and sound using an Android phone or tablet or an Apple smart device and the free E-Z App download. Bachmann Trains, 215-533-1600, [www.bachmanntrains.com](http://www.bachmanntrains.com)

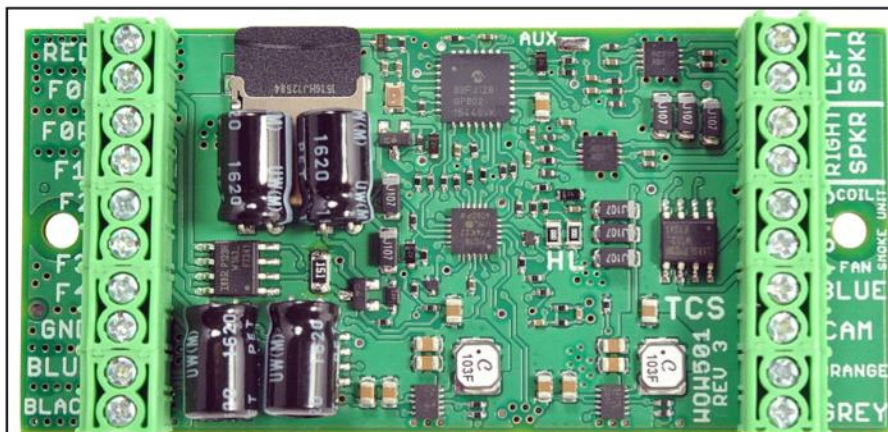


**HO scale Trinity 64-foot TRINCool mechanical refrigerator car.** ExactRail's 64-foot TRINCool reefer is decorated for Union Pacific (ARMN reporting marks) in the as-delivered and patch schemes. Both schemes are offered in 12 road numbers. The car features American Steel Foundries 100-ton Ride-Control trucks, Kadee no. 156 scale whisker couplers, and photo-etched stainless steel brake platforms. The Platinum series cars retail for \$44.95. ExactRail, 866-945-1701, [www.exactrail.com](http://www.exactrail.com)



**HO scale Thrall 4,727- and 5,750-cubic-foot capacity carbon black covered hoppers.** ScaleTrains.com unveiled pre-production samples of two new cars. The 4727 covered hopper is offered in four names; the 5750 in seven. The Rivet Counter line models (\$39.99) have prototype-specific details, Barber S-2 70-ton trucks with rotating bearing caps, and 33" metal wheels. ScaleTrains.com, 844-987-2467, [www.scaletrains.com](http://www.scaletrains.com). Ken J. Johnson photo





**WOW501 WOWSound large scale sound decoder.** Train Control Systems has two new WOWSound decoders for large scale. The steam (no. 1600 with Version 4 of WOWSteam) and diesel (no. 1605 with Version 4 of WOWDiesel) decoders feature 5A motor output, 8A overall current rating, a built-in Keep Alive capacitor, two audio amplifiers, two speaker outputs, six 1A programmable light functions, and Audio Assist. The decoders sell for \$199.95 each. Train Control Systems, 215-453-9145, [www.tcsdcc.com](http://www.tcsdcc.com)

## HO scale structures



■ **50-foot queen post truss covered bridge.** Kit includes strip bass-wood, white pine ties, nut-bolt-washer castings, and laser-cut shake shingles. HO scale measures 6 7/8" x 2 5/8" x 4 7/8"; HOn3 measures 6 7/8" x 2 3/8" x 3 7/8". \$96 each. Hunterline, [www.hunterline.com](http://www.hunterline.com)

## N scale locomotives

■ **Electro-Motive Diesel SD70ACe diesel locomotive.** Norfolk Southern (as-delivered in two road numbers and Erie, New York Central, Penn Central, and Reading Co. heritage schemes in one number each) and Union Pacific ("Building America" scheme in two numbers; Chicago & North Western, Denver & Rio Grande Western, Missouri-Kansas-Texas, Missouri Pacific, Southern Pacific, and Western Pacific heritage schemes in one number each; and George Bush Presidential Library scheme in one number). Also available undecorated. Plastic and die-

cast metal construction. Paragon3 sound system with Rolling Thunder, all-wheel drive and electrical pickup, and traction tires. \$249.99. Broadway Limited Imports, 386-673-8900, [www.broadway-limited.com](http://www.broadway-limited.com)

## N scale train sets

■ **Milwaukee Road Olympian Hiawatha.** Set will include Super Dome and Skytop solarium-sleeper-observation cars. Additional information and pricing to be announced. Scheduled for release in 2017. Kato USA Inc., 847-781-9574, [www.katousa.com](http://www.katousa.com)

## N scale freight cars

■ **Milwaukee Road 50-foot ribbed-side double-door boxcar.** Price and additional details to be announced in winter 2016. Fox Valley Models, 847-768-2344, [www.foxvalleymodels.com](http://www.foxvalleymodels.com)



■ **Stealth Track Cleaner.** Bowser Pennsylvania RR class H21a hopper with knuckle couplers in various road names, Fox Valley Models metal wheelsets, and 16-piece assortment of felt and re-usable abrasive pads in various grits. \$49.95. JAM Creations/Solutions Inc., [www.stealthtrackcleaner.com](http://www.stealthtrackcleaner.com)

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## NEWS&PRODUCTS

Trainfest special!



**HO scale 36-foot double-sheathed wood boxcar.** Accurail showed pre-production artwork of its new boxcar kit. The 36-foot double-sheathed boxcar will be decorated for Cleveland, Cincinnati, Chicago & St. Louis (New York Central); Boston & Albany; Canadian Pacific; Louisville & Nashville; Michigan Central (New York Central); Missouri-Kansas-Texas; New York Central; Nickel Plate Road; Missouri Pacific; and Savannah & Atlanta in one road number per scheme. The boxcar, priced at \$17.98, will have a steel roof and ends, fish-belly underframe, and Accumate couplers. Three other versions (steel roof, wood ends, and fish-belly underframe; steel roof and ends and straight underframe; and steel roof, wood ends, and straight underframe) will also be offered. Accurail, 630-365-6400, [www.accurail.com](http://www.accurail.com)

### N scale details and accessories



■ **United Parcel Service 40-foot drop-sill trailer.** Five paint schemes. Painted wheels and rolling vinyl tires. Two or three trailer numbers per scheme. \$24.98. AthearnN. Athearn Trains, 800-535-5551, [www.athearn.com](http://www.athearn.com)

### O scale structures

■ **Firehouse no. 3.** Digital file that customer prints on heavy cardstock. Works with any ink-jet or laser printer. Parts must be cut, folded, and glued. Instructions included for printing in smaller scales. Based on prototype in Gary, Ind. \$19.95. Sent via e-mail or on a flash drive for an additional \$2. Clever Models LLC, [www.clevermodels.net](http://www.clevermodels.net)

### Large scale accessories

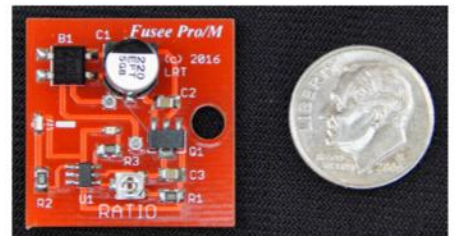


■ **1:24-proportion rail conditioner car.** Includes hook-and-loop couplers, metal wheels, 1 ounce bottle of XL Rail Conditioner, and extra set of felt strips and clips. Six colors available. \$79.99.

Excelle Lubricants, 847-515-1263  
[www.phoenixbottles.com](http://www.phoenixbottles.com)

### Electronics/controls

■ **Test track.** G scale (5-feet long with raised bumpers, screws, and soldered wiring), \$112.95; S scale (3-feet long with code 125 rail, soldered wiring, and scale ties), \$46.95. Gooddealsdcc, [www.gooddealsdcc.com](http://www.gooddealsdcc.com)



■ **Fusee Pro/M.** Track-powered warning device. Fusee begins "burning" shortly after the board is placed across the rails. Provides 10-minute burn cycle which can be correlated to the fast-time ratio when operating with a fast clock. Constant rail power (Digital Command Control) is required. Features ignition, burning, and sputtering visual effects. Includes factory-drilled hole for hanging the board on the fascia when not in use. Compatible with N, HO, and up to On30. \$14.95. Logic Rail Technologies, 281-251-5813, [www.logicrailtech.com](http://www.logicrailtech.com)

### Track

■ **HO scale Customline Mark IV curved turnouts.** Die-cast metal points

*Continued on page 20*



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## Kato T-Trak contest winners at Trainfest

**Trainfest special!**

**Japanese model railroad** manufacturer Kato sponsors a T-Trak module construction contest in Japan each year for students. T-Trak modules, which use the Kato Unitrack system, are compact and designed to be set up on tabletops. When connected, the modules can be arranged into ovals or more complex configurations.

This year's winners, a team from a junior-senior high school in Hiroshima, won a trip to the United States and a visit to Trainfest. Representing the winning team were Koki Yoshida, Yuta Tak, Masaki Mochizuki, and Takuto Kodama. Their scratchbuilt module, on display at Trainfest, depicts a scene from Hiorshima.



Students from the Hiroshima Johoku Junior & Senior High School receive their award for winning Kato's T-Trak contest. Shown from left to right are Koki Yoshida, Yuta Tak, Masaki Mochizuki, and Takuto Kodama.



The award-winning T-Trak module features Hiroshima's peace memorial dome, a prominent city highway/rail bridge, and a floating lantern festival. The lanterns are illuminated with fiber optics. Neil Besougloff photos

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# NEWS&PRODUCTS

**Trainfest special!**



**Piko SmartControl basic set.** This expandable system controls up to 16,000 trains, switches, and signals. The SmartControl features automatic detection and registration of locomotives (if equipped with RailComPlus decoder) and programming on the main and programming tracks. Updates are available through the Google Play store. The set (\$539.99) is for HO, N, and TT scales. Piko America, 619-280-2800, [www.piko-america.com](http://www.piko-america.com)

Continued from page 16

and isolated die-cast metal frog with power contact. Can be set up as remote or manual turnout. Outside radius, 30"; inside radius 22". Left-hand turnout with code 100 rail and right-hand turnout with code 83 rail. Price to be announced. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

■ **Super-Flex track.** Code 55 rail. Compatible with Atlas N scale rail joiners.

24" section, \$5.95. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

## Scenery

■ **Cobblestone roads and cobblestone detail sheets.** Flexible vinyl material with hand-painted base coat and peel-and-stick backing. Sheets (3 3/4" x 12") can be cut with scissors. Detail sheets include curved cobblestones, manhole covers, sewer lids,

street drains, and storm grates. Small (HO and N scales), medium (HO), and large (O scale), \$12.99 each. Chooch Enterprises Inc., 425-273-4794, [www.choochenterprises.com](http://www.choochenterprises.com)

■ **Water System.** New line of products for modeling water scenes. Additional details, pricing, and release date to be announced. Woodland Scenics, 573-346-5555, [www.woodlandscenics.com](http://www.woodlandscenics.com)

## Paint

### ■ Make-Your-Own Marker sets.

Turn Testor and Model Master paint into a paint marker. Marker sets feature a two-in-one barrel with a brush on one end and marker on the other. Kit includes dual tip nibs (chisel and bullet) and a marked syringe for transferring paints. Kits available for acrylic and enamel paints. Price to be announced. The Testor Corp., 800-837-8677, [www.testors.com](http://www.testors.com)

## Tools

■ **Denbur applicators.** Fiber-tipped applicators for applying glue, paint, lubricants, solvents, and other materials



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### Evolution (shown) | \$450 MSRP

Standard Set Includes: DCS210 Advanced Command Station, DT500 Advanced Super Throttle, UP5 Universal Panel, PS615 power supply, and a LT1 LocoNet Tester.

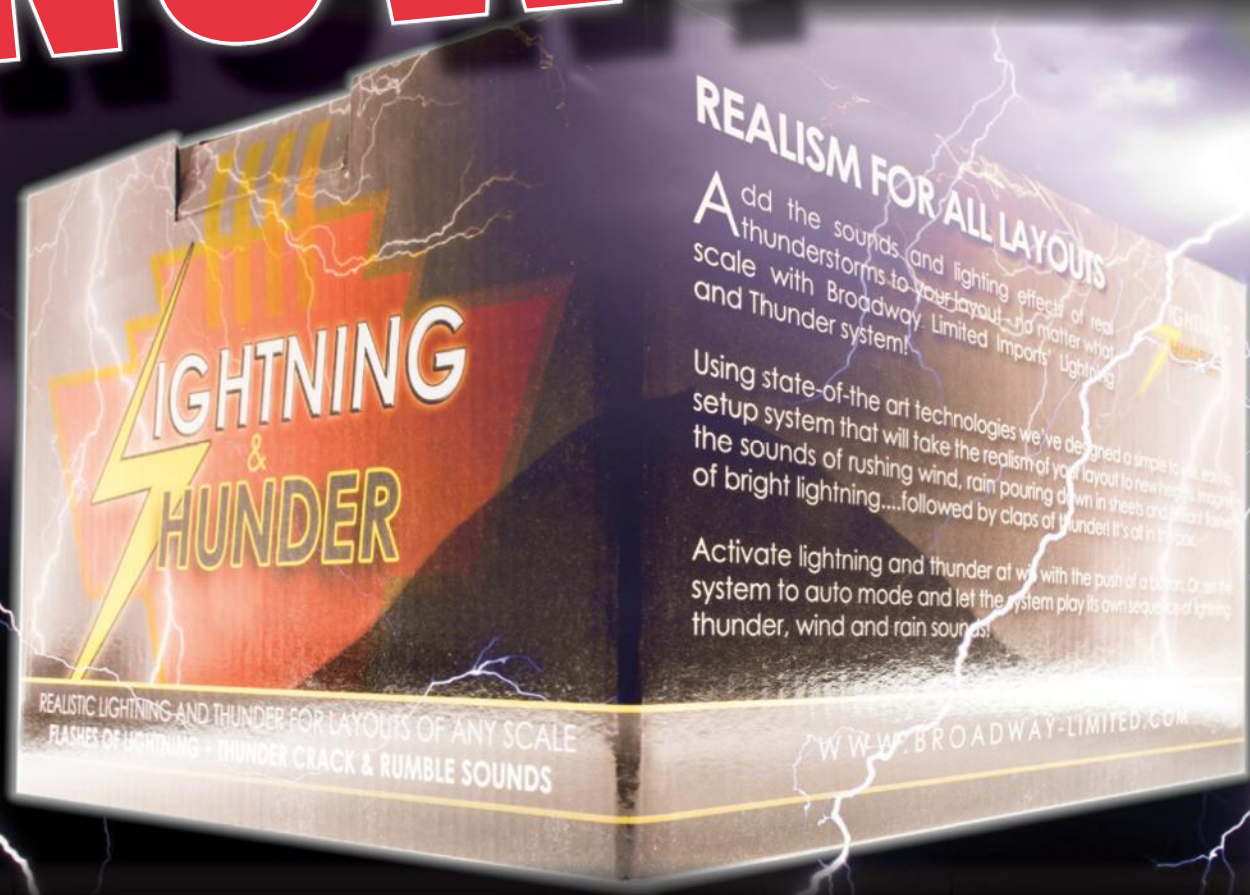
### Evolution Duplex | \$660 MSRP

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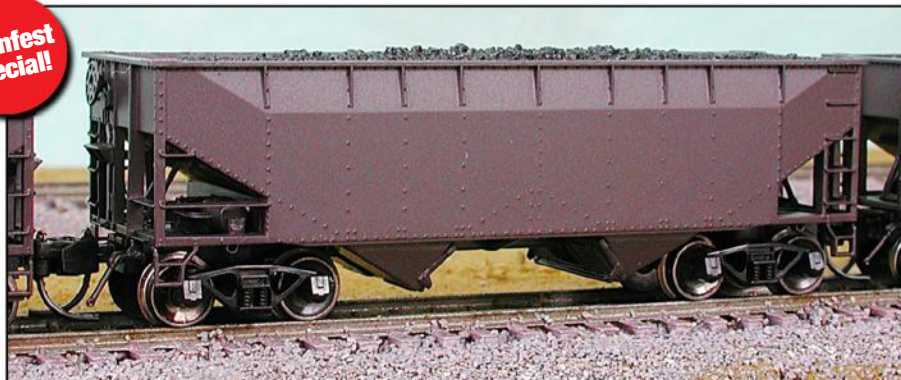
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# NEWS&PRODUCTS

**Trainfest special!**



**N scale two-bay offset side hopper.** Bluford Shops displayed a pre-production sample of its next freight car. The two-bay offset-side hopper will be decorated for Baltimore & Ohio; Bangor & Aroostook (single car and two-pack); Chicago & Eastern Illinois; Erie; Northern Pacific; Gulf, Mobile & Ohio (single car and two-pack); Lehigh & New England (single car and two-pack); New York Central; Soo Line (single car and two-pack); and South Buffalo (single car and two-pack). The hopper will be offered in six road numbers per scheme unless noted. Painted black with data only and undecorated cars will also be offered. The model, priced at \$24.95 each and scheduled for release in early summer 2017, will have a die-cast metal slope sheet, hopper bay, and center sill assembly; injection-molded plastic sides, ends, and hopper doors; and Fox Valley Models metal wheelsets. Bluford Shops LLC, 618-822-6833, [www.bluford-shops.com](http://www.bluford-shops.com)

in hard-to-reach areas. Extra small (white handle), small (yellow), and medium (teal). Bristle applicator (blue) also available. Twenty-pack, \$5. Denbur Inc., 630-986-9667, [www.denbur.com](http://www.denbur.com)


## ■ Micro Brushes and Sponges.

10-pack of disposable applicators. Price to be announced. The Testor Corp., 800-837-8677, [www.testors.com](http://www.testors.com)

## Weathering supplies

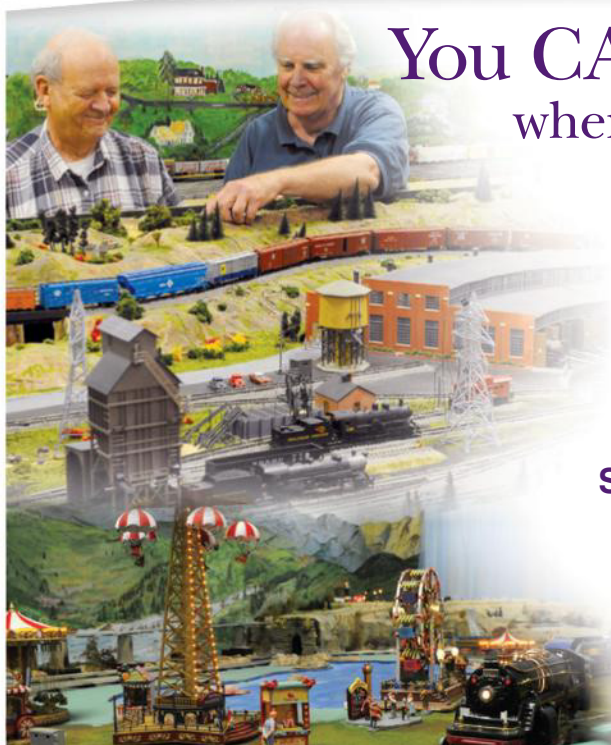
■ **Weathering Mix.** New colors: Cement and pale green. Alcohol-based weathering solution. For use on wood, plastic, and Hydrocal. Eight-ounce bottle, \$9. Hunterline, [www.hunterline.com](http://www.hunterline.com)

## Miscellaneous

■ **Choo Choo Shoes.** Sound-equipped shoes (chuffs when foot is stomped; whistles and headlight illuminates when both shoes land together after a jump). With on/off switch. Hook-and-loop fastening. Kids and adult sizes. Pricing to be announced. Broadway Limited Imports, 386-673-8900, [www.choochooshoes.com](http://www.choochooshoes.com) 

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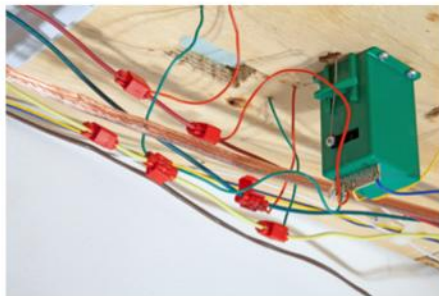
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## Up to capacity

Regarding the December editor's note "The next game changer," even with locomotive capacitors, you would still need to power the turnout points and frog. Otherwise, you would lose control of the locomotive over a turnout. Still, I can't wait for a capacitor small enough for N scale.

*David Wilkins,  
Philadelphia*



## Packing your suitcase

Larry Puckett had a timely article in December's DCC Corner on suitcase connectors. I've gotten too old to solder over my head under layouts and had started using wirenuts as connectors. A friend told me about suitcase connectors (pictured above), which were easy to use and held together. Finding them was a problem until I hit on auto supply stores which have a good selection at a reasonable price. They also have many colors and gauges of wire in useful lengths.

*Richard Parker, Penney Farms, Fla.*

In the December DCC Corner, Mr. Puckett says that the 3M no. 558 connectors are limited to connecting 22-18 AWG wires. That is not correct: as noted on the data sheet, the no. 558 is suitable for 22-16AWG wires, solid or stranded, and tinned or untinned. I have successfully used these on my HO layout connecting precisely these wire sizes: 16AWG stranded bus and 22AWG solid feeders. I used a heavy-duty Vise-Grip plier to attach them.

*Dante Fuligni, York Township, Pa.*

## Steering the right direction

I read with interest, the article in your sister magazine, *Trains*, about steerable trucks on diesels where the axles were free to move slightly sideways around curves. My HO diesels have been doing

that for years. It's about time us modelers taught the real railroads something.

*Walter Hughes, Cincinnati, Ohio*

## Wiring lessons learned

Just read Don Fiehm's article in the November issue on electrical troubleshooting. A companion article would be how to wire your layout and document it to minimize electrical problems.

Here are a few tips on wiring based on my experience:

Rule 1 (which I violated to my everlasting regret): Don't change colors. If your bus wires are red and white, don't substitute other colors because you've run out of the original ones. Wait to do additional wiring until you've bought more of the right color and size.

Rule 2: Document your wiring. The more you document the more likely and rapidly you will be able to identify and fix a problem. Document everything: track, switch machines, power systems, etc. This is true of a personal layout, but it's critical for a club layout. My current club layout was largely wired by one member, but he hasn't been around for awhile. I don't have a clue how the system works, nor do I know where the instruction books are. It would take hours to figure out how it was put together.

Rule 3: Every wire on the layout should be labeled. I use the paper tags with string attached, and number each wire and mark it on the wiring diagram. If a wire goes through a layout support, label it on both sides to make sure you can follow its path.

Rule 4: make your wiring neat. A rat's nest of wire may push you into stamp collecting rather than trying to solve a difficult wiring problem.

Relevant comment: when faced with a wiring problem, no model railroader has ever said: "Gee, I have too much documentation to help me fix this problem."

*Phil Keogh, Howard, Ohio*

## And one about GMR 2017

Enjoying the new issue of *Great Model Railroads*, especially the Bone Valley RR. Absolutely a concept I never would have thought of, and it shows innovation is alive and well in the hobby – a good thing. Thanks for including it!

*Brian Olson, Highlands Ranch, Colo.*



**A model of Gardiner, Mont.'s NP depot and its curved canopy, like the one built by Doug Kirkpatrick in the November issue.**

## Building a curved passenger canopy

Last winter (2015-16) a couple of us at the Livingston, Mont. Model Railroad Club (at the Northern Pacific Passenger Depot Museum) decided to re-create Gardiner, Mont. in the 1930s. Gardiner was the end point of NP's Yellowstone Branch and the north entrance to Yellowstone Park.

The depot and the passenger canopy are located just north of the famous Roosevelt Arch at the entrance to Yellowstone.

We found the original blueprint of the Gardiner depot by searching through pages of Google images. My husband and I built the depot from that blueprint, scaling it back just a bit to fit the available space. The roof has over 8,000 wooden shingles cut from 1/4" plywood that was sanded even thinner! It was a challenge for it to be smooth, as well as being able to put the shingles across it in a straight line. We learned a lot!

We also visited Gardiner several times, measuring and photographing buildings from that era that still exist, and searched through those same Google images online, at local museums and libraries to find buildings we could replicate. We started in September of 2015 and finished it in April 2016, just in time for the train show.

*Sylvia Ypma,  
Manhattan, Mont.*



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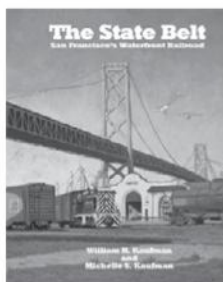
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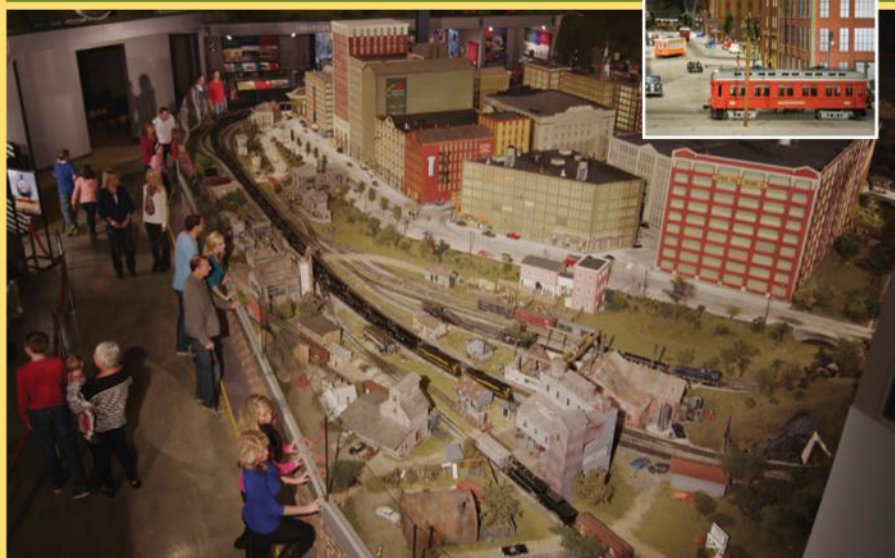
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Jim Pendley's HO scale Western Pacific Feather River Canyon layout features wire slide fences. Scott Brons photo



The On30 Olympia Logging Co. layout uses a rock shed to disguise the entrance to staging. Steven Otte photo

## How can I protect track from rockslides?

**Q** As I began constructing the mountain scene on my model railroad, I created a rather sizable cliff towering over one curve of track. It's an organic process, and I hadn't intended for it to be so steep, but it happened. As I have begun to detail, install rock castings, and the like, it occurred to me that section of rail may need some protection from falling debris. I've considered using chain link fence over the cliff side, and was curious if you had any suggestions for material to use, or if you had any additional ideas for cliff stabilization. I work in N scale.

*Larry Potts, Cleveland*

**A** Many modelers use tulle (bridal veil material) spray-painted silver, gray, or rust to model chain link fence. In N scale, even the finest mesh you can find might look a bit coarse for chain link fence, but it could plausibly represent a more substantial slide fence material.

For another approach, look to the Western Pacific's installations in the Feather River Canyon. One example of this fencing on a model layout was built by Jim Pendley (see *Great Model Railroads 2009* and the December 2016 *Model Railroader*). If you're handy with a soldering iron, you could model such a fence out of brass wire and tube.

Depending on the era and the railroad's budget, the prototype might have constructed a wooden or concrete rock shed over the track. Such a structure is designed to catch and/or deflect stones falling from above. The Model Railroader Video Plus staff built one on their On30 scale Olympia Logging Co. project layout. In addition to being an interesting trackside structure in itself, a rock shed can also be used on a model train layout to disguise a tunnel through a backdrop or an entrance to staging.

**Q** Prototype railroads lay out curves using the chord method for degree of curvature. What are some of the degrees of curvature for common HO radii such as 18", 24", and 30" radius? Other modelers besides myself may find this interesting.

*Charles Carter, Akron, N.Y.*

**A** Since prototype railroads deal with curves of very broad radii, the center point of their curves may be hundreds or even thousands of yards away, and difficult to measure. Instead, the measurement they use is calculated by how many degrees the rail bends over a set distance, which in the U.S. is 100 feet,

coincidentally called a "station." And to complicate matters, this length isn't measured along the curve of the rail, but straight across the curve from end to end, a measurement called the chord. So, to calculate the degree of curvature of a curve, you're going to need a calculator that does trigonometry:

$$R = C \div (2 \sin (D \div 2))$$

In this formula, R is the radius, C is the length of the chord, and D is the degree of curvature, measured from the center point.

So, a curve of, let's be arbitrary and say 10 degrees, would have a radius of  $100 \div (2 \sin (5)) = 573$  feet. In HO, that's a radius of about 79".

To see how our model radii compare, we'll have to invert the equation:

$$D = 2 \arcsin (C \div (2 R))$$

Arcsine is the inverse of the sine function, sometimes denoted  $\sin^{-1}$ . Instead of making you track down your old high school calculator, I'll just give you some examples (and convert the results from scale feet):

In HO scale, 1 station (100 scale feet) = 1.1481 actual feet, or 13.777 inches. So the degree of curvature of an 18" radius curve (fairly sharp for HO) is  $2 \arcsin (13.777 \div (2 \times 18)) =$  about 45 degrees, far too sharp for anything but a traction line. By the same formula, a medium 24" curve is 33.36 degrees of curvature.





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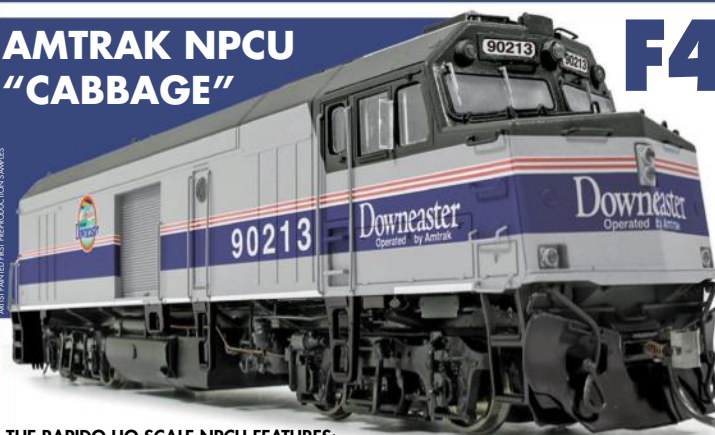
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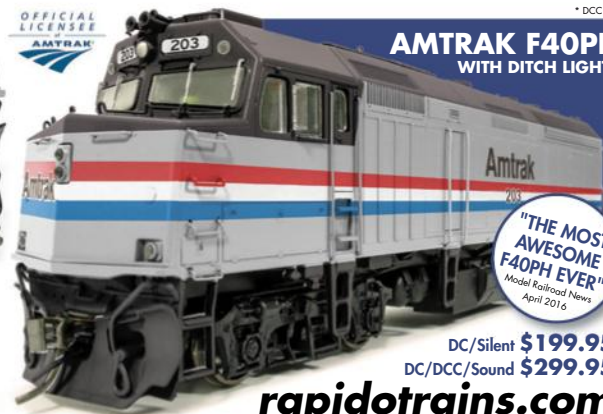
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## ASKMR

A broad curve of 30" radius would come out to 26.55 degrees. You can perform the same calculations for other scales by substituting the 13.777 figure in that formula above for the actual length in inches of 100 scale feet – 7.5" for N, 25" for O, 18.75" for S.

How useful those numbers would be for a hobby already set up to measure curves by their radius, I don't know. But there you go. Happy calculating!

The National Model Railroad Association published an extensive article on this topic in the October 2016 issue of its membership magazine. If you want more information, look it up.

**Q** I don't know who started this many years ago, but I'd like to know just what is meant by the word "mineral," describing a paint color for modeling projects. A mineral is a naturally occurring substance which can be any color of the rainbow. So just what actual color is mineral brown or mineral red?

*Dick Walker, London, Ont.*

**A** The mineral in mineral red is lead tetroxide,  $Pb_3O_4$ , also known as "red lead" or "cinnabar," a heavy, brilliant red pigment formed by heating white lead in air. But the name "mineral red" derives not from the word mineral, but from the similar-sounding Latin word for red lead, *minium*. Red lead has been used to tint paint and ink since Roman times. Railroads used Mineral Red to paint wooden boxcars, hoppers, stockcars, and more not because they liked the color, but because it was cheap, hid rust and dirt, and inhibited rot.

But because railroads purchased their paint from different manufacturers in different parts of the country at different times, what one railroad called Mineral Red paint might have been very different from what another railroad called Mineral Red. If you compare a bottle of Mineral Red hobby paint with bottles of Oxide Red, Light Freight Car Red, and Boxcar Red, you'll find the differences very slight – slight enough that in the real world, the differences could be plausibly chalked up to sun fading, weathering, or variations between batches from the paint factory. So these different colors might all have been simply "Freight Car Red" to the railroads. In fact, it's conceivable that some of these names were assigned not by the railroads, car



**The Model Railroader staff keeps this paint-chip card in its spray booth to compare paint colors. Note how similar Mineral Red (top row, second from left) looks to some of the other shades, particularly Oxide Red and Light Freight Car Red.** Steven Otte photo

makers, or their paint suppliers, but by the makers of hobby paint.

As you know, modern paint no longer includes lead. So while the name "Mineral Red" may have come from the pigment that once tinted paint, today it's simply the name of a color – one of many similar shades that could plausibly adorn a model freight car.

**Q** I live in Germany, but I model the Atchison, Topeka & Santa Fe. As a schoolboy, I learned that a manifest was a political document, like the *Kommunistisches Manifest* by Karl Marx and Friedrich Engels. So I nearly fell from my chair when I opened the September MR and saw this caption on page 27: "A manifest freight meets an intermodal unit train on Daryl Kruse's N scale Geneva Sub." How is this word used in connection with trains and what is its meaning?

*Gerhard Walther, Muhltal, Germany*

**A** As you mentioned elsewhere in your letter, another definition of "manifest" is a list of cargo or passengers in transport. The term "manifest freight" comes from that meaning. It refers to a freight train made up of a variety of cars bound for multiple destinations. (Some people call this a "mixed train," but that term actually means a train made up of both freight and passenger cars.) The opposite of a manifest freight is a "unit train," which is all the same kind of cars, all bound for the same destination.

(By the way, in English, the word "manifest" can also mean a document outlining a political stance, but we more often call that a "manifesto.")

**Q** What websites have good pictures of trains?

*James Veronico, Wheaton, Ill.*

**A** A few sites the MR staff uses when looking for reference photos of specific locomotives or cars include the Railroad Picture Archives ([www.rrpicturearchives.net](http://www.rrpicturearchives.net)), Fallen Flags ([www.rr-fallenflags.org](http://www.rr-fallenflags.org)), [www.Railcar-Photos.com](http://www.Railcar-Photos.com), and [www.RailPictures.net](http://www.RailPictures.net).

**Q** I've inherited a lot of Lionel track and trains. The track is three-rail. A long time ago, this was a hobby of mine. I now have children, so I want them to get involved. In your magazine, you talk about HO trains and tracks. Is HO scale two or three rail? Will my Lionel cars and engine run on two-rail track? I'm not sure of the difference. I would like to know more before investing.

*Alan Laatz, LaGrange, Ill.*

**A** As you've figured out, there's more of a difference between types of track than just the size. Your Lionel trains ran on O gauge, three-rail track powered by alternating current (AC). The center rail was "hot" and the two outer rails were ground, which greatly simplified wiring of both the track and the locomotives.

By the time HO scale (1:87.1 proportion, a little more than half the size of O) came along, technology had advanced enough that it wasn't such a big deal to insulate the wheels on either side of a locomotive. This made the center electrical pickup unnecessary, and HO trains were wired for direct current (DC). Though it complicated layout wiring, particularly on reverse loops and wyes, two-rail gained popularity because it looked more realistic than three-rail.

Regardless of scale, most three-rail trains run on AC, and two-rail trains use DC. So even if your Lionel trains fit on two-rail O scale track, or vice-versa, the mechanisms would be incompatible.

Send questions and tips to associate editor Steven Otte at [AskMR@MRmag.com](mailto:AskMR@MRmag.com).



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# Fine locomotives inspired fine models



The colorful heavy Pacifics of the Southern Ry. and Baltimore & Ohio inspired many models over the years. One of the better representations was this Tenshodo brass Southern Ps-4 imported by Pacific Fast Mail in 1965.

**United States Railroad Administration** (USRA)-type heavy Pacific locomotives, admired in colorful Baltimore & Ohio and Southern Ry. liveries, exude a romance enhanced by their *Royal Blue* and *Crescent* paint schemes. These trains were the flagships of their respective railroads and the locomotives that pulled them were the stars.

Baltimore & Ohio's 20 P-7s, built in 1927, first wore olive green, then blue and light gray in *Royal Blue* service; Southern Ry.'s eight famous class Ps-4 locomotives, built from 1923 to 1926, were painted Virginia green and gold leaf, and considered by many the zenith of that design.

In 1917, the USRA nationalized the railroads and standardized locomotive design and construction to meet expected war-time demands. The designs included many types, one of the most influential being the heavy Pacifics. The administration expected great stress to be put on these locomotive designs to fulfill their duties, and many would be needed from different builders.

Although the war ended before the program got under way, construction of the locomotives continued. Designs were advanced for the era, and so successful, many copies were made. The heavy Pacifics were a few years ahead of their time, and proved powerful enough to find use in freight and passenger service alike.

**Both roads' Pacifics** inspired miniatures. A 1938 American Flyer tinplate version was called the "First O Gauge Scale Model 'President Washington' Locomotive of the Baltimore & Ohio Railroad." It wasn't. Black rather than B&O's olive green, it had too many deficiencies that denied it being a true scale-tinplate model, and the tinplate market

wasn't ready for a near-scale model. Nor were scale hobbyists about to accept it with its detail deficiencies.

In 1994, Mantua catalogued its postwar Pacific in Royal Blue livery as 5301 "President Adams," featuring a Sagami motor and smoke, and said by some to represent B&O's P-7. It didn't. Visually, it was the re-engineered plain postwar die-cast metal boiler, lacking proper appliances, rivets, piping, and other details to be accurate, with the tender on small freight trucks.

In 2013, Broadway Limited Imports catalogued a handsome HO scale P-7, finely detailed with olive green paint trimmed in red and gold. It depicted B&O no. 5300 "President Washington" before it was later repainted in *Royal Blue* livery. As a modern import, it included all the high-tech electronic bells and whistles (literally), plus other operational features expected on today's sophisticated models. It was also offered as an Erie class K-5 and painted for Chicago & Eastern Illinois.


**In 1965, Pacific Fast Mail** introduced two beautiful HO scale brass Pacific models made by Tenshodo in Japan, one light, the other a heavy version with Southern's Ps-4 modifications, including the Elesco

feedwater heater, additional piping, and other alterations required by the railroad.

Lionel catalogued an exquisite 2004 imported 1/4" scale-tinplate Southern Ps-4 *Crescent Limited* with all the correct prototype details: feedwater heater, piping, rivets, appliances in the right places, and long-distance, 12-wheel tender. It was as fine as could have been expected from Max Grey, and the equal of the HO Tenshodo. Crescents on the cab sides and steam chests marked it as a premium passenger locomotive of the prototype's era. It was also available with 1/4" scale-tinplate 19" passenger cars: combine, coaches, diner, and observation.

**HO scale USRA** heavy Pacifics have ranged in quality from the mid-1990s Mantua quasi-version, to the 1960s brass PFM Tenshodo, to the latest model from Broadway Limited Imports. They're tributes to the eminently successful standardized motive power designed to meet a national emergency and which saw many copies put into service around the country after World War I was over.

That Lionel saw fit to import a superb O gauge 1/4" scale-tinplate Southern Ps-4 speaks well of the panache associated with quality rail travel. It's a testimony to the allure of the grace and power rail travel once exuded, particularly in colorful B&O and Southern liveries.

Whether in natural brass, painted olive green or black, run on layouts or kept proudly in collections, these locomotives are a joy to behold, and speak across the decades of what once was, and is now long gone. One Southern Ps-4, no. 1401, survives in the Smithsonian Institution's National Museum of American History in Washington, D.C., and the first P-7, no. 5300 "President Washington," is at the B&O Museum in Baltimore, Md. 



While Mantua's 1994 release of the B&O Presidential Pacific was colorful, it was lacking in some of the finer details.





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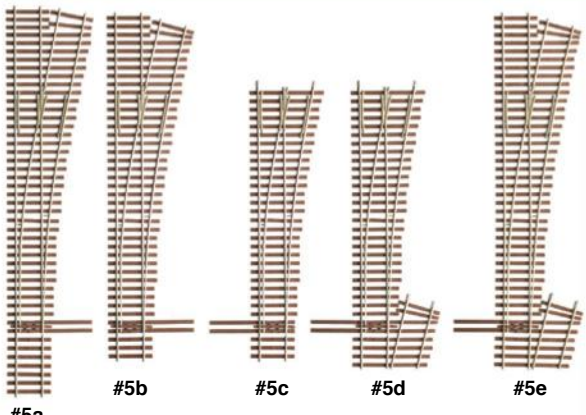
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The field behind this small lumberyard on the HO scale Winston-Salem Southbound layout was made using pieces of static grass mats made by Heki (light green) and Busch (dark brown). Bill Zuback photos

## How to model tall grass easily

**Not long ago** the name grass mat conjured up frightful images of sheets of green paper and dyed sawdust used to cover acres of otherwise barren plywood quickly and cheaply. Fortunately, those days are behind us.

Modern static grass mats are something altogether different than their ancestors. These products are manufactured by attaching fibers to a substrate – the two most common are a flexible clear membrane or a poly fiber backing. Modelers then choose the grass mat that meets their application, cut or tear it to fit, and cement it to the layout. The end result is lush, realistic model grass without the need to own an electrostatic

grass applicator. You also avoid having to get the fibers to stand up or thicken.

Busch, Faller, Heki, Walther's, Scenic Express, and others offer static grass mats in an amazing array of colors, lengths, and textures. I've used many of them in scales from N to O, and the mats can be used to model tufts, patches, or entire fields.

For Model Railroader Video Plus' Winston-Salem Southbound project railroad, I used several mats from Heki and Busch. Heki no. 1575 Meadow Grass Light Green proved particularly effective for modeling the tall grass found on embankments along the railroad right-of-way. The material is very easy to work

with, and it took me less than an hour to fill the layout's unkempt scenic areas with grass that looks realistic to the eye.

If you haven't given modern static grass mats a try, you should. They're definitely worth a look. No, these aren't your father's grass mats – thank goodness for that!

### Now on ModelRailroader.com

Subscribers to Model Railroader Video Plus can watch a detailed video showing how the grass was applied to the layout pictured here. Visit [www.ModelRailroader.com](http://www.ModelRailroader.com).



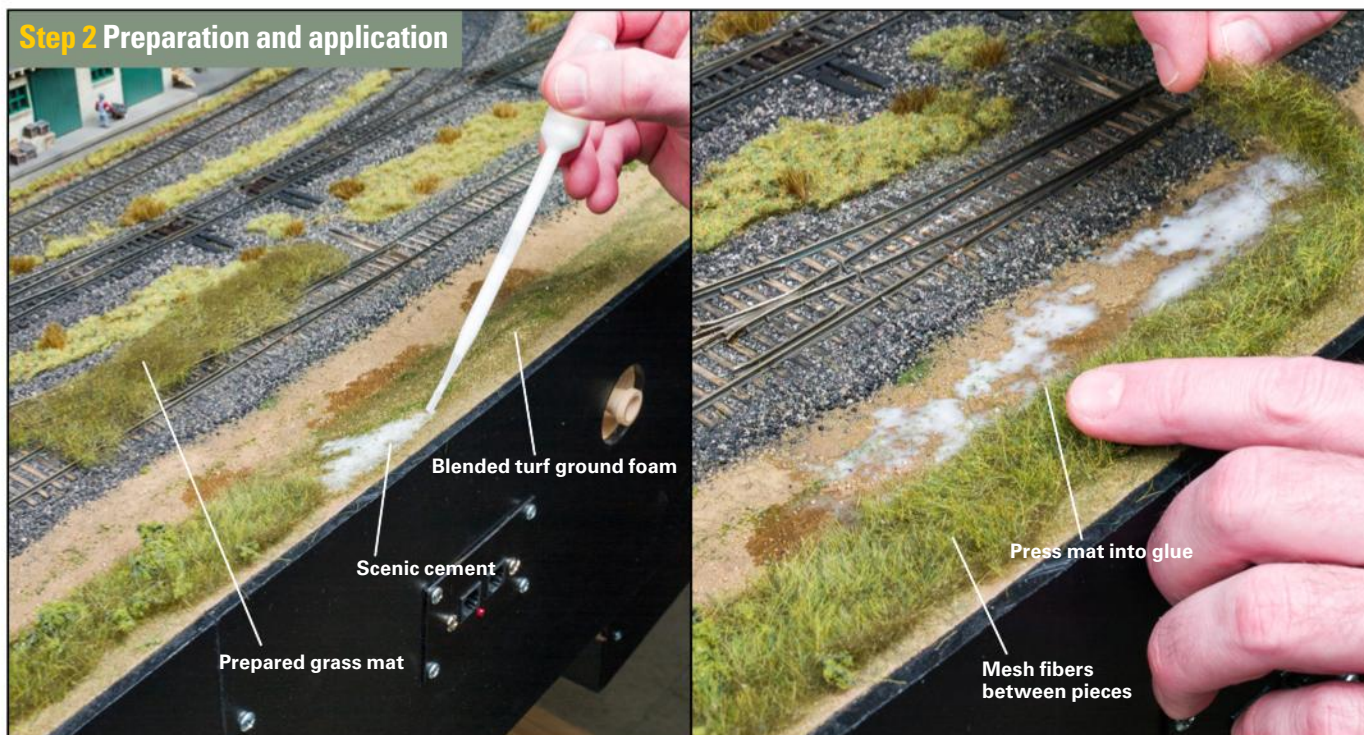
## Step 1 Cutting and shaping



**The Heki no. 1575** grass mat uses a green poly fiber backing, which is easy to cut with a sharp pair of scissors. I cut the material into short strips to make it easier to shape and apply to the layout.

Before applying the grass strips, I teased the ends of the material to eliminate the clean edge created by the scissors. Avoid overworking the poly fiber, as the grass fibers come off it easily.

## Step 2 Preparation and application



**The Heki static mats** look best when applied over a base layer of ground foam. I first applied some Woodland Scenics blended turf to the hillside, then soaked the ground with Scenic Cement. (For better control of the glue on steep hillsides, brush diluted white glue over the surface instead of using the Scenic Cement.)

With the surface scenery wet with cement, I carefully laid the grass mat into the adhesive. I started on the adjoining end, making sure the grass fibers meshed together with the previous section, then gently pressed the mat into the glue.



# STEPBYSTEP

## Step 3 Adding weeds



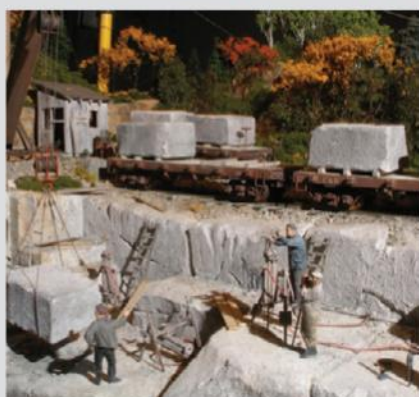
**Most open places** with tall grass also have various weeds growing in them as well. I added a few weeds to the embankment using bits of Woodland Scenics Fine-Leaf Foliage. First I dipped the stems in full strength white glue, then I slipped them between the fibers of the grass mat.

## Step 4 Realistic tall grass



**With the grass installed**, the Tar Branch local has arrived to work the town, and the crew wonders when the maintenance department is going to cut the embankment. The shorter grass along the other side of the tracks was made with similar techniques, but using Heki's shorter no. 1590 grass mats instead. **MR**





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The Snake Track job switches a boxcar full of lumber for Steinman Lumber on *Model Railroader's* 2017 project layout, the Beer Line addition. This month, we show you how we built benchwork and laid the track.

# BENCHWORK AND TRACK for the Beer Line addition

Pine, pink foam, and track make up the foundation of our project layout

By **Eric White and Cody Grivno** • Photos by Bill Zuback and Cody Grivno



## ▶ Beer Line series

**January 2017:** Meet the Beer Line addition

**February 2017:** Benchwork and tracklaying for the Beer Line

**March 2017:** Scratchbuilding Steinman Lumber Co.

**April 2017:** Mix kitbashing and scratchbuilding to create a large rail-served factory

**May 2017:** Building the North Avenue Viaduct

**June 2017:** Using a variety of techniques to build a cement plant complex

**This year's project layout** is an addition to the 2009 *Model Railroader* Beer Line. The original layout was very popular with readers, and folks who come for a tour of our building are always excited to turn the corner and see it up close.

Since we were adding another section to this model railroad, I needed to match what had been done before. So, naturally, I went to *Model Railroader's* All Access Archive ([www.modelrailroader.com/allaccess](http://www.modelrailroader.com/allaccess)) to see how it was done.

I learned that then-managing editor David Popp built the benchwork from clear pine lumber, so I dragged coworker Cody Grivno from his office, checked out the company van, and headed to The Home Depot to buy some wood.

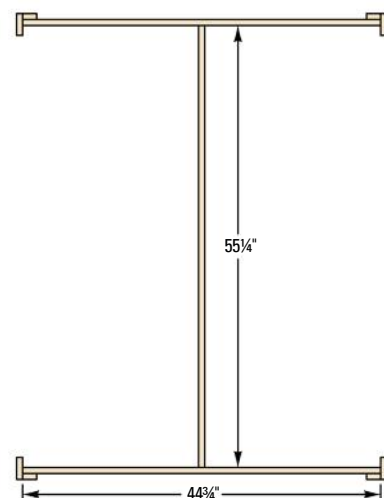
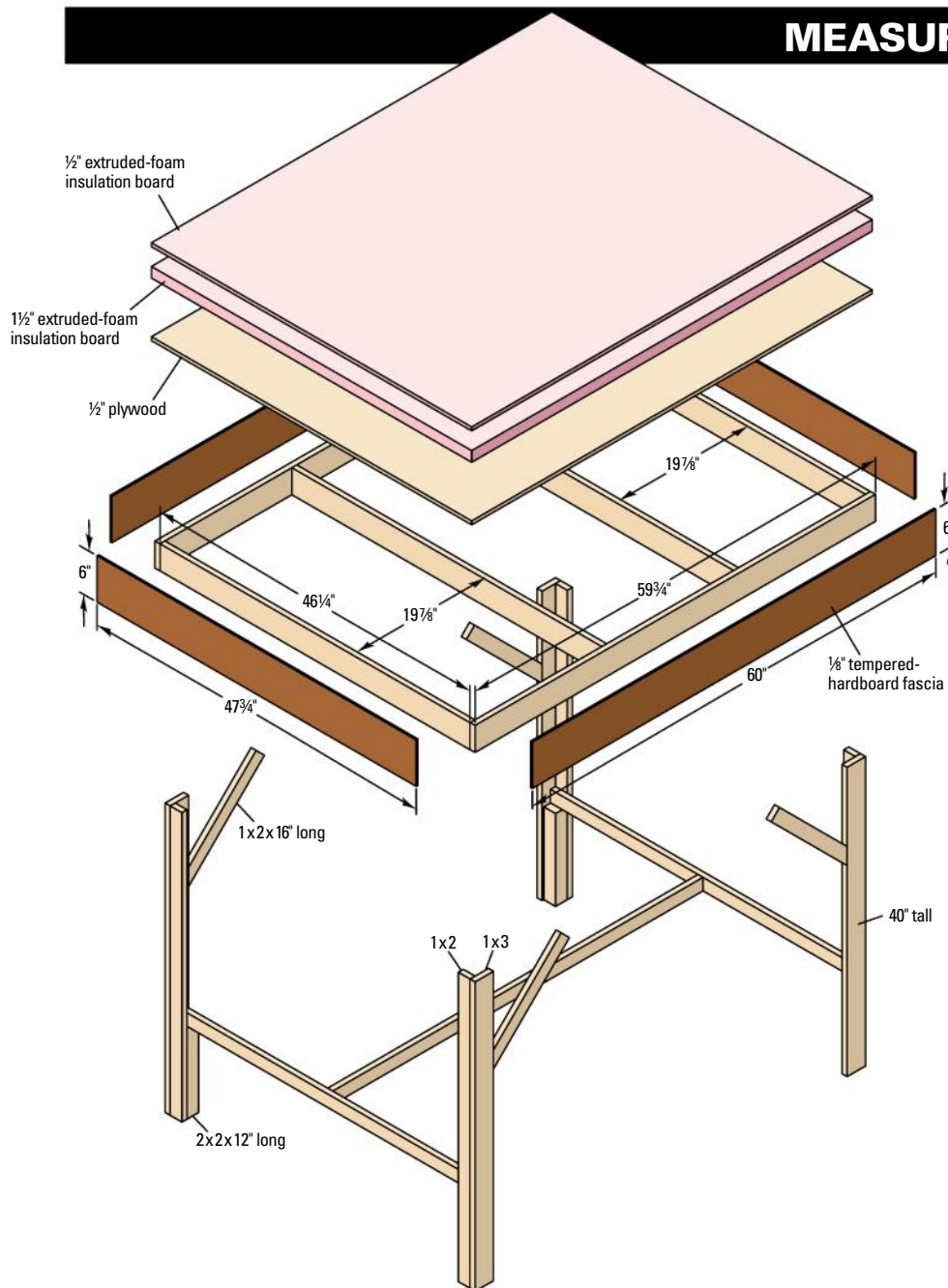
This year's project is 4 x 5 feet, making it the largest of the sections on the layout at 20 square feet. Since I had the instructions from 2009 at hand, the benchwork went together quickly.

With the benchwork done, I added a couple layers of extruded-foam insulation board, then laid out the track centerlines and rough building locations.

Cody then came in to install the roadbed and track. Though none of the track arrangements are particularly complicated, he had to pay special attention to how the rails aligned between the sections. See page 40 for more on that.

Follow along as our Beer Line addition goes from a plan on paper to track on benchwork. **MR**

## MEASURE ONCE, CUT TWICE



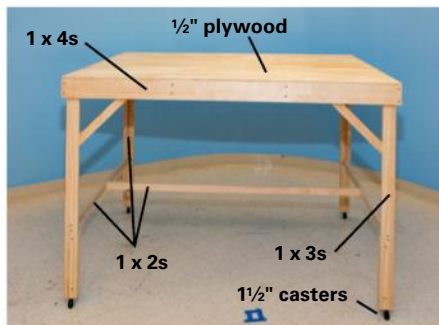
**Since this project** is an addition to an existing layout, I started by taking several measurements. I needed to know the length of the Beer Line's legs so our new section would fit right in, and I figured I'd better check to see what the overall dimensions were.

That's where I discovered my first surprise. I figured the end section that the addition would plug into would be just over 4 feet wide, since it's made from a sheet of 4 x 8 plywood wrapped in a tempered-hardboard fascia. But I discovered the overall finished width was 4 feet even.

David told me this was done to maintain the modular sizes required to assemble the Beer Line in three different configurations. That meant I had to cut 1/4" off the edge of my plywood sheet so the finished section would match the existing modules.



# THE WORLD IS FLAT

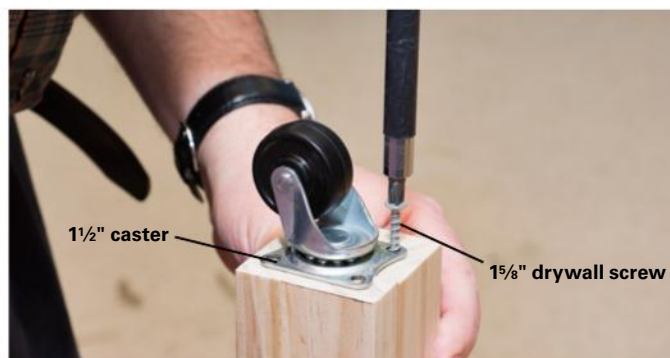
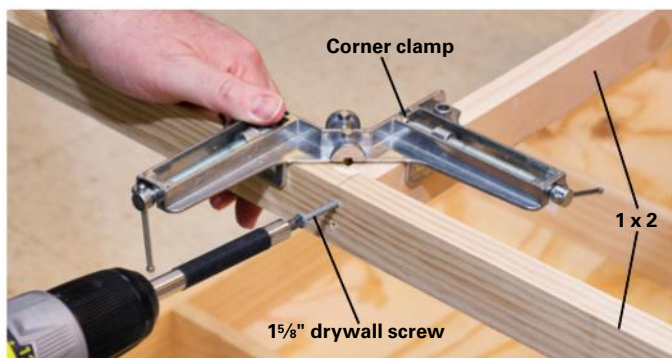
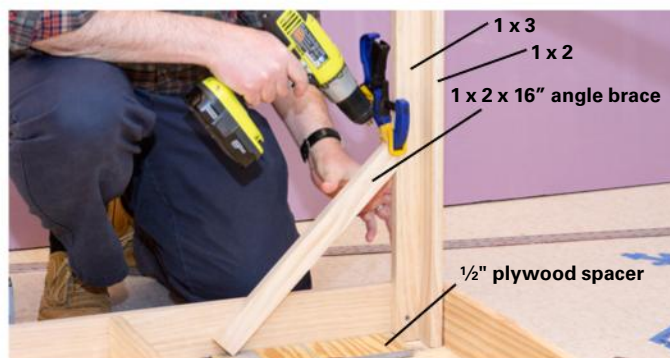
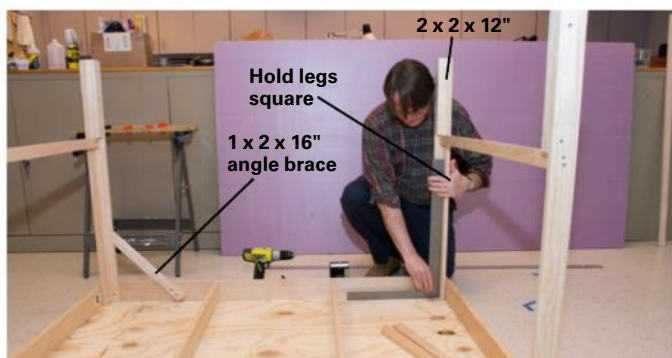


**To keep with the program,** I made the plywood top just less than 5 feet long as well, so the finished module is exactly 4 x 5 feet. Since I used 1/8" tempered hardboard for the fascia, the rough tabletop dimensions are 3'-11 3/4" x 4'-11 3/4".

That determined the size of the 1 x 4 framing pieces I'd need for the tabletop grid. The long sides are also 4'-11 3/4", and the short sides and intermediate joists are 3'-10 1/4" long. The joists are centered 19 7/8" in from each end. I used corner clamps to hold the parts together while I drilled pilot holes and drove the screws. All the joints are fastened with 1 5/8" drywall screws and yellow carpenter's glue.

Once the frame was assembled, I laid the plywood on top and marked the centerlines of the joists. Then I spread glue on top of the 1 x 4s, laid the plywood on top, and secured it with 1" ringed paneling nails about every 12" or so.

## GIVING IT LEGS



**The legs on the Beer Line** measured 40" long. I purchased four 1 1/2" casters to match what was used on the Beer Line, and even though it's eight years later, the casters I bought for the new project match the height of the parts bought for the original layout.

The legs are again made from 1 x 2 clear pine glued and screwed to 1 x 3 clear pine in an L shape. Following the plan from 2009, I cut 12"-long pieces of 2 x 2 and glued and screwed them to the bottom of the legs to accommodate the casters.

A 1 x 2 crosspiece set on top of the 2 x 2s connects the legs into H-shaped assemblies. I used a framing square to line everything up, then clamped and screwed the parts together. The crosspiece is 44 3/4" long.

The legs are connected to the tabletop with 1 1/4" drywall screws. Again, I used a framing square to ensure the legs were perpendicular to the tabletop, then clamped them in place while I drilled pilot holes and drove the screws.

After I attached each assembly, I installed 16"-long 1 x 2 angle braces. The bottoms of the braces were cut at a

45-degree angle with a power miter saw and screwed to the legs with 1 5/8"-long drywall screws. The legs were again checked with a square, the braces clamped in place, and the tops of the braces attached to the tabletop with 1 1/4"-long drywall screws. I used the shorter screws wherever there was a possibility of a screw coming through the back of a connection.

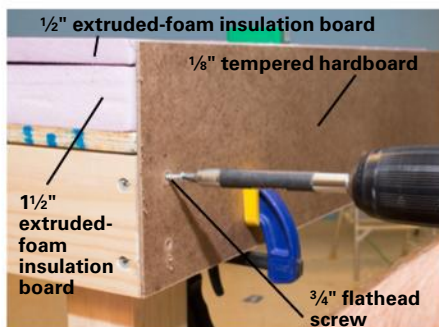
With both sets of legs attached to the tabletop, I used corner clamps to hold a 55 1/4"-long cross brace in place between the legs. With everything square and level, I drilled pilot holes, then drove 1 5/8" drywall screws into the joint.

Finally, I marked the location of the holes needed to attach the casters, drilled pilot holes, then screwed the casters in place with 1 5/8"-long drywall screws.

With Cody's help, I flipped the benchwork onto its casters for the first time. Next, David and I took it over to the Beer Line to check to see if everything was going to fit together. It did! Of course, the top was 2" shorter than the Beer Line, but that was OK, as it was going to get two layers of extruded-foam insulation board on top.



## PUT ON A HAPPY FASCIA

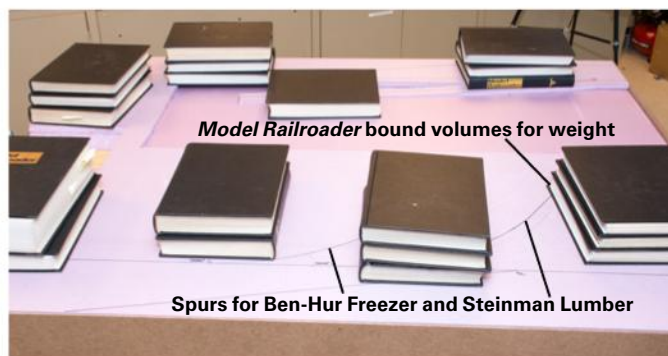
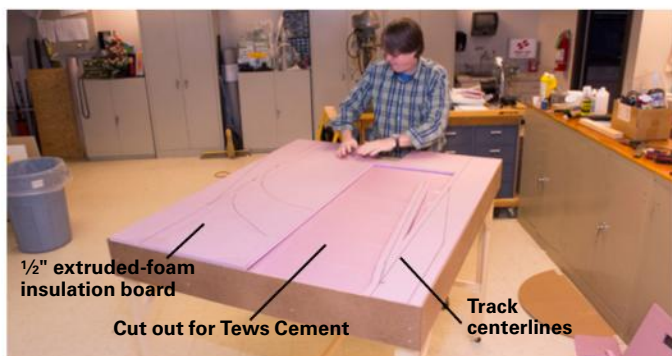


**The fascia is 6" high** to match what's already on the Beer Line. It's attached to the tabletop frame with  $\frac{3}{4}$ " flathead screws, countersunk so the Beer Line sections can be clamped together.

Three of the pieces are simple rectangles. One end has a cutout for the Milwaukee River. That piece of fascia has a profile to match the river banks. David helped me rip the  $\frac{1}{8}$ " tempered hardboard on a table saw. The ends were cut  $3'-11\frac{3}{4}"$  long, and the sides are  $5'-0"$ .

I installed the ends first since they're the same as the width of the completed benchwork, then installed the sides. The parts were held on with just screws, in case we needed to remove the fascia. I had the extruded-foam insulation board we used for the layout surface in place to ensure everything fit correctly.

## FOAM ALL OVER THE PLACE



**In 2009, the crew used** a single layer of 2" extruded-foam insulation board, but I wanted to be able to sink the area for Tews Cement to include a retaining wall at the back of the property. Even a little grade separation would be good, so we used a layer of  $\frac{1}{2}$ " foam on top of a layer of  $1\frac{1}{2}"$  foam to get 2" total. Tews Cement is  $\frac{1}{2}"$  below the rest of the layout.

I also needed space for the Milwaukee River. It's just going into a culvert and stopping, but it had to line up with what was already on the 8-foot-long sections this piece plugs into. I measured the existing channel, then transferred those dimensions to the new section.

Next I cut the foam into tabletop-sized pieces so I could start to lay out the features we'd be incorporating. With the  $\frac{1}{2}"$  layer atop the  $1\frac{1}{2}"$  layer, I marked the edges of the river, then transferred the dimensions for the track. All of the track connections are 6" in from the sides of the section.

With the main line penciled in, associate editor Steven Otte, Cody, and I gathered in the workshop. The three of us were assigned to build the three industries on the section, so I wanted everyone's input on how much space they'd

need and where the sidings should go. With building sites and the edges of roads and bridges marked, I could make the cuts in the foam.

I marked the track centerlines, then marked the cut lines for the Milwaukee River and Tews Cement. The river cuts go all the way to the plywood, and have angled sides that match the rest of the Beer Line. Tews Cement is cut into just the top layer, with a ramp from the main line into the industry site.

I cut the area for the ramp through both layers of foam so I could push the  $\frac{1}{2}"$  layer into the cutout of the  $1\frac{1}{2}"$  layer. Two layers of  $\frac{1}{2}"$  foam support the ramp at the bottom.

With the fascia installed, I glued down the extruded-foam insulation board. I spread a layer of DAP Dynaflex 230 sealant on the plywood and laid the  $1\frac{1}{2}"$  layer of foam down. I weighted it with several bound volumes of *Model Railroader*, and let it set up overnight.

The next day, I glued scraps of  $\frac{1}{2}"$  foam into the cutout for the Tews Cement ramp, then spread more sealant, which is foam-safe, on the area to be covered by the  $\frac{1}{2}"$  foam. Finally, I laid the top piece down and weighted it as I had the bottom.



## PINNING THE SECTIONS TOGETHER

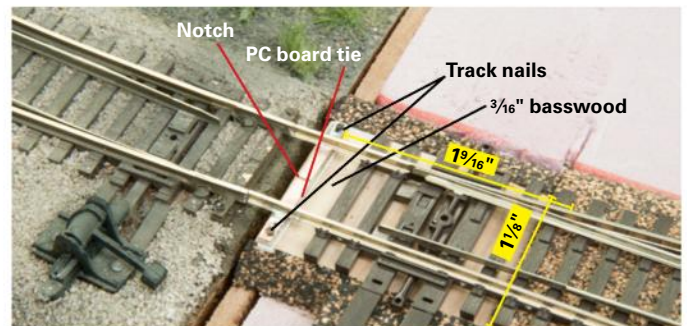
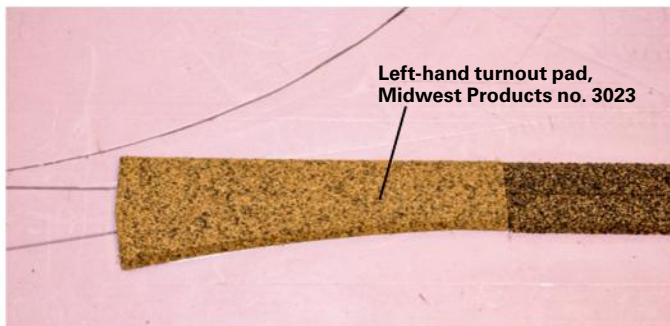
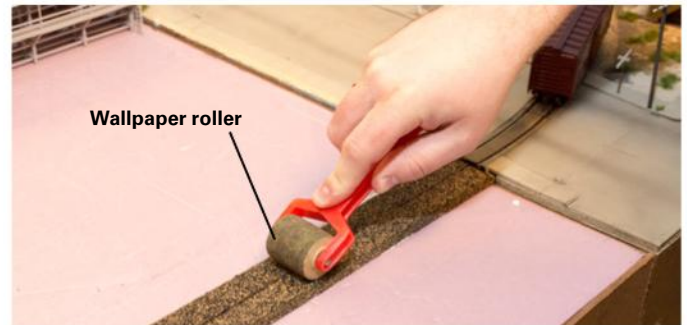
**With the benchwork complete,** David and I hauled the mating sections of the layout into the workshop and clamped everything together.

With everything matched up and clamped together, David did the honors with the power drill and a  $\frac{3}{8}$ " bit, using

the mating holes in the old layout to drill matching holes in the new section. He then put backing plates behind the holes to keep the  $\frac{3}{8}$ " dowel pins from being forced through.

With the pins and backing plates glued in place, everything was ready for the next step: laying track. – E.W.

## ROADBED AND TRACK



**With the benchwork done,** I installed the roadbed. Using Eric's track centerlines as a guide, I attached Midwest Products no. 3013 cork roadbed to the extruded-foam insulation board with DAP ALEX Plus acrylic latex caulk. Avoid solvent-based adhesives, as they'll dissolve the foam.

I spread the adhesive into a thin layer with a putty knife and attached the cork to the foam. Then I made a few passes over the cork with a wallpaper roller to ensure the adhesive was evenly distributed and the roadbed surface was level.

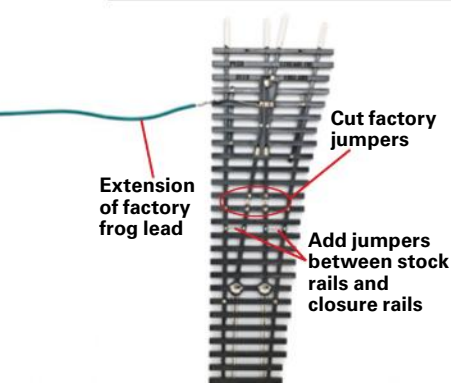
Cutting and splicing cork around turnouts is a time-consuming task. To speed things up, I turned to Midwest Products left-hand cork turnout pads. I used no. 3023, designed for nos. 4 and 6 turnouts. The edges are factory beveled, and the height matches the roadbed strip I used earlier. I attached the pads using the same acrylic latex caulk.

Track alignment is critical on a sectional layout like the Beer Line. First, I installed a  $1\frac{9}{16}$ " x  $1\frac{1}{8}$ " piece of  $\frac{3}{16}$ " basswood at each edge of the addition where the track connects to the adjacent section. The size of the basswood isn't overly important. You just need a place to drive track nails.

Next, I cut pieces of ANE Model no. PC001 printed-circuit (PC) board material to the same length as the crossties. I used a fine-tooth razor saw to cut notches in the copper on both sides of the tie. This is critical to prevent short circuits.

I then drilled holes in the PC board material with a pin vise and drill bit (the bit size will vary depending on the brand of track nails you use). I soldered the ties to the rails and secured the PC board ties to the basswood with track nails. You may need to add a styrene shim under the PC board tie to bring it to the same thickness as the plastic ties.

## LAYING TRACK



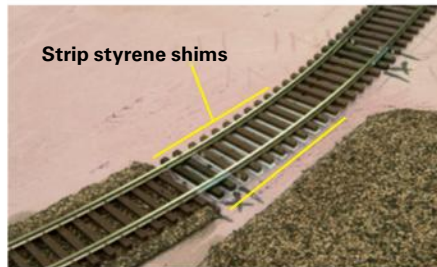
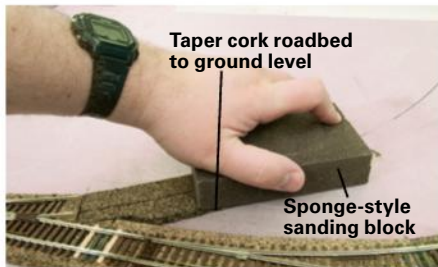
**I used the acrylic caulk** to secure the track. After I applied a bead of caulk down the center of the roadbed, I spread it into a thin layer with a putty knife, then placed the track.

The Peco Electrofrog turnouts required a few adjustments so I could power the frogs using a Tam Valley Depot Frog Juicer. First, I cut the two factory jumper wires. Then I soldered wires to connect the stock rails with the closure rails. Finally, I extended the factory frog lead with a piece of 22AWG wire.

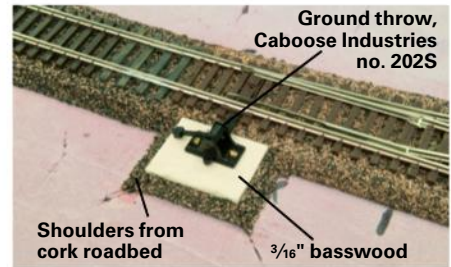
To prevent short circuits, I added insulated rail joiners to the frog rails on the Peco turnouts. The non-power-routing Atlas Snap-Switches don't need these, but keep adhesive away from moving turnout parts.



## ELEVATION CHANGE



## LINING TURNOUTS



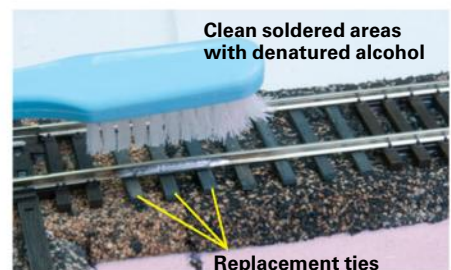
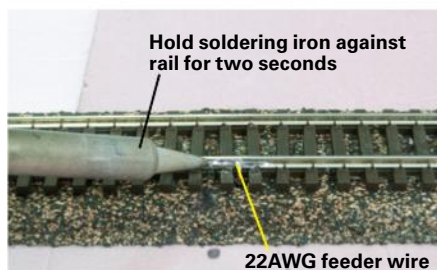
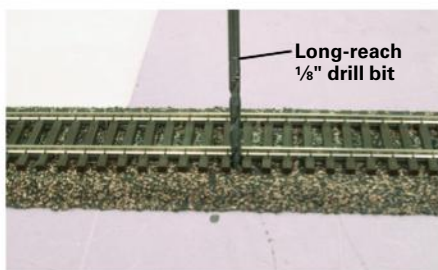
**To give the track** some elevation change, the sidings for Ben-Hur Freezer Co. and Steinman Lumber Co. both drop from roadbed height to ground level.

To do this, I installed an approximately 9" length of cork roadbed for each siding and let the acrylic latex caulk dry thoroughly. Then I used a Stanley Surform tool and sponge-style sanding blocks to taper the roadbed.

After sanding the cork as thin as possible, I installed the track. To help make the transition from the cork to the foam as smooth as possible, I installed pieces of .030", .040", and .060" x .100" styrene strip under the plastic ties. This wasn't a perfect solution, but the ballast will hide the styrene shims.

**We used** Caboose Industries no. 202S sprung ground throws to line the Snap-Switches. I trimmed the switch rod slightly to accept the mounting pin on the ground throw. I made a 3/4" x 1 1/2" mounting pad using 3/16" thick basswood and finished it with bits of cork to blend it into the roadbed. Peco turnouts are sprung to stay in place.

## FEEDER WIRES



**Once I'd determined** the locations for the feeder wires, I used a long-reach 1/8" bit to drill holes through the cork roadbed and 2" thick extruded-foam insulation board.

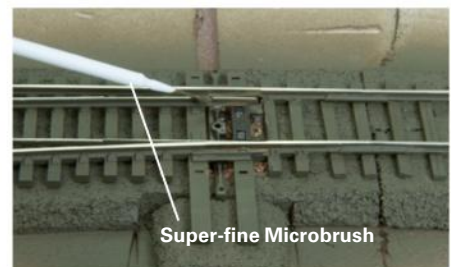
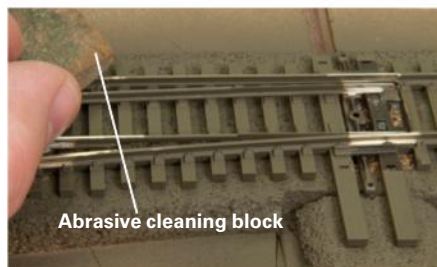
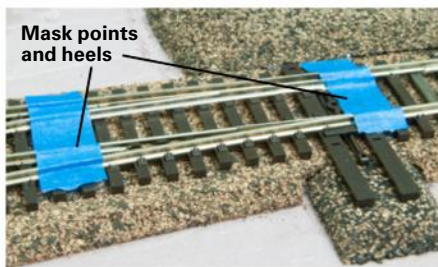
I used 22AWG solid wire for the feeders. After stripping 1/4" of insulation off the end, I bent the bare wire into a dogleg shape that would seat in the web of the rail. I applied rosin flux to the wire and rail and tinned both surfaces. Then I carefully held the wire against the rail, touched the

hot soldering iron against the rail for two seconds, and the joint was done without melting the ties.

With the soldering completed, I cleaned each joint with alcohol and a toothbrush so paint will stick to the rails.

After the solder joints were cleaned, I inserted replacement ties between track sections as necessary to replace the D-ties at the ends of the Atlas turnouts, and where we had to remove an extra tie or two to install rail joiners.

## PAINTING THE RAILS



**I masked the points** and heels of all five turnouts with blue painter's tape before spraying the rails and ties Model Master no. 4885 Railroad Tie Brown. Masking prevents the paint from creating electrical flow issues or gumming up the working parts of the turnout. As soon as the paint was dry, which was roughly as long as it took to clean my

airbrush, I used an abrasive track cleaning block to remove the paint from the heads of the rails. Any stubborn paint can be removed with a cotton swab dipped in Windex (acrylic paint) or lacquer thinner (organic solvent based paint).

Finally, I touched up the bare rails on the turnouts with Railroad Tie Brown and a super-fine Microbrush. – C.G.





**"SOUTHERN" replaced "SANTA FE" on this trio of Kato SD40-2s running on Bob Kingsnorth's freelanced HO scale Southern Transcontinental Ry. Learn how Bob uses factory-painted models as the starting points for his freelanced paint schemes.**

# FREELANCED PAINT SCHEMES from factory-painted models

Selective repainting keeps details intact on a custom-decorated locomotive

**By Bob Kingsnorth** • Photos by the author

**T**he detail, paint, and decoration found on today's ready-to-run locomotive models are better than at any time in the hobby. The precision of factory-applied lettering and the ability to legibly reproduce the tiniest text of a warning stencil in HO or smaller scale is beyond the skills of most model railroaders. Pick a road name, and you're likely to find a prototypically detailed and painted scale diesel fleet ready to go on your local hobby shop shelf.

However, I'm a "freelance" model railroader, one who built a layout around

a fictional railroad of his own creation. This left me in a quandary. If I were to start my freelance project with a molded gray, undecorated locomotive model or one that I'd completely stripped the paint from, I would never be able to match the quality and detail of a factory-applied paint job.

Therefore I modify factory-painted models instead. I pick paint schemes close to what I imagined for my freelanced railroad, which would limit the amount of repainting. I also focus on only removing and modifying lettering and numbers, which keeps most of the

fine paint and decoration work intact. That way I can have a custom-painted diesel locomotive that has the sharply printed stencils and finely finished window gaskets and other details of an out-of-the box model.

## Choosing a paint scheme

My freelanced model railroad is the Southern Transcontinental Ry., known as the "Southern." For the setting I switch between 1995 and the modern-era. I could easily imagine "SOUTHERN" replacing "SANTA FE" on the sides of my diesels. I have Southern decals custom



printed by Rail Graphics Custom Decals ([www.railgraphicsdecals.com](http://www.railgraphicsdecals.com)).

My favorite prototype diesel locomotive paint scheme is the Atchison, Topeka & Santa Fe Ry.'s blue and yellow freight scheme. However, in addition to Santa Fe decorated models, I use locomotives factory painted in CSX schemes. This makes it easier for me to build a varied diesel roster, as both of those railroads owned many different types of General Electric and Electro-Motive Division diesels appropriate for my layout's eras. Model manufacturers have made HO scale versions of most of them. See "Designing a freelance paint scheme" on the next page for more ideas.

### Selective paint removal

Many re-painting projects begin by soaking a factory-painted plastic body shell in alcohol or some other chemical paint remover. This wasn't going to work if I wanted to keep most of the factory paint job intact. Simply painting over the pad-printed lettering and heralds wouldn't work, either. The relatively thick printed lettering would leave a ghosted outline under the new paint.

My selective paint removal process involves repeated applications of a paint remover to a specific area on the model. I then use cotton swabs to scrub away the lettering, as shown in **fig. 1**. I tried Microbrushes, paintbrushes, and toothbrushes, but nothing was as effective as a cotton swab. It's important to change cotton swabs often. I went through 600 swabs to modify six locomotives.

For some of the heavier lettering I also used no. 11 and no. 17 blades in a hobby knife. When using a blade, I work slowly and with a gentle touch to avoid gouging the plastic.

Even after working with several locomotives, the process remains one of trial and error. Paint varies from manufacturer to manufacturer and even between production runs. For example, the lettering on one model may be easily removed with isopropyl alcohol, while on another model alcohol has little or no effect.

Follow along as I outline my techniques on factory-painted models from three different manufacturers: Kato, Atlas, and Athearn.

### Kato Santa Fe SD40-2

For my railroad's 1995 setting, it was easy to imagine a trio of weathered EMD SD40-2s heading mainline freights. A trio of Kato HO scale SD40-2s in the Santa Fe yellow-and-blue warbonnet livery would be my starting point. I needed



**Fig. 1 Cotton swabs.** Bob found that nothing was more effective at removing lettering than a cotton swab. Once the swab gets saturated with paint and starts smearing the surface, Bob would switch to a new one. He used several hundred swabs while redecorating the six locomotives in this article.



**Fig. 2 Disassembly.** For all the locomotives, disassembling the models is a necessary step, including separating the cab from the body shell for the Kato SD40-2s. This step makes masking and separating the colors a much easier task.



**Fig. 3 SD40-2 details.** The finished model shows how Bob was able to preserve the factory-painted silver window frames and black windshield gaskets as well as the builder's plate and other details on the side sills. He modified the number board lettering to be consistent with his fleet.



## Designing a freelance paint scheme



**Bob's latest freelanced diesel project uses an F unit decorated for the Baltimore & Ohio as a starting point. Bob repainted the body shell and applied decals from a Microscale Pennsylvania RR set.**

**I used both Santa Fe** and CSX liveries for my freelanced locomotive paint schemes. Readers will notice the different treatments of the locomotive fronts, starting from SD40-2's yellow cab to the Dash 8's yellow front and small triangle of yellow on the sides to the AC4400's simple yellow front.

These paint schemes all help me show the passage of time on my railroad. The SD40-2 and Dash 8s work well for my layout's 1995 era, the former would have been at the end of their careers while the latter would be new. When I want to run my layout in a modern-day setting I'll use the AC4400s.

I'm currently working on a first-generation diesel scheme, using an F unit decorated for the Baltimore & Ohio as a starting point, shown above. I'm repainting the model in a lighter shade of blue and adding lettering and pinstripes from a Microscale Pennsylvania RR diesel set.

When looking for a good starting point for a freelanced locomotive fleet, I recommend searching the [www.Walthers.com](http://www.Walthers.com) catalog to find popular locomotives in various paint schemes from a particular era, such as "F7" for first-generation diesels or "SD40" for second-generation diesels.

Those modeling first-generation diesels should also note that the Electro-Motive Division graphics department designed many railroad paint schemes. For example, schemes similar to the Denver & Rio Grande Western scheme shown on the Athearn Genesis F3 below were used by the Boston & Maine (gold and maroon), Lehigh Valley (black and Cornell Red), and Maine Central (gold and green). It would be easy to remove the factory-applied railroad name and replace it with that of a freelanced road.

The Union Pacific yellow and gray scheme could also make a good starting point. The scheme was fairly consistent over the decades and the UP used many different locomotive types, which would make for a varied freelanced fleet. — B.K.



**Conversion to a freelanced paint scheme could be as simple as removing the "Rio Grande" from the Athearn F3 shown above. The Electro-Motive Division graphics department designed several paint schemes that were similar to the Denver & Rio Grande Western scheme.**

to remove not only all the Santa Fe lettering but also the warbonnet profile on the long hood.

Disassembling the model, including separating the cab from the hood, was the first step. See **fig. 2** on page 43. This made masking the separate colors a much easier task.

I used 91 percent isopropyl alcohol to remove the lettering on the Kato models. I used wet cotton swabs to repeatedly scrub the large Santa Fe lettering, while trying to avoid getting any alcohol on the blue paint. I was only partially successful. The alcohol faded and thinned the lettering but not enough that I could avoid repainting the hood.

Luckily this model had few warning stencils on the long hood, so I didn't mind repainting it. After masking the yellow end of the hood with blue painter's tape, I airbrushed the rest of the part with Scalecoat II Santa Fe blue.

On the locomotive cab, I found it easier to remove the blue Santa Fe cigar-band herald from the yellow nose as well as the numbers on sides. There was no need for any repainting.

The small incursion of blue from the warbonnet profile on the cab sides couldn't be completely removed. I airbrushed the lower cab panels with my own Scalecoat II yellow mix (320 parts Reefer Yellow, 30 parts White, 14 parts Santa Fe Red, 1 part Locomotive Black). After an application of Testor's Dullcote and some weathering, any paint color differences aren't noticeable.

Since my three models all had duplicate numbers, I replaced the cab numbers with those from a Microscale Santa Fe diesel set. To stay consistent with the other models in my fleet, I also changed the number boards to black numbers on a white background, using Microscale decals, shown in **fig. 3** on page 43.

### Atlas CSX GE Dash 8-40CW

My next locomotives were a pair of Atlas GE Dash 8-40CWs. I was able to keep the stencils on the cab and along the sills intact, as well as the silver window frames and black gaskets around the windshields. See **fig. 4**.

Unfortunately my models were in the gray, blue, and yellow scheme, shown in **fig. 5**. The current dark blue scheme would have required less repainting. Because I had to repaint the gray, I lost the warning stencils on the long hood.

I again removed the lettering and numbers with 91-percent isopropyl alcohol. In addition to using cotton swabs, I had to carefully scrape away the CSX





**Fig. 4 Preserving details.** All the detail on the front of the Dash 8-40CW is factory painted, including the road number, number boards, headlight mounting, m.u. cable, and step edging. Not having to repaint these details saved a lot of time.

herald with my hobby knife. I removed enough of the herald to avoid ghost outlines after repainting the hood blue with Scalecoat II paints (80 parts B&O Royal Blue, 3 parts Locomotive Black).

In addition to my Southern decals on the sides of the hood, I added warning stencil decals from a Microscale set.

### Athearn CSX GE AC4400CW

My last conversion was a pair of Athearn GE AC4400CW diesels in the current dark blue CSX scheme. The CSX herald proved challenging.

After masking the sides of the hood around the herald, I applied a few different chemicals. Nothing would remove only the lettering, so I stripped the paint down to raw plastic with Testor's Easy Lift Off (ELO) paint and decal remover.

After removing the masking tape, I scrubbed the boundary lines between the painted and raw surfaces with a cotton swab dipped in ELO. I wanted to taper the paint thickness down to the raw plastic so that a rectangular ghost outline didn't appear in the final paint.

Using blue painter's tape, I then masked the sides of the hood under the radiator overhang, along the roof line, and forward of the dynamic brake grills. I also masked the equipment cabinet and side sills.

I mixed the blue using Scalecoat II paints (40 parts Santa Fe Blue, 2 parts White, 1 part Reefer Yellow) that looked close to the model's factory color. Then I airbrushed the raw plastic areas, blending the paint toward the masking tape.

The blue CSX herald on the yellow nose and rear required careful scraping with a hobby knife followed by several applications of ELO with a cotton swab. I removed most of this lettering without affecting the paint underneath. A light



**Fig. 5 Atlas GE Dash 8-40CW.** Bob used isopropyl alcohol to remove most of the lettering from the model's long hood (top photo). He repainted the gray body (bottom photo) prior to applying his freelance decals.



**Fig. 6 Athearn GE AC4400CW.** Bob had to remove the paint down to the raw plastic to get rid of the CSX herald on the Athearn models (top photo). This selective repainting allowed him to keep all of the factory applied warning stencils on the finished model (bottom photo).

spray of custom-mixed Floquil yellow (80 parts Reefer Yellow, 4 parts Roof Brown, 1 part Signal Red) concealed remnants of the factory lettering.

While scraping the road numbers off one of the AC4400s, I gouged the blue paint with my hobby knife. Some scrubbing with ELO smoothed the gouges. I then touched up the cab sides, added new road numbers, and applied weathering. My diesels were ready for service.

My freelanced locomotives represent the best of both worlds. I get the precisely painted details of a commercial model as well as a custom paint scheme of my own design. Despite the challenges, factory-painted models will remain the starting point for my Southern fleet. **MR**

*Bob Kingsnorth wrote "6 ways to make painting easier" in the May 2016 issue of Model Railroader.*



# UPSTATE NEW YORK IN 1948





# This double-deck HO railroad features dual automated staging elevators

By **Jim Heidt** • Photos by Lou Sassi

## **"LONESOME LEW"**

**CRAWFORD** is impatient. On a July 4th holiday weekend in 1948, he's checking his watch and grumbling about when that conductor is going to get the South Milk moving out of Speculator. "What's the delay?" he mumbles, with itchy hand on the throttle.

Welcome to the Ogdensburg & Norwood Ry.'s Northern Division. The

northern terminal is at the port and border city of Ogdensburg, N.Y., across the St. Lawrence River from Canada, where it interchanges by car ferry with its corporate parent, the Canadian Pacific. The O&N then runs southeast through the Adirondack Mountains of upstate New York and the division point of Northville, N.Y., near Albany on the Great Sacandaga Lake.

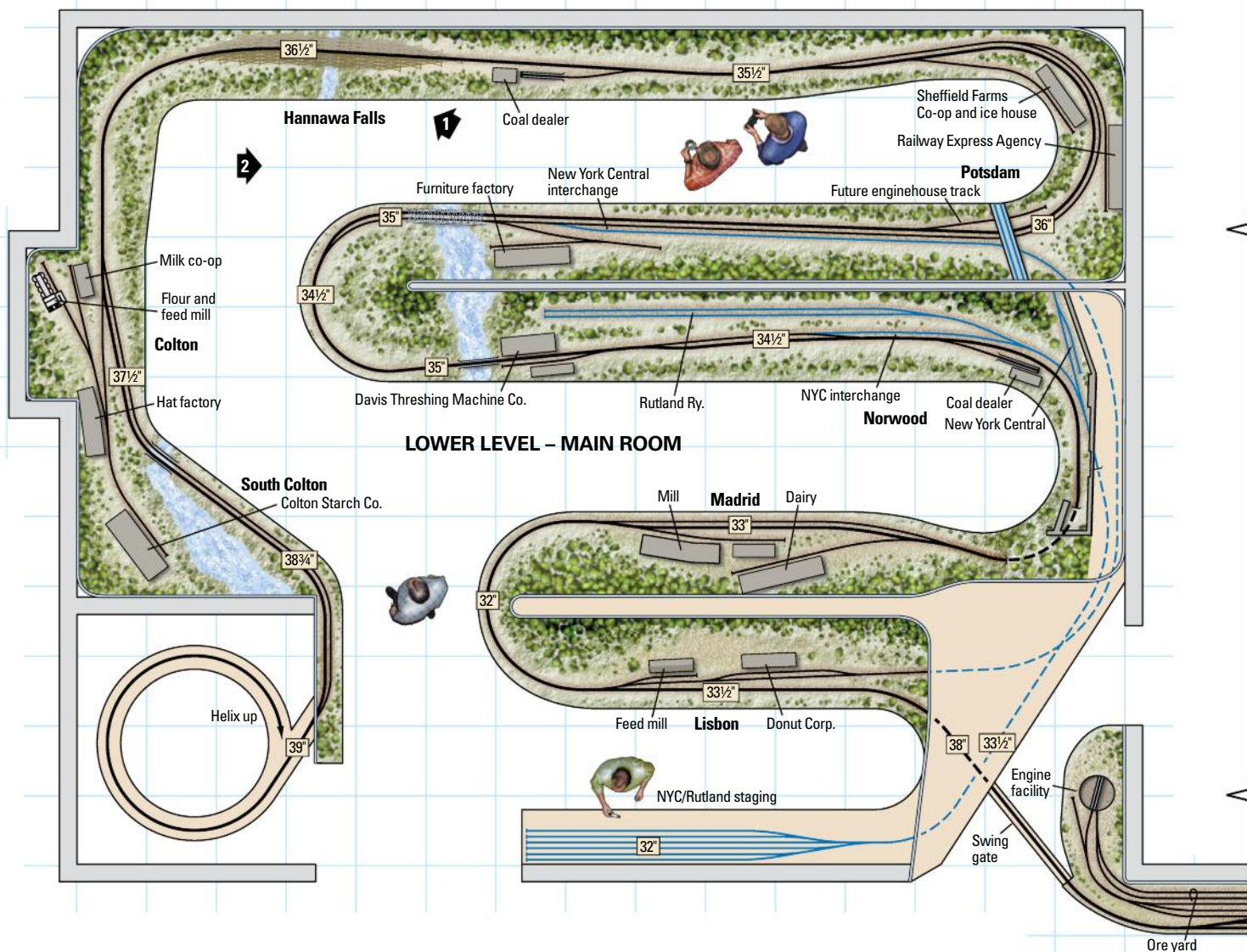
## **Take a tour**

The HO scale layout is a double-decked, 400-plus-foot main line linked by a helix. The north point is a nine-track staging elevator representing Canada, with trains crossing the St. Lawrence by car ferry. Ogdensburg has a grain elevator, riverside warehouses, ferry, and other prototypical traffic destinations, as well as an iron ore dock.



1. An Ogdensburg & Norwood Consolidation leads the local over Hannawa Falls trestle toward Potsdam on Jim Heidt's HO scale Ogdensburg & Norwood RR. The trestle evokes the Ferndale trestle on the New York, Ontario & Western.





Though the latter is not prototypical, it reflects that there was commercial iron ore production in the Adirondacks through the 1950s.

Heading timetable south, the main line runs through Lisbon and Madrid into Norwood, all prime dairy country providing a lot of milk and other dairy traffic for the railroad. At Norwood, the O&N interchanges on layout with the Rutland and the New York Central (NYC) secondary line running between Syracuse and Montreal, which continue off layout into a six-track staging yard.

Continuing south, the main line enters Potsdam, a town with enough action for its own switcher and pusher locomotives into the Adirondacks. Mountain grades start on the other side of the steel trestle over Hannawa Falls (a reminder of the New York, Ontario & Western's Ferndale trestle) and climb past Colton into the helix.

## ► The layout at a glance

**Name:** Ogdensburg & Norwood Ry., Northern Division  
**Scale:** HO (1:87.1)  
**Size:** 24 x 30 plus 7 x 20 feet  
**Prototype:** Ogdensburg & Norwood  
**Locale:** upstate New York  
**Era:** July 1948  
**Style:** walkaround

**Mainline run:** 404 feet  
**Minimum radius:** 24"  
**Minimum turnout:** no. 6  
**Maximum grade:** 3.3 percent  
**Benchwork:** L-girder  
**Height:** 36" (lower deck), 60" (upper)  
**Roadbed:** Homabed  
**Track:** code 70 flex-track (main), code 55

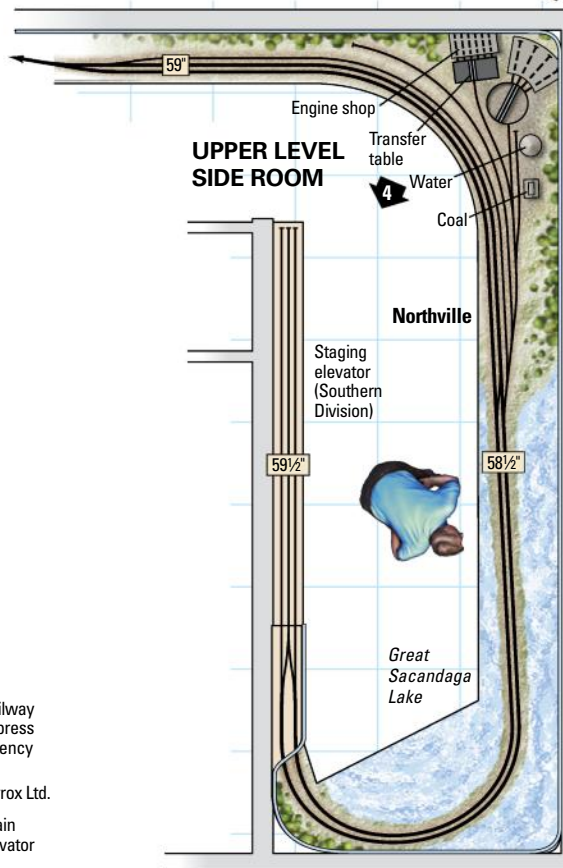
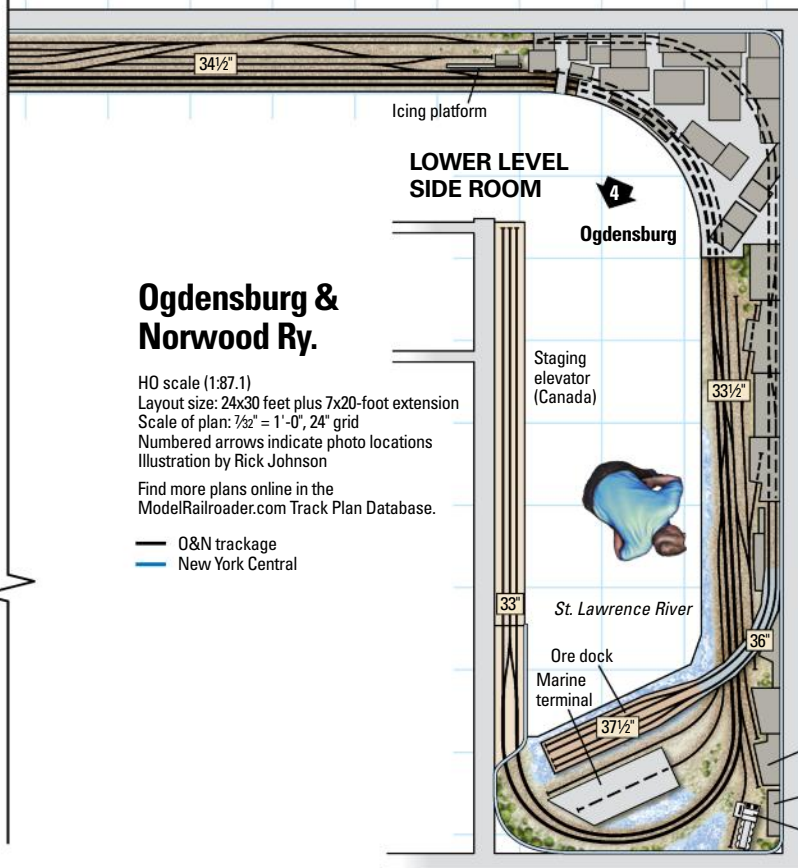
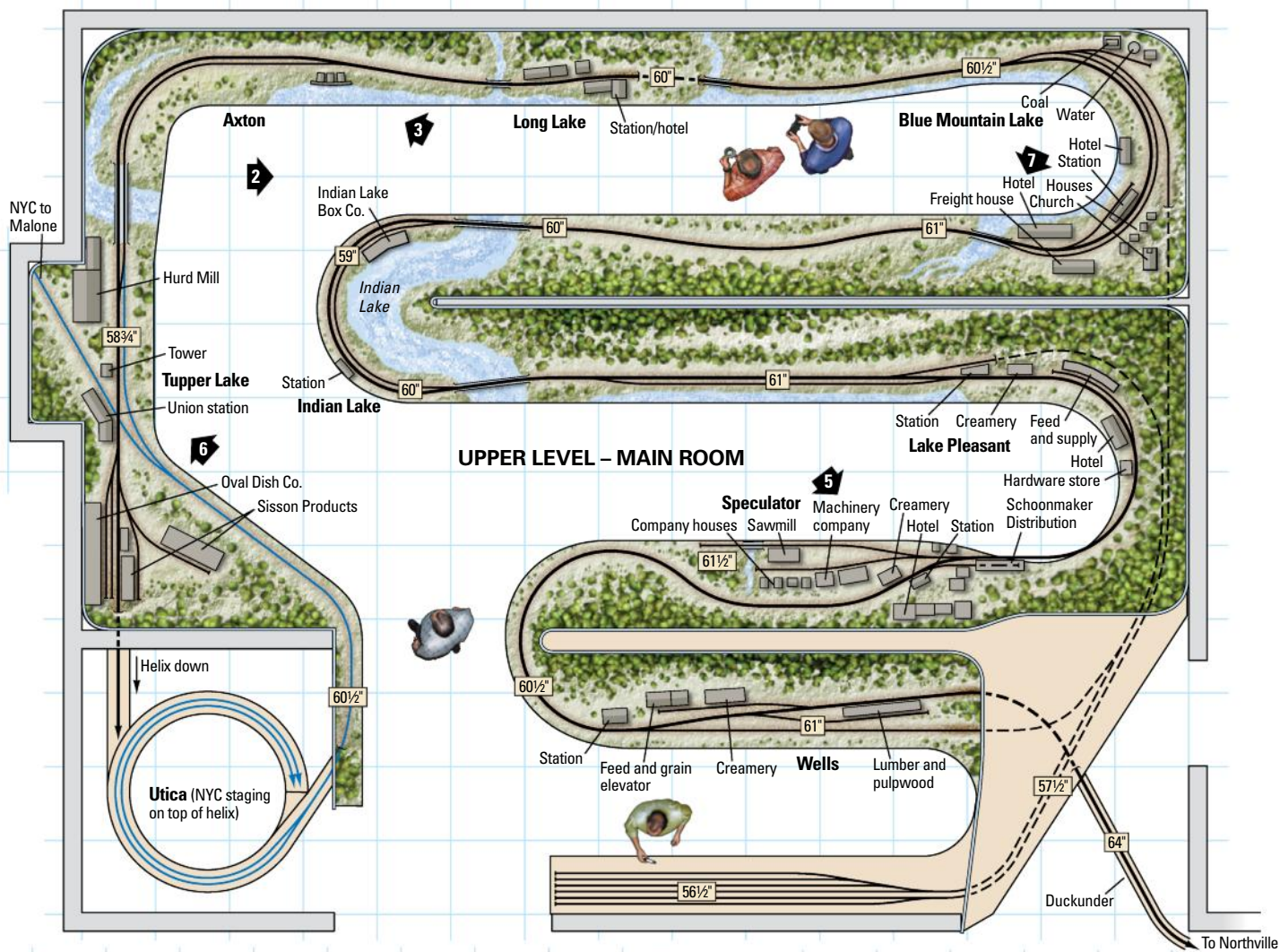
(sidings), code 100 (staging)  
**Scenery:** extruded-foam insulation board topped with Structo-Lite plaster  
**Backdrop:** LARC Products printed backdrops on painted vinyl flooring  
**Control:** Digitrax DCC

On the layout's upper deck, the main reappears at Tupper Lake, a town combining tourism and industry. Here, the NYC line from Utica to Malone and points north crosses and interchanges. But there's a bridge out farther north on

the Adirondack Division, so the NYC runs on trackage rights over O&N rails from here to Norwood.

Through the flag stop at Axton, the line moves southbound across and along Long Lake to Blue Mountain Lake, a





## Ogdensburg & Norwood Ry.

H0 scale (1:87.1)

Layout size: 24x30 feet plus 7x20-foot extension

Scale of plan: 1/32" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Rick Johnson

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

— O&N trackage  
— New York Central





**2. This view down the long aisle of the layout shows Blue Mountain Lake above Hannawa Falls on the left, and Indian Lake above Potsdam on the right. The track arrangements in Potsdam were still being developed.**



**3. The daily O&N southbound through freight heads out of Axton following the shore of Long Lake. Jim built the lakeside cabins from a Bar Mills kit. They cover a removable section of scenery that gives access to turnout and signal electronics and controls.**

prime tourist area with period hotels and a historic excursion riverboat scratch-built by Brian Curry. There's also a branch line into hidden staging toward the iron mines.

Passing through Indian Lake, the main line approaches Lake Pleasant, connecting with an O&N branch line to Utica and the interchange there with the New York Central, the NYO&W, and the Delaware, Lackawanna & Western.

Continuing southward through Speculator and Wells out of the high

mountains, the O&N main passes high overhead on a nod-under suspended by threaded rod from ceiling tile supports. Then the main line continues toward Northville over the Dawson Springs section of the well-known Virginian & Ohio of Allen McClelland.

As the division point, Northville hosts the major car and engine shops of the road, similar to the relationship the NYO&W had with Middletown, N.Y. Because I really like the view of the Rutland RR's causeway crossing of Lake

Champlain, the O&N crosses the Great Sacandaga in the same way before disappearing into the upper level nine-track staging known as the Southern Division.

Off layout, the Southern Division continues on through towns such as Mechanicville and Troy, N.Y., and Pittsfield, Mass., with more interchanges with the NYC, Delaware & Hudson, Boston & Maine, and terminating with a connection to the New York, New Haven & Hartford. All that interchange capacity helps to sustain the O&N as an independent regional carrier, offering freight routing options outside of the dominant regional control of the NYC.

## The layout

The double-deck, HO scale layout sprawls throughout the basement, which I fondly call the "Ash Pit." The layout is a collaborative effort of good friends coming over to build and visit. It wouldn't exist without their help.

The helix, built more than 20 years ago and moved here, was innovative for its time. Built with the assistance of the late Bill Swain, it's made from threaded rod and Stanley mending plates.

The benchwork around the walls uses traditional L-girder off the wall studs, but the peninsula uses 4-foot-long



L-girder arms cantilevered from a central wall. After settling on a 24" minimum radius, we glued and screwed on cleats with risers. All benchwork pieces are both glued and screwed together.

I was sold on spline-lattice subroadbed construction based on an old two-part article in *Model Railroader* in 1970, and wouldn't do it any other way. On top of the spline, my friends and I glued 1/2"-thick Homasote strips cut 2" wide for single track. Once this set, the entire cantilevered roadbed became extraordinarily stable and strong. Next, we added commercial Homabed [now California Roadbed, [www.calroadbed.com](http://www.calroadbed.com) – Ed.], with yellow glue for the final contour.

The mainline track is code 70 Micro Engineering flextrack, while some sidings are code 55. I used code 83 Atlas flextrack only for the ore dock approach, which is hidden behind an urban backdrop at Ogdensburg. All staging uses code 100 Atlas turnouts and flextrack.

For the main line, I scratchbuilt code 70 no. 6 turnouts from Fast Tracks, which I modify in construction by using Campbell profile switch-tie material between the printed-circuit-board (PCB) ties on the Fast Tracks template. The Campbell wood ties are stained and glued with cyanoacrylate adhesive (CA) to .010" thick styrene to match the thickness of the PCB ties. These turnouts have a sufficiently secure and waterproof footprint when they also get glued onto the layout. The few code 83 and code 100 turnouts are commercial Walthers or Atlas products or BK Enterprises kits from Trout Creek Engineering.

The backdrop is made of sheets of surplus vinyl flooring, glued "finished" side in to lauan plywood with commercial flooring adhesive. On the exposed "rough" side of the flooring, we painted two coats of white primer and then two coats of flat blue for the sky. Bill Brown's LARC Products line of scenic backdrops were used to fill out our views.

## Scenery and greenery

The scenery is mostly supported by foam, covered by paper towel soaked with Structo-Lite. This is a perlite-aggregate plaster from U.S. Gypsum, used as a basecoat in plaster application. It's lightweight and has a texture perfect for model scenery.

For finely detailed rock castings, I use molding plaster in commercial and homemade rubber molds, coloring them in place using acrylic paints and washes.

Modeling the Adirondack Mountains of New York in July requires foliage, and

## Elevator staging

**The O&N's Northern Division** is point-to-point, bracketed by two independently operated train elevators serving as staging yards. The lower elevator represents Canada, across the St. Lawrence River from Ogdensburg, and the upper level is the Southern Division, south of the division point of Northville on Great Sacandaga Lake. This is the second version of moveable elevator staging for this layout.

Each elevator consists of three 8-foot-long, 1 x 8 planks, surfaced with Homasote and bearing three code 100 tracks. Each elevator is operated by its own 24V motor connected by chain drive to sprockets attached to three, 1/2" diameter threaded rods. These are threaded through large nuts permanently attached to each shelf unit, so as the rods rotate in one direction or the other, the elevators rise or descend.

A microprocessor controls the operation of each elevator, using digital sensors that count the links of chain passing through for precise control of each elevator level. Clear acrylic shields protect viewers and operators from the moving parts.

At the far end is the control panel, with lighted pushbuttons for each of the three levels on each elevator.

My friend Brian Curry welded the frame for the elevator system and designed and built the chain, sprocket, and threaded-rod control. Mike Lamond designed and programmed the microprocessor. – J.H.



**4. Staging on both ends of Jim's railroad is served by a pair of automated three-shelf train elevators, with three tracks per shelf.**



**5. New York Central Alco no. 8219, leased by the O&N, sits outside Speculator station as the train crew does a quick visual inspection. Bob Andrews kitbashed the structures in the left background from Woodland Scenics kits, and Jim scratchbuilt the Sturges House hotel in the background to the right.**

## Now on ModelRailroader.com

Watch video of trains running on Jim Heidt's HO scale layout on our website, [www.ModelRailroader.com](http://www.ModelRailroader.com).





## Homemade trees from goldenrod

**Needing thousands of trees** for his layout, Jim scratchbuilds his background deciduous trees from goldenrod. The goldenrod is harvested after the first frost but before the first heavy snowfall. Jim cuts 18-inch lengths, which are stored and dried for a year. The heads are then trimmed so the branches are about 1½" long.

Jim pulls polyester fiberfill until it's thin and lacy, then lays it loosely over the branch structure. He then sprays flat black lacquer over the entire head to attach the fiberfill to the branches, add shadow inside the tree, and give mass to the fiberfill.

Once the paint dries, Jim sprays unscented hairspray on the tree before sprinkling on his homemade green ground foam, which he fixes with another spritz of hairspray. After a short drying period, the tree is ready for planting.

– Lou Sassi



**Jim scratchbuilds deciduous trees from goldenrod armatures, polyester fiberfill, and homemade ground foam foliage.**

heads. [See “Homemade trees from goldenrod” above. – Ed.]

The conifers take a little longer. They're homemade with a technique I modified from a magazine article some years ago. This method uses a wood-product-based air filter material for branches, loaded onto bamboo skewers

I've whittled to length and shape. Working outside for ventilation, I first spray-paint the entire tree a flat gray for the bark color, then immediately spray Kelly green from above just before sprinkling on fine Woodland Scenics ground foam. The final step is to spray flat black on the bottom of the tree for shading.

**6. A New York Central southbound freight sits at the Tupper Lake union station, waiting for signals. A washout on the NYC's Adirondack Division forces NYC trains to run over the O&N. Some background structures in Tupper Lake are scratchbuilt in smaller TT scale to force perspective.**

The foreground trees are mostly Scenic Express products. I also use fiberfill sprayed black and covered with ground foam, as well as blender-ground goldenrod waste, for the base underbrush common in the mountains.

### Structures

My friends and I mix and match structures: completely scratchbuilt, kit-bashed, or kit-built, with some smaller TT scale buildings added for forced perspective. For example, my friend Charlie Albee changed King Mill Enterprises' structure backdrops for Ogdensburg, replacing the printed windows with dimensionally matching Tichy Train Group windows so we could light them with light-emitting diodes (LEDs). He also modified the Walthers marine terminal in Ogdensburg to double its size and serve as a scenic divider hiding the approach to staging.

Bill Brown, Bob Verkuyl, and I have scratchbuilt, respectively, the stations at Tupper Lake, Lake Pleasant, and Long Lake from detailed plans by the late Don



Andrews. These drawings include full interior possibilities. Many of the layout's structures also contain interior lighting, divided by rooms for better effect. We use small brass rods extending from the base of the structures that slide into matching brass tubes permanently mounted in the scenery for electrical lighting contact. This allows us to remove structures for cleaning or repair and easily put them back in place.

Now, I'm entering the final phase of scenery detailing, including flanger signs, whistle posts, and telltales in selected locations. The line poles are made from wooden cotton swab sticks, scale 4 x 4 stripwood cross arms, and fine wire nubs painted green for insulators. They're wired with E-Z Line from Berkshire Junction, glued with CA.

## Operation on the O&N

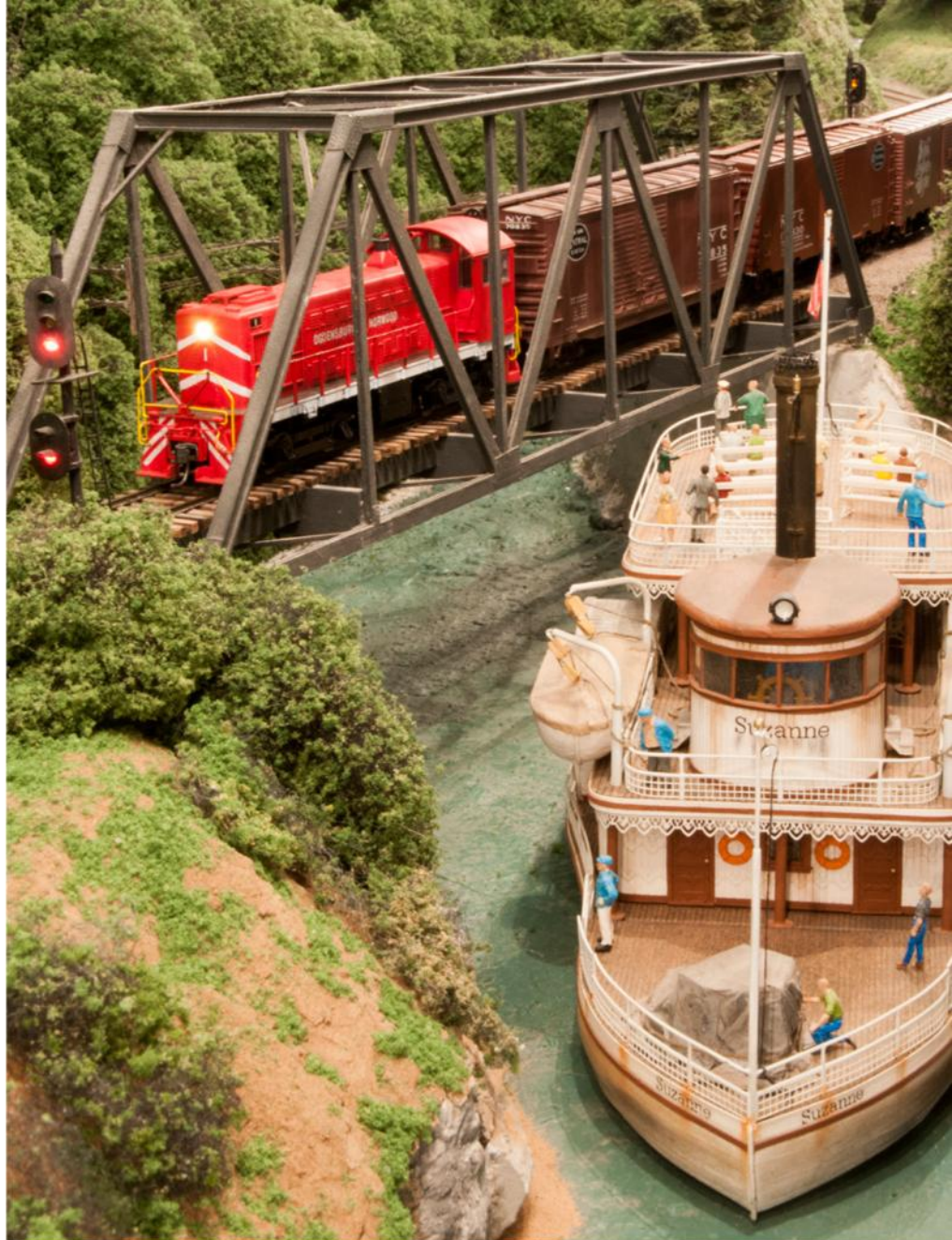
Friends Ed Scott, Rick Mniece, Bernie Messenger, Bob Verkuy, and Ken Cameron have added their expertise and interest into generating a fun-filled transition-era, Class 1 bridge line operation based on timetable and train orders. We simulate 24-hour operation, so the layout room has a dedicated layout lighting system controlled by dimmer stepper motors, all coordinated via computer to a 6:1 fast clock.

The analog clocks are separately lighted by LEDs so operators can read them regardless of room lighting. Each station location also has a lighted name sign in the fascia, helping everyone know their location in the dark. We use radio-equipped Digitrax Digital Command Control throttles so we don't trip over the cords during "nighttime" operations.

I designed and built homemade slow-motion motor controls for mainline turnouts that use bi-color LEDs to indicate turnout position (green for the main line, yellow for the diverging route). The controls also switch frog polarity and send an output to a computer for lineside signals. Most of the O&N is signaled using Oregon Rail Supply kits, some of which are kitbashed.

All these computerized functions – the coordinated lighting to fast time, signaling, block detection, setting up operations – is due to the wonderful products and inspiration of well-known modeler Bruce Chubb, and locally through the hard effort and interest of Ken Cameron and others in the Java Model Railroad Interface (JMRI) user's group.


Motive power and rolling stock reflect the period and locale. Almost all diesels are first-generation Alco products. The



**7. It's a holiday weekend in 1948, and a vintage riverboat from the resort village of Blue Mountain Lake drifts close to the mainline as O&N Alco switcher no. 1 passes overhead. The boat was scratchbuilt by Jim's friend Brian Curry.**

O&N runs late steam using sound-equipped Bachmann Spectrum Consolidations and Mountains, as well as a few Broadway Limited Imports heavy Mikados. The O&N road diesels, RS-1s and RS-2s by Atlas and Kato, respectively, are awaiting trips to the paint shop.

Occasionally, a pair of Electro-Motive Division NYO&W diesels show up, along with visiting NYC power. Dave Babson works non-stop to get rolling stock built and online by adding occupancy-detection resistors to the metal wheelsets and making sure the cars conform to National Model Railroad Association weight and coupler standards.

Thanks for shipping on the O&N. 

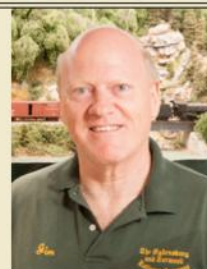
## Meet Jim Heidt

**Jim Heidt is a**

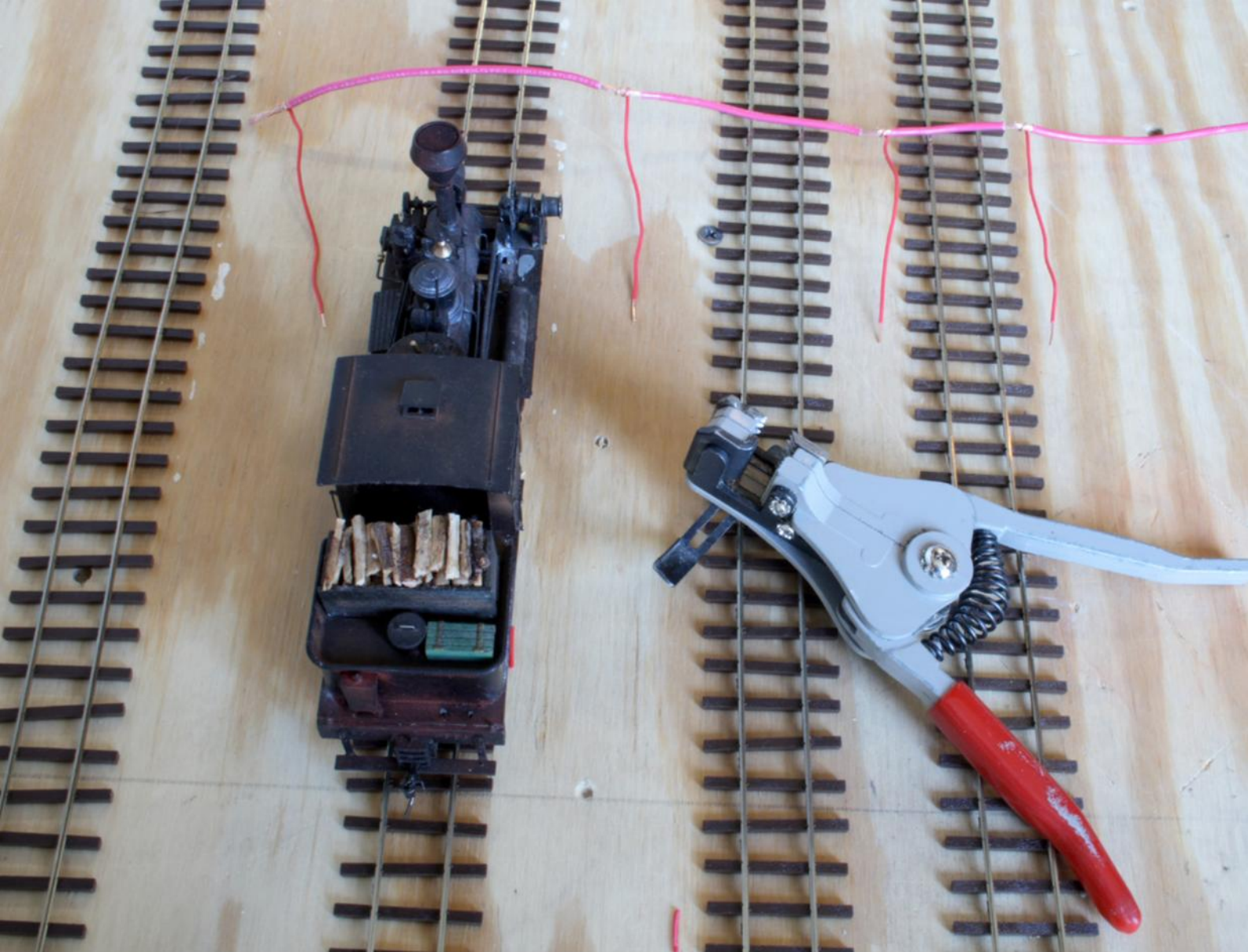
4th-generation railroader whose family served the NYO&W. As a youth, he

worked with his family on the prototype O&N, a remnant of the Rutland. Jim currently works as a

lawyer and serves as an Episcopal priest. He and his wife, Meribeth, enjoy traveling.







Are backaches giving you the layout wiring blues? Pete Birdsong shares how he makes wiring harnesses at the workbench, reducing the chances of polarity mistakes and reducing strain on his body.

# Build a **WIRING HARNES**

Tired of soldering above your head? Give this technique a try

**By Pete Birdsong**

Photos by the author

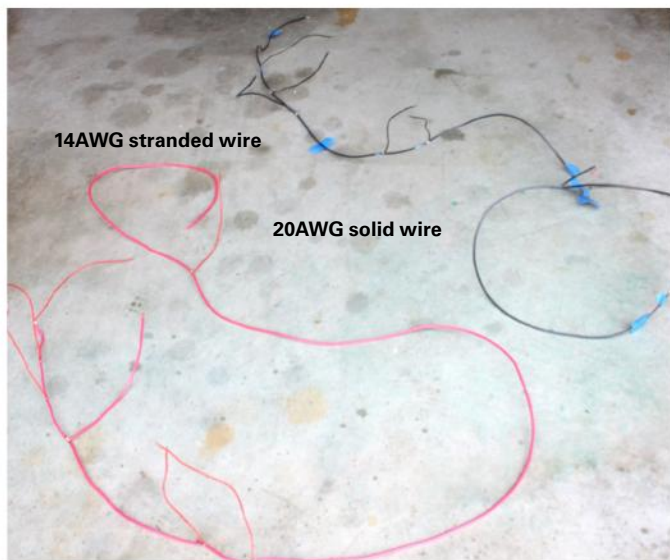
**L**ike many of you, I've spent many an hour under layouts with a soldering iron in one hand, solder or flux in the other, and a flashlight in my teeth all while balancing on my knees or toes. I'm constantly swapping out the iron and solder for pliers, wire cutters, strippers,

and other implements, burning myself in the process. I resolved that when I moved to California and reconstructed my On30 Fernwood Lumber Co. RR (see the January 2015 *Model Railroader*) I would find a better approach to layout wiring. I wanted to do as much as possible on top of the layout, or better yet, at

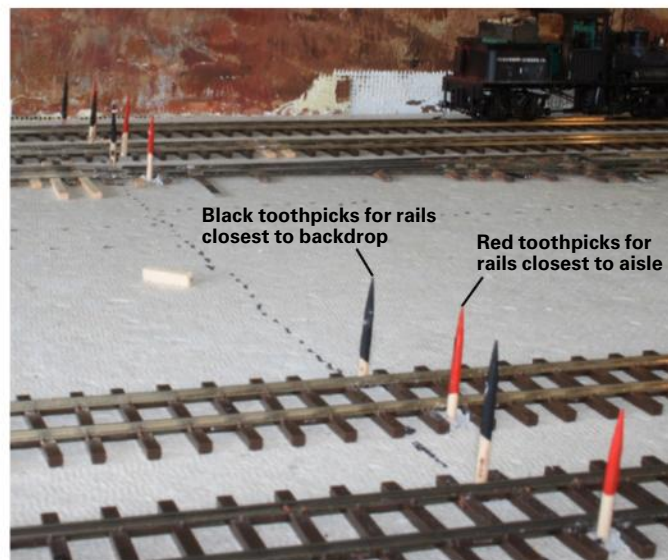
the workbench. Having had rotator cuff and back surgeries, and feeling the arthritic/rheumatic consequences of my 75-plus years, it was actually a need more than a want.

I developed a top-down method for soldering all joints without sitting under the benchwork. It turns out to be easier,

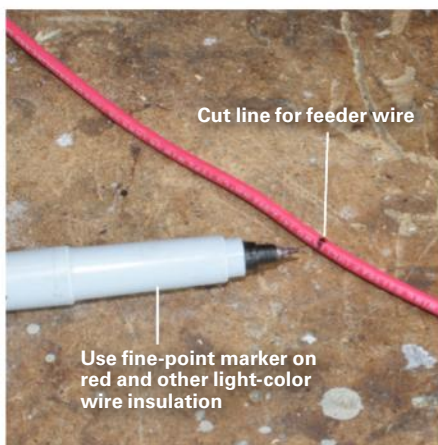




**Fig. 1 Wiring harnesses.** Pete made the bus and feeder harnesses for his On30 layout at the workbench. The wire gauge will vary depending on your layout's needs.



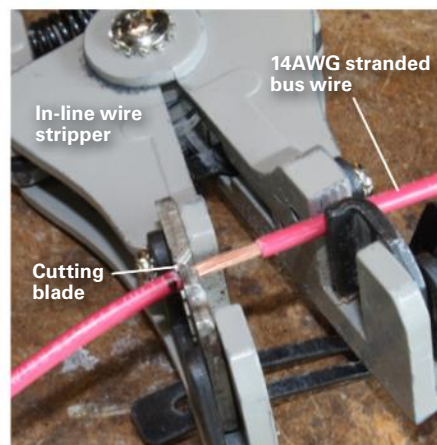
**Fig. 2 Feeder wire holes.** Next, Pete used a .077" bit to drill holes for the feeder wires. The color-coded toothpicks identify what wire goes to what rail.



**Fig. 3 Marking the joints.** With the bus wire positioned, Pete marked the feeder wire locations. He used a marker for the red wires and tape on the black wires.



**Fig. 4 In-line wire stripper.** With the feeder locations marked, Pete set the wire in an in-line stripper. The blade makes the cut while the other side slides the insulation.



**Fig. 5 Making room.** With the insulation cut, the right side of the in-line wire stripper pulls the insulation away. The amount of exposed wire can be adjusted.

less prone to polarity mistakes, and neater than the methods I used previously.

## New layout, new techniques

Since my new layout would be smaller, I experimented with using the track as the power bus. I learned that using jumper wires to one point midway on the layout from my Digitrax Zephyr Digital Command Control control unit was more than enough to power the engines, sounds, and lights across the entire layout.

In addition, I also experimented with using jumper wires on my turnouts. I connected like rails on the frog end of the turnouts, eliminating a lot of extra feeder wires.

But I still wanted the extra margin of safety and reliability that separate buses

would give. So I settled on a hybrid, with feeder wires to the rails and frogs attached from the top of the layout and feeders to the buses completed at the workbench. I elected to solder the rail joiners, as well.

## Bus and feeder harnesses

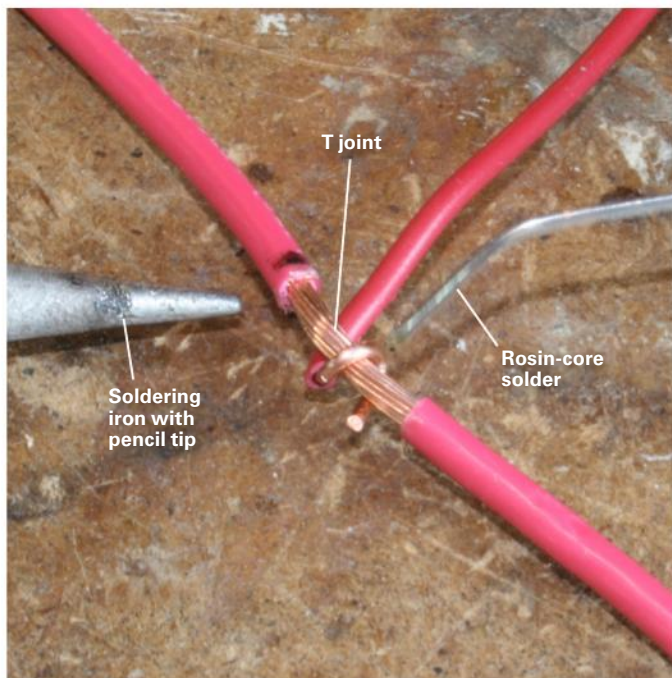
The objective of the bus and feeder harnesses is to get a major portion of this wiring done without having to go under the layout. To create these harnesses, I laid the 14AWG stranded bus wire into position on top of the layout, marked the feeder locations so I knew where to spread the insulation, and soldered the 20AWG solid feeder wire into place at the workbench. A completed example is shown in **fig. 1**. The gauge of wire will vary depending on your layout's needs.

Even on small layouts it's best to create multiple buses so they're not overly complex. They can lead back to a central location for tie-in to your control system and be joined with screw-type terminals.

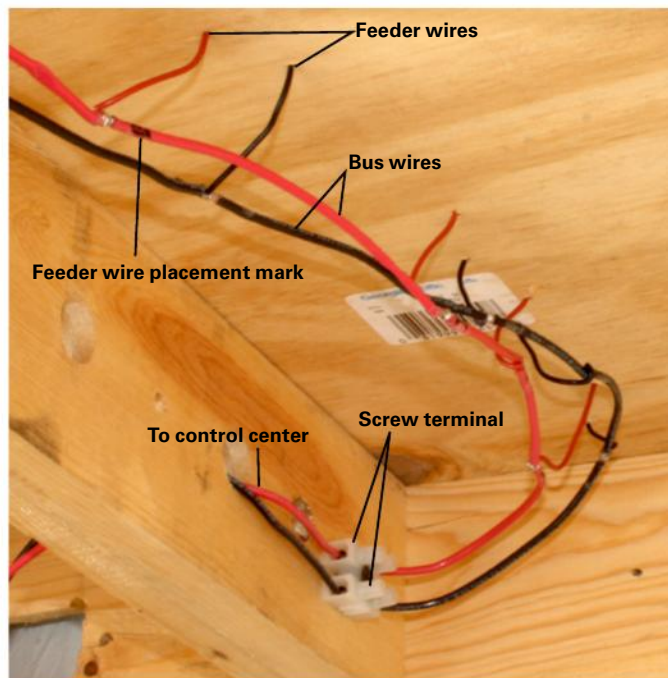
Next, I drilled holes for the feeder wires on the layout. As shown in **fig. 2**, I placed color-coded toothpicks in the holes so they can be seen under the layout. This not only makes the locations of the holes easier to see from below, but it ensures correct polarity when the feeder wires are fed through from the bottom. I used black wire for the rails adjacent to the backdrop and red for the opposite rails. The same colors were used for the bus wires.

Care must be taken if the track curves around enough to reverse the rails' relative positions in the room.

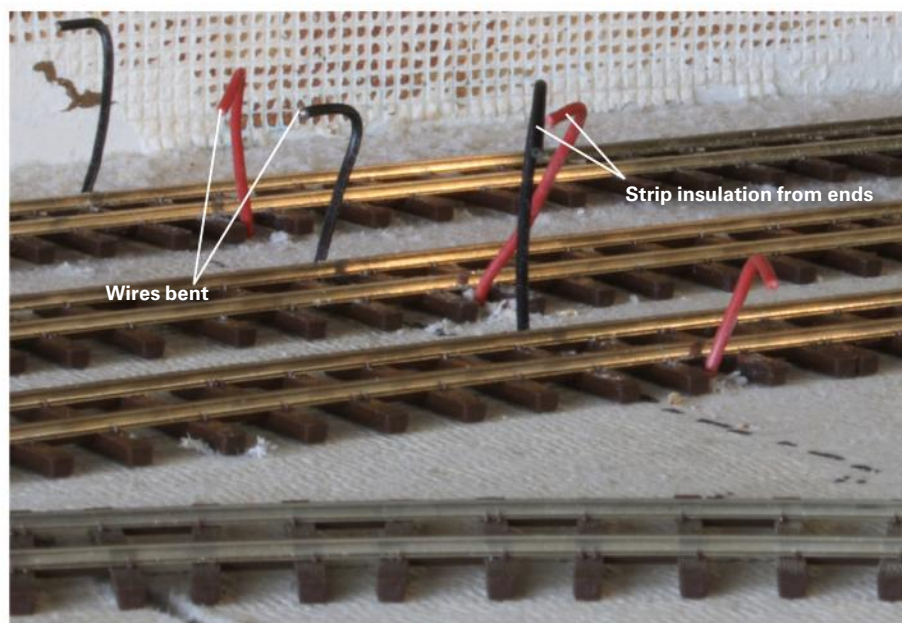




**Fig. 6 Solid connection.** Pete made a T joint between the solid feeder wire and the stranded bus wire. He used a soldering iron with a pencil tip to melt the rosin-core solder.



**Fig. 7 Still solder free.** The bus wires terminate at screw terminals, where they're connected to like wires that run to the control center.



**Fig. 8 Ready for installation.** Pete carefully pushed the feeder wires through the holes he drilled with a .077" bit in **fig. 2**. Then he bent, stripped, and soldered the solid wire to the rails.

When drilling the holes, select a bit size that will let the toothpick be placed and removed easily, yet hold it in place until needed. The hole should also have enough room to push the wires through later. I found a .077" bit works well for round toothpicks and 20AWG solid feeder wire.

Next, I placed the bus wires on top of the layout, using the toothpicks as a positioning guide. With the wire positioned, I marked the toothpick locations

on the insulation with a marker (for wire with red or light-colored insulation) or tape (for wire with black or dark insulation). See **fig. 3** on the previous page.

Though not essential, an in-line wire stripper is a handy tool for this process. The tool, shown in **fig. 4**, is available at electrical-supply shops and online. The wire stripper cuts and separates the insulation on a length of wire, as seen in **fig. 5**. The amount of separation can be adjusted if desired.

With the insulation separated, I was ready to solder the feeders to the bus. Since the copper wire has just been exposed, it's unlikely there's corrosion to interfere with a good solder joint. If in doubt, apply a little flux. A soldering iron with a pencil tip works well for making the joints, as shown in **fig. 6**.

Since there isn't any way for the individual solder joints to come into contact with each other, there isn't a need to use tape or other insulating materials.

### Installing the harnesses

With all of the joints soldered, crawling under the layout to install the harnesses proved less troublesome and stressful. I matched the feeder wire insulation color to the toothpick color and pushed the wires through the appropriate holes.

The bus wires can be anchored with screw eyes, cup hooks, staples, or other means to keep them from falling until the feeder wires are soldered to the rails. In **fig. 7**, the bus wires that pass through the hole in the joists at rear are connected with screw terminals to like wires that run to the control center, where they are also secured with screw terminals. As promised, no under-table soldering.

One of the feeder wire placement marks can be seen in **fig. 7**. While neatness counts in wiring, this photo points out that the positioning need not be exact if the feeder wires are long enough to accommodate some slop.





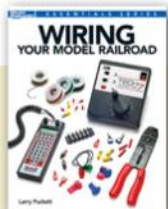
**Fig. 9 Wiring ground throws.** Pete used Caboose Industries ground throws with frog polarity contacts. The wiring followed the same protocol as the rest of his layout, with the addition of a green wire for the frog.

**Figure 8** shows the feeder wires on the top side of the layout, ready to be stripped, bent, and soldered to the rail. Alternatively, the feeders can be stripped before they're pushed up.

## Ground throws

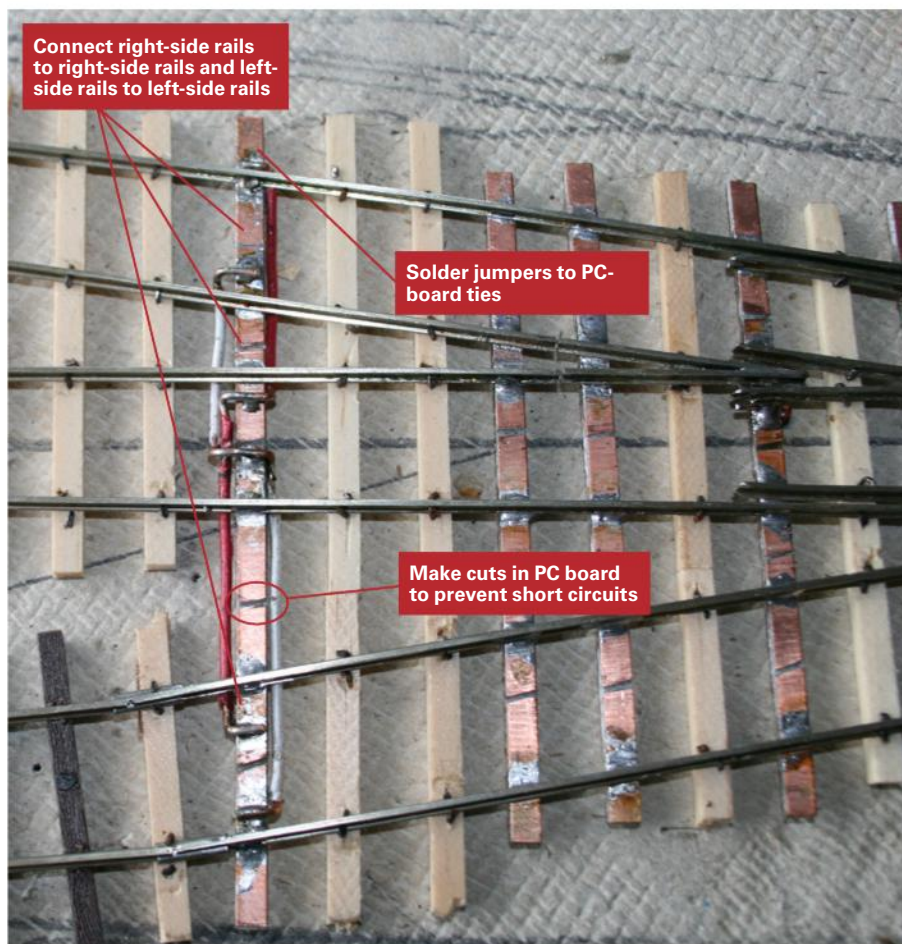
There are two reasons I prefer to use Caboose Industries ground throws with frog polarity contacts to line the turnouts on my model railroad. First, the installation can be done from above. Second, my operating crews don't have to guess where the ground throw is for a given turnout. It's at the turnout.

Three wires are all that's necessary for the ground throw, as seen in **fig. 9**. I use



## Learn more

Want more information on wiring? Get contributing editor Larry Puckett's book *Wiring Your Model Railroad* at [www.KalmbachHobbyStore.com](http://www.KalmbachHobbyStore.com).



**Fig. 10 Turnout wiring.** At the frog end of turnouts, Pete used jumper wires to eliminate the need for extra feeders. This scratchbuilt three-way turnout has four jumpers instead of the two necessary for a traditional turnout.

black and red for the appropriate rail power wires, and green (what else?) for the frog wire.

I can usually finish the entire installation without going under the layout by fishing for the wires through the hole under the ground throw. But even if I have to go under the layout to find the frog wire, it's still a lot easier than soldering under the benchwork.

## Turnouts

I use jumper wires on the rails at the frog end of turnouts to eliminate the need for extra feeders. Since my turnouts are scratchbuilt, I solder the jumpers to the printed-circuit (PC) board ties rather than to the rails, making cuts in the boards to prevent short circuits. Right side rails are connected to right side rails, and left side to left side. This passes current from the point end of the turnout to both rails of both sides of the turnout at the frog end.

The turnout shown in **fig. 10** is a three-way, so it required four jumpers instead of the two for a normal turnout. The wires will be hard to detect when the

track is painted flat black and the ballast is installed. If commercial turnouts are used, just solder to the appropriate rails instead. Some commercial turnouts may have jumpers integrated internally, so test before duplicating their efforts.

## An easy approach

Having used the top-down method and conventional, under-the-benchwork wiring (using soldering and suitcase connectors), you're probably wondering which technique is better. I think the top-down method requires a little less work, is less prone to polarity mistakes, and is much easier on your back, arms, shoulders, and eyes. The top-down method is also a bit cheaper than using suitcase connectors, and it tends to make the wiring neater. If you're about to build a layout, I suggest you give this technique a try. **MR**

*Pete Birdsong lives in Danville, Calif., with his wife, Caggy. He retired after a 38-year career as a systems analyst with IBM and its Lexmark spin-off. He has four grown daughters.*



# *Rio Grande*





# through the West

Capturing the flavor of a Western carrier in HO scale during the transition era

By Dave Rickaby • Photos by the author

**L**ike many model railroaders, Ed Miller was introduced to the hobby during his youth when he received a Lionel train set at Christmas. Years later, after serving in the United States Army, he discovered HO scale and built his first layout, which represented the Chicago area.

Ed's interest in the hobby grew when he discovered the modeling of John Allen and his HO scale Gorre & Daphetid layout through magazine articles. Ed wanted to emulate the Wizard of Monterey's style of modeling, but with a Western railroad operating through the Rocky Mountains. He quickly set his sights on the standard gauge Denver & Rio Grande Western.

## A blank slate

In 2006, Ed moved to a new home near Merrill, Wis., in the north-central part of the Badger State, and began work on his dream layout. The model railroad was originally 15'-0" x 41'-6". Five years later, Ed expanded the layout to 25'-6" x 41'-6", filling the rest of his basement. This project was still ongoing at the time of Ed's passing.

Ed's goal wasn't to prototypically re-create the Rio Grande. Instead, he wanted to capture the flavor of the Western carrier and the grandeur of mountain railroading during the late 1940s

**1. The Denver & Rio Grande Western portion of the *California Zephyr* eases up to the platform at Salt Lake City on Ed Miller's HO layout. The 25 x 41-foot model railroad features the Rio Grande in Colorado and Utah during the steam-to-diesel transition era.**

and early 1950s, the steam-to-diesel transition era.

The layout was set between Denver and Salt Lake City. In between were the fictional towns of Lewiston, Millersburg, Trout Lake, Lake Edwards, Lake Judith, and Wakita. The latter was named after a town in the motion picture *Twister* that was devastated by an F5 tornado.

To satisfy his need for a logging railroad, Ed also modeled the Deer Creek Logging Co. The railroad's headquarters, located in its namesake town, was home to a large sawmill, enginehouse, and company houses. The logging railroad had trackage rights over most of the Rio Grande between Deer Creek and its camps at Millersburg and Lake Judith. A log flume brought trees harvested at higher elevations down to the lake.

## Benchwork, track, and equipment

Ed's layout featured open-grid benchwork with a ½" plywood tabletop. The track was Micro Engineering code 83 on the main line and code 70 on the sidings and industrial spurs. All the track was laid on cork roadbed.

The turnouts were Shinohara no. 6 on the main and no. 4 in the logging area. All of the turnouts within easy reach were manually operated with Caboose Industries ground throws. The remainder were controlled with Tortoise by Circuitron switch motors. Ed used Digital Command Control accessory decoders to control the turnouts with DCC throttles. He operated his layout with a Digi-trax Empire Builder DCC system.

A variety of structures populated the layout. Ed enjoyed working on high-level craftsman kits from Fine Scale





**2. A figure of a hobo looks back as Rio Grande caboose 01151 carries the markers on a passing freight in Salt Lake City. Ed's model railroad is a freelanced version of the Western carrier.**



**3. A simulated full moon reflects off the waters of Lake Edwards. There's just enough light to see Rio Grande 2-8-2 steam locomotive no. 26 rolling over the grade crossing near Delwin's Boat & Storage.**

Miniatures. After building several of them, he felt confident enough to scratchbuild his own structures. Whether the building was a basic plastic kit, a craftsman-level wood kit, or scratchbuilt, he enjoyed adding extra details and weathering them.

Ed's locomotive roster included steam locomotives from Broadway Limited Imports and Precision Scale Models and diesels from Athearn. All of the locomotives featured sound decoders.

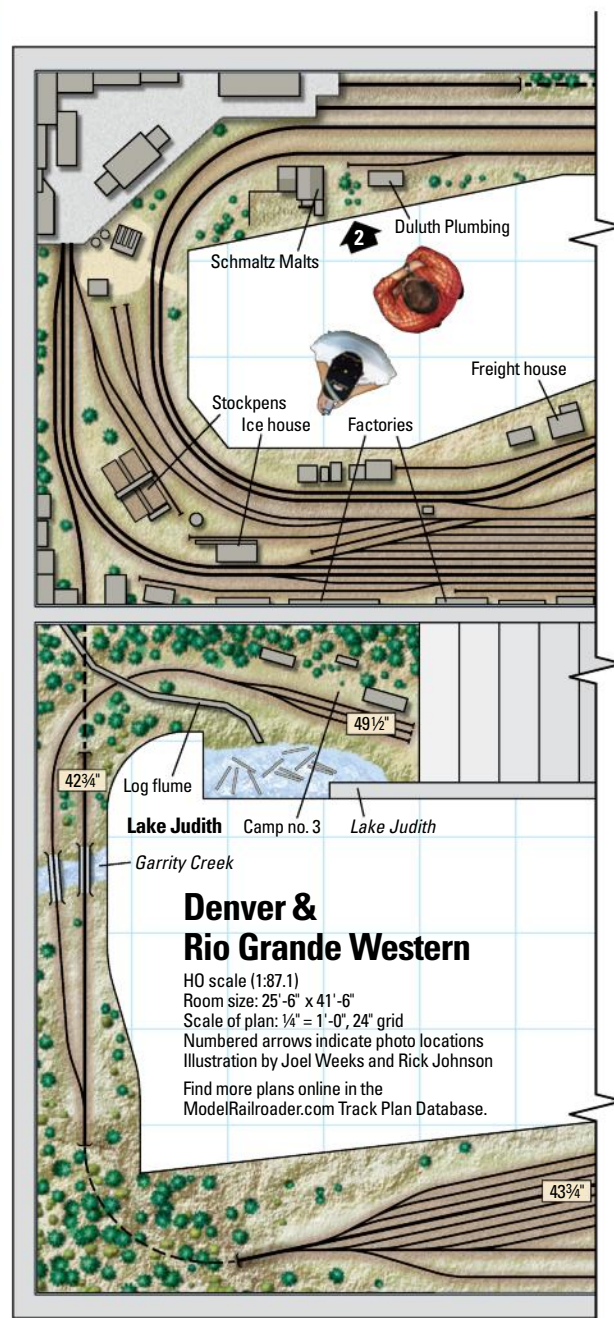
The rolling stock was from Accurail, Athearn, and Roundhouse. Ed put metal

wheelsets on all of his freight cars before putting them into service on his layout.

### Mountain scenery

To model the mountain scenery, Ed attached screen wire over wood risers. Once he was happy with the landforms, he draped plaster-soaked industrial towels over the screen. He used Sculptamold to round out some areas.

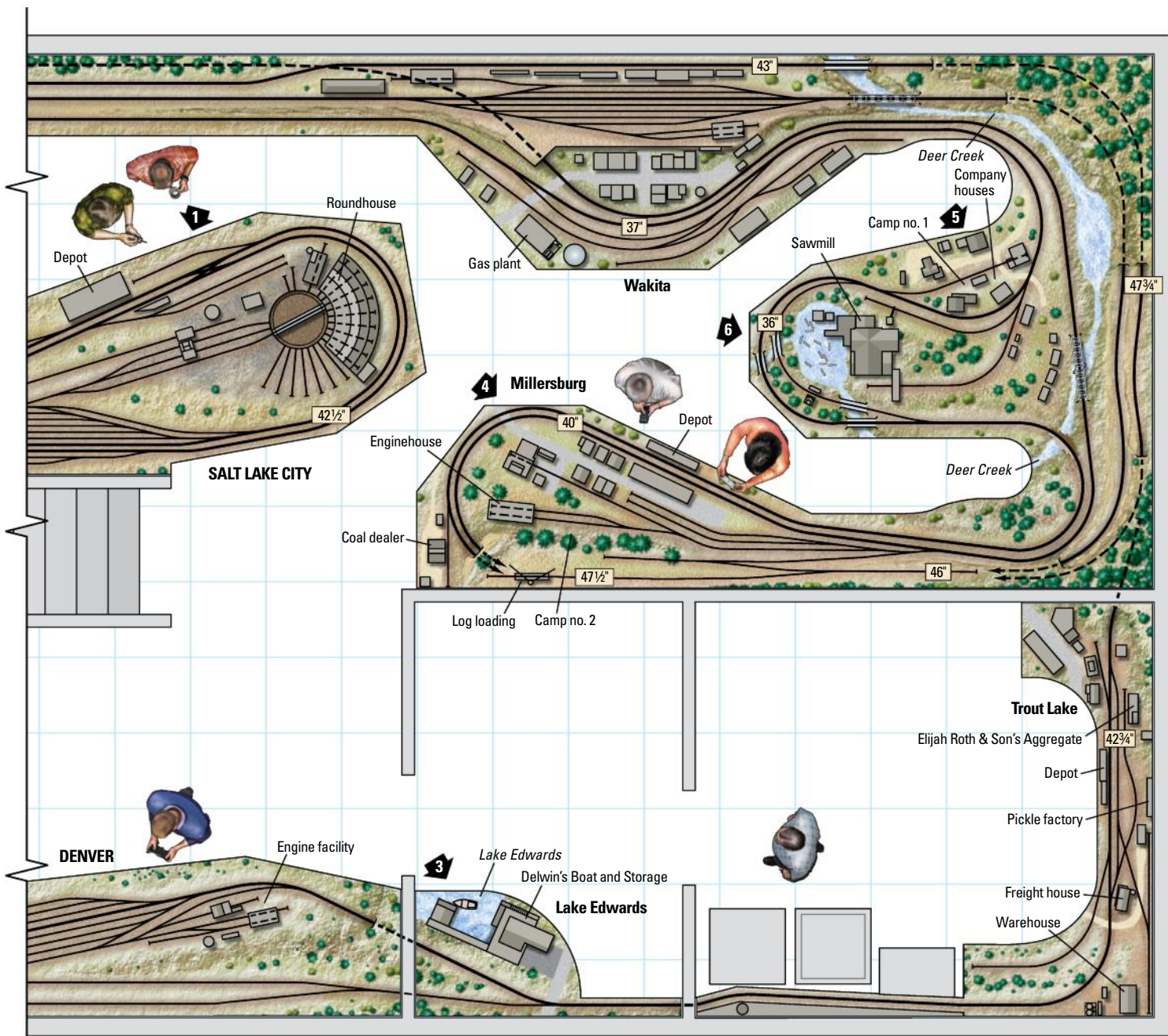
When the plaster and Sculptamold were dry, Ed painted the areas with earth-toned latex paint and applied various textures of ground foam from Wood-



land Scenics and Mountain Modelcraft. He used commercial latex rubber molds for the rock castings, which he also painted with earth-toned latex paint. Many of the tunnel portals were made by A.I.M. Products in nearby Mosinee, Wis. [A.I.M. Products was acquired by Monroe Models. Visit [www.monroemodels.us](http://www.monroemodels.us) to learn more about the A.I.M. Products line. – Ed.]

No mountain railroad would be complete without trees, and Ed's layout featured plenty of the coniferous and deciduous varieties. The former were from Busch, Heki, and Noch, while the latter were Scenic Express SuperTrees. Some of the taller trees were handmade.





When Ed worked on the SuperTrees, made from natural plant material, he noticed some of the armatures were straight while others were curved. To fix the curved armatures, Ed strung a short clothesline in the workshop and attached them upside down with clothespins. Then he sprayed the trees with a 50:50 mixture of water and glycerin. Once the solution dried, the trees remained straight and were ready to use on the layout.

To model the water scenes at Deer Creek, Lake Edwards, and Lake Judith, Ed first prepared the lake beds by painting the bottom with dark shades of latex paint. Then he lined the shores with

## ►► The layout at a glance

**Name:** Denver & Rio Grande Western

**Scale:** HO (1:87.1)

**Size:** 25'-6" x 41'-6"

**Prototype:** D&RGW

**Locale:** Colorado and Utah

**Era:** steam-to-diesel transition

**Style:** around the walls with peninsulas

**Mainline run:** 461 feet

**Minimum radius:** 30"

**Minimum turnout:** no. 6

**Maximum grade:** 2 percent

**Benchwork:** open grid

**Height:** 36" to 49'-6"

**Roadbed:** cork

**Track:** codes 70 and 83 flextrack

**Scenery:** towels dipped in plaster over screen

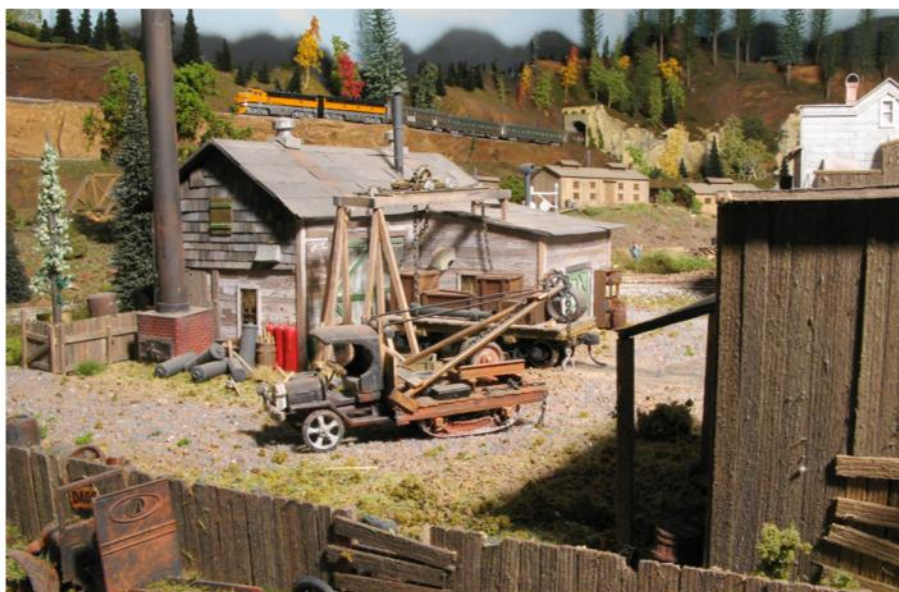
**Backdrop:** painted on walls

**Control:** Digitrax Empire Builder Digital Command Control





**4. The *California Zephyr* rolls through Millersburg in the middle of the afternoon. Some of the structures are scratchbuilt; others are wood kits and plastic models.**



**5. Ed's interest in logging railroads led him to model the Deer Creek Lumber Co. The railroad's headquarters, located in its namesake town, is home to an enginehouse, sawmill, and company houses. The *California Zephyr* is passing in the background above the boiler house.**

small rocks and gravel. Once the paint and scenery were dry, he added Enviro-Tex two-part epoxy that he tinted with blue paint.

Ed used the backdrops to make the mountains and trees appear to carry on into the distance. Some of the scenes were painted directly on the drywall, while others were commercial backdrops with the sky cut out.

Ed also had a knack for modeling detailed scenes without making the layout look cluttered. At Deer Creek, a father and son are walking side by side with their cane poles en route to their

favorite fishing hole, like Andy and Opie in the opening credits of the *Andy Griffith Show*.

The Schmaltz Malts scene on the outskirts of Salt Lake City has an abandoned reservoir directly behind the building. The dry pit features junk and debris. If you looked closely, you could see the outfall opening in the back side of the retaining wall, which leads to a nearby creek.

### **Adding operations**

When Ed built the layout, he didn't have operations in mind. He typically



ran the layout on his own, with friends coming over to help during open houses.

That philosophy changed after Ed joined the Wisconsin Valley Model Railroad Club in Wausau, Wis., in 2011. He expressed an interest in learning how to operate and quickly discovered that he enjoyed it. He was hoping to organize operating sessions once the layout was finished, but never got the chance.

There were two division point yards, in Salt Lake City and Denver, and smaller yards in Lewiston and Wakita. Since the Rio Grande was a bridge route, Ed could run point-to-point traffic between yards. Locals served the smaller towns, yards, and industries.

Ed kept operators on their toes with a John Allen-style Timesaver switching





puzzle at Wakita. He built his version on a curve, complete with two drill tracks on either end of town.

### Sharing the hobby

According to Ed's friends, the late model railroader would advise people getting started in model railroading to have fun and not be afraid to try new techniques. Ed was very goal oriented, and once he started a project would stick with it to completion.

He also loved to share model railroading with others and make new friends. During Ed's last open house, visitors stayed longer than anticipated, closely examining the detailed scenes. Even Ed's close friends found new things that they'd missed in previous visits.

While emulating famed model railroader John Allen's work was one reason Ed gave for building his freelanced HO scale Denver & Rio Grande Western, another was his profession, carpet laying. As a carpet layer, Ed realized that his work wasn't necessarily appreciated except by the homeowner. With model railroading, his work could be shared with countless friends and guests. What he most enjoyed was hearing the positive feedback. **MR**

*Dave Rickaby is a frequent contributor to Model Railroader magazine. He lives in Marinette, Wis. Dave would like to thank Dave Wallenfels, Jim Garrity, Dick Strasser, and Dick Schultz for their assistance with this article.*

**6. Deer Creek Lumber Co. purchased several locomotives from West Side Lumber Co., including Heisler no. 3. Today the geared locomotive pulls a train to the unloader.**

### » In Memoriam

#### Ed Miller

Ed Miller was born in Bensenville, Ill. Besides model railroading, he enjoyed fishing and competing in bass fishing tournaments. He was a carpet layer and founder of Miller Tackle Co., a manufacturer of fishing lures. Ed and his wife, Judith, raised two children.





## West Deerfield Industrial Park

HO scale (1:87.1)

Layout size: 7'-11" x 6'-8"

Scale of plan: 3/4" = 1'-0", 12" grid

Illustration by Rick Johnson

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

# A SHELF TRACK PLAN for a switching line

The HO scale West Deerfield Industrial Park fits in the corner of a small room

By Paul Boehlert

Welcome to West Deerfield Industrial Park (WDIP), a freelanced switching line set in the modern era. With a footprint of less than 7 x 8 feet and a depth of only 15", this shelf layout would fit in the corner of almost any room. The track plan doesn't have an inch of main-line track and runs no scheduled trains, yet it's designed to deliver enough prototypical operation to satisfy experienced as well as novice operators.

Industry is the lifeblood of railroad-ing, and modern industrial parks are home to a variety of light manufacturing and warehousing firms. My WDIP track plan includes industries as diverse as a frozen food plant, a soil-recycling facility and a plastic bag factory. The plan's freelanced setting is the northeastern United States, but it could be adjusted to fit almost any locale. The right side of the plan, with its plastics plant and bottling works, is inspired by a Union Pacific branch line in Southern California.

Whatever industries the builder chooses, the WDIP packs a lot of switch-

ing action in a small space. The layout could also be built and operating in a relatively short time.

## Layout building suggestions

To build this layout, just disassemble a 30"-wide bi-fold closet door and arrange the two 15"-wide panels in an L shape. This simple benchwork can be supported on shelf brackets mounted to wall studs, leaving room underneath for storage, or it could be supported from below on bookshelves or traditional legs.

Benchwork height is a matter of personal preference. My preferred working and operating height for a layout is 18" less than my own height. For example, I'm 6 feet tall (or 72"), so I'd build my layout with a 54" track height above the floor.

I designed the track geometry around no. 5 turnouts and a 24" minimum curve radius. At slow switching speeds, even long, modern rolling stock will operate smoothly over this trackwork. Commercial or handlaid code 70 and 55 track components will work for this plan.

I suggest making the track that runs from the Atlantic Plastics spur to the edge of the fascia long enough to hold a locomotive and two cars in the clear. Also, be sure that a locomotive and the longest car to be run will fit on the tail track to the left of the runaround without extending into staging.

## Locomotive, cars, and structures

The industrial park would be served by a single locomotive. Options include older units, such as Electro-Motive Division GP15, CF7, or MP15 diesels, or modern switchers like the National Railway Equipment Genset. Superdetailed, sound-equipped locomotives would be real showpieces on this small layout.

The narrow shelf benchwork allows every model to be appreciated up close, making it a perfect setting for highly detailed, heavily weathered and tagged modern freight cars. A subdued color palette for the structures and scenery would make the rolling stock stand out.

To justify rail service, I planned for large industrial buildings in West



## ► The track plan at a glance

**Name:** West Deerfield Industrial Park

**Scale:** HO (1:87.1)

**Size:** 6'-8" x 7'-11"

**Theme:** industrial switching

**Locale:** northeastern United States (as shown)

**Era:** modern

**Style:** shelf

**Mainline run:** not applicable

**Minimum radius:** 24"

**Minimum turnout:** no. 5

**Maximum grade:** none

Deerfield Industrial Park. Modular systems from companies like Wm. K. Walther, Design Preservation Models (now owned by Woodland Scenics), GCLaser, and Rix provide good starting points for modeling these structures. Most of the buildings feature more than one car spot, so operators have as many as 12 different places to set out a car during a session. That's a lot of operation in less than 7 x 8 feet.

### Staging design and operation

Staging can consist of one track or two; the option chosen will affect the operation of the finished layout.

A single staging track, which can hold a five- or six-car train, is adequate for a small layout like the WDIP. Operating sessions would begin with the train entering the scenicked part of the layout as if it were arriving to begin the day.

The industrial park trackage will become congested when it arrives. There will be little free track because both inbound and outbound cars are present. Switching the industries will take longer and require more moves until the crew can get the outbound cars off the layout and into staging. This sort of operational challenge can be a lot of fun.

A two-track staging yard, with one track empty and the other holding the cut of inbound cars, can simplify operations. In this scenario, the locomotive arrives alone at the start of the session. The crew makes its pickups and shoves the outbound cars into the empty staging track, making room for inbound loads, which are then set out at their proper locations.

By choosing a staging design, the builder can tailor the operational complexity of the WDIP. The layout could even be first built with a two-track staging yard. Then, as the operators' skills

## Industries and traffic

**On a small layout**, each car and load is important. Here are some notes on how I envision each WDIP industry, including the various car types it ships and receives.

**ImproveMart regional distribution center.** This location receives bulkhead flats and boxcars, with loads as diverse as plywood and wall-board, home appliances, bagged potting soil, and barbecue grills. On rare occasions ImproveMart will generate a load, sending surplus to another distribution center.

**Team track/materials laydown area.** Almost any type of freight car can be spotted on this track, since it's used by a variety of customers who don't have spurs of their own. Typical inbound loads include hoppers of gravel and road salt for the local highway department, gondolas with steel girders and fabricated shapes, and insulated boxcars of fresh produce. Occasionally an empty pulpwood car will be spotted here for loading.

**Resource Renewal LLC.** This plant specializes in decontaminating soil laced with petroleum. It receives gondolas of 'dirty dirt' covered with tarps, which are unloaded inside the building. After processing, both the clean, recycled soil and toxic contaminants are shipped by truck, so no outbound loads are generated.

**Penguin Frozen Foods.** This facility both ships and receives products in various types of refrigerator cars. Frozen vegetables are made and shipped from here, while carloads of frozen fish sticks and filets arrive to be warehoused for regional distribution. Summer and fall are the peak season for Penguin, with several carloads of product shipping daily.

**Colonial Bottling Co.** This industry manufactures a wide variety of soft drinks, flavored waters, and energy drinks. The spur has unloading points for three short corn syrup tank cars plus a loading door for boxcars (inbound bottles and packaging materials, outbound pallets of product). Care must be taken to spot the correct grade of corn syrup at the correct unloading point.

**Atlantic Plastics Inc.** This firm makes plastic sheeting, wrap, and shopping bags. Every third day Atlantic Plastics receives two covered hoppers full of plastic pellets, and the crew usually pulls the empties at the same time. Occasionally a carload of industrial wrap will be shipped, but most outbound traffic is handled by truck. — *P.B.*

and confidence grow, staging could be converted to a single track, increasing the challenge.

### Two-man crews and more options

Although the WDIP can be run solo, I think using a two-man train crew, as on a prototype railroad, enhances operation. A big part of the operating fun will be the conversations between conductor and engineer as they determine the most efficient way to perform the day's switching duties. For a closer look at these tasks, see "Industries and Traffic" above.

To slow things down and simulate the prototype more accurately, I suggest allowing enough time to simulate the jobs that must be done in real-world railroading. This added time takes into

account connecting air hoses and doing an air test, flagging grade crossings, and unlocking and re-locking gates in chain-link fences, among other tasks.

The West Deerfield Industrial Park is a versatile track plan. Although it's shown here as a stand-alone layout, it could certainly become part of a larger model railroad as well. Spread the parallel track centers a bit and it would even work as an industrial railway in On30.

Whether on its own or as part of a larger layout, the HO scale West Deerfield Industrial Park offers plenty of modeling and operating enjoyment. **MR**

*Paul Boehlert wrote "A space-saving urban track plan" in the September 2016 Model Railroader.*



## Operating with Digital Command Control



**New York, Susquehanna & Western Ry. Mikado no. 142 approaches a grade crossing with the bell ringing and whistle blasting a warning for any oncoming traffic in this**

**scene staged on the Milwaukee, Racine & Troy club layout. Larry Puckett gives advice on how to take advantage of the features in sound decoders.**

**Over the last couple years** I've written a lot about the various light, sound, and other features available in the current generation of Digital Command Control (DCC) decoders. This month let's talk about using these features to add prototype authenticity to your operations.

**We'll start with an example** of the sequence of events as you acquire a steam locomotive in a yard, couple up to a train, and head out down the main line.

The hostler will have moved the locomotive, a 2-8-2, out onto the ready track, so all you need to do is acquire the address on your throttle. Next, in accordance with Rule 17, you need to make sure your headlight is turned on, day or night. Before moving the locomotive you must start the bell ringing, and then give two long whistle blasts to warn anyone near the locomotive you are about to move forward.

Depending on how long the locomotive has been sitting, you might want to open the blowdown valve to clear particulates from the boiler, and also open the cutoff valve to blow water from the cylinders. Finally, releasing the engine brake and opening the throttle, the locomotive eases through a turnout onto the arrival and departure track, where your train awaits. After about 20 seconds you reset the cutoff valve. Once the locomotive is fully through the turnout, close

the throttle and apply the engine brake. All of these effects are functions found in DCC sound decoders.

**Now it's time** to couple to the train. With the bell still ringing you turn on the light on the rear of the tender, and give three short whistle blasts to indicate a reverse movement. You set the reverse lever for backing up, release the brakes, open the throttle, and let the locomotive ease back toward the waiting train. As you approach the first car you close the throttle and start to apply the engine brake while watching your brakeman's hand signals. As you feel the couplers connect you see the brakeman's hand signal and fully apply the brakes.

Once he has made the hose connections, you turn on the compressor to pump up the air, then give two long whistle blasts to warn the crew and let the conductor in the caboose know you are heading out. With the bell still ringing and forward headlight turned on, you release the brakes and crack the throttle, easing the train forward. Finally you can turn off the bell.

**As you roll along** toward your first stop, you approach a grade crossing where you warn automobiles and trucks with the familiar two long, one short, and one long whistle blast. On the other side of the grade crossing is an industrial

spur where you need to drop off a car, so you decide to split the train at the crossing so as not to block it.

A crewman is sent to disconnect the air line behind the car to be switched out, while you signal with a long and three short whistle blasts instructing a flagman in the caboose to walk back and protect the rear of the train.

As the flagman sets out, the conductor in the caboose gives two short blasts from the caboose's whistle, telling you to release the brakes and proceed. Responding with two short acknowledgment whistles, you set the bell ringing



**Fig. 1 Lots of buttons.** Master throttles like the Digitrax DT500 (left) can be used for programming. Utility throttles like the NCE Cab06 are designed just to run trains.



and give two long whistle blasts to warn the crew on the ground you are about to pull forward.

After dropping off the car with the necessary whistle signals for forward and reverse moves, you couple up to your train and give four long whistles, instructing the flagman to return to the train. As he swings up onto the caboose, the conductor gives two short whistles from the caboose, telling you to release the brakes and proceed.

**Installing** a SoundTraxx SoundCar decoder in a caboose would make it easy to add prototype authenticity. In the days before radio communications, many railroads installed small air whistles on cabooses, allowing the conductor to signal the engineer.

I showed how to install a SoundCar decoder in the March 2015 DCC Corner column. With the SoundCar installed, you could have two-man operating crews with the engineer and conductor using whistles and horns to signal each other. In the sidebar I've included a list of common signals used by engineers and conductors, so give them a try.

**A lot of the operations** I mentioned above involve Rule 17, so let's take a look at its provisions. According to my 1956 Southern Ry. rule book, the most basic provision of Rule 17 is that the headlight must be illuminated day and night, and in unsignaled territory the headlight must be turned off once a train turns off the main line for a meet.

More complex provisions require that the headlight must be dimmed when approaching trains on adjacent tracks, and when standing in or moving through a yard where yard engines are working. It must also be dimmed when approaching train order signals and standing to meet a train at a junction. Finally, it must be dimmed when standing in a siding in signaled territory.

Engines with a white oscillating headlight must display it day and night if visibility is impaired due to bad weather, or if the standard headlight is inoperative. It must be turned off when the standard headlight is dimmed or off. Similar rules applied for a red oscillating headlight, which must be illuminated when the train is stopped in a way that may foul an adjacent track.

Less common provisions require that when a train is running backward, a


white light must be displayed on the leading end. If the headlight fails at night, then a white light must be displayed in its place, the speed reduced where necessary, the bell rung continuously, whistle sounded frequently, and the dispatcher notified.

Bell ringing is an important part of signaling. According to Rule 30, the bell must be rung when the engine is about to move, except after momentary stops in continuous switching movements. It must also be rung while approaching and passing public grade crossings and stations, and through tunnels.

**The set of maneuvers** described in this column requires eight or more different function buttons, depending on the locomotive's decoder and how realistic you want to be. In some decoders functions can be set to occur automatically or are set that way at the factory.

One of the realities of DCC is that triggering all these different sound and lighting features requires access to an equally large number of function buttons on your throttle. Using a full-featured throttle, available from most manufacturers, can make the job much easier.

Dual control throttles like the Digi-trax DT500 (**fig. 1**) allow you to control the sounds and lights on two locomotives or a locomotive and a caboose. Some NCE PowerCab, Pro Cab, and Cab06 throttles have a recall feature that can be used to toggle between two to six locomotives. Utility throttles like the NCE Cab06, shown in **fig. 1**, are smaller, but typically offer fewer features than the master throttles. As I discussed in the November 2016 DCC Corner column, remapping your functions to a common set of buttons can organize and simplify operations.

**Digital Command Control** sound can add so much to the prototype feel of a model railroad and allow us to duplicate aspects of prototype operations previously not contemplated. For example, you can add signals between the lead and helper engines. And as I described earlier, the engineer and conductor in the caboose can have conversations with their whistles. Even small things like using the lights and bell properly can help put us into a mindset of operating a model railroad. 

## ►► Whistle signals

**A '—' indicates** a long whistle, and a 'o' indicates a short whistle." — Southern Ry. Operating Rules, effective Aug. 1, 1956.

### Engineer

Signal	Message
o	Apply brakes, stop
--	Release brakes, proceed
-ooo	Flagman protect rear of train
ooo-	Flagman protect front of train
----	Flagman return from west or south
-----	Flagman return from east or north
oo	Acknowledge any signal
ooo	When standing, back up
oooo	Call for signals
--o-	Grade crossing
--o	Approaching meeting or waiting point
-oo-	Approaching tunnels and warning to workmen of approaching train
o-	Inspect train for (air) leak or sticking brakes
oooooo	Alarm for people or livestock on track
-----	Approaching stations, junctions, railroad crossings, mail cranes between stations, intermediate block stations, and drawbridges

### Conductor

Signal	Message
oo	When standing, start; when running, stop
ooo	When standing, back up; when running, stop at next station
oooo	When standing, apply or release brakes; when running, reduce speed
ooooo	When standing, recall flagman; when running, increase speed
--o	Approaching meeting or waiting point
-----	When running, brakes sticking, look back for hand signals





## Kato HO scale Dash 9 features upgraded mechanism and roadname-specific detail

**For more than 20 years**, the General Electric C44-9W, the most popular locomotive of GE's Dash 9 series, has maintained a dominating presence on North American main lines. The prototypes were only a couple years old when Kato released its first HO scale Dash 9, reviewed in the September 1996 *Model Railroader*. This latest release features roadname-specific details to accurately model the Southern Pacific and Union Pacific (ex-SP) prototypes. The direct-current (DC) version we tested has an upgraded mechanism that's easy to convert to Digital Command Control (DCC). The model is also available with a factory-installed ESU LokSound Select dual-mode decoder.

**The prototype.** General Electric produced nearly 1,800 C44-9W diesel-

electric locomotives between 1993 and 2004. An improved version of its Dash 7 and Dash 8 series predecessors, the Dash 9 featured a 4,400 hp 7FDL16 diesel engine and direct-current traction motors. During the same production period, GE produced the AC4400CW, which was very similar to the C44-9W except for its alternating-current traction motors and related AC equipment.

The Dash 9 introduced GE's new high-adhesion (HiAd) locomotive trucks that along with computer-aided wheel slip control added up to an 11 percent increase in all-weather adhesion over the Dash 8. Other improvements included electronic fuel injection and a split cooling system that led to increased fuel economy and lower emissions.

Even though the Dash 9 has been replaced by the GEVO series in the GE

product line, most of the C44-9Ws still work the rails today.

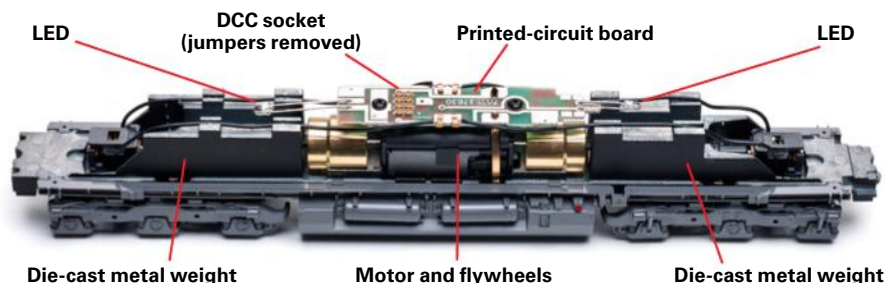
**The model.** The dimensions of the Kato locomotive match a builder's diagram reproduced in *The Car and Locomotive Cyclopedia of American Practice* (Simmons-Boardman, 1997). The well-defined molded details include engine-access doors and grills that are properly placed per prototype photos.

Our review sample models Union Pacific no. 9660, which was built as part of a 101-unit order for the Southern Pacific in 1994. In 1996 UP took over the SP. All the SP Dash 9s were eventually repainted in UP livery.

The Kato Dash 9 accurately includes the SP style ditch lights, which were mounted above the pilot deck. Another enhancement from the earlier Kato release is the battery box area behind the fireman's side of the cab, which now includes a detailed air-conditioning unit.

The model's many separate detail parts are all factory applied. These parts include grab irons, cab sunshades, windshield wipers, and the Sinclair antenna. The handrails and stanchions are flexible engineering plastic to resist breaking.

The 1996 release modeled an early version of the GE HiAd trucks with a separately applied, rounded stiffener on the sideframes between the outside and



The motor rests in the center of a die-cast metal chassis. Die-cast metal weights are mounted over each truck.



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middle axles. Correct for the SP and UP prototypes, this latest Kato release models a later version of the HiAd truck side-frame with a less pronounced bulge in that location. The molded bearing cap detail is also correct.

Inside the cab is a detailed one-piece interior, including seats for the locomotive crew. Kato sells a six-pack of seated train crew figures for a manufacturer's suggested retail price of \$13.

The model is smoothly painted with sharp color separation. The Armor Yellow used on the model looks a bit too orange to my eye. The placement of the lettering, heralds, and warning stencils matches prototype photos. Even the tiniest printing such as FIRE EXTINGUISHER INSIDE on the nose door is visible under magnification.

**Mechanism.** After removing the front and rear coupler boxes, I carefully squeezed the plastic body shell to disengage the locking tabs along the bottom. Lifting off the body shell revealed a can motor with a brass flywheel on each end mounted in the center of a die-cast metal chassis. Universal shafts transfer power from the motor to the truck-mounted gearboxes. Two die-cast metal weights are positioned over each gearbox.



The plastic body shell features a revised battery box area with air-conditioner details.

The printed-circuit (PC) board is attached to the top of the mechanism via two Phillips head screws. A golden-white light-emitting diode (LED) is soldered to each end of the board. These LEDs illuminate the directional headlights. Plastic tubes transfer light from the front LED to the number boxes and ditch lights in addition to the headlight.

Converting the DC version of the Kato Dash 9 to DCC involves simply removing the jumpers from the eight-pin socket on top of the PC board, then plugging in a decoder equipped with an 8-pin plug.

There's also room to add a sound system. The plastic fuel tank has an enclosure for a 28mm round speaker as well as sound holes in the bottom of the tank.

Another option for those who wish to add sound to the model without converting to DCC is to operate the model with the Kato Sound Box. (See my review in the June 2015 issue). This sound system connects to a DC power pack and uses Kato Sound Cards that contain sound files of specific prototype locomotives. Kato has recently released a GE 3rd Generation Sound Card that would be appropriate for the Dash 9.

**Performance.** During testing, our DC version featured the smooth and quiet mechanism we've come to expect from Kato. Lights turned on and the locomotive started creeping along at 2 scale mph with only 1.25 volts (V) of track power. At the motor's maximum operating voltage of 12V, the Dash 9 reached 78 scale mph. This is close to the prototype's standard top speed of 70 mph. It's also an improvement over Kato's earlier 1996 Dash 9 release that had a 94 scale mph top speed.

The locomotive has a long wheelbase, so you'll need a layout with curves no sharper than a 22" radius. After installing an ANE Model motor decoder (see my review in the January 2017 issue) I headed down to our staff layout, the Milwaukee, Racine & Troy, and put the Dash 9 to work.

The model easily negotiated a yard ladder of no. 6 turnouts without any binding in the trucks. Next I coupled the locomotive to a test train and sent it around a 1.5 percent climbing curve followed by a steady 3 percent upward grade. The Dash 9 single-handedly pulled 15 HO freight cars up the steep hill without slipping or stalling. On

## ►► Kato HO scale GE C44-9W

**Price:** \$195 (DC, no sound), \$295 (ESU LokSound decoder)

### Manufacturer

Kato U.S.A. Inc.  
100 Remington Rd.  
Schaumburg, IL 60173  
[www.katousa.com](http://www.katousa.com)

**Era:** 1994 to present (as detailed)

**Road names:** Union Pacific (nos. 9660 and 9632), Southern Pacific (nos. 8104 and 8132)

### Features

- All-wheel drive and electrical pickup
- Blackened metal wheels in gauge
- Eight-pin Digital Command Control socket (DC version)
- ESU LokSound Select decoder (DCC version)
- Five-pole skew-wound motor with dual brass flywheels
- Kato knuckle couplers at correct height
- Light-emitting diodes (LEDs) illuminate headlights and ditch lights
- Minimum radius: 22"
- Weight: 1 pound, 1.5 ounces

## HO scale GE Dash 9 diesel

Drawbar pull	2.9 ounces
	40 HO scale freight cars

Scale speed (DC)	
Volts	Scale mph
1.25 (start)	2
3	16
6	37
12	78

straight and level track, the locomotive can pull 40 free-rolling HO freight cars.

Like many other HO locomotives, the knuckle couplers are plastic parts. As I do on my own models, I suggest replacing the plastic couplers with those made of metal, especially on locomotives that will be heavily operated.

The Kato GE C44-9W remains a smooth operator and accurate HO model of a modern-era workhorse. The factory-installed detail and DCC friendly mechanism, not to mention the availability of a sound-equipped version, make this Dash 9 better than ever. — Dana Kawala, senior editor





## Rapido brings feature-packed New Haven FL9 commuter locomotive to N scale

**N scale modelers** who want to model commuter operations on the New York, New Haven & Hartford don't have to pine for the HO scale Electro-Motive Division FL9 any longer. Rapido Trains has them covered.

**The prototype.** New Haven's FL9 was an odd duck. It was designed to accommodate two unique needs: the ability to run on electric power in Manhattan's Grand Central Terminal, and meeting the weight restrictions on the Park Avenue Viaduct leading to the terminal. This resulted in a longer frame than a standard F9, and a combination of a four-wheel and a six-wheel truck, both with third-rail pickup shoes. For more about the FL9, see my review of Rapido's HO scale model in the February 2016 *Model Railroader*.

**The model.** Rapido's N scale FL9 matches drawings of the locomotive in *Model Railroader Cyclopedia: Vol. 2, Diesel Locomotives* by Bob Hayden (Kalmbach Publishing, out of print). Our sample, decorated as New Haven no. 2009, is accurately painted in the McGinnis-era scheme of black, white, and red-orange.

Color separation on the nose is a little fuzzy, but all lettering is sharp and opaque. Detail painting includes the stainless steel grills on the body sides and window trim on the cab side windows, m.u. doors at the top of the nose, and EMD builder's plates. Rapido includes decals for all 60 of the possible road numbers.

Grab irons on the sides of the locomotive are formed wire, and the ladder

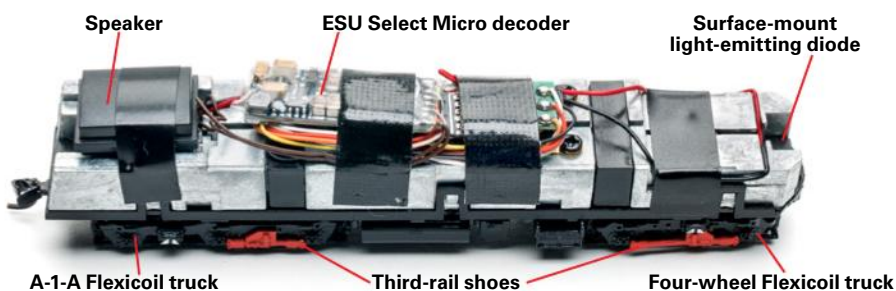
on the back is engineering plastic, as are the m.u. hoses and uncoupling levers on the front and back of the model. The third-rail apparatus is separately applied to the trucks. The center axle on the rear truck is an idler, just as on the prototype. The four driven axles also pick up power from the track.

On sound-equipped locomotives like our sample, a printed-circuit board and an ESU Select Micro Digital Command Control (DCC) decoder are secured to the top of the die-cast frame with tape. A downward-facing speaker is mounted above the rear truck.

Surface-mount light-emitting diodes are attached at the ends of the chassis facing up, where they shine into light tubes that conduct the illumination to the headlight and back-up light. The cab interior casting snaps into the side glazing. It can be removed to add crew figures.

**On the test track.** Out of the box, the model had a stutter in speed step 1 when I tested it using an NCE Powercab DCC system. I increased starting voltage by changing configuration variable (CV) 2 to a value of 10. That smoothed performance considerably.

Rapido recommends what it calls "Awesome Slow Speed Thingy," which tunes the decoder's back-electromotive



A split die-cast metal frame surrounds the motor and flywheels. Driveshafts transfer power to the trucks, driving four of the five axles, just like the prototype.



force control to the model's motor. Using programming on the main, I set CV 54 to a value of 0, then switched out of programming mode and pressed function 1, the bell. The locomotive took off for about 2 feet, then came to a stop with its bell ringing.

After turning off the bell, I retested the locomotive's speed performance. Speed in speed step 1 fell from 5.5 scale mph to 3.9 scale mph. Midpoint speed in step 14 dropped from 51 to 35 scale mph. Top speed in step 28 fell slightly from 108 to 102 scale mph.

Testing the locomotive on direct current before making any of the above changes, I recorded a low speed of 16 scale mph at 8.5V, but after getting the locomotive moving, I was able to throttle down to 5.5 scale mph at about 7.25V. Engine start-up sounds commenced at 6V, and the locomotive reached 89 scale mph at 12V, matching the top speed of the prototype.

The locomotive had a drawbar pull of .64 ounce, equivalent to seven N scale passenger cars or 14 N scale freight cars.

I took the locomotive to *Model Railroader's* Salt Lake Route project layout to put it through its paces. With the tuned decoder settings, the FL9 operated smoothly. I had no trouble navigating through the double crossover or any of the other Kato Unitrack sections on the layout.

The ESU Loksound Micro decoder realistically revved the diesel engine sound before the locomotive started to move. Factory-programmed momentum gave the illusion of great mass. The momentum and many other aspects of the locomotive performance can be further adjusted via CVs. A free user guide is available at [www.rapidotrains.com](http://www.rapidotrains.com).

Features such as "straight to eight," which simulates the full power application commuter locomotive engineers used on their busy routes, and Grand Central Terminal mode, which simulates the transition from diesel-electric propulsion to straight electric, add realism to operating scenarios.

**With its feature-laden** sound decoder and paint-scheme specific detailing, Rapido has a fully realized N scale model of an iconic locomotive. All those features make it easy to add authentic commuter operations to a model railroad, and this model will make that an enjoyable experience. — *Eric White, associate editor*

## ▶▶ Rapido N scale EMD FL9

**Price:** \$279.95, DCC and sound; \$169.95, DC without sound

**Manufacturer**  
Rapido Trains Inc.  
500 Alden Road, Unit 21  
Markham, Ontario  
L3R 5H5

**Era:** 1956 to 1996 (as decorated)

**Road names (multiple numbers per paint scheme):** New York, New Haven & Hartford (three paint schemes); Amtrak, phase 2; Amtrak, phase 3; Conrail, blue/yellow; Penn Central, black; Penn Central, blue/yellow; Penn Central, NH patch; Metro North Commuter RR red/silver/blue; Metropolitan Transit Authority silver/blue. Undecorated versions with gray body shells are also available

### Features

- Authentic sounds including Hancock air whistle (where appropriate)
- Five-pole, skew-wound motor
- Full cab interior
- Micro-Trains couplers mounted at the correct height
- Operational headlight and back-up lights
- Road-number and era-specific details applied at the factory
- Separate grab irons
- Sound-equipped version includes a dual-mode ESU LokSound Micro decoder
- Weight: 3.2 ounces

### Rapido N scale EMD FL9

**Drawbar pull** .64 ounce  
7 N scale passenger cars, 14 freight cars

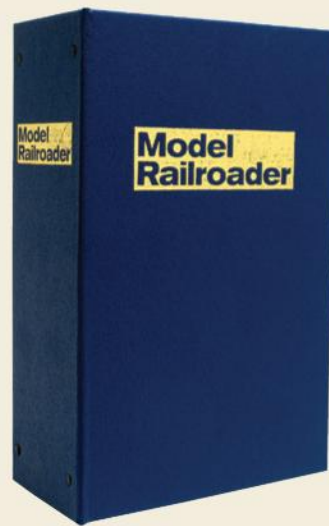
Scale speed (DC)		Scale speed (DCC)	
Volts	Scale mph	Speed step	Scale mph
8.5 (start)	16	1	5.5
9	24	7	22
10	41	14	51
11	65	21	93
12	89	28	108

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## Peco charges into scenery market with static grass

**Peco, a manufacturer long known** for producing track in Z, N, HO, O, and large scales and structures in N, HO, and O, recently entered the scenery market. The initial offerings in the Peco Scene line include the Pro Grass Micro Applicator, static grass fibers in four lengths and 11 colors, ready-to-plant grass tufts in four colors, basing glue (for installing the static grass fibers), and layering spray (for adding subsequent layers of static grass).

**The centerpiece** of the Peco static grass line is the Pro Grass Micro Applicator (item no. PSG-1). The tool features plastic construction and has an overall height of 9½". The hopper for the static grass is 3" deep; the screen on the medium sieve is suitable for 2mm to 6mm static grass fibers. The handle has a slightly textured grip with an illuminated on/off rocker switch.

As with other static grass applicators, the Peco tool has a grounding clip. The device is powered by a 9V battery (not included), which is housed under the screw-top cap at the end of the handle. The applicator has a maximum current output of 15kV DC. When switched on, never touch the inside of the hopper or put items other than static grass inside the tool. In addition, do not use the

applicator around flammable liquids, such as isopropyl alcohol.

The bottom of the hopper has a coating that generates a negative charge. This should not be scratched or marked. The magic happens as the fibers tumble out of the sieve. They pass through an electrical field that causes them to land vertically in the scenery glue.

**Now I was ready** to put the applicator to the test. Per the instructions, I brushed a layer of scenery glue onto the area I wanted to apply the static grass. The glue must conduct electricity for the fibers to stand on end.

Then I filled the hopper about half full with static grass fibers. As you can see in the photo above, some of the fibers were clumped together in our sample packages. I broke the clumps apart with my fingers before adding them to the hopper. If I'd skipped this step, the clumps of fibers would stay on the sieve instead of passing through it.

Next, I put a metal pin into the area wetted with glue (a small nail is sufficient) and attached the alligator clip to the pin. Then I turned the applicator on and applied the fibers. I worked in a back-and-forth motion, holding the applicator between ½" and ¾" above the layout.

### ▶▶ Peco static grass products

**Price:** Pro Grass Micro Applicator, \$109.99; static grass, \$6.99 (.7 ounce bag) to \$22.99 (3.5 ounce bag); grass tufts, \$8.99 to \$10.99

#### **Manufacturer**

Pritchard Patent Product Co. Ltd.  
Beer, Devon EX12 3NA  
www.peco-uk.com

#### **Features**

- Basing glue secures initial layer of static grass
- Grass tufts have 4mm static grass fibers and self-adhesive backing
- Layering spray secures subsequent layers of static grass
- Static grass fibers offered in 1mm, 2mm, 4mm, and 6mm lengths

I let the scenery glue dry completely before vacuuming up the excess fibers. If you want to make the grass taller, like that found in ditches, wetlands, and the like, spray the base layer of fibers with Layering Spray and apply more static grass.

After each use, remove the battery from the Pro Grass Static Applicator and store the tool in a cool, dry place. Any static grass residue can be removed with a dry towel (again, with the tool turned off). Do not use water, liquid cleaners, and solvents to clean the applicator.

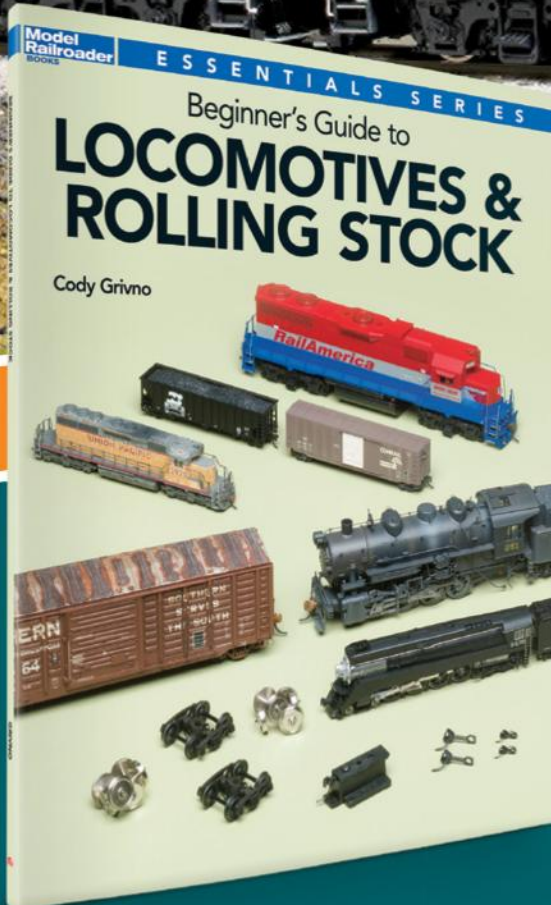
**Peco partnered** with WW Scenics, a U.K.-based scenery manufacturer, to produce the static grass fibers and grass tufts in its Peco Scene line. The static grass fibers are offered in 1mm, 2mm, 4mm, and 6mm lengths. There's a color for each season, as well as specialty colors such as hay field and patchy grass.

The tufts line is a bit more limited, offered in three colors and only with 4mm fibers. The tufts are packaged 100 per box and are attached to waxed paper. Though they have an self-adhesive backing, a dot of white glue will hold them in place more securely.

**If you want** an easy-to-use system for adding static grass to your layout, give the Peco Scene static grass line a look. The applicator works well, and the range of fiber colors should cover most scenery needs. — *Cody Grivno, associate editor*



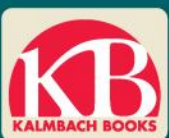
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# PRODUCT REVIEWS

## QUICKLOOK

### Walthers Mainline HO 53-foot Thrall corrugated-side gondola

**Price:** \$24.98

**Manufacturer**

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

**Road names:** Great Northern; Atchison, Topeka & Santa Fe; Burlington Northern; Conrail; Southern Pacific; and Union Pacific

**Era:** Late 1960s to 1990s

**Comments:** Walthers is offering a ready-to-run version of the HO scale Thrall 53-foot corrugated-side gondola that it sold as a kit in the 1999 catalog. The prototype was built in the late 1960s, and a few battered specimens served into the 1990s and later in maintenance-of-way service.

Included with the model are a coil cradle and two removable bulkheads.

The car is smoothly painted, and all lettering is crisp, opaque, and legible, even where it crosses body panel corrugations.

The car's major dimensions match a prototype diagram reproduced in *The 1970 Car and Locomotive Cyclopedia of American Practice* (Simmons-Boardman).

A metal weight is sandwiched between the floor and underframe. The car weighs 2.5 ounces without the bulkheads or coil cradle, which is 2.25 ounces lighter than National Model Railroad Administration recommended practice 20.1 guidelines.

The underbody has molded simplified brake gear without piping or rods, though those could be added by the modeler using brass wire.



The blackened metal RP-25 contour wheels are in gauge. The

knuckle couplers are at the proper height per the NMRA S-2.

The car had difficulty on the 19" curves of our Eagle Mountain project railroad, with the inside of the wheels contacting the draft gear boxes. I'd recommend running this car on 21" radius curves or broader.

Walthers' Mainline 53-foot gondola is a fine choice for modelers looking to fill a specific niche in their fleet. A steel coil, pipe, or pole load would make it an interesting addition to an HO scale freight car fleet set in the 1960s on. – Steven Otte, associate editor

Bill Walthers (L), founder of Wm. K. Walthers and Al Kalmbach (R), founder of *Model Railroader*, sharing Vol. 1, Issue 1, 1934.



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## QUICKLOOK

### Atlas N scale FMC boxcar

**Price:** \$23.95 (undecorated, \$18.95)

**Manufacturer**

Atlas Model Railroad Co.

378 Florence Ave.

Hillside, NJ 07205

www.atlasrr.com

**Era:** late 1980s to present (as painted)

**Road names:** Burlington Northern; Atlanta & St. Andrews Bay; Atlantic & Western; Cadiz RR; Escanaba & Lake Superior; Lake Erie, Franklin & Clarion; Port Huron & Detroit; and Railbox. Three road numbers per paint scheme; also available undecorated (early and late body styles).

**Comments:** For more than 40 years, the full-size FMC 5,077-cubic-foot-capacity boxcar has been plying the rails. Now you can add this car to your N scale roster thanks to the latest release from Atlas Model Railroad Co. The model features a one-piece

injection-molded plastic body, etched-metal crossover platforms, molded grab irons, and a separately applied brakewheel on the B end of the car. The plastic underbody features pin-mounted trucks; body-mounted Accumate couplers; and molded center sills, crossbearers, crossties, and brake appliances.

Atlas offers the FMC 5077 boxcar in two body styles. The early version (shown here) was produced from 1975 through April 1976. It features long grab irons and wide end panels. The late version (post April 1976) have shorter grabs and narrow end panels.

Our sample is decorated in Burlington Northern's simplified scheme, used from the late 1980s until 1991. The Cascade Green paint is smooth

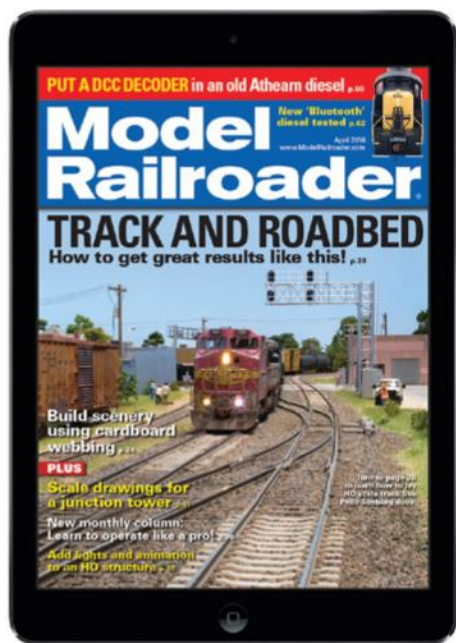


and evenly applied, with prototypical overspray on the roof. The white printing is opaque and legible.

The model's dimensions match prototype drawings published in the 1980 edition of *The Car and Locomotive Cyclopedia* (Simmons-Boardman Publishing Corp.)

The model weighs 1.2 ounces, which is .9 ounce too light per National Model Railroad Association recommended practice 20.1. The metal wheelsets are correctly gauged, and the couplers are at the correct height.

Atlas did a great job capturing the lines of the FMC boxcar. The model would look right at home in a freight train or spotted at an industry. – C.G.



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## Excursions and passenger specials

**A train order**, folded as crisply as if it were just snagged from a hoop, fluttered to the floor when I opened a folio that had been languishing in my collection so long it had been nearly forgotten. The order demanded attention because it was green onionskin. The other orders a friend had stuffed in the folder to give me were buff-colored, typical of the road from which they were collected. I caught my breath when I unfolded Western Maryland order No. 29 dated Feb. 5, 1972, and read its body: ENG 302 RUN PSGR EXTRA HIGHFIELD TO SECURITY.

It's easy to associate passenger trains with colorful name trains such as the *Sunshine Special* and the *Coast Daylight* or the workaday intercity runs and the nameless locals that fed them. Another category, often overlooked, includes specials such as fan trips and excursions.

**One of my first** fan trips was a 1965 Railroad Enthusiasts trip that Erie Lackawanna operated. It ran from Hoboken, N.J., to Campbell Hall, N.Y. There, it switched to rare-mileage, freight-only trackage over EL's Montgomery Branch and New York Central's Wallkill Valley Branch. This brought EL E8s tastefully painted in Lackawanna-inspired livery and a string of Erie Stillwell coaches to Kingston, N.Y., for a fast run down NYC's West Shore line to return to home rails at Newburgh. The train made a photo stop under the towering Poughkeepsie Bridge, a historic rail crossing of the Hudson River that linked western points with New England.

Excursions have long been a part of railroading. Passenger departments actively solicited such business, offering trips from crowded cities to recreational destinations. Boston & Maine was noted for the Snow Trains it ran from Boston to New England ski areas. Milwaukee Road did the same, with service from Seattle and Tacoma to Snoqualmie, Wash. Milwaukee's publicity described "moonlight ski trains, to which are attached refreshment cars and recreation cars for dancing."

Many parts of the country saw special trains to big-city baseball games and other sports events. Santa Fe rushed race trains to Del Mar Race Track, as did the Central of New Jersey to Monmouth Park. Major events like the Kentucky



**Handsome Western Maryland Alco FAs help Reading 2102 lift a passenger extra up the Blue Ridge nearing Highfield, Md., on WM's Dutch Line, where an order awaits on Feb. 5, 1972.** Jerry Dziedzic photo

Derby attracted trains from all over the country, and some events still do.

**This opens many** modeling possibilities, whether you're a freelance or prototype modeler. Movements like these can add variety to almost any operation, offering a way to run a favorite engine or other equipment normally out of place on a layout.

The La Mesa Model Railroad Club's 1953 Tehachapi layout runs a special train for passengers traveling to a national convention of insurance agents. The train's consist makes a smorgasbord of equipment from originating roads. It could include cars from Missouri Pacific; Pennsylvania; Chesapeake & Ohio; and Chicago, Burlington & Quincy, with travelers from cities on those lines. Typically, the train runs as a second section of one of the Santa Fe or Southern Pacific regular first-class trains.

Troop trains are easy to justify on almost any layout. Troop movements by rail continued through the Vietnam War era. A troop train could bring heavy-weight section sleepers from a distant road to yours. Such a train ran over Lehigh & New England, a road I model, headed by one of the road's ex-PRR Mikados. This is on my wish list.

Special movements color contemporary railroading, too, providing inspiration for modern layouts.

The American Association of Railroad Passenger Car Owners (AARPCO) organizes an annual private car trip. One

recent train saw restored Pennsylvania RR E8s, resplendent in pinstriped Tuscan, leading the varnish over rare mileage in eastern Pennsylvania. Union Pacific's *Denver Post* Frontier Days rodeo train continues a wildly popular, century-old tradition.

Perhaps the most recognizable face of the railroad, UP 4-8-4 no. 844 returned to service on the rodeo special last year. Norfolk Southern hosted no. 765, one of Nickel Plate's superpower Berkshires, all over its system recently. Norfolk Southern continues to operate Norfolk & Western 611, a Northern outshopped by Roanoke in 1950. Milwaukee Road 261, also a 4-8-4, visited Minneapolis and Duluth last June.

Another Northern, Reading 2102, headlined the occasion for the train order I found. Number 2102, made famous by Reading's Rambles little more than 10 years earlier, barnstormed throughout the east in the early 1970s. This was a trip I couldn't resist, so I arranged permission and signed a Western Maryland release.

The trip was a success, but for me it was a frustrating disaster. Bitterly cold weather caused my camera fits. Sometimes the shutter wouldn't trip, or the aperture wouldn't adjust. Good exposures were just plain dumb luck.

It takes more than luck to explain how the slide was joined with one of that day's train orders, more than 40 years after my camera shuttered to life in time to capture a very special moment. **MR**





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— KEN PETKAU

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# TRACKSIDE PHOTOS







◀ This Norfolk Southern SD70ACU looks a little lost sitting in the Utah Belt's engine terminal at East Benton, N.M. Eric Brooman of St. Peters, Mo., always keeps his HO scale railroad set in the present day, so when the Union Pacific sold the SD9043MACs that used to run through on his layout, he needed a justification to keep running his Kato locomotive model. A shell remodel and a run-through agreement with the NS did the trick. Eric also shot the photo.

#### Now on ModelRailroader.com

Eric Brooman's photo of his HO scale Utah Belt RR at left is this month's free computer wallpaper. You can download it from our website, [www.ModelRailroader.com](http://www.ModelRailroader.com).





## TRACKSIDEPHOTOS



▲ Bad Water Western RR motorcar no. 3 passes Keane Junction in Death Valley on its way to North Mojave, Calif. Tom Daniel of Kanab, Utah, built the 2 x 8-foot HO scale Keane Junction module and kitbashed the distillate-electric motorcar from Model Die Casting, Varney, Walthers, and Cal-Scale parts, as well as numerous other details. John Olson took the photo.



► A crew uses its aging, second-hand Bucyrus 25-ton steam crane to perform maintenance-of-way work along the Puget Sound & St. Paul RR. Robert A. Boyd of Tacoma, Wash., kitbashed the crane from a Walthers 20-ton HO scale kit, replacing the diesel engine with a steam boiler. He also scratchbuilt the tender and took the photo.





▲ The sun is sinking low behind the trees on an early fall evening as Rio Grande Southern Galloping Goose no. 6 makes its way into Timber Lake Junction. Jon C. Stetz of Erie, Colo., photographed the scene on his Sn3 Durango, Rico & Northern layout, which models a former stagecoach line converted to a railroad branch line. The layout features more than 1,600 trees.



◀ Unloading baggage cars at Tabiona depot isn't easy because of the tight clearances on the platform. The scene takes place on the Rio Grande Pacific layout built by Steve Strebel of Salt Lake City. The city of Tabiona is one of the newer areas of the On30 model railroad. Dale Angell shot the photo.



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**All ads must be prepaid and pertain to the subject of model railroading.**

## Schedule of Events

**AR, SPRINGDALE:** Sugar Creek Model Railroad Historical Society. Fourteenth Annual Show. Holiday Inn & Convention Center, 1500 South 48th St., Zip: 72762. Saturday, February 25, 2017, 9:00am-4:00pm. Adults \$8.00, under 12 free. Keith Johnson, 479-871-2802, E-mail: [train072@cox.net](mailto:train072@cox.net) or NWA Train Show, PO Box 1283, Farmington, AR 72730, Website: [www.railroadclubssugarcreek.org](http://www.railroadclubssugarcreek.org)

**AZ, TUCSON:** Gasden Pacific Toy Train Swap Meet, Tucson Expo Center, 3750 East Irvington Rd. at Palo Verde I-10 Exit 264. January 13-14, 2017, Friday 1:00pm-6:00pm and Saturday 9:00-2:00 Admission \$6.00, under 13 free. Information: <http://www.gpdToyTrainMuseum.com>

**FL, FORT MYERS:** Scale Rails Annual Train Show. Araba Temple, 2010 Hanson Street. February 4-5, 2017, Saturday & Sunday, 10:00am-4:00pm. Admission Adults: \$7.00, Teens: \$2.00, Children under 12 free. Dealer & collectors: 100+ tables, new & used equipment for all scales. Contact Jim Overman, 239-272-6396.

**FL, INVERNESS:** Citrus Model Railroad Club 2017 Model Railroad Workshop, Citrus County Fairgrounds, Horticulture Building, 3600 S. Florida Ave. February 18, 2017, 9:00am-4:00pm Admission: \$15.00 includes coffee and donuts, 4 clinics, lunch, operations on the club layout. Information: 352-746-4039, [conductor@citrusmodelrrclub.org](mailto:conductor@citrusmodelrrclub.org)

**FL, JACKSONVILLE:** 39th Jacksonville Rail Fair. Prime Osborn Convention Center, 1000 Water Street. Saturday, February 11, 2017, 9:00am-5:00pm. Adults \$9.00 (under 12 free). Over 350 tables. Large operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. E-mail: [rrshows@aol.com](mailto:rrshows@aol.com)

**FL, STUART:** Martin County Model Railroaders 10th Annual Train Expo. Martin County Fairgrounds, 2616 Old Dixie Hwy. January 21-22, 2017, 9:00am-3:00pm. Admission: Adults \$6.00, Operating layouts, sales tables, displays & NMRA information. Information: Bill Smet, 772-233-0279, [mcmr2616@yahoo.com](mailto:mcmr2616@yahoo.com) or PO Box 1498, Stuart, FL 34995.

**IA, MONTICELLO:** M.V.M.R.R.C. Train Show and Swap Meet. Bernides Center, Jones County Fairgrounds, 766 N. Maple St. Sunday, January 29, 2017, 9:00am-3:30pm. Admission \$5.00, children under 12 free. Contact Denny Beasley, CircleBarB607@aol.com or phone 319-270-1171 between 6 and 10 PM.

**ID, LEWISTON:** 6th Annual Lewis-Clark Railroad and Collectibles Swap Meet. NPC Fair Grounds, 1229 Burrell Ave. Sunday, March 26, 2017, 9:30am-4:00pm. Adults \$5.00, children under 12 free w/adult. Several vendors. Operating model RR's available. Operation Lifesaver Train Simulator. Refreshments/food. Contact Dan Wise, 208-816-0845, [wrailes@cablone.net](mailto:wrailes@cablone.net)

**IL, LOMBARD:** Chicago O Scale Meet (2-Rail), Westin Lombard Yorktown Center, 70 Yorktown Center. March 17-19, 2017. Friday dealer set-up, show open to public Saturday 9:00am-5:00pm, Sunday 9:00am-2:00pm. Buy/sell/trade, clinics, discussions, tours, contest. Largest dedicated O Scale show. \$20.00 entire weekend. Info: Melissa 630-745-7600 or [www.marchmeet.net](http://www.marchmeet.net)

**IL, SPRINGFIELD:** Springfield Railroad Society Annual Train Fair. Orr Building on the State Fairgrounds. Sunday, March 19, 2017, 10:00am-4:00pm. Early Bird shopping starts at 9:00am. Free parking. Largest show in downstate Illinois! For info call Ray at 217-544-4295 or visit [www.springfieldtrainfair.com](http://www.springfieldtrainfair.com)

**IN, AUBURN:** RxR Mania Train Show. Kruse WWII Museum, (National Military History Center), 5634 County Road, 11-A. From Interstate 69, Exit 326; Saturday, February 4, 2017, 9am-3pm. Adults \$5.00, Under 12 free. \$20/table, 5+ tables \$15 each. Info: [www.RxRMania.com](http://www.RxRMania.com) or call Jim (260) 627-2176.

**IN, MICHIGAN CITY:** Duneland Model RR Club Train Show and Swap Meet. IBEW Building, 301 East 8th St. Sunday, February 26, 2017, 9:30am-2:00pm (Chicago time). Adults \$3.00, youths 6-13 \$1.00, 5 and under free. Contact: Dave Novak at [trains86@frontier.com](mailto:trains86@frontier.com) or 219-778-1186.

**IN, NOBLESVILLE:** Central Indiana Division /NMRA Train Show. Hamilton County 4H Fairgrounds, 2003 Pleasant Street. Sunday, January 29, 2017, 10:00am-3:00pm. Admission \$3.00 or \$5.00 family. Dealers, Portable Train Layouts, Clinics, Door Prizes. Dealer Tables \$12.00. Contact Tom Cain at 317-696-2818 or [atsf93@comcast.net](mailto:atsf93@comcast.net)

**KS, LAWRENCE:** Lawrence Model Railroad Club 16th Annual Train Show and Swap Meet. Douglas County Fairgrounds, Bldg. 21, 2120 Harper St. February 18-19, 2017, Saturday 9:00am-4:00pm; Sunday 9:00am-3:00pm. Admission: \$6.00 donation, 12/under free w/adult. Contact: Steve M., 785-979-2711, [www.lawrencemodelrailroadclub.org](http://www.lawrencemodelrailroadclub.org)

**MD, ANNAPOLIS:** WB&A Chapter Toy Train Show. Annapolis Eels Lodge, 2 Pythian Drive, Edgewater, MD. SUNDAY, February 26, 2017, 10:00am-3:00pm. Admission \$5.00, under 12/scouts in uniform free. All scales, 50+ tables, operating layout, Train Doctor, free appraisals. Food available. Free parking. Contact Skip Lee, [ocbp55@comcast.net](mailto:ocbp55@comcast.net) Phone: 443-618-6866

**ME, AUGUSTA:** Whitefield Lions Club 31st Annual Model Railroad & Miniature Dollhouse Show, National Guard Armory, Western Avenue. February 18, 2017. Doors open 10:00am. 10:00am-3:30pm. Adults \$5.00, under 12 free, family \$10.00. Operating layouts, miniature displays. Contact: Steven Landrie, 50 Fairview Ave., Randolph, ME 03446. Telephone: 207-582-1410, E-mail: [slaundrie@roadrunner.com](mailto:slaundrie@roadrunner.com)

**MN, WOODBURY:** Newport Model RR Club Flea Market & Train Show, Woodbury High School, 2665 Woodland Drive, Zip: 55125. January 14, 2017, 9:00am-2:00pm. Admission \$5.00. Future Show: April 29, 2017. Club Address: Newport Train Club, PO Box 0061, St. Paul Park, MN 55071. Contact: Ed, 651-233-3310

**MO, ARNOLD:** Fox C6 School District & Dirk's Trains, The Warrior Express. Fox C6 High School Gym, 751 Jeffco Blvd., Zipcode: 63101. Saturday, February 11, 2017, 10:00am-3:00pm. Admission: \$3.00, 12 and under free. Tables \$10.00. Dirk P. Reynolds, 618-973-2237, 1232 Glenwood Drive, Columbia, IL 62236, [Comtrain2002@yahoo.com](mailto:Comtrain2002@yahoo.com)

**NC, ASHEVILLE:** Asheville Train Show. Western North Carolina Agricultural Center, March 3-4, 2017, Friday 12:00pm-7:00pm and Saturday 9:00am-5:00pm. Admission \$6.00, under 10 free. All scales, all gauges, collectibles, artifacts. Operating layouts, Thomas The Tank Engine, hundreds of vendor tables. More: [www.Asheville-Trainshow.com](http://www.Asheville-Trainshow.com)

**NC, GREENSBORO:** 9th Annual 'Greatest Little Train Show'. AMTRAK Depot, West Concourse, 300 E. Washington St. Saturday, March 18, 2017, 10:00am-3:00pm. \$5.00 adults, under 12 free. Onsite CMR layouts open. Downtown city meter/parking free on weekends. Contact Walt Saboin, 336-312-4198. [Carolinamodelrr@aol.com](mailto:Carolinamodelrr@aol.com) or CMR, PO Box 13642, Greensboro, NC 27415.

**NC, NEW BERN:** 22nd Annual Train Show, New Bern Riverfront Convention Center, 203 South Front St. March 4-5, 2017, Saturday 10:00am-5:00pm; Sunday 10:00am-4:00pm. Admission \$7.00, under 12 free w/adult. Operating layouts, 25+ vendors, food concession, door prizes. Carolina Coastal Railroaders, Joseph T. Hofmann, 252-474-4153.

**NY, FISHKILL:** Fishkill Model Train and Railroad Hobby Show. Fishkill Recreation Center, 793 Route 52. Sunday, February 12, 2017, 10:00am-4:00pm. Adults \$7.00, kids under 12 \$2.00, 13,000 sq. ft. Operating layouts, dealer, vendor tables, Thomas the Tank engine and LEGO trains. Information: 845-616-0931 or [www.kingstontrainshow.com](http://www.kingstontrainshow.com)

**NY, ROCHESTER:** TCA Upstate NY Chapter & Edgerton Model RR Club's Train Show. Edgerton Community Center, 41 Backus Street. Zip: 14608. Saturday, February 25, 2017, TCA Members: 9:00am-10:00am. Public: 10:00am-3:00pm. Admission \$5.00, under 17 free w/paid adult. Call: Chuck 716-390-8216 or Lee 585-544-0916. E-mail: [usnyc2015@gmail.com](mailto:usnyc2015@gmail.com) or [www.upstatenyc-tca.com](http://www.upstatenyc-tca.com)

**NY, SYRACUSE:** Syracuse Model Railroad Club Open House. Eastwood American Legion Hall, James Street at Nichols Ave. Sunday, February 26, 2017, 10:00am-4:00pm. Adults \$4.00, 12 and under \$2.00, family maximum \$12.00. Two HO layouts, LEGO layout, dealers selling train models and railroad items. Contact: Ken Cameron, 315-706-7580.

**OH, HAMILTON/CINCINNATI:** Ross H.S.-Larry Keller Memorial Train Show Fundraiser, 3371 Hamilton Clevland Road. Saturday, March 4, 2017. Public welcome 9:00am-2:00pm. Adults \$5.00, under 12 free. Tables \$20.00, additional tables \$15.00, 88 available. Operating Layouts, Door Prizes, Music Performances. GREAT EVENT WORTH THE DRIVE. Kent Acree, 513-235-3086



**OH, KIRTLAND:** Railfest 2017. Lakeland Community College (AFC), 7700 Clocktower Dr., Zipcode: 44094. NMRA MCR Div. 5. March 18-19, 2017, Saturday and Sunday 10:00am-4:00pm. All Gauge Train Show with over 400 tables. 440-357-8890, [www.Railfest.org](http://www.Railfest.org)

**OH, MASSILLON:** CJ Trains Spring Massillon Train and Toy Show. Knights of Columbus Hall, 988 Cherry Road NW, 44647. Sunday, March 26, 2017, 10:00am-3:00pm. \$5.00 admission, 12 and under free. \$25.00/dealer table, 150 - 8' dealer tables. Jon Ulbright, 941 Buchholz Drive, Wooster, OH 44691, 330-262-7488, [cathjon@ssnet.com](mailto:cathjon@ssnet.com) [www.cjtrains.com](http://www.cjtrains.com)

**OH, TOLEDO:** Greater Toledo Train & Toy Show. Owens Community College (SHAC), 30335 Oregon Rd., Perrysburg, OH 43551. Sunday, March 12, 2017, 11:00am-3:00pm. Early Birds: 9:00am-3:00pm. Adults \$6.00/Early Birds \$10.00, 12/under FREE w/adult. Contact: Randy Ramsey, 1566 South Ave., Toledo, OH 43609, 419-215-4181, Website: [toymasters.org](http://toymasters.org) E-mail: [trainmasters@bex.net](mailto:trainmasters@bex.net)

**OH, VERMILION:** Norwalk & Western RR Model Train Show & Swap Meet. German's Villa, 3330 Liberty Avenue (US Rt. 6). Sunday, January 29, 2017, 10:00am-3:00pm. Admission: 10 and over \$5.00. Trains all scales, historical items, operating layouts, lunch available, free parking. Information: 419-706-8038, [www.norwalkandwesternrr.com](http://www.norwalkandwesternrr.com)

**WA, SPOKANE:** River City Modelers Spring Train Show. Spokane Fairgrounds, 404 N. Havana, Bldg. A, B & C. Sunday, March 5, 2017, 9:30am-3:30pm. \$6.00 for adults, 12/under free. 200+ tables of railroad related items for sale, operating layouts, Free-MO, Operation Lifesaver, more. Free parking. Contact: Shirley Sample, 509-991-2317, E-mail: [shirley@busnws.com](mailto:shirley@busnws.com)

**WI, LA CROSSE:** The 26th Annual Great Tri-State Rail Sale. La Crosse Center, 2nd & Pearl Streets. January 28, 2017, 9:00am-3:00pm. Admission \$5.00, under 12 free. 300 Tables; All Scales; Model, Toy & Antique Trains & Memorabilia. Information: 4000 Foundation, PO Box 3411, La Crosse, WI 54602, 608-781-9383.

**WI, STEVENS POINT:** CWMR 20th Annual Model Railroad Show. Holiday Inn Convention Center Hotel, 1001 Amber Avenue. January 21-22, 2017, Saturday 9:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$4.00, kids 12-17 \$2.00. Many layouts, swap/sales tables, vendors. Paul Clasen, 4546 Buckhorn Lane, Stevens Point, WI 54481, 715-341-5253 or [designcentralwi@yahoo.com](mailto:designcentralwi@yahoo.com)

**WV, CHARLESTON:** Kanawha Valley Railroad Association's 12th Annual Model Railroad Show, Coonskin Park Lodge. February 18-19, 2017, Saturday 10:00am-5:00pm and Sunday 10:00am-3:00pm. Admission \$4.00, under 12 free. Free parking. Operating layouts, new and used equipment. Tables \$15.00. Website: [www.kvrrailroad.org](http://www.kvrrailroad.org) or contact Joe Horter, 304-539-6721, [jhorter@gmail.com](mailto:jhorter@gmail.com)

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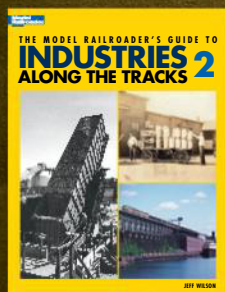
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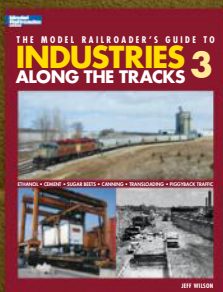
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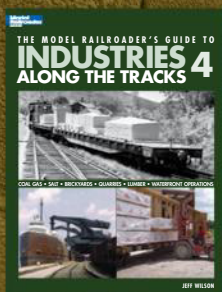
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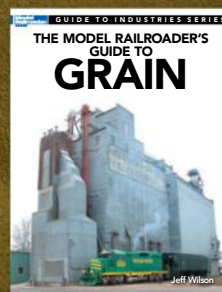
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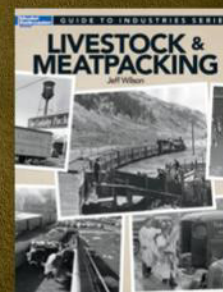
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## A modeling ambassador



**Harold Werthwein (Erie shirt) celebrated his 95th birthday with his operating crew in October. He's been a regular MR reader since 1936!** Rich Wisneski photo

**One of the greatest** things about the hobby of scale model railroading is the people you meet. It's been my experience that there are no social or professional barriers. If you and he or she are interested in model trains, you're good to go. Among my hobby friends are actors, railroaders, race car drivers, teachers, doctors, airline pilots, soldiers, lawyers, farmers, engineers, nurses, truck drivers, professors, artists, architects, editors, and executives. Name a profession or get-your-hands-dirty skill set, and I'll bet I can name a friend who does or did that for a living.

I admit to having a few surprises along the way to getting to know some outstanding people. My good friend and fellow Nickel Plate Road enthusiast Jim Long, who now hails from Texas, is a former Indiana farmboy who went on to earn a math degree at Indiana University and then became the guy who calculated the re-entry trajectory on the early NASA capsule flights. Among his good friends were the astronaut Gus Grissom and his wife, one of Jim's former neighbors. Hoosier farmboy indeed!

**Another good friend** who lives just down the road is Harold Werthwein. Harold was another important cog in our government's machinery, in his case at the Picatinny Arsenal, one of the most important military research and manufacturing sites in the United States. At age 60 – 35 years ago – he decided to build an HO model railroad depicting a specific part of his favorite railroad, the Erie's scenic Delaware Division from Port Jervis to Binghamton, N.Y.

And model it he did. Anyone even vaguely familiar with that region would recognize his depictions of towns along that line or the world-famous Starrucca Viaduct at Lanesboro, Pa. He had the space to do a credible job of modeling key aspects of the entire division, as he designed his sprawling ranch house to keep the rain and snow out of a 28- by 85-foot basement.

I was still building my Allegheny Midland layout when Harold stopped by to ask me about handlaying turnouts. I still had a few to build on the connecting Ridgeley & Midland County short line, so I built one as he watched. The ties had

been glued down, sanded, and stained, and ballast was in place. I showed him how easy it is to file the points and frog rails and spike down the turnout in well under an hour.


Harold then went home and casually built a hundred or so turnouts of his own. No sweat.

**He didn't build everything** on the railroad, of course. His good friend Harry McGown built the bridges, including the massive stone viaduct. But Harold built most of it, including handlaying the track. When I spoke to him earlier today, he was about to build a few more turnouts to service a new industry. At 95 years of age, mind you.

Harold admits to slowing down, and his hearing is giving him trouble. He lost his wife, Audrey, back in 2000, but he hasn't slowed down nearly as much as people decades younger. He's been reading *Model Railroader* since before I was born. At my request, he dug out the first issue he bought: October 1936! He still has the entire collection. And he's been a subscriber since 1938, although he did miss a few issues while serving in the armed forces during World War II when a relative forgot to renew his subscription.

**Harold has always been** a most gracious host to anyone who asks to see his railroad. His crew roster probably totals nearly a hundred people; around 20 are needed to bring it to life each month. Add to that the casual visitors he hosts and you can safely estimate he has exposed a thousand or more people to HO scale model railroading. His railroad was featured in January 1994 MR and *Great Model Railroads* 1999. In short, he's been an inspiration to us all.

I don't know of any award called Ambassador of Model Railroading. But Harold continues to live the part. Most of us won't have the good fortune to live such a long and varied life as Harold Werthwein has, but we can emulate his example of sharing with modelers and non-modelers alike the reasons why we find model railroading such a captivating and rewarding hobby.

Meanwhile, let's raise our glasses and drink a well-earned toast to Ambassador Werthwein! Continue to live long and prosper, my friend. 



**N**  
Scale

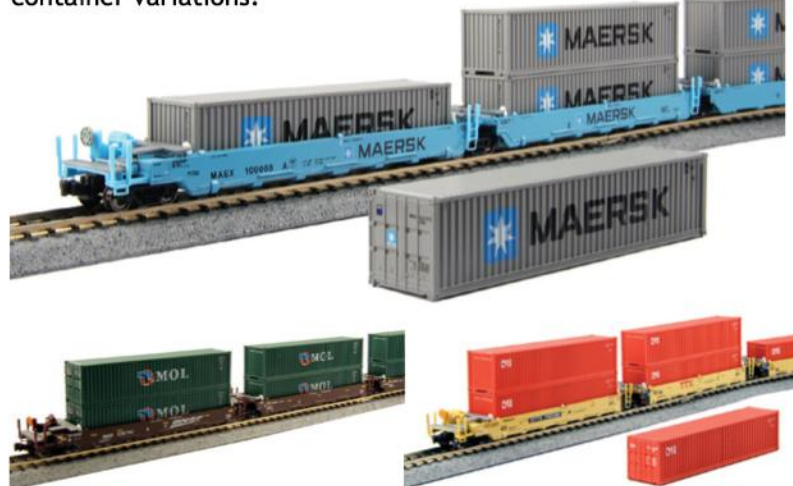


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#106-6190	N Gunderson MAXI-I MAERSK #100008	150
#106-6191	N Gunderson MAXI-I MAERSK #100010 w/ Maersk Containers	150
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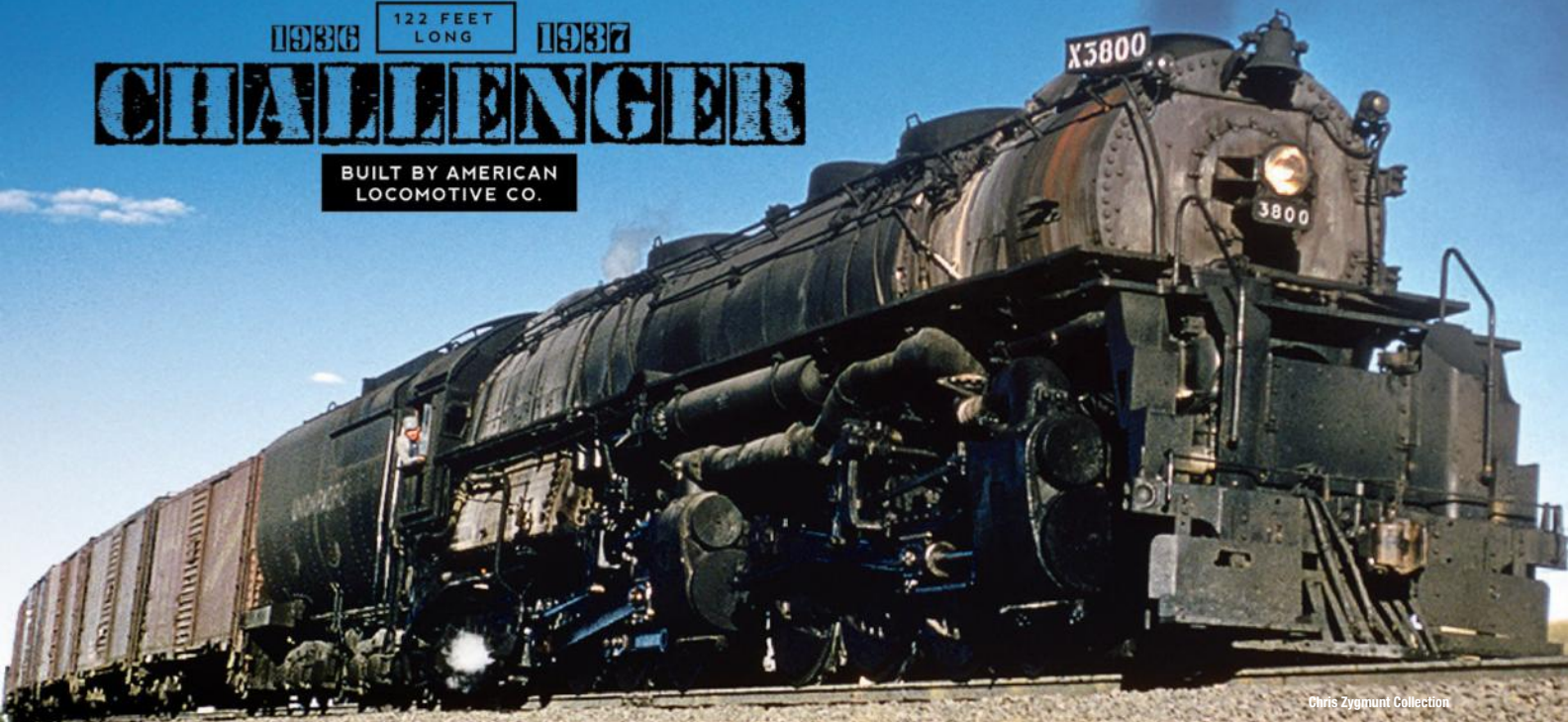




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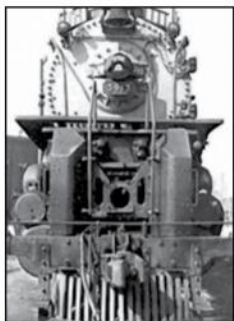
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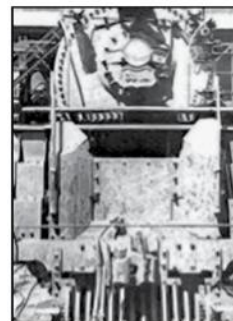
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