

**BOOSTERS FOR YOUR DCC SYSTEM** p.52



**Walthers SW1200  
in N scale** p.54

September 2018  
[www.ModelRailroader.com](http://www.ModelRailroader.com)

# Model Railroader

## B&O in a bonus room

Diesel reigns on this pivotal  
Pennsylvania division p.38

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Upper Midwest  
action in N scale**

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**Moving  
grain in  
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**BONUS  
ONLINE  
CONTENT  
CODE PG. 4**



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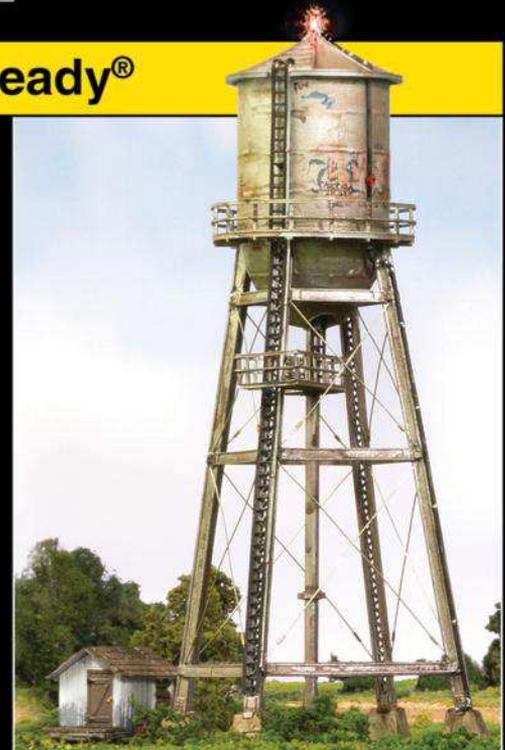
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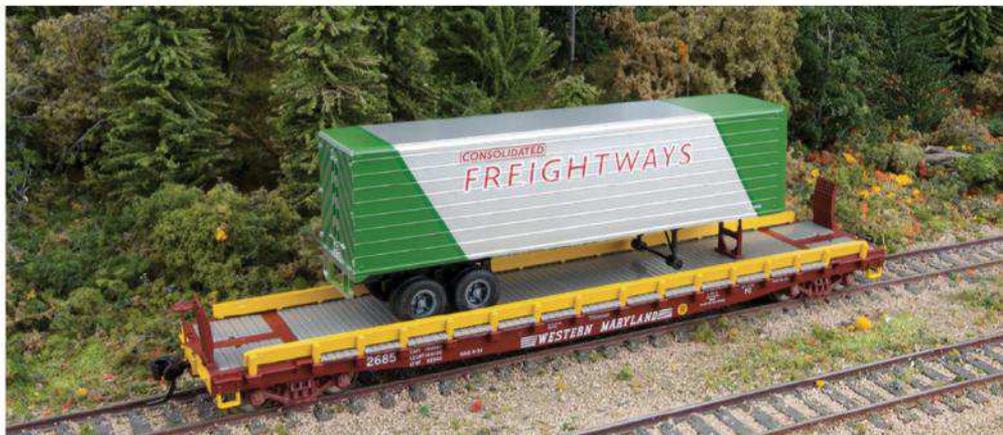
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### Features



#### 28 Missabe Junction revisited

This Upper Midwest N scale layout got a new home

by *Dave Rickaby*

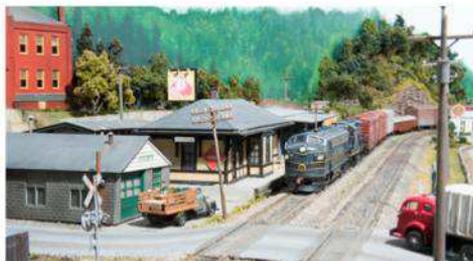
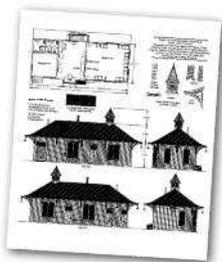
• Online bonus [ModelRailroader.com](http://ModelRailroader.com)

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by *Harold W. Russell*

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by *Alain Kap*

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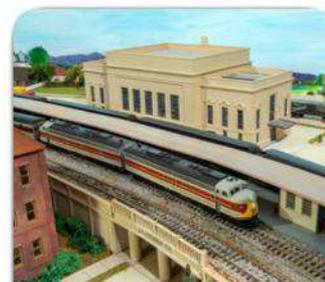
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**On the cover:** It's the summer of 1966 on Jim Babcock's HO scale Pittsburgh & Western Sub Baltimore & Ohio layout.  
 Lou Sassi photo



### Next issue

In **October**, the Erie and the Lackawanna come together in the 1950s on an HO layout, a Walthers freight house becomes a Santa Fe station, and more!

**MR EXTRA**

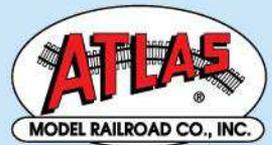
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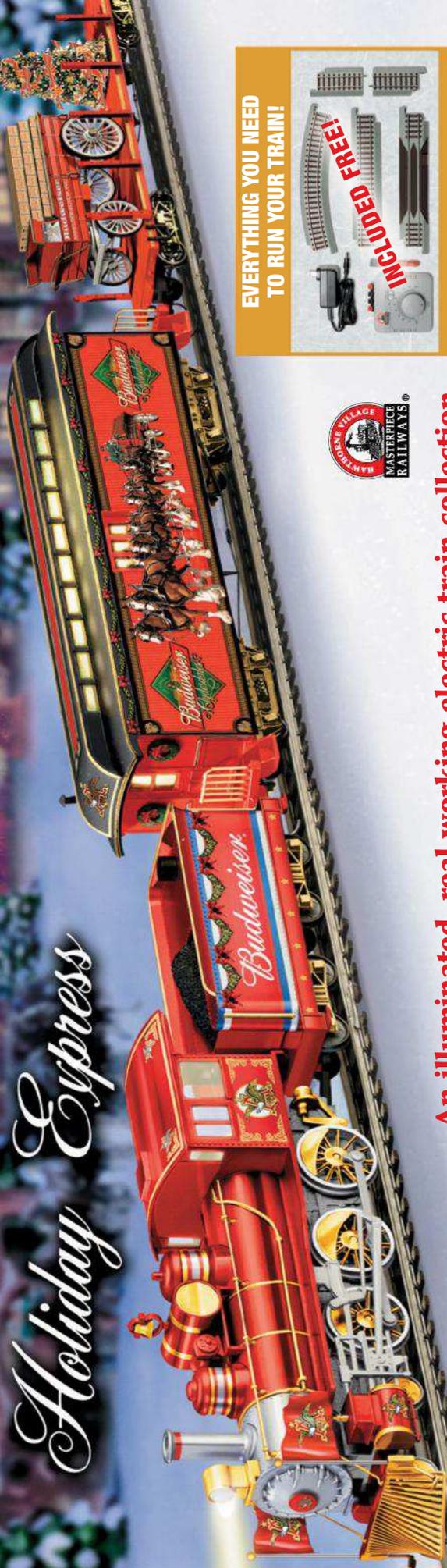


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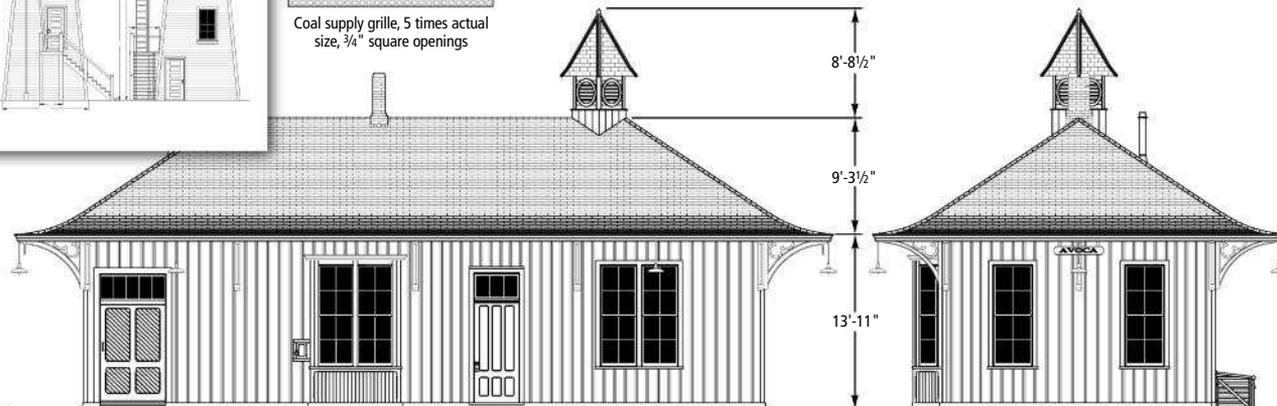
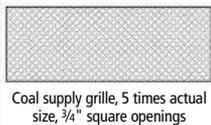
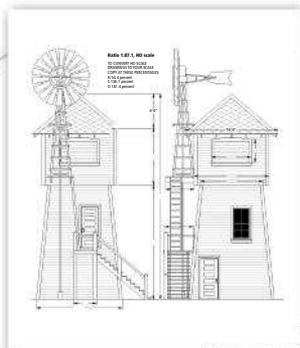
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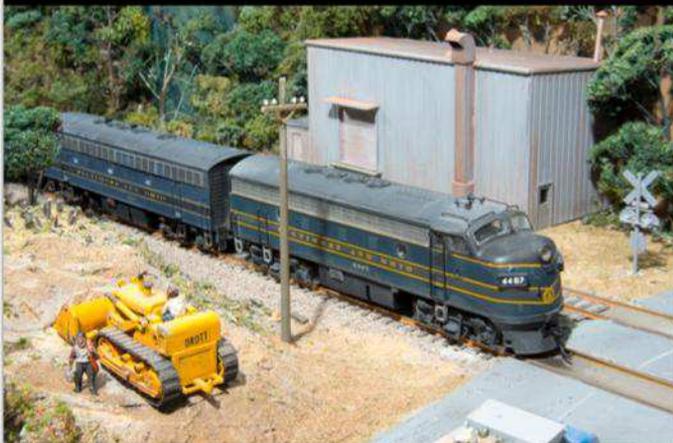
Track side

## New prototype drawings from the September issue

**This month you'll learn** about two interesting prototype structures: the Delaware, Lackawanna & Western's Avoca, N.Y., depot and a tank house from the citrus groves of California. As a bonus, you can download the plans featured in each article. Find the plans and many more projects by clicking the How To tab at [www.ModelRailroader.com](http://www.ModelRailroader.com).

### NEW LAYOUT VIDEO

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## Watch trains on the HO scale Pittsburgh & Western Division

**Featured on the cover**, Jim Babcock's HO scale Pittsburgh & Western Sub models the Baltimore & Ohio RR through western Pennsylvania in the 1960s. In this exclusive video you'll see diesel-led trains run past coal mines, small towns, and rugged Pennsylvania scenery. Find the video of Jim's railroad and many more by clicking on Layout Visits under the Videos tab on the MR home page.

### BONUS ARTICLE



## Origins of the N scale Missabe Junction Ry.

**Steve Miazga's N scale** Missabe Junction Ry. celebrates the railroads of northern Wisconsin, including the Soo Line; Wisconsin Central; and Duluth, Missabe & Iron Range. After a recent move, Steve rebuilt the layout with an operations focus, as described on page 28. To see the layout's original configuration and track plan, read Steve's first article from the November 2013 issue. Click on the link under Online Extras.

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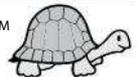


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# The value of just walking away

**We've all** been there: at the workbench at midnight, when you just *need* to get that depot or that car finished, or those figures just *have* to have their faces painted.

You've been at it for hours, and your steady hands and keen eyes deserted you at about 10:30. Yet you press on, because it's quiet and you're in a groove.

Then it happens: a glued wall doesn't stick at the 90-degree angle it was supposed to. Those grab irons don't hit the holes and spring out of your tweezers, into the carpet – twice. People are getting flesh-colored collars.

Not good.

But your brain tells you it will never, ever be this quiet again in your house and you must take advantage of it *now* and *keep working!* Your eyes and hands tell you a different story. It's time to put the tweezers down, clean your brush,

cap the paint or glue, and just walk away.

**When I** was younger, I could work well into the wee hours of the morning, and frequently did. Sleep was something “those old guys” did.

As I've aged, I understand why it's important to push back from the workbench and come back later with fresh eyes and hands. Yet another example of the old saw, “What a pity youth is wasted on the young.”

My exuberance years ago to plow forward on bigger projects also resulted in having to do some of them twice. I'd get going without really knowing how I was going to make it to where I wanted, but I felt like I needed to get it done.

Take hand-laying sidings, for instance. I knew they should be at a lower rail height than the main line, and there were a few ways to get there. I chose poorly because I felt

like I needed them right now, which led to some serious problems for locomotives entering and exiting. That was a pain to correct.

In hindsight, I should have walked away for a day or two or a week, done a little research, and weighed the pros and cons of the various construction methods. A few hours could have saved me a few nights.

**Of course**, it took many episodes to learn my lesson. It always does.

Sometimes now I walk away from projects for weeks or even months, knowing the solution will hit me eventually. In the interim, I'm gathering knowledge, so when the answer does finally pop up or come to mind, I can complete the task quickly and move on.

Ultimately, it's all about the economy of time. We could probably all use a little more,



but I don't see any sign the day is going to get any longer soon.

Doing things once the right way when you are in the proper frame of mind saves time, even if the production comes in fits and spurts. Having to undo dumb mistakes costs you time you could be working on something else.

Remember, there's always tomorrow. The task will wait.

## Model Railroader

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### Model Railroader Art Team

**Art Director** Thomas G. Danneman  
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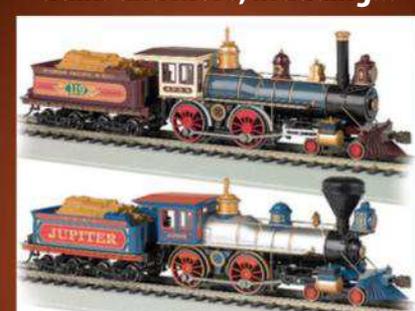
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O scale



**General Electric Dash 8-40CW diesel locomotive.** This much-anticipated Atlas O Trainman series road locomotive is in hobby shops now. The Dash 8-40CW is decorated for Atchison, Topeka & Santa Fe; BNSF Ry. (Heritage III); CSX (gray, blue, and yellow); and Union Pacific (Armour Yellow and Harbor Mist Gray) in two road numbers each. The O scale model has directional light-emitting diode lighting, separately applied details, and metal handrails. Direct-current models are priced at **\$269.95**. Versions with an ESU LokSound sound decoder retail for **\$429.95**. Atlas Model Railroad Co., 908-687-0880, [www.atlaso.com](http://www.atlaso.com)

## Industry news



• **Stacey Naffah to become Walthers' fourth president.** Wm. K. Walthers Inc. has announced Stacey Walthers Naffah will become the company's fourth president in September. Current president Phil Walthers is retiring from day-to-day operations of the company but will remain chairman of the board and be available for special projects.

"I couldn't be more proud and excited to turn over the leadership of Walthers to Stacey," Phil said. "She brings an enthusiasm and vision to the company that will continue to support our dedicated customers while helping to bring new people into the hobby."

Phil Walthers has been with the company since 1972. He succeeded his father Bruce as president in 1984. The company was founded by Bruce's father, Wm. K., in 1932.

Stacey has been with the company for nine years, most recently as vice president of sales and marketing. She is a past president of the Model Railroad Division of the Hobby Manufacturers Association and is the current president of World's Greatest Hobby Inc., a non-profit industry organization which exists to promote model railroading.

"I'm honored to carry on the legacy of the hard work of those before me," Stacey said. "Model railroading is truly one of the classic and timeless hobbies. It transcends ages from the young child with his or her first train set to the adult hobbyist creating highly detailed worlds in miniature."

• **Rail-Scale-Models acquires details line from Rusty Stumps.** Rail-Scale-Models, a provider of laser-cutting services and manufacturer of railroad craftsman kits and custom scale structures, has acquired the Laser-Cut Details line from Rusty Stumps Scale Models.

The product line includes windows and doors, roofing material, ladders and stair stringers, fences, crates and pallets, and wall materials in several popular modeling scales.

Rusty Stumps Scale Models will continue to provide 3-D printed detail parts and structure kits.

## HO scale locomotives



**Union Pacific class CSA-1 and CSA-2 4-6-6-4 Challenger steam locomotives.** CSA-1: nos. 3701, 3707, and 3901 with coal tender; nos. 3802 and 3813 with oil tender. CSA-2: nos. 3923 and 3937 with coal tender. Boiler back-head with printed manual controls, positionable cab roof vent, and 8-pin connector between locomotive and tender. Direct-current model, \$529.98; with ESU LokSound Select dual-mode Digital Command Control and sound decoder, \$629.98. Genesis series. Athearn Trains, 800-338-4639, [www.athearn.com](http://www.athearn.com)



• **Pennsylvania RR class P5a boxcab electric locomotive.** 1930s passenger type with brown roof and Gold Leaf Roman lettering (three road numbers), freight type with brown roof and Buff Yellow Roman lettering (two numbers), freight type with Buff Yellow Futura lettering (two numbers), and freight type



with Buff Yellow Roman lettering (three numbers in two lettering styles). All models are painted Dark Green Locomotive Enamel. Die-cast metal construction with motorized dual pantographs and dual-mode Paragon3 sound decoder with Rolling Thunder. Release date to be announced. \$399.99. Broadway Limited Imports, 386-673-8900, [www.broadway-limited.com](http://www.broadway-limited.com)

- **Electro-Motive Division E9A and E9B diesel locomotives.** Milwaukee Road (A unit and A-B sets, four numbers each [two each in direct current and Digital Command Control]) and Preamble Express (Union Pacific E9A, one road number). Modified etched-metal Farr air grills, working backup light, 48" dynamic brake fan, and prototype-specific details. Direct-current models: A unit, \$199.98; A-B set, \$369.98. With dual-mode ESU LokSound Select sound decoders: A unit, \$299.98; A-B set, \$569.98. October 2019. WalthersProto. Wm. K. Walthers Inc., 414-527-0770, [www.walthers.com](http://www.walthers.com)

## HO scale freight cars



- **Assorted freight cars.** Canadian Pacific 36-foot Fowler single-sheathed boxcar, \$17.98. Chicago & North Western 40-foot plug-door boxcar, \$17.98. Lehigh & Hudson River 36-foot double-sheathed boxcar with steel ends and straight

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underframe, \$17.98. New York Central 55-ton panel-side hopper, \$16.98. New York, Susquehanna & Western 50-ton offset-side two-bay hopper, \$17.98. Pacific Fruit Express 40-foot steel refrigerator car (single car, \$18.98; three-pack, \$55.98). Pittsburgh & Lake Erie 50-foot boxcar with exterior posts, \$17.98. Wellsville, Addison & Galetton 40-foot single-sheathed boxcar, \$17.98. Injection-molded plastic kits with plastic wheelsets and Accumate couplers. Accurail, 630-365-6400, [www.accurail.com](http://www.accurail.com)



- **100-ton three-bay hopper.** Bessemer & Lake Erie (Rock Island patchout, six road numbers); Baltimore & Ohio (capitol dome herald); Burlington Northern (1991 scheme); Canadian National (Lake Erie, Franklin & Clarion patchout [with and without herald]); Chessie System (Baltimore & Ohio, Chesapeake & Ohio, and Western Maryland reporting marks, six numbers each); CSX (Chessie System patchout and black with yellow "CSX" lettering, six numbers each); Norfolk Southern (Norfolk & Western marks, six numbers); Pittsburgh & Lake Erie (six numbers); Pittsburgh Power & Light (six numbers); and Reading, Blue Mountain & Northern (PP&L patchout with reporting marks only and road name spelled out in six numbers). Three road

numbers per scheme unless noted. Roller-bearing trucks, 36" metal wheels, and slope sheet braces. \$25.95. February 2019. Bowser Manufacturing Co. Inc., 800-327-5126, [www.bowser-trains.com](http://www.bowser-trains.com)



- **Durham & Southern 70-ton three-bay hopper.** Six road numbers. Plastic kit with separate brake appliances, metal wheels, and plastic couplers with metal knuckle springs. \$18.95 each. Produced by Bowser exclusively for East Coast Railroads, 919-322-5003, [www.eastcoastrailroads.com](http://www.eastcoastrailroads.com)
- **Pacific Fruit Express class R-70-15 mechanical refrigerator car.** New paint schemes: Bangor & Aroostook (blue), Burlington Northern (white), Conrail, Great Northern (Western Fruit Express lettering and post-1967 Rocky herald), and Milwaukee Road. New road numbers: Pacific Fruit Express (orange with black box around reporting marks and road number and white with orange lettering) and Union Pacific (yellow with small herald and yellow with large herald and Union Pacific Fruit Express lettering). Six road numbers per scheme; also available as undecorated kit. Injection-molded plastic with etched-metal details, metal wheels, and prototype-specific cushion underframe.

## Atlas to acquire Walthers N locomotive, rolling stock tooling

**Atlas Model Railroad Co. Inc. and Wm. K. Walthers Inc.** have reached an agreement under which Atlas will purchase all N scale locomotive and rolling stock tooling owned by Walthers, including the Walthers N tooling as well as former Life-Like tooling. Atlas will incorporate this tooling into its Atlas Master, Atlas Classic, and Trainman N scale lines.

Walthers will continue to offer N scale items in its Cornerstone, Scene-Master, and Walthers Controls brands, including new items as well as items currently in those lines.

"We feel that this tooling has found a great home with Atlas. They have a strong N scale offering and these tools will help them bring some exceptional products back to the market," said Phil Walthers, president of Wm. K. Walthers Inc.

Tom Haedrich, executive chairman at Atlas, added, "We're pleased to be bringing these former Walthers N scale models back to the market so that they can be enjoyed by present and future model railroaders alike. These locomotives and rolling stock will fit right in with our existing N scale lines and we are committed to producing them with the latest technology, prototypical accuracy, and high quality you've come to expect from Atlas."

## HO scale

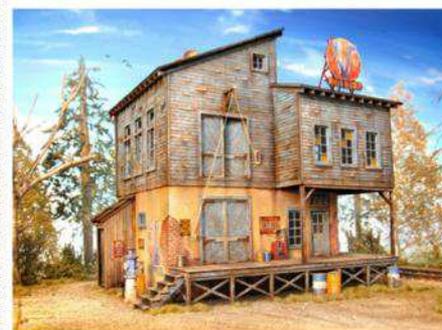


**40-foot steel ice bunker refrigerator car.** Athearn offers this Roundhouse line car decorated for Burlington Northern/Western Fruit Express, Great Northern/Western Fruit Express, Burlington Refrigerator Express ("Way of the Zephyrs" slogan), Fruit Growers Express, Merchants Despatch Transportation, Pacific Fruit Express (with Union Pacific "Overland" herald), Rock Island, and Soo Line (white with blue door and billboard lettering) in three road numbers per scheme. The HO scale model (**\$24.98**) has 33" metal wheels, and body-mounted McHenry couplers. Athearn Trains, 800-338-4639, [www.athearn.com](http://www.athearn.com)

## HO scale structures



• **Elf service station.** Laser-cut cardboard kit with separate gas pumps and sign. Measures 4.13" x 3.14" x 3.14". \$48.61. Price may vary based on exchange rate. Minifer, [www.minifer.fr/en](http://www.minifer.fr/en)



• **Val-U Fuels and Oils.** Laser-cut parts, peel-and-stick windows, pewter detail castings, waterslide decals, and high-resolution graphics. Produced in association with Jason Jensen Trains. \$89.95. Showcase Miniatures, 334-750-3276, [www.showcaseminatures.net](http://www.showcaseminatures.net)

• **"Ghostbusters" Hook & Ladder no. 8 firehouse.**

Cast-resin kit with removable roof, positionable door, acrylic doors and windows, and detailed roof accessories. Measures 6<sup>3</sup>/<sub>4</sub>" x 4" x 6<sup>3</sup>/<sub>16</sub>". \$44.95. Twin Whistle Sign & Kit Co., [www.twinwhistle.com](http://www.twinwhistle.com)

• **Brickworks storage building.**

Injection-molded plastic kit with corrugated metal siding, two loading platforms, positionable dock doors, two large and five small brick stacks, and 12 pallets. Measures 9" x 4<sup>1</sup>/<sub>4</sub>" x 3<sup>1</sup>/<sub>2</sub>". \$24.98. Cornerstone series. Wm. K. Walthers Inc., 414-527-0770, [www.walthers.com](http://www.walthers.com)

## N scale locomotives



• **Electro-Motive Division GP40 diesel locomotive.** New paint schemes:

\$39.95 (undecorated kit, \$29.95). InterMountain Railway Co., 800-472-2530, [www.intermountain-railway.com](http://www.intermountain-railway.com)



• **Pullman-Standard boxcars.** Southern Ry. 40-foot PS-1 (Built 1953, repaint 1972), \$38.95. Illinois Central 50-foot PS-1 (1968), \$39.95. Injection-molded plastic models with positionable doors, scale couplers, and two-piece self-centering trucks. Kadee Quality Products Co., 541-826-3883, [www.kadee.com](http://www.kadee.com)



• **General American Transportation Corp. 4,180-cubic-foot capacity Airslide covered hopper.** New paint schemes: Union Pacific (original 1973 aluminum scheme with red lettering, three road numbers), Southern Pacific

(1976 gray repaint), and St. Louis Southwestern (Cotton Belt, 1976 gray repaint). Two numbers per scheme unless noted. See-through etched-metal running boards, 36" CNC-machined metal wheels, and Kadee scale couplers. \$44.95. Tangent Scale Models, 828-279-6106, [www.tangentscalemodels.com](http://www.tangentscalemodels.com)

## HO scale passenger cars



• **Pullman 6-compartment, 3-drawing room heavyweight sleeper.** Alaska RR (*Mt. Iliamna* and *Mt. Susitna*); Atchison, Topeka & Santa Fe (*Glen Rapids*, *Glen Stream*, *Glen Trail*, and *Glen Vista*); Illinois Central (*Glen Lake* and *Glen Oak*); Louisville & Nashville (*Glen Torridon*); Pullman (Pullman Green: *Durer*, *Goethe*, *Schiller*, and *Schubert*. Two-tone gray: *Glen Cedar*, *Glen Devon*, *Glen Rae*, and *Glen Tana*); and Seaboard Air Line (*Glen Arbor*, *Glen Canyon*, *Glen Island*, and *Glen Saddell*). Also offered undecorated. Detailed interior and separately applied underbody detail. \$72.95 (undecorated, \$62.95). Master Line. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

Showcase



**1 40-foot offset-side ballast hopper.** An upgraded Roundhouse HO scale car with wire grab irons is lettered for Great Northern and five other railroads. A single car retails for **\$29.98**; four-packs list for **\$115.98**. Athearn Trains, [www.athearn.com](http://www.athearn.com)

**2 Wally's Service Station.** This HO scale factory-assembled and painted structure is now available



from Menards. The lighting and animation features require a 4.5V power source, sold separately. The station retails for **\$59.99** plus shipping (or free shipping to your local Menards store). Menards, [www.menards.com/trains](http://www.menards.com/trains)

**3 78-foot heavyweight paired-window coach.** Union Pacific's two-tone gray is the latest paint scheme on this injection-



molded plastic N scale model (**\$34.90**). Micro-Trains Line Co., [www.micro-trains.com](http://www.micro-trains.com)

**4 Plymouth ML-8 industrial switcher.** New paint schemes on this WalthersMainline HO scale locomotive include Burlington Northern. Direct-current models are priced at **\$99.98**. Versions with an ESU LokPilot motor-only decoder with



built-in capacitor for Digital Command Control are **\$149.98**. Wm. K. Walthers Inc., [www.walthers.com](http://www.walthers.com)

**5 Single-axle box trailer.** Atlas offers this accessory in seven paint schemes. The HO scale single-axle box trailer (**\$19.95** to **\$29.95**) features positionable rear supports, rolling wheels, and painted brake lights. Atlas Model Railroad Co., [www.atlasrr.com](http://www.atlasrr.com)

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N scale



**40-foot standard-height intermodal container.** Atlas offers this modern-era container lettered for Evergreen (EISU and EMCU reporting marks), Genstar, Uniglory, and Wan Hai. There are two three-packs per scheme; an undecorated set is also available. The N scale containers feature end walls with corrugations and 1-1 door style with Ocean Transportation Intermediaries handles. The containers retail for **\$32.95** (undecorated, **\$26.95**). Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

Detroit, Toledo & Ironton (orange and black); Baltimore & Ohio (blue and yellow); Helm Leasing (red, white, and black, one road number); Montana Rail Link (blue and black, one number); Richmond, Fredericksburg & Potomac. New road numbers: Canadian National (sergeant stripes), NJ Transit (silver and black), Milwaukee Road (orange and black), Southern Pacific (speed lettering), and Western Pacific (green and orange). Two numbers per scheme unless noted; also available undecorated (with and without dynamic brakes). Golden-white light-emitting-diode headlights, blackened metal wheels, and Accumate

couplers. Direct-current model, \$129.95 (undecorated, \$114.95); with ESU LokSound Digital Command Control decoder, \$239.95 (undecorated, \$224.95). Master Line. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)



• **General Electric AC6000CW diesel locomotive.** Southern Pacific, BHP Iron

Ore (blue-and-white and “bubbles” schemes), CSX (blue, gray, and yellow and dark-blue-and-yellow schemes), General Electric (green and red-and-gray schemes, one number each), and Union Pacific. Two numbers each unless noted. Plastic and die-cast metal construction, Magne-Matic no. 1015 couplers, and dual-mode Paragon3 sound decoder with Rolling Thunder. \$259.99. Broadway Limited Imports, 386-673-8900, [www.broadway-limited.com](http://www.broadway-limited.com)

## N scale freight cars

- **33,900-gallon liquefied petroleum gas tank car.** Capital Finance, CIT Group, General American Marks Co., North American Tank Line, Rocky Mountain Transportation, Transportation Equipment Inc., and Union Tank Car. Five road numbers (two single cars and three-pack). Separately applied walkway platform, etched-metal walkways and crossover platforms, and 100-ton roller-bearing trucks. Single car, \$30.98; three-pack, \$89.98. April 2019. AthearnN. Athearn Trains, 800-338-4639, [www.athearn.com](http://www.athearn.com)
- **Association of American Railroads 50-foot boxcar.** New paint schemes: Atchison, Topeka & Santa Fe (“Super Shock Control” lettering); Detroit, Toledo & Ironton (blue); Southern Pacific (Texas & New Orleans reporting marks); and Penn Central (Toledo & Ohio Central reporting marks). New road numbers: Chicago, Burlington & Quincy

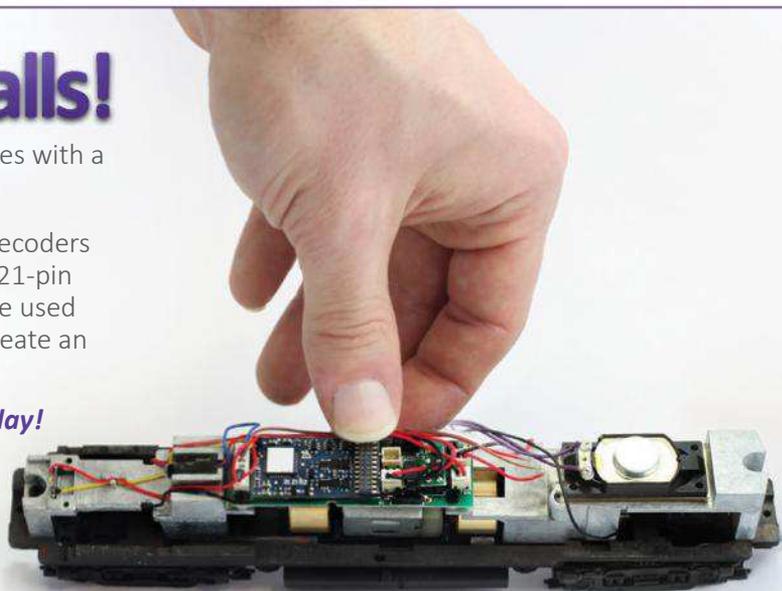
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(Mineral Red with “Way of the Zephyrs” slogan and Chinese Red with “Burlington” billboard lettering); Grand Trunk Western (square herald); Delaware & Hudson (“I Love New York” scheme); and Southern Pacific (classes B-50-44 and B-50-47). Six road numbers per scheme; undecorated kit also available. Injection-molded plastic model with InterMountain metal wheelsets. \$26.95 (undecorated kit, \$16.95).

InterMountain Railway Co., 800-472-2530, [www.intermountain-railway.com](http://www.intermountain-railway.com)

• **Bethlehem 100-ton quad hopper.** Alaska RR (aluminum), CSX (Louisville & Nashville patchout), Denver & Rio Grande Western (“The Action Road” slogan), Missouri Pacific (“buzzsaw” and “screaming eagle” heralds, six numbers each), and Illinois Central Gulf (white lettering with orange herald). Twelve road numbers per scheme unless noted. Micro-Trains trucks, low-profile wheels, and separate brake wheel and brake appliances. \$28.95. Spring 2019. Trainworx, 970-874-9747, [www.train-worx.com](http://www.train-worx.com)

## N scale structures



• **Small ice house.** Laser-cut wood kit (shown with HO scale model). Based on Delaware, Lackawanna & Western prototype in Northumberland, Pa. Footprint is 1 3/8" x 2 3/8". \$19.99. RS Laser Kits, 503-371-4290, [www.rslaserkits.com](http://www.rslaserkits.com)

## N scale train sets



• **2017 Operation North Pole Christmas train.** Includes Chicago Metra Electro-Motive Division F40PH

diesel locomotive with Operation North Pole wrapping, four gallery bi-level coaches (*Rosemont, Allstate Arena, Donald E. Stephens Convention Center, and Lifesource*), and gallery bi-level cab coach (*Chicago Dogs*). Includes bookcase-style packaging with specially designed slipcover. \$260. A portion of the sales of the sets will be donated to Operation North Pole to subsidize wrapping of future Operation North Pole trains. Kato USA Inc., 847-781-9500, [www.katousa.com](http://www.katousa.com)

## N scale details and accessories

• **Grade crossing details.** Concrete and rubber grade crossings, \$8 each. Expander sets for each, \$7.75. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

## O scale freight cars

• **Gunderson 53-foot Maxi-IV three-unit articulated well car.** New paint schemes: Northwest Container, TTX

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(new logo), and Utah Central. New road numbers: BNSF Ry. (circle-cross herald). Four road numbers per scheme. Die-cast metal construction, low-friction trucks with rotating bearing caps, and metal wheels. \$289.95. Fourth quarter 2018. Atlas O, 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

## O scale details and accessories



• **53-foot intermodal containers.** New paint schemes. Jindo containers: Pacer and Pacer Stacktrain. China International Marine Containers: Marten Intermodal, Matson, and TMX. New road numbers. Jindo containers: CSX ("How Tomorrow Moves" slogan) and Hub Group Inc. (red). Six numbers each; both body styles available undecorated. Two six-packs also offered (set one includes two each CSX, Pacer, and Pacer Stacktrain; set two features two each Marten Intermodal, Matson, and TMX). Injection-molded plastic with prototype-specific details. \$32.95 each (undecorated, \$29.95); six-pack, \$197.70. Atlas O, 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

## Z scale locomotives

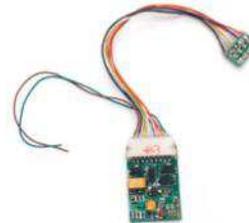


• **General Electric P42 diesel locomotive.** New paint scheme: Amtrak (phase 1 40th anniversary scheme). One road number. Traction tires and directional light-emitting-diode headlights. Designed for Digitrax and TCS drop-in Digital Command Control decoders. American Z Line, 614-764-1703, [www.americanzline.com](http://www.americanzline.com)

## Electronics/controls

• **T1300E throttle.** Features USB rechargeable battery, 60 hours of continuous operation between charges, thin handheld case, and 16 frequencies. Can be ordered with or without USB charger and USB charger cable. T1300Ev4 (for Lenz system using the CVP ALR900 wireless receiver) and T1300Ev6 (for EasyDCC systems using the CVP XFG1 or XFG2 wireless receiver). \$139 (includes throttle, charger, and charging cable); \$129 (throttle only).

CVP Products, 972-238-9966, [www.cvpusa.com](http://www.cvpusa.com)



• **Four-function non-sound decoder with light effects.** For HO scale. Features adjustable back-electromotive-force control, eight- and nine-pin connectors, and two- and four-digit addressing. 1 amp continuous power, 1.5 amp stall. \$29.98. Model Rectifier Corp., 732-225-6360, [www.modelrectifier.com](http://www.modelrectifier.com)

## Track

• **Assorted N scale code 65 True-Track pieces.** No. 5 turnouts (left and right), \$26.95 each. 17" radius, \$17.95. Four-pack of 2" beveled track sections for no. 5 turnout (two each left and right), \$8.75. Two-pack of no. 5 turnout reverse curve (left and right), \$4.95 each. True-Track features nickel silver rail with molded crossties and roadbed. Atlas Model Railroad Co., 908-687-0880, [www.atlasrr.com](http://www.atlasrr.com)

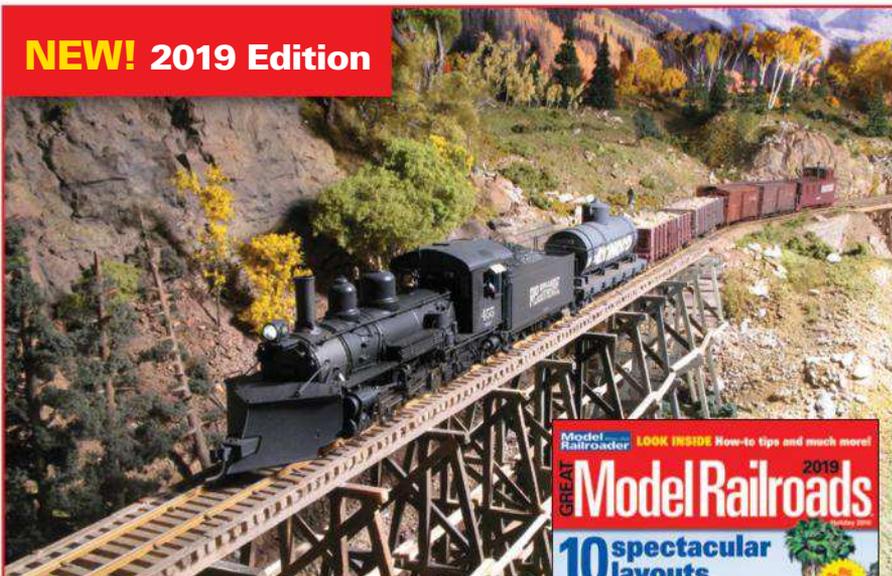
## Decals

• **Assorted water slide decals.** Canadian Pacific modern diesel locomotives (HO, \$8.25; N, \$6.75). Chesapeake & Ohio hopper cars, 1935-1956 (O, \$8.50). Southern Pacific "black widow" cab units (O, \$8.50). Union Pacific cabooses with black outline lettering (O, \$8.50). Union Pacific Electro-Motive Division cab units, 1947+ (O, \$8.50). Microscale Industries, 714-593-1422, [www.microscale.com](http://www.microscale.com)

## Books

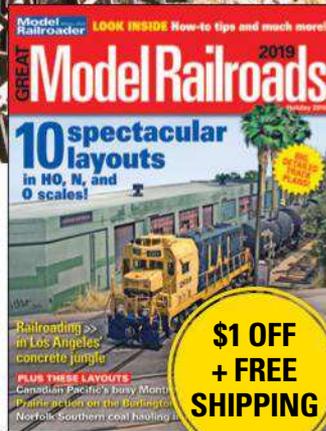
• **Great Railroad Series: Old Reliable Locomotive.** By Isaac ben Levi. Children's book about the adventures of locomotives transferred to their new home on the Ozark Mountain RR. Includes a dictionary of railroad terminology. 30 pages. E-book, \$9.99; paperback, \$11.95. Available at [www.greatrailroadseries.com](http://www.greatrailroadseries.com) and [www.amazon.com](http://www.amazon.com) 

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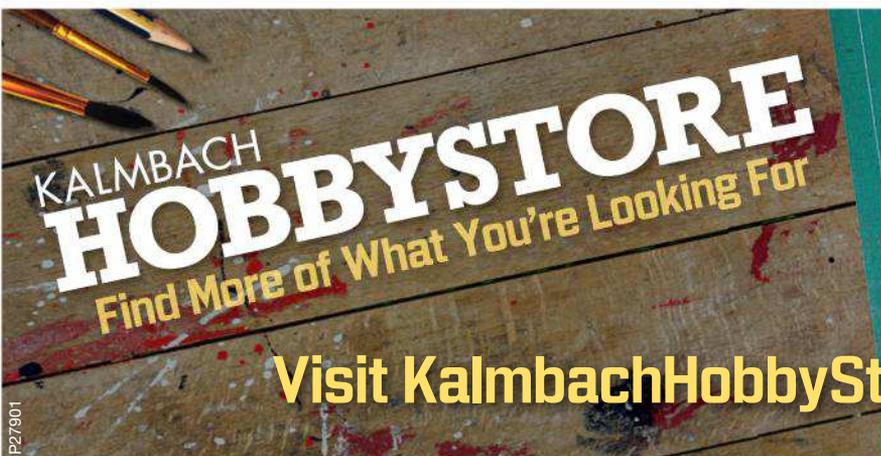
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P27901



A grain elevator worker directs a stream of corn into a boxcar with planks nailed across the doorway on the Chicago, Rock Island & Pacific at Grundy County, Iowa, in September 1939. Arthur Rothstein photo, Library of Congress collection

## How was grain moved in boxcars?

**Q** I'm helping our historical society with exhibits for our new museum in the former Baltimore & Ohio station once located along the Old Main Line. One exhibit will be a small model railroad. My question: During the late 1800s to early 1900s, what type of rolling stock was used to bring grain from the farms to the mills for processing?

*Cliff Beck, Mount Airy, Md.*

**A** From farm to mill is a two-stage trip. It was up to the farmers to get their grain to a grain elevator, which accumulated the produce of multiple farms into quantities large enough for rail shipment. They hauled the grain to the elevator in horse-drawn wagons. Conveyors then lifted it into large elevated bins, from which gravity facilitated loading it into railcars for the trip to the mill.

In the time period you're talking about, grain most often moved in boxcars. Grain elevator workers would nail wood planks, or "grain doors," inside the boxcars to cover the bottom three-quarters of the door openings. In later years, thin plywood or heavy paper grain doors took the place of individual wood planks. Grain was then poured in over the grain doors to fill the car.

When the cars reached their destinations, workers would remove the grain doors with a sledgehammer or ax, letting the grain spill out. Workers with shovels would be sent in to shovel out both ends.

This practice continued into the 1970s in the United States and 1980s in Canada, when covered hoppers became prevalent. It would make an interesting scene on your display to show the loading and/or unloading in process, with grain doors in place or being removed.

**Q** I'm seeking advice on lubricating the drive train on HO scale locomotives. What brand or type of grease do you recommend for this? I suppose it would have to be compatible with both metal and plastic parts. Thanks.

*Ken Havanko, Emmaus, Pa.*

**A** A quick search of Walthers.com for "grease" turned up a large number of plastic-compatible products marketed specifically for lubricating model locomotives, including products by Bachmann, Woodland Scenics, Trix, Labelle Industries, and Excelle Lubricants. Choose a grease, which will stay in place, rather than an oil, which will tend to spread around.

Some of these greases contain PTFE, the generic name for Teflon, which is fine for use in mechanisms. But avoid lubricants containing graphite, which conducts electricity and can therefore cause problems with electric motors. And resist the impulse to over-lubricate – too much grease will clog the gears, rather than making them work more smoothly.

**Q** Reading the article in your special issue *Model Railroading: The Ultimate Guide* about the On30 Olympia Logging Co. switching layout inspired me to create a timetable for operations on my On30 Mission Ridge & Rifle Flats RR, a freelanced layout set in the Pacific Northwest. But I'm not sure how to create or read a timetable.

*Alex Wittman, Lewiston, Idaho*

**A** Railroad timetables aren't just conveniences to let passengers know when the next train will arrive. There are also employee timetables, which are safety tools intended to prevent collisions by telling conductors where other trains are at all times. Along with the rules of train superiority, they tell engineers when and where they need to get out of the way of other trains. (For more on train superiority and how it works, check out Jerry Dziedzic's "On Operation" column in our January 2018 issue.)

Do a Google image search of "railroad timetable" if you want to look at some prototype examples. But for our discussion, let's refer to a timetable created for a model railroad, my own HO scale Cincinnati, Lebanon & Northern RR.

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

The center column of the timetable lists the stations, in order south to north. In this case, it covers all the modeled stations on the line; on a prototype, the timetable might cover the entire railroad, a division, a subdivision, or a branch. To the left are the mileposts where the stations are located; on the right are letters that tell what facilities are available at each, including FUEL, WATER, TURNABLE, and WYE (Y).

On either side are the train schedules. Notice how NORTHBOUND TRAINS and SOUTHBOUND TRAINS are grouped on opposite sides. The northbound trains say READ DOWN; likewise, READ UP for southbound trains. Reading up might feel counterintuitive, but having the stations listed in the same order regardless of direction makes it easy to see where meets are scheduled.

Note that five of the stations are listed in all capital letters – Cincinnati, Norwood, Blue Ash, Mason, and Lebanon. These are stations where a passing siding is available, meaning that meets can be scheduled there.

The CL&N hosts six passenger trains a day: a morning express in both directions, an “accommodation train” (passenger local) in each direction, then two evening express trains. All six trains are handled by the same set of equipment, so there’s no chance of conflicts there.

But there are also two through freight trains – southbound in the morning, northbound in the evening. As third-class trains, they’re inferior to any passenger trains they may meet, so they have to get out of the way when those trains are scheduled to come through.

You’ll note on the schedule several times that are shown in boldface. These are the scheduled meets. When either of the two trains involved get to a station with a time noted in bold, if the other train is not already at the station, it must wait until the other train arrives and passes before it can proceed.

The timetable doesn’t show the two daily local freights. Since the switching work to be done each day varies, these two trains are run as extras, which are by definition inferior to any scheduled train. They must take a passing siding when any train on the timetable is due.

This timetable is a fairly basic example. Employee timetables can convey much more information – such as which stations are flag stops, designated here by a dagger (†) next to the time. A train will

CINCINNATI LEBANON & NORTHERN - Timetable No. 1.											
Trains Northbound (Read Down)				Mile	STATION	Facil.	Trains Southbound (Read Up)				
34 - 3rd Cl.	22- 2nd Cl.	4 - 1st Cl.	2 - 1st Cl.				1 - 1st Cl.	3 - 1st Cl.	21 - 2nd Cl.	33 - 3rd Cl.	
04:00 PM	01:00 PM	05:45 PM	8:00 AM	0.0	CINCINNATI	FWT	7:45 AM	05:20 PM	12:45 PM	8:40 AM	
4:11	1:22	5:57	8:12	3.6	Idlewild		7:31	5:06	12:21	8:26	
4:17	1:38	6:03	<b>8:18</b>	4.9	NORWOOD	W	7:24	4:59	12:04	<b>8:18</b>	
4:27	1:58	6:13	8:28	7.4	Kennedy		7:16	4:51	11:45	8:10	
4:33	2:14	6:19	8:34	9.1	Deer Park		7:10	4:45	11:27	8:03	
<b>4:38</b>	2:30	6:24	8:39	11.7	BLUE ASH	WY	7:03	<b>4:38</b>	11:10	7:55	
4:47	2:42 †	6:32	8:47	14.4	Hazelwood		6:55	4:30	10:59 †	7:46	
4:55	3:00 †	6:40	8:55	18.3	Miltomson		6:49	4:24	10:51 †	7:40	
5:03	3:08	6:48	9:03	21.4	MASON	W	6:42	4:17	10:33	7:33	
5:10	3:25	6:55	9:10	24.9	Hageman		6:35	4:10	10:15	7:26	
5:15	3:40 †	7:00	9:15	26.8	Turtle Creek	T	6:29	4:04	10:05 †	7:20	
05:20 PM	03:45 PM	07:05 PM	9:20 AM	29.4	LEBANON	FW	6:25 AM	04:00 PM	10:00 AM	7:15 AM	

A railroad’s employee timetable includes more information than just when trains are due. This example was created for Steven Otte’s HO scale home layout.

stop at this station only if a station agent or waiting passenger flags the train down. Other notations might indicate the locations of yard limits, grade crossings, speed or weight restrictions, train order stations, and more.

**Q Can someone tell me which railroad the Pullman 10-1-1 sleeping car *Chief Red Tomahawk* was used on? A lot of the *Chief*-series 10-1-1s were used on the Northern Pacific RR, but I don’t want to assume. It would definitely help us modelers to know what individual railroads each car ran on so we can put them in the correct consists.**

*Franc Wells, Reading, U.K.*

**A** According to the book *Car Names and Consists* by Robert J. Wayner (self-published, 1963), the *Chief Red Tomahawk* was a heavyweight 10-section, 1-drawing room, 1-compartment sleeper owned by the Pullman Co. and assigned to, you guessed it, the Northern Pacific. I’m afraid the book doesn’t list what consist(s) it was assigned to, but as a Pullman-lettered car, it could have been shuffled around to whichever passenger train needed it at the time.

Check with the historical society of the railroad you’re modeling – in this case, the Northern Pacific Ry. Historical Association ([www.nprha.org](http://www.nprha.org)). It might have the consist information you need.

**Q What is the best material to model snow on top of trees and mountains?**

*Gary Herrmann, Reading, Pa.*

**A** Many modelers just leave their snow-covered mountaintops bare white plaster. To make the snow more powdery and

natural-looking, wet down the surface with wet water and sift powdered plaster on top. Other modelers have used baking soda, powdered white marble, or commercially produced snow material from manufacturers like Woodland Scenics, Noch, Busch, Faller, and Deluxe Materials Ltd. Don’t use food materials like flour or cornstarch; they will yellow and attract pests.

**Q Does anyone at your organization know when the magazine *The HO Monthly* started publication? Also, did it morph into *Model Trains* magazine? I know that *Model Trains* was eventually absorbed into *Model Railroader*.**

*John Frink, Carson City, Nev.*

**A** *The HO Monthly* began publication in May 1948 and added *Model Trains* to its name and logo in January 1951. February 1951’s cover bore the hybrid title *HO Model Trains Monthly Magazine*, and a new logo was introduced in March 1951. In December of that year, the name became *HO Scale Model Trains*. The title was further simplified to *Model Trains* in August 1952, along with a new semaphore-shaped cover banner.

Kalmbach Publishing bought the magazine in January 1954, aiming it at the beginner-to-intermediate model railroader, while *Model Railroader* continued catering to the intermediate-to-craftsman market. Kalmbach continued publishing *Model Trains* monthly until March 1962, when it was announced the magazine would become an annual. Two editions of *Model Trains Yearbook* were published, in 1963 and 1964, after which the title was folded. Thanks for prompting this trip down memory lane!

# Roadbed for main lines and spurs

**Lots of modelers** in all scales take measures to differentiate mainline track from spurs and sidings. Spurs are dead-end tracks leading to industries, loading ramps, and sometimes stations. Sidings are tracks usually parallel to mainline tracks and are double-ended so a train can take the siding, stop, and wait for another train to pass it.

One way to differentiate tracks is by ballast color, say using a light gray for the main line and a darker gray or brown for the sidings and spurs. I think this is an excellent idea, as in towns and yards it can be difficult to distinguish between tracks, and it'll help your operators to recognize the main.

The one problem I have with this idea is that while the Woodland Scenics fine gray ballast I use looks correct for my Southern Pacific prototype, I don't favor the look of any of the tan, buff, and brown I've used on the spurs. I airbrush them with Earth to weather them, and then I think they look pretty good.

## Sidings on modern lines.

The SP's route up Tehachapi Pass is a vital link on a heavily trafficked transcontinental railroad. The company would've double-tracked it if the terrain hadn't been so challenging that the cost would've been prohibitive. Therefore, the line is single-tracked with frequent and long passing sidings built to the same high standards as the main. I think you'll find the situation the same on most modern heavily trafficked main lines.

Spurs are a different story, depending on how old they are and the types of customers they serve. Before the 1970s, railroads had many more



The insulated boxcar serving Jim Kelly's Giumurra Winery is on track mounted to 1/16" thick roadbed, while the locomotive is on mainline track laid on 1/8"-thick Midwest Products N scale cork roadbed. Differentiating between main line and secondary trackage helps operators determine where they are and looks prototypical, too. Roen Kelly photo

branches and far more small customers that shipped or received a few cars a day or less. Spurs were often built of lighter rail, received less maintenance, and didn't generate much revenue. Much as they might want to, the railroads couldn't drop these customers or increase their rates without approval from the Interstate Commerce Commission.

That changed with deregulatory actions in the 1970s. Many money-losing branches were abandoned, which in some cases led to them being taken over by shortline railroads. (And some became bike paths, making your author quite happy.)

Today, most railroad customers are large and ship and receive many cars a day. Examples are western coal or petroleum producers, steel mills, auto plants, power plants, and a host of others. These large modern facilities need dependable, high-volume trackwork that's basically built to mainline standards.

**Laying spur tracks.** To differentiate them from the

main line, I laid my spurs on shallower roadbed. The cork roadbed I used for mains is 1/8" high. Half that height is 1/16", and so I searched for cork that thick. I found such cork in rolled sheets at Michael's craft stores and cut it into 7/8" strips for roadbed, using scissors. For turnout roadbed, I traced around the actual turnout and cut out the shape. Where I needed to curve the cork, I cut kerfs halfway across and spaced about 1/2" apart so the strip would bend. (You could also just cut a curved piece from your cork sheet.)

The craft store cork worked OK, but I've found something better since: head gasket cork, which I bought at an auto parts store. The craft store cork tore easily, but this gasket cork is tough stuff indeed. It's made of a thin strip of rubber

sandwiched between two thin layers of cork.

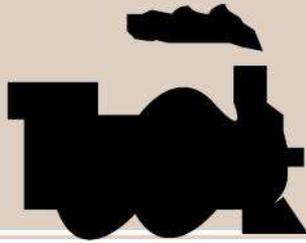
**Was it worth it?** I'd like to end on a triumphant note, but when I look at the spurs adjacent to the mainline tracks, I find it hard to see the height difference. Also, as some of my friends can attest, sanding the transition from the 1/8" mainline cork to the 1/16" spur cork is no easy matter.

Another way to emphasize differences between main lines and spurs is with smaller rail

size track. On my layout I used Atlas code 55 throughout, so I could've used code 40 on spurs and maybe achieved a more dramatic result. Also, I could've just cemented the spur track directly to the sub-roadbed. If I were to do it again I'd experiment first, so I'll leave you with that suggestion. **MR**

**TO DIFFERENTIATE THEM FROM THE MAIN LINE, I LAID MY SPURS ON SHALLOWER ROADBED**  
— JIM

# N SCALE SPOTLIGHT



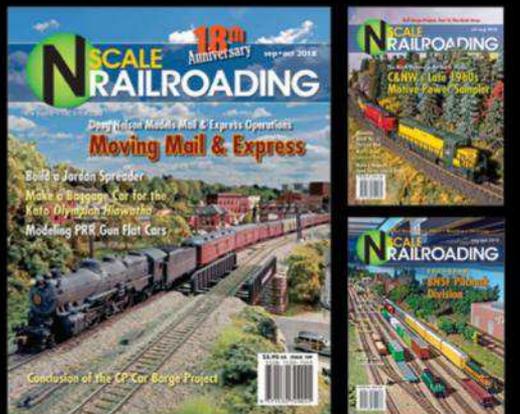
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N SCALE SPOTLIGHT



Associate editor Eric White demonstrates how to install a Digital Command Control-triggered switch machine on the *Model Railroader* staff's Wisconsin & Southern Troy Branch layout using a Walthers Layout Control System switch machine.

# Installing a Walthers Layout Control System switch machine

**Switch machines** are one of the basic pieces of layout automation. They're especially useful for lining hard-to-reach turnouts, and controlling them from a central dispatching panel can simulate a Centralized Traffic Control scheme.

But installing switch machines can be daunting to some. Adjusting them to work smoothly, then soldering connecting wires, make them seem to be more trouble than they're worth.

But Walthers has taken two of those big hurdles and leapt over them, with a simple-to-align machine with plug-in wiring for its control components. Follow along as I share my experience installing a machine on the Wisconsin & Southern (WSOR) 2008 *Model Railroader* project layout.



## STEP 1 ALL THE PIECES

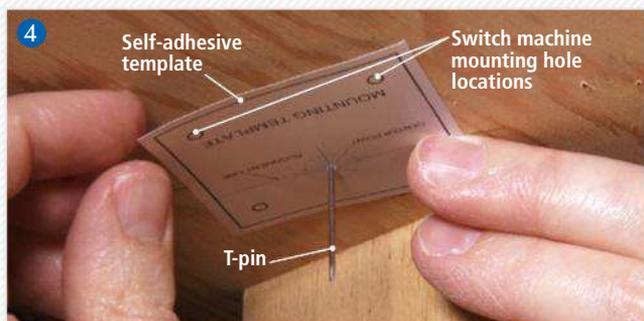
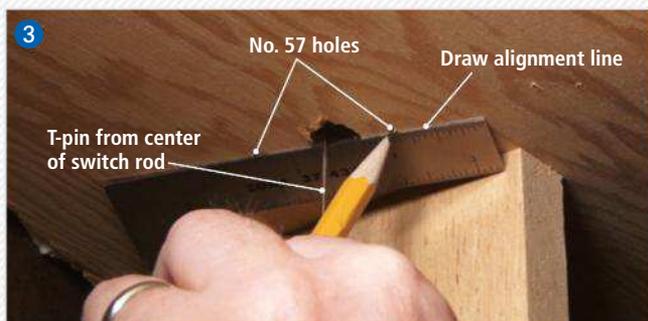
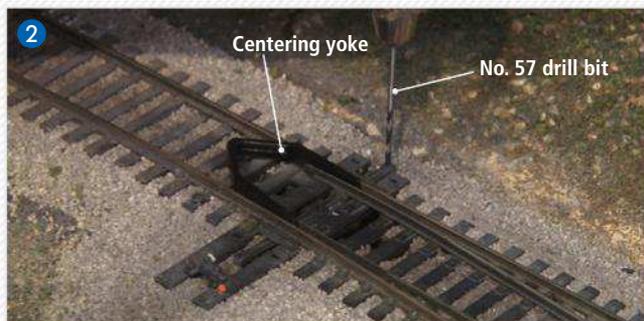
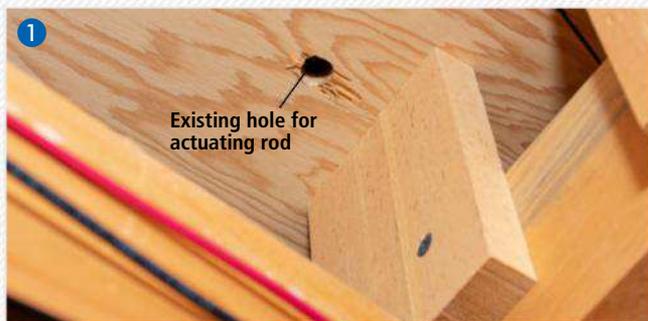
**Walthers sells everything** a la carte, so you can buy only what you need. If you already have a turnout control system in place, you can just buy the switch machine and integrate it into your existing system. Walthers' turnout controls are pretty slick, though. They integrate bi-color light-emitting diodes (LEDs) with a momentary switch.

The power distribution block allows you to control eight turnouts each, and two blocks can be connected together to run off one Walthers power supply. There's also a kit with all of the different drill bit sizes you'll need to install

any of the components, including a step drill to make large holes for the switch machine and fascia controls.

The switch machine includes an integrated Digital Command Control (DCC) stationary decoder. It's shipped dormant, but it's simple to wake it up with any DCC programming throttle. There are also two micro switches on the switch machine that can power turnout frogs or illuminate signals. There are also connections for position indicators on the switch machine and power distribution block to connect to external logic circuits.

## STEP 2 MOUNTING THE SWITCH MACHINE



The instruction sheet packed with the switch machine assumes you're installing the machine on a new layout, without the turnouts already secured in place.

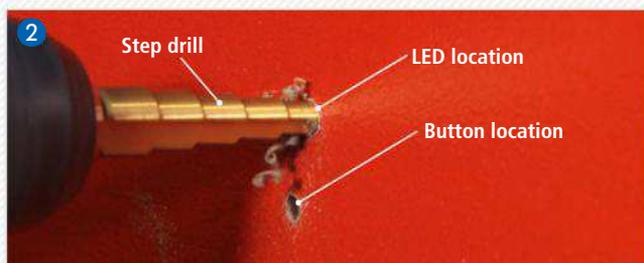
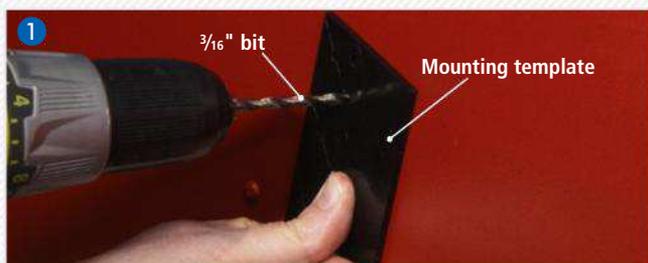
That wasn't the case for me. The Peco Insulfrog turnouts were installed and ballasted a decade ago. Fortunately, the MR staff drilled holes under the switch rod locations of the turnouts when the track was laid on the WSOR 1.

A centering yoke holds the turnout points in position. Using the smallest bit in the drill bit kit, a no. 57, I drilled alignment holes in the roadbed through the ends of the switch rod 2. Then I stuck a T-pin through the center hole in the switch rod to mark the centering point.

Under the layout, I connected the alignment holes with a line, drawing beyond the holes on both sides 3. This line matches a mark on the self-adhesive drilling template. I poked a hole in the center of the template, then slid the template up the T-pin and adhered it to the bottom of the layout surface, aligning all the marks 4.

I took the next larger drill bit and drilled pilot holes for mounting the switch machine. After pulling out the T-pin, it was time to place the machine. The location of the turnout and benchwork crossmembers made this a little tricky, but with a little help, everything lined up. Four screws later, the switch machine was installed.

## STEP 3 FASCIA CONTROL



One of the many questions to be answered when powering turnouts is, how are you going to control them?

Stall-motor switch machines require a constant flow of power to keep the points in place, so standard double-pole, double-throw switches are the usual answer. In contrast, solenoid switch machines require power for just a short burst, as constant power will overheat them and

burn them out, so they usually require momentary switches for control.

Once you've chosen your switches, then you have to wire them up, either with screw terminals or soldering lugs. Even people proficient at soldering are unenthusiastic about soldering under the layout, with the chance of molten metal dripping onto them.

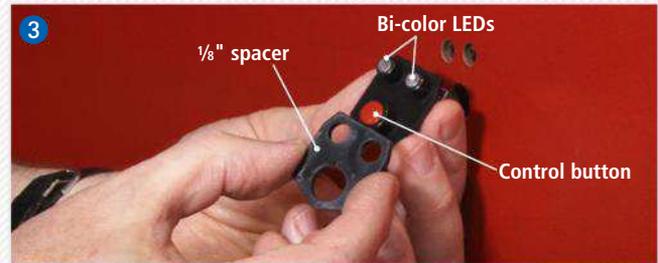
## STEP 3 FASCIA CONTROL (CONT'D)

Walthers' system simplifies the process considerably with matched controls and plug-in connections.

The fascia controls come in two styles. One has two bi-color LEDs to indicate turnout position, handy for track diagrams on control panels, and the other has a single, bi-color LED for installation on a fascia panel or for creating crossover arrangements.

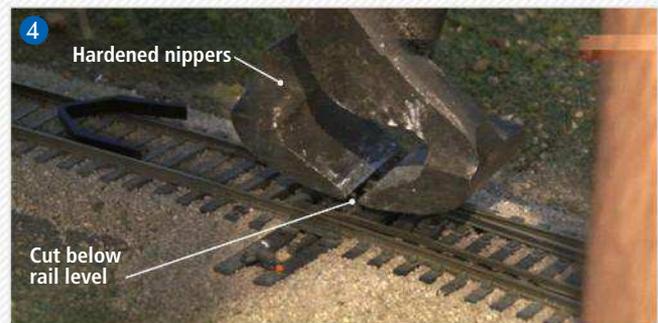
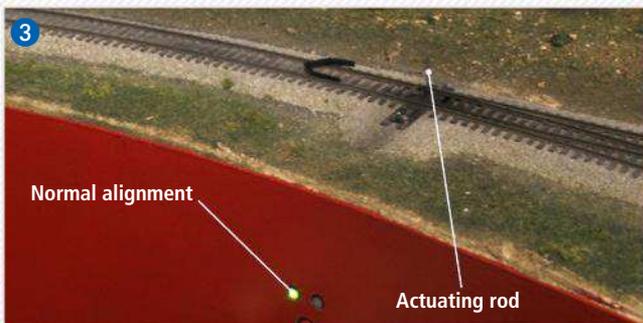
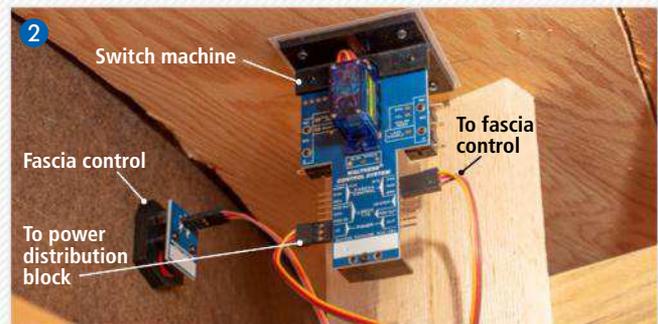
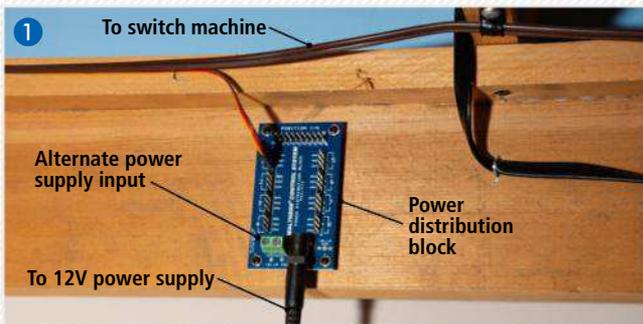
I installed the two-LED control. The kit includes a plastic template for drilling the necessary holes. I used the largest twist drill and the template to create the pilot holes for the control **1**, on the previous page. Then, using the step drill from the kit, I made a  $\frac{5}{16}$ " hole for the LEDs and a  $\frac{1}{2}$ " hole for the switch **2**.

A plastic spacer plate made the control fit flush with our tempered hardboard fascia **3**. The control is designed



to work with  $\frac{1}{8}$ " or  $\frac{1}{4}$ " fascia material. I simply pressed the control in place, as friction seemed to hold it well enough. Walthers recommends gluing it in place with either epoxy or gel-type cyanoacrylate adhesive. If it falls out, I can add glue later.

## STEP 4 POWER SUPPLY AND WIRING



The power distribution block makes it easy to connect as many as eight switch machines to one power supply. I mounted the distribution block in a location central to many of the turnouts on the layout **1**.

With the power distribution block in place, it was a simple matter to connect jumper plugs from the distribution block to the switch machine and the fascia control **2**.

Walthers' power supply plugs into the power distribution block, so there are no worries about polarity. I used the power supply to test my installation, but I wanted to control the turnout alignment from a DCC throttle when the turnout was out of reach.

There's a second set of screw terminals on the power distribution block to allow connection to a DCC power bus,

use an alternate 10V to 18V filtered DC power supply, or connect two power distribution blocks together.

When I plugged in the Walthers' power supply, the LEDs on the fascia blinked back and forth. This indicated the actuator was in the centered position. I removed the centering jumper from the switch machine and pressed the control button. The points moved to the diverging position and the right-side LED illuminated yellow. When I pushed the button again, the points moved to the normal position and the left LED illuminated green **3**. Flipping the control wire would switch the colors of the LEDs if I desired.

The last thing to do was to trim the actuating rod with a pair of hardened nippers **4**. Be sure to use eye protection. Now it was on to DCC control.

## STEP 5 WAKING UP THE DECODER

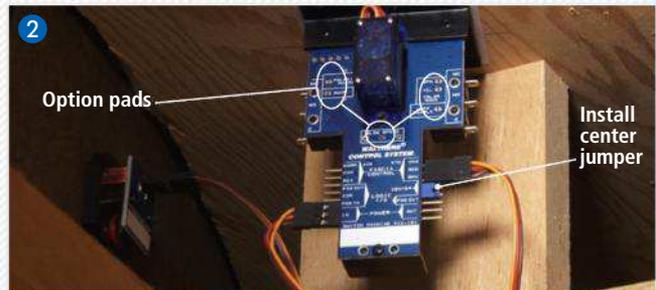
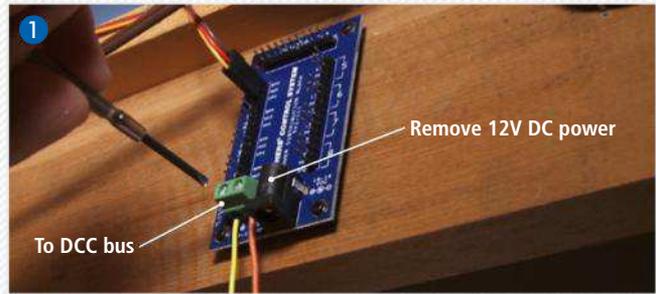
To install DCC control, I headed back under the layout. I pulled the plug on the power supply, then installed two wires into the screw terminal inputs ①. I used 18AWG wire to be compatible with the 14AWG DCC bus wire used on the layout. This let me tap the bus wire with suitcase (also known as IDCs or insulation displacement) connectors sized for 14 to 18 AWG wires. The photo shows 22AWG wire, but it wouldn't make a reliable connection with DCC bus using the correct IDCs.

With the connection made, but the DCC power off, I reinstalled the centering jumper ②. In addition to centering the actuating rod, this also puts the switch machine in Learn Mode. I'd need this to activate the built-in decoder.

I powered up the DCC system, in this case a Model Rectifier Corp. Prodigy Advance<sup>2</sup> system, and entered accessory mode. I typed the address I wanted for the decoder, 1, then pressed function key 1 to turn on the decoder ③. Pressing F1 or F2 now allowed me to line the turnout from the DCC throttle. It also allowed me to line the turnout from the fascia button. Not bad for a morning's work.



▶ Model Railroader Video Plus subscribers can watch Eric install the Walther's Layout Control System switch machine at [MRVideoPlus.com](http://MRVideoPlus.com)



## STEP 7 OPTIONS

Besides the basic installation, or DCC control, there are several other options built-in to the Walther's Layout Control System switch machine. Most of these require a bit of soldering, usually to jump two pads on the switch machine printed-circuit (PC) board.

Bridging the LOCK ENABLE pads allows a Centralized Traffic Control operator to lock-out DCC or fascia turnout control if desired. Two COLOR MODE pads allow users to alter the colors of the LEDs on the fascia control.

The speed of the throw can be set to 3 seconds by bridging another jumper on the PC board. Installing a resistor in lieu of the jumper can set the throw speed from about 1/2 second to 5 seconds. A graph on the free downloadable Reference Guide on Walther's website ([www.walthers.com](http://www.walthers.com)) shows the relationship between resistor value and time of throw.

The SWAP pad allows matching of turnout indication between DCC throttles and fascia controls, if they're unmatched, and between two turnouts of a crossover if the switch machines are mounted in reversed orientations due to benchwork obstructions.



**Completed installation.** Whether you want fascia control or Digital Command Control options, the Walther's Layout Control System switch machine features simple installation.

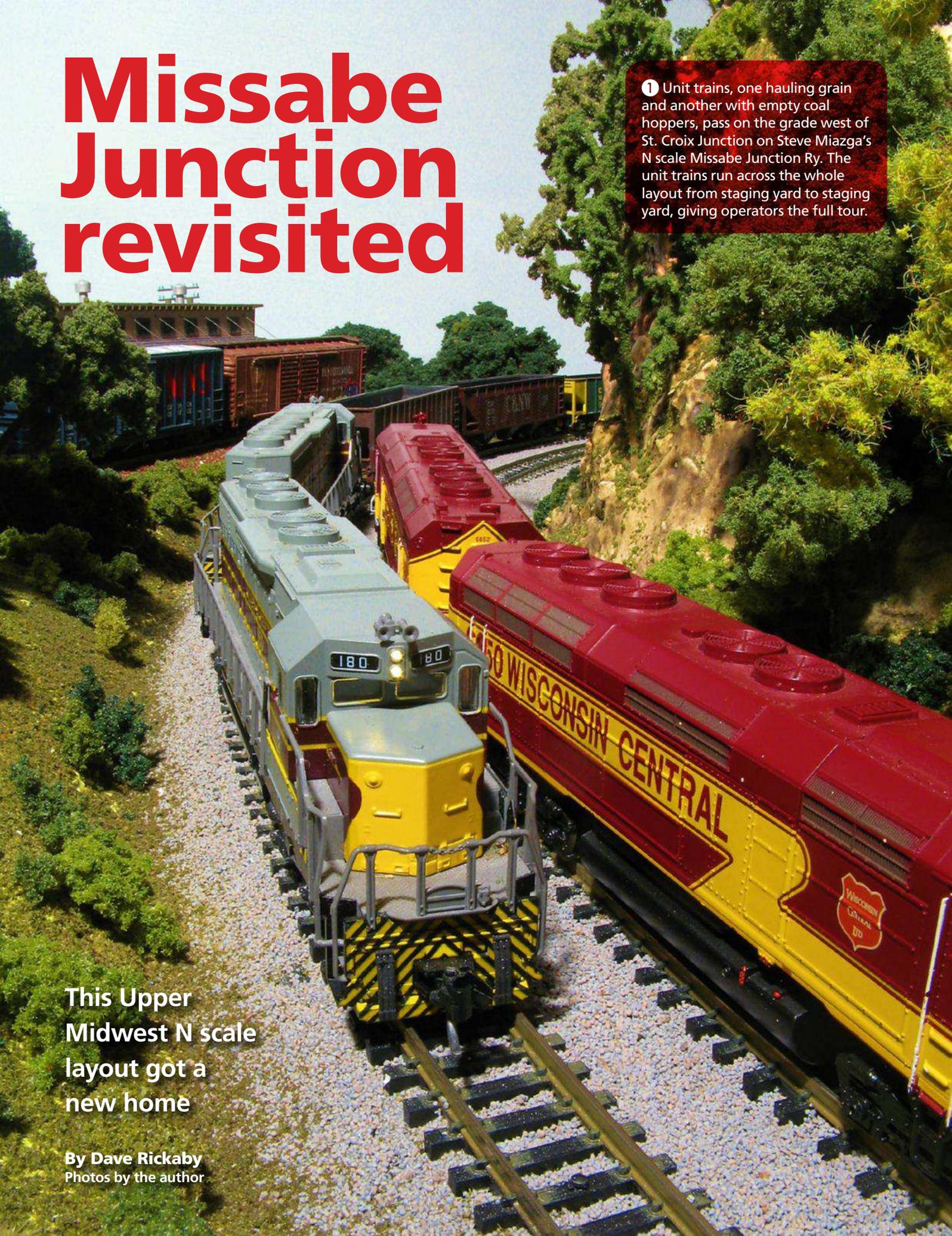
Finally, POLARITY ROUTE allows the switch machine's position to be set by the polarity of the incoming DC voltage. This is useful when the switch machine is being installed as a replacement for a stall-type switch motor. **MR**

# Missabe Junction revisited

① Unit trains, one hauling grain and another with empty coal hoppers, pass on the grade west of St. Croix Junction on Steve Miazga's N scale Missabe Junction Ry. The unit trains run across the whole layout from staging yard to staging yard, giving operators the full tour.

This Upper Midwest N scale layout got a new home

By Dave Rickaby  
Photos by the author



**Steve Miazga grew up** in Rhinelander, Wis., where he saw the ebb and flow of railroading on the Soo Line and Chicago & North Western Ry. Over time the C&NW pulled up its tracks, and the Soo gave way to the Wisconsin Central and eventually the Canadian National.

During the time the WC served the line, locomotives from the Fox River Valley RR; Atchison, Topeka & Santa Fe; and Burlington Northern were seen here, as well as units from the Duluth, Missabe, & Iron Range, hauling ore from the Minnesota Iron Range to the ore docks at Escanaba, Mich. This is where the seed for Steve's N scale Missabe Junction Ry. was planted.

If Steve and his railroad sound familiar, it's because they were featured in the November 2013 issue of *Model Railroader*.

## Steve's journey

Steve started in N scale in 1974 with a gift from his wife. He built two or three small layouts using that equipment, but every time he moved, he had to bust up the Hydrocal-based scenery with a sledgehammer.

When Steve and his wife moved back to Rhinelander from Chicago in 1976, he took an 11 x 11-foot space in the basement and built his first version of the Missabe Junction Ry. The layout was double-decked and had a lot of features, but it was too cramped for the space.

This layout was torn down in 2002 when the family moved to the Milwaukee area. Again, Steve took what space was available for the new layout. This one was built as a free-standing 14 x 18-foot island layout. It's the one featured in the November 2013 MR.

Realizing the agony of tearing down and rebuilding layouts with each move, Steve had moved away from plaster as a scenery base and switched to extruded-foam insulation board.

As a civil engineer, Steve understood arcs and tangents. He designed his layout using CadRail computer-aided drafting software. Preparing for another move, he built the layout in sections that could be easily dismantled and reconstructed. The sections were 30" wide with a 1 x 4 perimeter frame. Cross pieces made from 1 x 4s laying flat provide a surface for extruded-foam insulation board, which was glued to the perimeter and the cross pieces with construction adhesive. (See the illustration on page 31.)

The sections were clamped, leveled, and screwed together. This concept served him well when, in 2014, the layout



**2** A quartet of Soo power awaits assignment at the Missabe Junction roundhouse. Besides Soo equipment, diesels from Wisconsin Central; Canadian National; and Duluth, Missabe & Iron Range make appearances on Steve's layout, just as they did in the area where he grew up in northern Wisconsin.



**3** The Highland/Alister transfer, LO3-East on the timetable, is being eased across the Pelican River bridge on its way out of Pelican Rapids. Steve uses Woodland Scenics Realistic Water for modeling lakes and rivers.

had to be dismantled and moved to another new home.

## The third time's the charm

The current layout is Steve's third version of the Missabe Junction Ry. The layout has always been a reflection of his boyhood experiences with railroading up in the northern woods of Wisconsin, but it's now built for several people to operate.

Steve's new basement came with a larger footprint, which allowed him to expand the layout. The railroad is now 18 x 22 feet, built as a freestanding island

designed for comfortable access around the perimeter and the interior aisles.

Steve added a 2-foot section to the Missabe and Highland Junction yard areas, which increased the track storage and walking distance between points to help eliminate operator congestion.

One of the shortcomings Steve found with his former layout was the stub-ended staging. Since the layout wasn't constricted on the two sides anymore, the solution was to wrap the staging and an expansion around the layout. He added a 16-foot-long, five-track, double-ended staging yard along the back of the layout. Two tracks are for eastbound trains and two for westbound trains, leaving the center open for the main line. The staging tracks each hold two trains.

Steve based the width of the outer expansion on insulation board sized to fit garage doors available in 3/4" and 1 1/2" thicknesses. It came in panels 14 1/2" wide by 4 feet and 8 feet long.

The thickness was ideal for working with Woodland Scenics SubTerrain risers. So the width and thicknesses became the standard for the expansion. CadRail was once again used to update the existing design.

A "train catcher tray" along the edge of the layout prevents equipment from falling on the floor in the event of a derailment. This way trains would fall



4 Here's our Wisconsin Central unit grain train again, led by FP45 no. 6652, passing the Berghoff Brewery and GFC Elevator on its way to Missabe Junction. Steve uses joint compound finished with a damp sponge to get a smooth surface for his roads.

only 4 to 5 inches. The tray also provided added stability to the layout, since it spans the section joints. When screwed in place, it made the layout very stable.

The tray is also useful as a place for operators to set their instructions, train order sheets, and beverages during operating sessions, as well as for tools when Steve works on the layout.

Steve's trains traverse a 150-foot main line with a maximum grade of 2 percent. The exception is a 4 percent grade on Highland Hill over Lake St. Croix to Highland Junction. The mainline minimum radius is 15", with no. 6 the minimum for Atlas turnouts and medium radius for Peco turnouts.

Code 80 flextrack from Atlas and Peco were laid on Woodland Scenics Trackbed, and everything is weathered.

Realizing the cost to automate the close to 100 turnouts on the layout, Steve opted for manual ground throws. Space for switch machines is challenging in N scale yard areas, as well.

Steve models the period from the 1960s through the 1990s. The

locomotives are primarily from Atlas, Kato, and InterMountain. Older locomotives that don't meet Steve's current standards reside in a showcase shelving unit.

Some of Steve's rolling stock dates to 1974, when Minitrix, Arnold, and Rivarossi were the dominant players in N scale. He enjoys updating his older freight cars to present-day standards, doing things such as removing the old running boards, brake wheels, and stirrup steps, and replacing them with etched-metal parts.

Since 2004, Steve's focus has been on prototype-specific cars from Micro-Trains Line and a few from Athearn, Atlas, Fox Valley Models, and ExactRail. His motive power is run using Digital Command Control (DCC) from Digitrax, with the decoders being from either Train Control Systems (TCS) or Digitrax.

### Building scenery

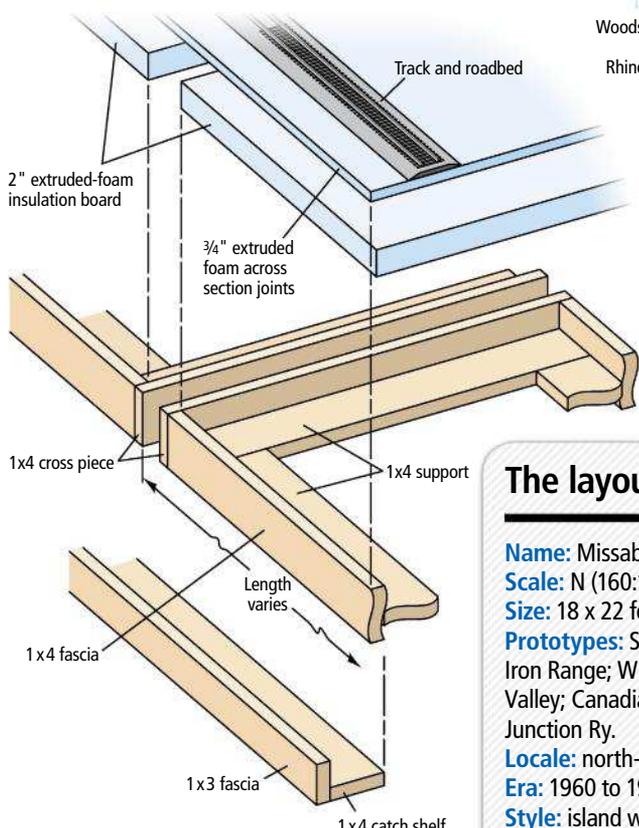
The landforms on the Missabe Junction Ry. were constructed using

extruded-foam insulation board, carved with a hot wire tool. [Use only in a well-ventilated area. - Ed.] This was then covered with Sculptamold and painted. Steve used ground foam from Woodland Scenics and Scenic Express for his grass and brush effects.

For his rockwork, Steve carved foam rock faces with the hot wire, and then covered that with lightweight Hydrocal. Once dry, the Hydrocal easily accepted coloring. Acrylic washes were used for exposed rock faces.

Initially, Steve used trees from Woodland Scenics, but later added models from Scenic Express and trees he made from natural vegetation such as goldenrod and sedum, along with astilbe flowers for conifers.

He picks new plants every year because the natural vegetation disintegrates over time, and it's always good to have a replacement inventory (especially on an operating layout). The natural trees are allowed to dry, coated with 3M spray adhesive, and coated with flocking material from several sources. Tree



Layout benchwork

### The layout at a glance

**Name:** Missabe Junction Ry.  
**Scale:** N (160:1)  
**Size:** 18 x 22 feet  
**Prototypes:** Soo Line; Duluth, Missabe & Iron Range; Wisconsin Central/Fox River Valley; Canadian National; and Missabe Junction Ry.  
**Locale:** north-central Wisconsin  
**Era:** 1960 to 1990  
**Style:** island walk-in  
**Mainline run:** 150 feet  
**Minimum radius:** 15"

**Minimum turnout:** no. 6 Atlas and Peco medium radius  
**Maximum grade:** 4 percent  
**Benchwork:** 1 x 4 open grid sections with extruded-foam insulation board surface  
**Height:** 45" to 50"  
**Roadbed:** Woodland Scenics Trackbed  
**Track:** code 80 Atlas and Peco flextrack  
**Scenery:** Sculptamold on extruded-foam insulation board  
**Backdrop:** 1/8" tempered hardboard  
**Control:** Digitrax Digital Command Control



**5** With its work completed, the Fredric Turn, LO39-East led by ex-Fox River Valley RR SD24 no. 2401, departs eastbound from Fredric toward Sugar Camp to end its day back at Missabe Junction Yard.

trunks are painted before planting on the layout.

To create Lake St. Croix and the Pelican River, Steve used Realistic Water from Woodland Scenics. He tinted the base layer to simulate depth before pouring the surface layer. He also used Woodland Scenics Water Effects to produce waves and river rapids.

To make his roadways, Steve used spackle, joint compound, or Sculptamold depending on the texture he wanted. To make smooth radius curves, he first used either a compass or template, and then bent .060" styrene strips to fit. He tacked these down with HO rail spikes, and then used an artist's flexible palette knife to spread the compound and strike it off. Once it set up, he smoothed the dried surface with a wet 150- to 300-grit sanding sponge and painted it appropriately.

Steve's scenery is almost complete, and he's superdetailing scenes by adding



**6** A trio of Duluth, Missabe & Iron Range units struggles upgrade past the Orchard Hill Farm toward Highland Junction with its loaded taconite train in tow. The train is coming from the Missabe Range and will travel to the ore dock at Escanaba, Mich.

figures, detail castings, and vehicles primarily from Classic Metal Works (Round 2 Corp.) – some with detailed add-on features from manufacturers like GC Laser.

The current focus for the layout is lighting. Steve is working to install lights inside his buildings, add streetlights and yard lights, and light any other areas necessary for night operation.

Lighting is by light-emitting diodes (LEDs). Steve can power almost 50 lights with a single transformer, and controls the lighting with push buttons.

Steve uses Woodland Scenics Just-Plug lights for street lighting. To install the streetlights, Steve uses an extra-long 1/16" drill bit to make a hole in the foam. He then pushes a 1/16" metal tube into the foam and feeds the wires through the tubing, extracting the tube and wires from under the layout.

For lighting his structures, he uses LEDs from Evans Designs, which have a bridge rectifier included with them so they can be wired for DCC, DC, or AC. The Evans Designs lights require a larger hole on the top of the layout to accept the rectifiers. Steve uses a 1/8" bit for the main hole and a 3/8" bit to widen the hole in the top 1" of the scenery base to provide a space for the rectifier.

After boring the hole and running the wires, he packs a wad of paper toweling above the rectifier, then covers the paper towel with a quick-setting rock putty. To power the lights, Steve uses old telephone transformers that produce 12 to 18 volts.

The structures on the layout, other than his scratchbuilt ones, vary from older Heljan kits to newer offerings from GC Laser, Bar Mills, and American Model Builders. He also has buildings from the Walthers Cornerstone series, and many built from Design Preservation Models modular wall sections.

Steve started scratchbuilding about six years ago and has really been bitten by the bug. Steve used plans from the Soo Line Historical and Technical Society for some of the buildings and trestles. He scratchbuilt the Marengo (Wis.) depot to use as the Alister depot, and the Highland Junction depot was built from plans for the Heafford Junction (Wis.) depot.

Steve incorporated a lot of family fun in the layout. There are buildings named after grandkids, grandparents, and other family and relatives.

Backdrops are 1/4" plywood, and the layout is illuminated

## Running the railroad to find trouble

**Your layout is complete** and the next chapter in your modeling life is to set up operations on the railroad. This was my story on the Missabe Junction Ry.

The plan was in place – a combination of freight and passenger trains with switching and unit train movements; a total of 20 jobs scheduled to work through about a three-hour session with up to six operators.

Layouts always look great when completed, but do they really operate well? After hosting sessions for about a year, it became obvious that one critical track section was missing on the Missabe Junction Ry.

The railroad includes several yards, and the largest and busiest is Missabe Junction, which builds all local trains. In the original track plan, I had passing tracks on the north and south sides of the yard. I thought this would allow through trains to move through the yard without disrupting switching.

What I didn't realize was that these tracks also played the role of switch leads, so any through movements would force the yard switcher to yield, thus interrupting yard operation.

The solution was to bypass the yard for as many of the through trains as possible, and if the change could isolate a track as a lead to the yard ladder, it would be a total win.

The Missabe Junction Yard has diamonds at each end. These provide connections to main line tracks that connect with the yard. One track became the obvious bypass – all that needed to be done was to add a missing leg to one of the diamonds. That could provide the bypass connection, and it could also serve as a dedicated 700-scale-foot-long switch lead. The new track is shown in red on the plan on page 31.

Construction is complete and the bottlenecks are gone. I wouldn't have uncovered this conflict without operating the railroad. Half of the trains operated during a session benefit from this new routing, a change which now allows the team to complete its routine in a three-hour session. – *Steve Miazga*

by 4-foot fluorescent and LED shop lights hung from the basement ceiling. For night scene operating, the room lighting is dimmed to the lowest level of the 60-watt LEDs.

### Operating the Missabe Junction

In the 2013 article, Steve was still developing his operating scheme. Since then he's attended many operating sessions in the Milwaukee area and has not only experienced many different forms of operation, but also gained friends who could help him develop his own operating plan for the Missabe Junction Ry.

His scheme features a combination of unit trains, manifests, yard jobs, way freights, and passenger trains. The unit trains come and go from staging, passing across the layout.

The manifests serve the three yards on the system. The main originating yard is at Missabe Junction, at the center of the layout. A classification yard at Alister serves local industry. The yard at Highland Junction is an interchange yard, routing cars

from transfer runs to westbound and eastbound manifest trains.

Steve has a 20-train operating sequence that lasts three hours. The first time he ran a session, the crew got through 12 of the jobs, which was fine because he feels that the point is to have fun. The next session finished all 20 jobs.

A full session accommodates up to six operators. One person works the yard at Missabe Junction; another holds the same duties at Alister Yard.

The remaining operators rotate through the train list running the passenger trains, unit trains, manifests, two turns, and a couple of way freights as they come up in sequence. Steve has signs around the layout that show east and west at all of the locations. There's also a large CAD drawing of the layout on the wall that allows his operators to orient themselves to the railroad.

Steve acts as a roving dispatcher and troubleshooter. All the operators carry a copy of the sequence list. Each train also has a concise job description that indicates where it's coming from, where it's going to, and the power assignments.

In N scale, operators sometimes have a hard time seeing car numbers on





7 Through freight T50-West, led by custom-painted Wisconsin Central SD45 no. 6652, prepares to depart Hodag Siding for Missabe Junction on its way across the layout.

rolling stock. Using car cards to set out and pick up cars requires operators to read the numbers on the cars. To keep things simple and fun, Steve employs wheel reports.

A wheel report tells the operator which type of car or cars, and the

number of said car or cars, go to an industry by town or location. This gives the operator the flexibility of looking at his train and deciding which of the cars to spot at any given location without having to discern car numbers.

### Future projects

After many operating sessions Steve has come to the conclusion that he needs another staging yard, which will be built off of Alister Yard. This would give a reason for trains to run through Alister.

Steve is also considering rebuilding parts of Missabe Junction Yard. He currently uses Atlas turnouts there, which allow for a 1½" spacing between tracks. He wants to replace these with Peco medium radius turnouts, which allow for a 1¼" track spacing, letting him add up to two more yard tracks.

### Staying focused

Steve is a member of the National Model Railroad Association (NMRA).

He's working to becoming a Master Model Railroader, an additional goal since he retired. He feels this will keep him focused and help him to become a better modeler.

Steve, a member of the Wisconsin Southeastern (WISE) Division of the NMRA, enjoys entering the modeling competitions at the meets. For him it's not about winning awards, but being able to test his skills against other modelers. He also enjoys sharing how he built his projects. To date, he's been averaging one Best-in-Show per year.

He encourages modelers to get involved in operating sessions because they give meaning to the hobby. A layout is no longer just a static display to look at or to run a train here and there, but becomes a wonderful, living, breathing entity. Most of all, he enjoys the camaraderie and laughter that comes with his operating sessions and the hobby in general. It's all about having fun! 

*Dave Rickaby is a frequent contributor to Model Railroader.*

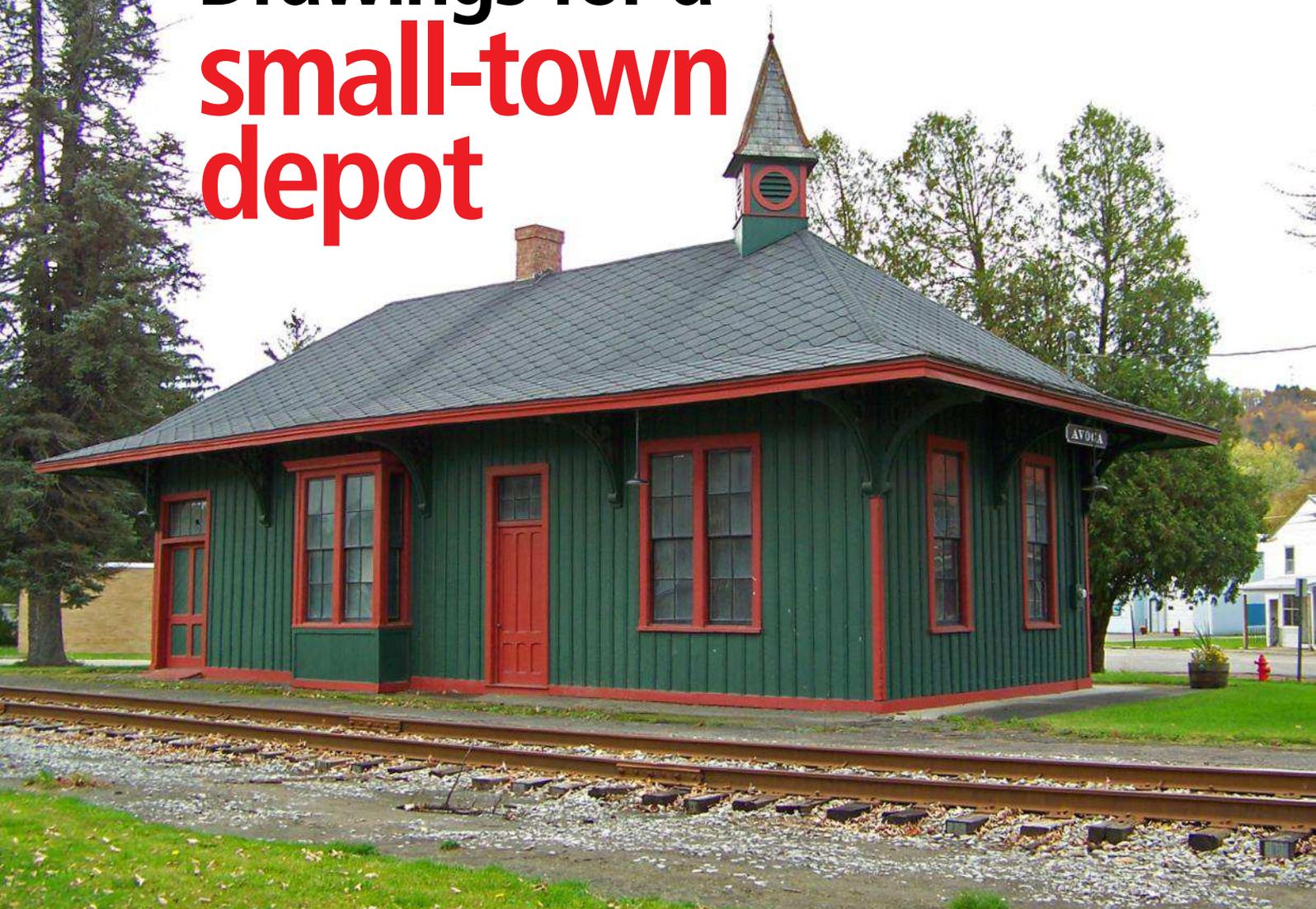
## Meet Steve

Steve and his wife, Jenny, live in Pewaukee, Wis., and have raised three sons. Born and raised in Rhinelander, Wis., Steve graduated with a degree in civil engineering from the University of Wisconsin.

Besides model railroading, he enjoys outdoor cooking, Wisconsin artisan cheese tasting, railroad history, golf, and travel.



# Drawings for a small-town depot



The Delaware, Lackawanna & Western station in Avoca, N.Y., is the subject of Harold Russell's latest drawing. The station has been restored to its original green and red scheme.

## This Delaware, Lackawanna & Western station still stands today

**By Harold W. Russell** • Photos and illustrations by the author

**In order to get data for drawings** of prototype structures, I visit the towns along a railroad's route. In 1973 my son, Michael, and I visited Avoca, N.Y., a town of around 2,000 residents in the south-central part of the state that was along the route of the Delaware, Lackawanna & Western (DL&W).

The DL&W was noted for its pagoda-style depots, whose main characteristics were a roof that curved sharply upward at the end; fancy roof braces, some of which featured a circle; and finials at the roof's peak. Structures with similar

architecture were built around the early 1880s.

Depots up and down the DL&W line were mostly in this style, but the Avoca station was different. The depot here had a slightly curving roof and featured a large steeple at one end. The roof braces were fancier, too. One might speculate that the town's elders wanted a structure different from neighboring communities.

After obtaining permission, we measured and photographed the building. Unfortunately, all the windows were

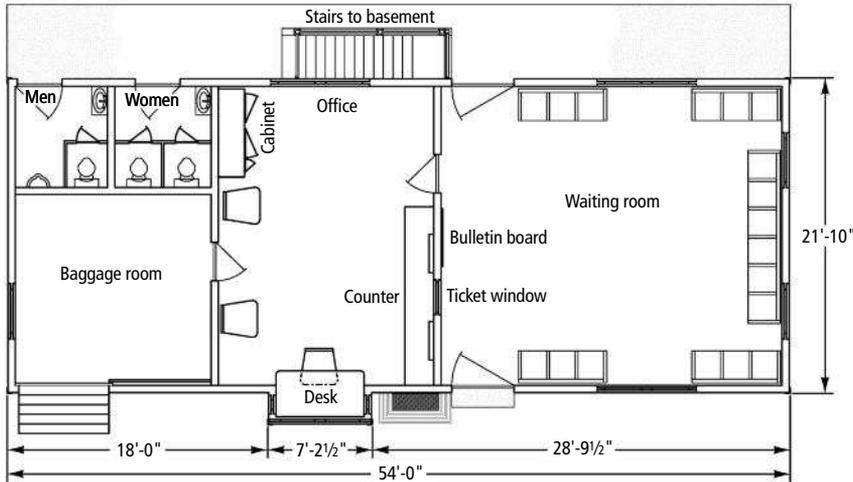
boarded up and the building was painted flat white. Nonetheless, my sketch and the negatives were filed for future reference.

Fast forward to 2016. An associate mentioned that the Avoca depot had been preserved. This warranted a return trip to take color photographs, gather additional data, and possibly look inside.

The depot featured a new roof and chimney and had been painted in DL&W's green and red depot colors. The double-track DL&W mainline that once ran to Buffalo with the *Phoebe Snow* has



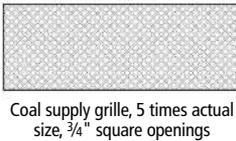
The *Phoebe Snow* passes the Avoca station at speed in this 1961 photo. The photo also shows that the double-track arrangement used during the DL&W era. David Monte Verde collection



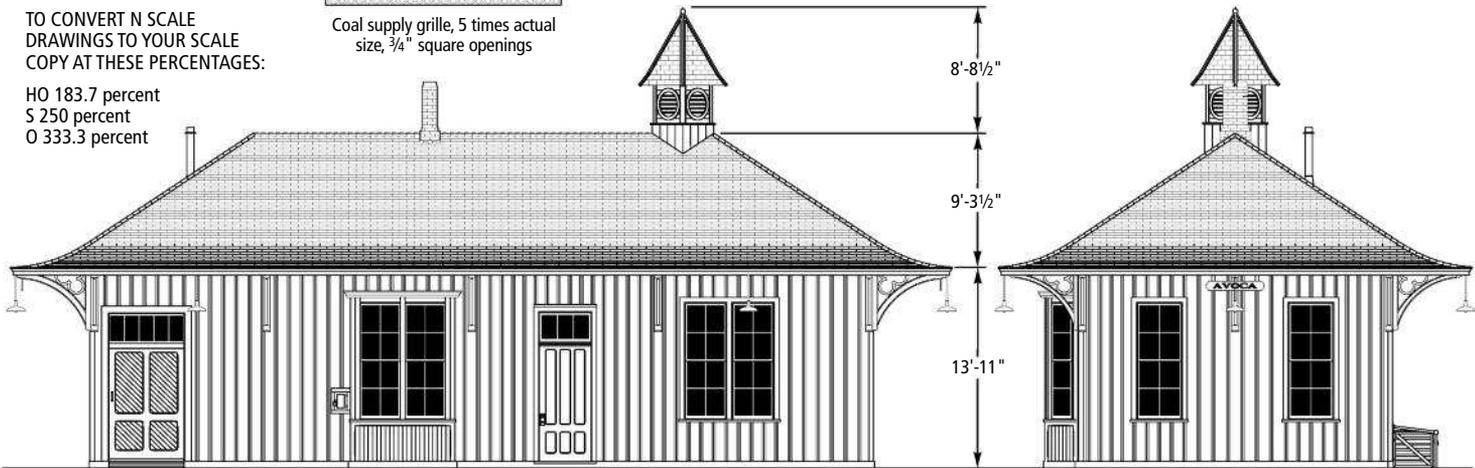
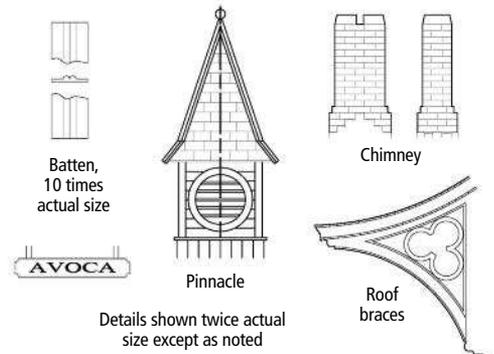
**Ratio 1:160, N scale**

TO CONVERT N SCALE DRAWINGS TO YOUR SCALE COPY AT THESE PERCENTAGES:

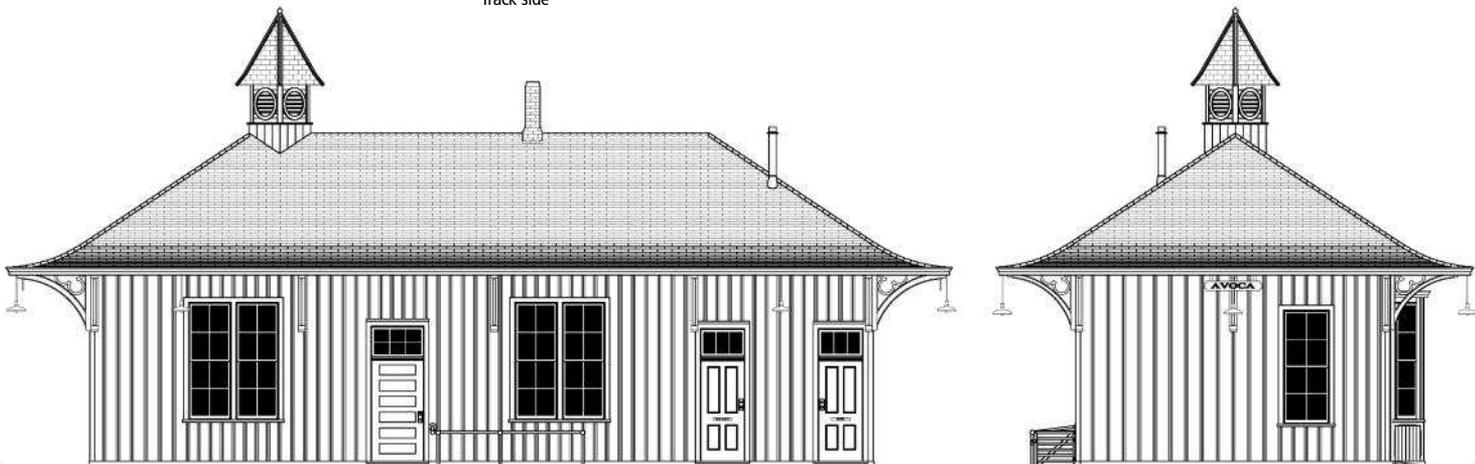
- HO 183.7 percent
- S 250 percent
- O 333.3 percent



Drawn for *Model Railroader* magazine by **HAROLD W. RUSSELL**  
 Magazine purchaser may have photocopies of these drawings made as an aid to personal model making but does not have the right to distribute copies of the drawings to others. Contact *Model Railroader* regarding commercial use of these drawings.



Track side



Road side

been severed north of Wayland, about 15 miles to the northwest of Avoca. Today, B&H Rail Corp. operates a single-track line through town.

## Making the drawing

Further inspection revealed the station had a basement stairway and a removable grate next to the bay window that indicated that the structure was heated by a coal-fired basement furnace and water heater.

The geometry of the roofing and chimney had been changed; I copied the 1973 pattern. The interior was still not accessible and the windows were covered with black curtains. I designed a floor plan based on the arrangement of two pagoda-style depots that I'd previously drawn. Also, I noted the two doors located at the end of the building were labeled MEN and WOMEN.

## Modeling the Avoca station

Making a scale model of the Avoca station would be a relatively easy scratch-building project. Wood or styrene board-and-batten siding could be used for the walls. Tichy Train Group or Grandt Line castings would be suitable for the single and paired double-hung windows. The freight house and passenger doors would either have to be scratchbuilt or kitbashed from commercial parts. Diamond shingles are available from a variety of manufacturers.

The most challenging part of the project would be the eave brackets. An ambitious scratchbuilder could construct a master and make castings. However, this might be a scenario where laser cutting or 3-D printing would be a better (and quicker) option.

With most of the supplies readily available, why not try building the Avoca, N.Y., DL&W station? It would be interesting to see the solutions modelers come up with for the eave brackets and steeple. [MIR](#)

*Harold W. Russell's illustrations have been appearing in Model Railroader for more than 50 years. In that time he's amassed more than 100 bylines. Harold's drawings of passenger shelters appeared in our March 2018 issue.*



Here's how the station looked when Harold and his son, Michael, first visited Avoca in 1973. The station was painted white, the windows were boarded over, and a single track passed in front of the building.



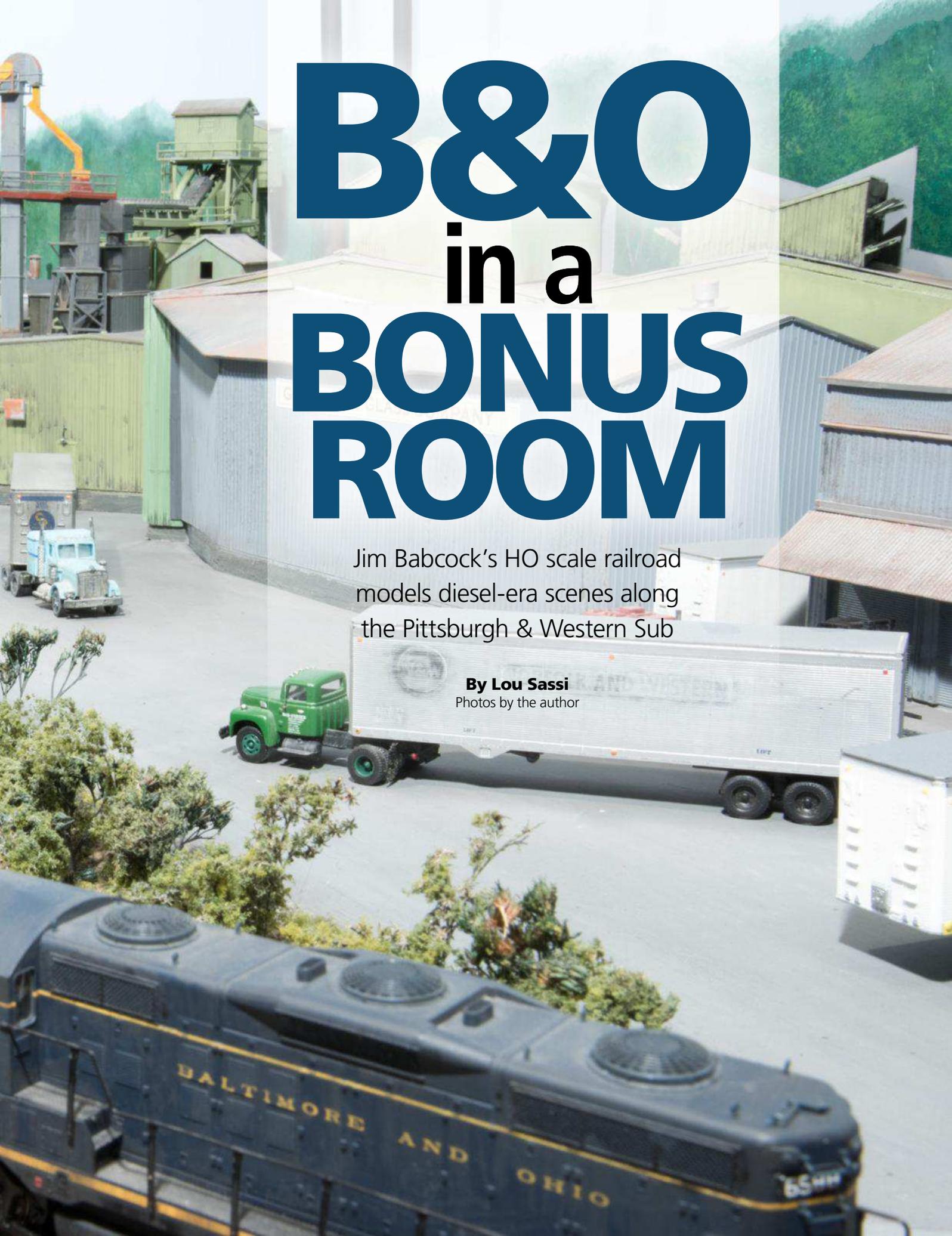
This 1970s photo shows the ornate eave brackets. Laser cutting or 3-D printing are possible options for modeling these details.



The cast-iron grating by the bay window indicates the station was heated by coal. The trackside location is unusual, as coal was usually delivered from the street side.



1 A pair of Baldwin RF-16 "sharks" meets an Electro-Motive Division F7A and GP9 on Jim Babcock's Baltimore & Ohio Pittsburgh & Western Sub. The HO scale layout models the B&O in 1966.



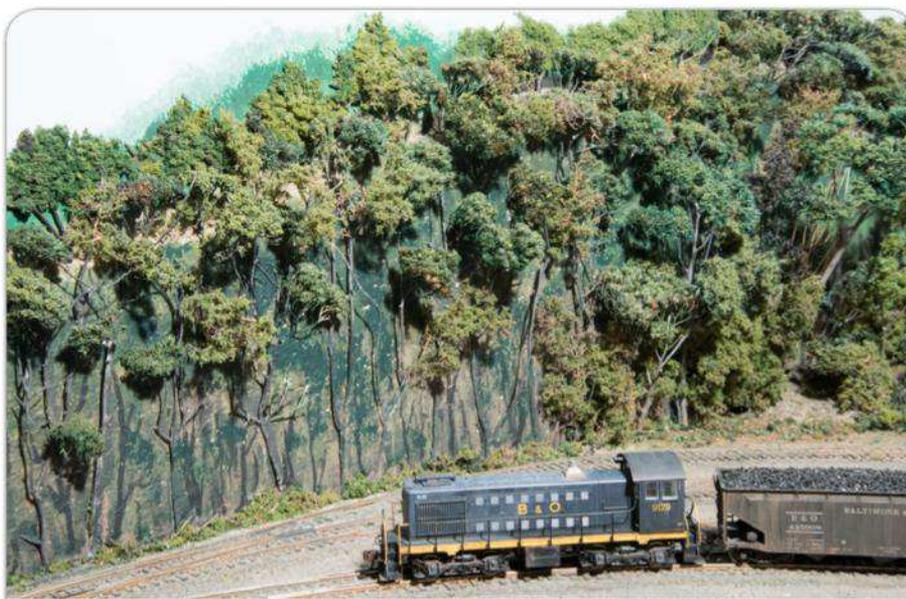
# B&O in a BONUS ROOM

Jim Babcock's HO scale railroad models diesel-era scenes along the Pittsburgh & Western Sub

**By Lou Sassi**  
Photos by the author



2 The layout is housed inside a bonus room above Jim's two-car garage. Just out of the photo on the left is a door that leads to a 6 x 23-foot staging/storage room.



3 With no room for scenery in this narrow scene, Jim added the illusion of depth by gluing pieces of 3-D scenery material to his painted backdrop.

## Deep woods in a narrow space

**Behind the return track** from Wildwood Mine, the distance between the track and the backdrop is only 1½". I'd painted the backdrop a tree green color, but the scene needed more depth. However, I didn't have the room to plant 3-D tree models.

My solution was to add the 3-D trees to the backdrop by gluing Woodland Scenics armatures flat against the surface. I also glued parts of Scenic Express trees as well as sprigs of sedum to its surface. I used larger twigs to model tree trunks. Once the glue dried, I painted additional tree trunks between the 3-D parts to add the illusion of looking into the deep woods. — *Jim Babcock*

Jim Babcock lives in North Carolina, but in the "bonus" room above his two-car garage, it's always summer 1966 in western Pennsylvania. That's the setting of his 19'-6" x 23'-3" HO scale Baltimore & Ohio, Pittsburgh & Western Subdivision. The choice of setting was an easy one for Jim, as he grew up about a mile away from the prototype P&W Sub. "1966 also happens to be the year I got married," Jim added.

The P&W Sub ran from Pittsburgh to New Castle, Pa. The line was an important connection for the B&O between Pittsburgh and the road's western divisions to Chicago as well as its northern divisions to Buffalo, N.Y.

Jim designed his track plan with suggestions from his friends, Dick Flock and the late John Roberts. The scenicked portion of Jim's layout models locations along the P&W Sub from Pittsburgh's 33rd Street Bridge over the Allegheny River to Bakerstown, Pa., which was also the highest point on the subdivision. Unscenicked staging areas represent Glenwood Yard in Pittsburgh to the east and New Castle Yard in New Castle, Pa., to the west.

## Building the P&W Sub

Layout construction began in 2001, not long after Jim retired, and he and his wife moved into their current home. Jim's above-the-garage train room was finished with drywall, carpeting, and a

## The layout at a glance

**Name:** Baltimore & Ohio RR, Pittsburgh Division, P&W Subdivision

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

**Size:** 19'-6" x 23'-3"

**Prototype:** Baltimore & Ohio

**Locale:** western Pennsylvania

**Era:** 1966

**Style:** walk-in

**Mainline run:** 125 feet (double-track main line)

**Minimum radius:** 24"

**Minimum turnout:** no. 4

**Maximum grade:** 3 percent

**Benchwork:** L-girder

**Height:** 42" to 48"

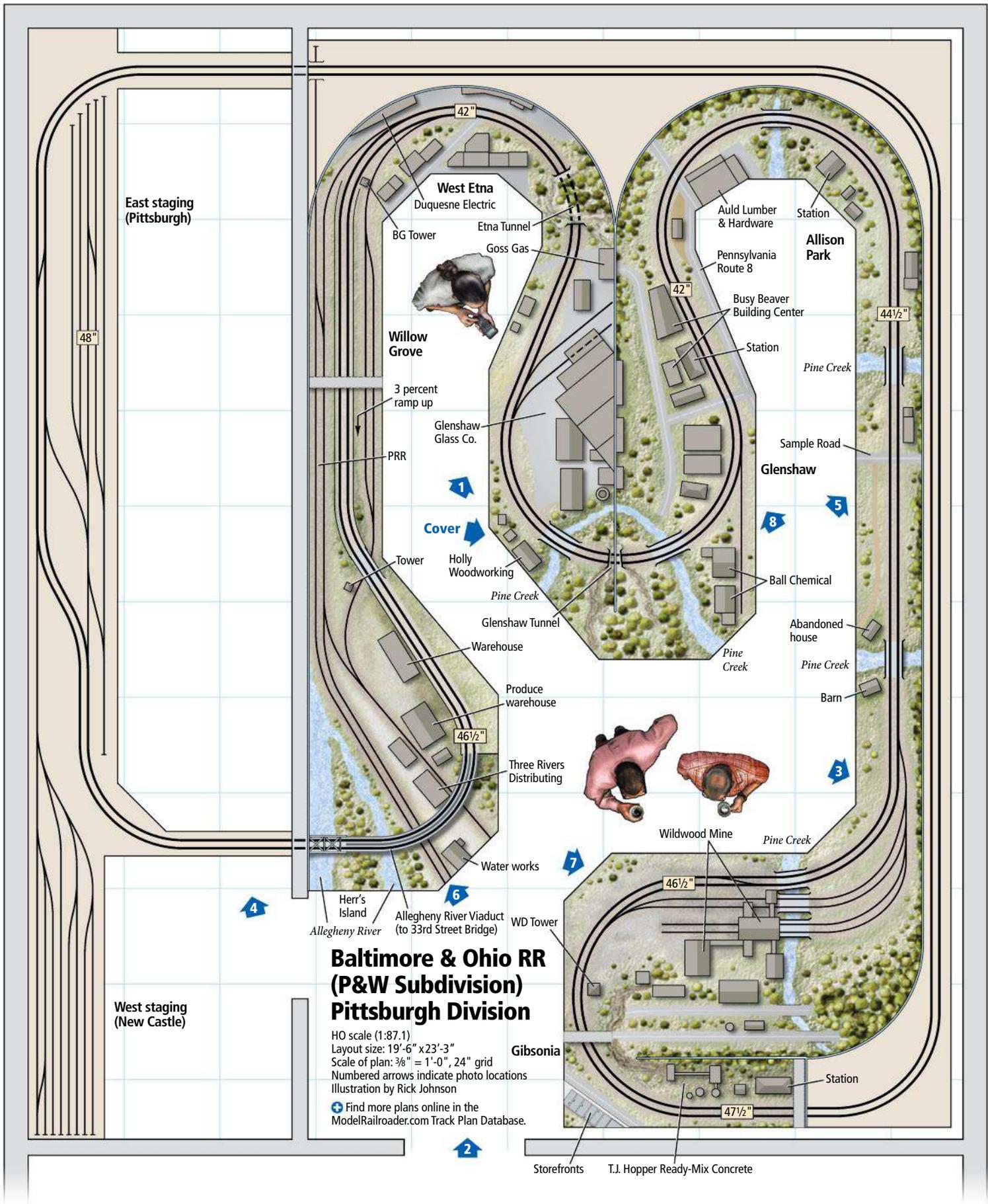
**Roadbed:** Homabed

**Track:** codes 83 and 100 flextrack

**Scenery:** sculpted extruded-foam insulation board

**Backdrop:** painted tempered hardboard

**Control:** MRC Digital Command Control



East staging  
(Pittsburgh)

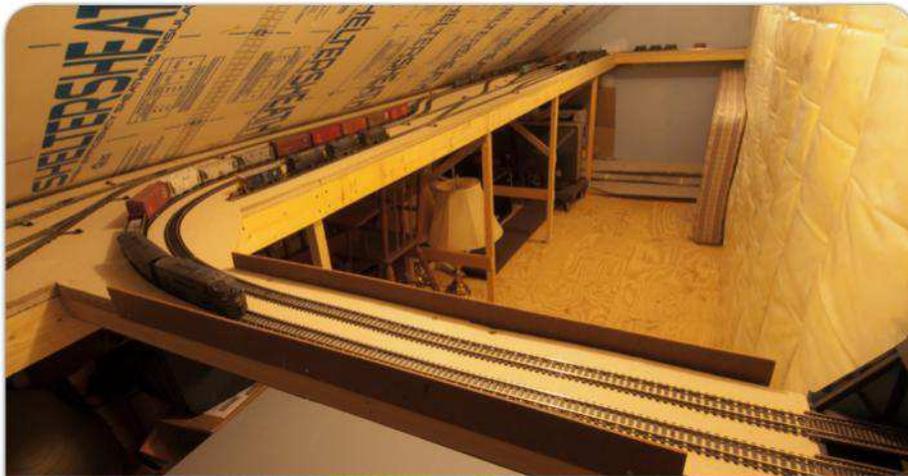
West staging  
(New Castle)

**Baltimore & Ohio RR  
(P&W Subdivision)  
Pittsburgh Division**

HO scale (1:87.1)  
 Layout size: 19'-6" x 23'-3"  
 Scale of plan: 3/8" = 1'-0", 24" grid  
 Numbered arrows indicate photo locations  
 Illustration by Rick Johnson  
 Find more plans online in the  
 ModelRailroader.com Track Plan Database.

Gibsonia

Storefronts T.J. Hopper Ready-Mix Concrete



4 Jim's bonus room had its own bonus room. The former storage area now houses two staging yards and a connection for the continuous-run main line.

## Storage to staging

**My 13 x 23-foot above-the-garage** train room also includes an adjoining 6 x 23-foot storage room. This space had been used mainly to keep holiday decorations and other infrequently used stuff out of the way. However, I wanted to use this area to expand my main layout with continuous running, staging, and car storage yards.

The entrance to this space was at the far end of the main room and blocked by the main layout benchwork. Before getting too far with layout construction, I relocated the entrance to the end of the wall near the main entry into the train room. I moved all the holiday and other stuff out of the way to a newly built 4 x 8-foot loft above the garage.

Next I built five 2-foot wide, 4-foot high leg assemblies connected by girders and placed along the angled roofline of the exterior wall. Then I topped this benchwork with ½" plywood followed by ½" Homasote. I sealed the top with tan latex paint.

As shown in the track plan on page 41, the completed 2 x 23-foot table has enough room for storage/staging yards at each end. The double track main line connects the yards and runs continuously through two 5" square holes cut in the wall between the rooms.

Although there's a duckunder to get into the room, the remaining aisle width is a roomy 46". With the extra space under the benchwork, there's even room to store more stuff if the need arises. – *Jim Babcock*

drop ceiling, but he still had some modifications to make. He replaced the ceiling fan light fixture with track lighting and painted the walls sky blue. He also relocated the door to an adjoining storage space that would eventually become the layout's staging area.

For the main layout, Jim used L-girder benchwork on brackets cantilevered from the wall studs. He topped the Glenshaw central peninsula, Allegheny River, and the Wildwood mine benchwork with ½" plywood. For the staging area Jim used box-girder construction. [See "Storage to staging" above for more about how Jim planned and built the staging area. – *Ed.*]

The mainline track is code 83 flex-track from Atlas and Lima/Roco laid

atop Homabed Homasote roadbed. Jim used Micro Engineering code 70 flextrack at Wildwood Mine. All the hidden and staging area track is code 100 flextrack.

Jim used mainly Atlas no. 4 and no. 6 turnouts, except for a few Walthers and Shinohara curved turnouts as needed. All but two of the turnouts are manually controlled using Caboose Industries ground throws.

Jim wired the layout for Digital Command Control (DCC) using a Model Rectifier Corp. Prodigy Advance<sup>2</sup> system. He has a tethered Prodigy throttle plugged into a panel on the central peninsula as well as a Prodigy Wireless throttle. The latter makes it easier for him to follow a train around the layout.



With the benchwork and track down, Jim screwed a tempered hardboard fascia to the ends of the benchwork stringers. However, he didn't like the unfinished look of the fascia, especially the gaps where the fascia pieces met at angles around corners. Inspired by a clinic he attended at a regional National Model Railroad Association conference, Jim, with the help of his wife, Barb, cut and glued brown indoor-outdoor carpeting to the hardboard. The home centers in



Jim's area stocked nothing but grassy green indoor-outdoor carpet, so he had to special order the brown carpet online. The finished fascia now has a much neater appearance.

### Summer scenery

Jim sculpted the basic landforms from extruded-foam insulation board. Satisfied with the scenery contours, he then brushed the foam with flat brown

latex house painted followed by applications of sifted dirt and Woodland Scenics Earth Fine Turf. In many areas he also added coarser textures of ground foam from several manufacturers.

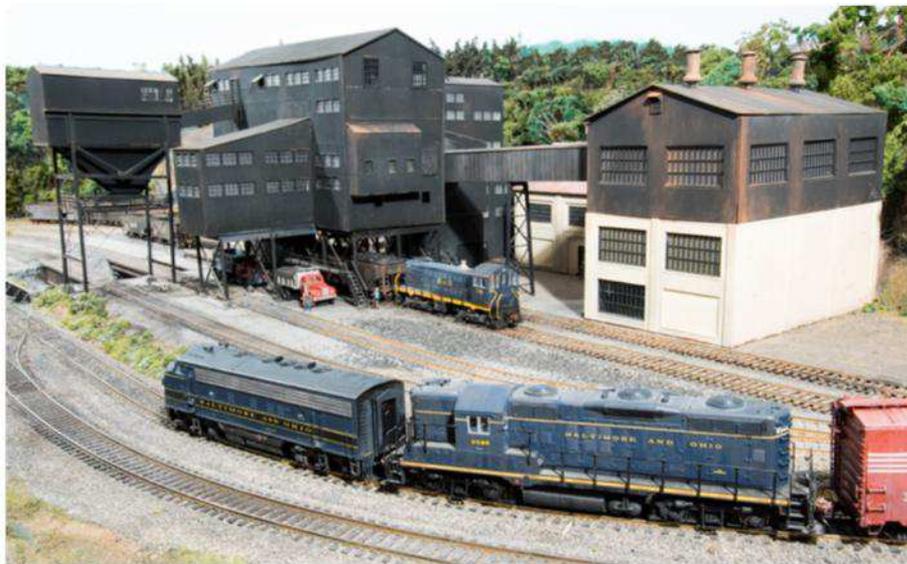
Most of the trees and bushes on the layout are from dried sedum flowers that Jim collected from a friend's garden. He painted them and applied flocking in green shades appropriate for summer. Many of the foreground trees are built from Scenic Express SuperTrees kits.

**5** Baltimore & Ohio F3A no. 4467 blows its horn for the grade crossing at Sample Road. Eight of Jim's 40 locomotives feature sound systems. All the engines have DCC decoders.

In some areas, including the return track at Wildwood Mine, Jim glued Woodland Scenics tree armatures flat against the backdrop and applied foliage. He also added some real twigs and painted trees to blend the background forest scenes together. Jim describes his



**6** A Baltimore & Ohio switchman rides the rear platform of an SW7 under the Allegheny River viaduct, while overhead an Alco S-2 leads a local along the main line. Once it crosses the river, the main enters the staging area.



**7** At Wildwood Mine, an Alco S-2 pulls coal loads from under the tipples while an F7A/GP9-led freight rolls by on the main. The mine buildings are a mix of scratchbuilt structures and kitbashed Walthers models.

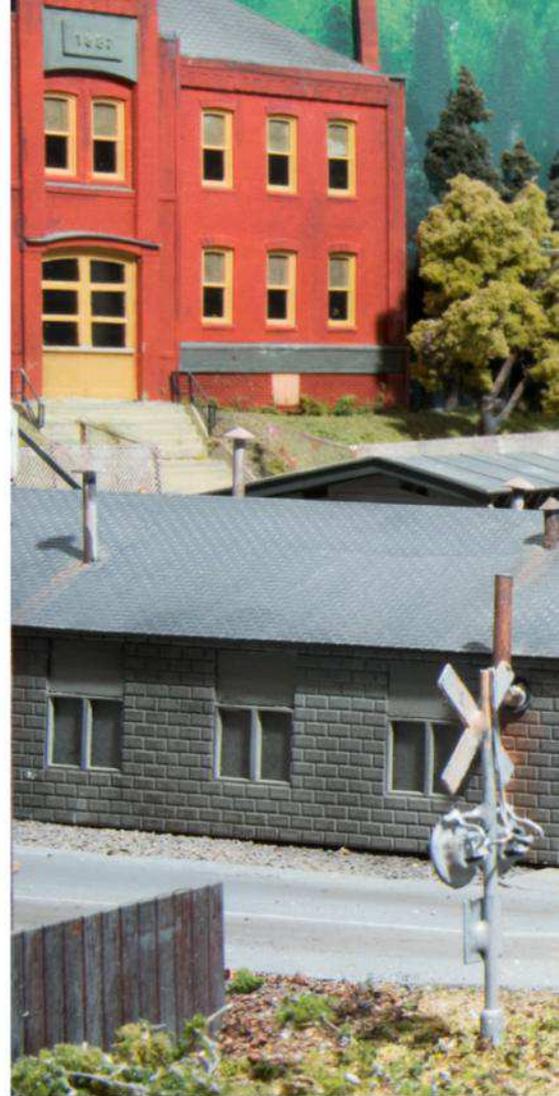
technique in “Deep woods in a narrow space” on page 40.

Jim modeled Pine Creek in several areas on his layout using epoxy resin Magic Water from Unreal Details. For the Allegheny River, he first brush-painted the plywood base with various darker colors to create the illusion of depth. After the paint dried, Jim brushed on multiple coats of gloss medium.

### Prototype-inspired structures

Most of the structures on the layout are kitbashed styrene models. One exception is Glenshaw Station, which Jim built from a Webster Classic Models wood craftsman kit. The village of Glenshaw is one of Jim’s favorite scenes.

On the other side of the peninsula is the Glenshaw Glass Co. Jim scratchbuilt



**8** The village of Glenshaw, Pa., is one of Jim’s favorite scenes. The B&O station is a wood craftsman kit from Webster Classic Models.

all the structures for this scene as they appeared in the 1960s, although some were selectively compressed to fit the space.

Another notable industry is the Wildwood Mine. The prototype was gone by the mid-1960s, but Jim used modeler’s license to bring it back to life on his layout. Following prototype photos taken by him and his friends over the years, Jim kitbashed and scratchbuilt the mine complex, mainly using Walthers parts.

Jim’s painting techniques vary depending upon the type of material he’s modeling. For the styrene structures with simulated brick walls, Jim spray-painted them with a base coat of red-oxide primer followed by a thin wash of concrete-colored acrylic paint. Once the wash dried, Jim rubbed it off the brick faces using a pencil eraser, leaving gray mortar lines between the bricks.

To simulate metal walls, Jim uses gray primer spray paint. He then applies thin



washes of grimy black and various rust-colored acrylics.

The layout features several through-plate and girder bridges, most built from Micro Engineering plastic kits. The through-truss bridge that spans the Allegheny River is built from a modified Walthers kit.

"I subscribe to the "good enough" philosophy," Jim said, "However, structures have to be appropriate for the time period and area modeled."

### Locomotives and rolling stock

Jim's locomotive fleet models Alco, Baldwin, and Electro-Motive Division diesels appropriate for the time period. All 40 of his locomotives have DCC decoders and eight are sound equipped.

Rolling stock on the P&W Sub is also era appropriate. Jim owns about 200 freight car models of various types. "As a B&O fan, I have a special affinity for wago-top boxcars," Jim added.

All the rolling stock is weathered to varying degrees, depending on the car's built date and the type of service it's in. Jim starts weathering by spraying a car

with clear matte finish, such as Testor's Dullcote. Working from the top down, he then applies acrylic paint washes to simulate rust and grime.

### Meeting the goal

As a builder of several model railroads, Jim has advice for anyone planning to build their own layout. "Plan, plan, plan!" Jim added, "Sketch everything to scale if possible and make sure a model fits before you build it."

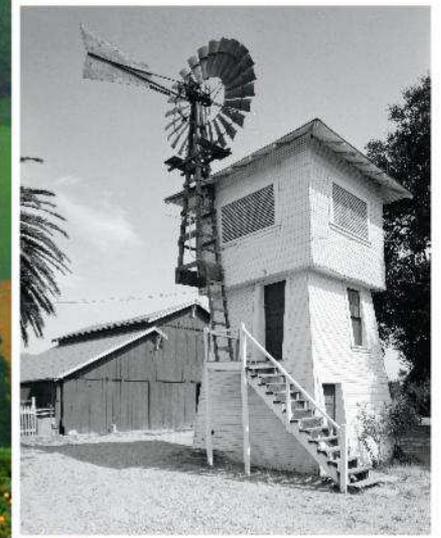
However, Jim is also first to admit that he didn't always follow his own advice. If he were starting over, he thinks it would have been better to raise the benchwork height to 50". He also found out the hard way on a few occasions that a turnout or curve didn't fit.

That said, Jim's layout has met his goal, transporting him and his visitors back to 1966 along his hometown railroad. "I wanted to re-create portions of the P&W Subdivision from Pittsburgh to New Castle, and run trains for my friends' and my own enjoyment," Jim said, "I feel, for the most part, I've accomplished this goal." 



### Meet Jim Babcock

**A model railroader for more** than 50 years, Jim Babcock is also a member of the National Model Railroad Association. Retired from Sony Electronics Corp., Jim and his wife, Barb, live south of Raleigh, N.C. They have a grown son and daughter as well as two grandchildren.



At left, Alain Kap's scratch-built California tank house stands in an orange grove on his HO scale Atchison, Topeka & Santa Fe Surf Line layout. The prototypes, one of which is pictured above, were common fixtures in California's agricultural areas. Prototype photo from Historic American Buildings Survey, Library of Congress

# Scratchbuild a California tank house

These agricultural landmarks were common sights in citrus-growing areas

By **Alain Kap** • Model photos by the author

**MY HOME LAYOUT** depicts Atchison, Topeka & Santa Fe's Surf Line in Southern California. This area was known for the citrus industry and its related features like orchards, packinghouses, and refrigerator cars.

In a thread on the Citrus Industry Modeling Group ([groups.yahoo.com/neo/groups/citrusmodeling](http://groups.yahoo.com/neo/groups/citrusmodeling)), I learned about another fixture commonly found in the citrus-growing areas of California, the tank house.

It's a water tower enclosed by siding, making it a "house" with usable interior space. They were built almost exclusively from redwood. Their heyday was from the 1850s to the 1930s, making them an important part of California's agricultural heritage.

A windmill that was often attached to the side of the tank house pumped water from a well up into the tank at the top of the tank house. From there it flowed down to the house, garden, or grove.

The enclosed portions of the tower were often used as laundries. Others were used for tool storage or as living quarters for crop workers.

Rural electrification and municipal water systems made the water-storage functions of the tank houses obsolete. But many remained standing, even after their tanks were removed. Some have survived until today, having been meticulously renovated or converted into guest houses.

My research led me to the Library of Congress, where I found information about the John Krohn Tank House, located in the Santa Clara Valley. The Historic American Buildings Survey (HABS) had documented this building. The information compiled by this survey was the basis of my project.

## The base

The base of the tank house is 15 feet square at the bottom

and 20 feet high. The sides slope inward toward the top to be approximately 11 feet square. Taking the thickness of the styrene into account, two of the four walls must be .120" narrower to result in a square assembly.

My preferred material for building structures is styrene, as it's sturdy, easy to cut and shape, and comes in a variety of styles to represent common car and structure sidings. I used .060" plain styrene sheet for the base of the walls.

I scored the outlines of the four wall sections on the sheet with a sharp hobby knife, then snapped the sections apart **1**. I next used a hobby knife to scribe the outlines of the door and window openings onto the wall sections. I use a handy tool that I bought from Micro-Mark, called a Nibbler, to bite out the openings from the inside **2**. I lightly sanded the edges until the castings fit properly.

After I had all the openings cut, I cemented the wall sections to the back of a sheet of Evergreen novelty siding, also called drop siding **3**. I applied a copious amount of liquid cement to the wall sections to make sure that they bonded properly. I also ran a small brush loaded with liquid cement around the edges. Capillary action drew the glue between the two sheets.

After the glue bond has thoroughly dried, I cut the sections out, taking care to leave a border of .060" on both sides of the narrower walls. These "ears" overlap the adjacent subwalls to make stronger joints. Since I plan on painting the door and window castings the same color as the walls, I cemented them in place at this stage **4**.

## Tank enclosure

The tank enclosure is 13 feet square and 10 feet high. Again

I scored and snapped plain styrene sections, cutting two of them .120" shorter. Then I cut a strip of novelty siding 10 scale feet high and roughly 55 scale feet wide. With a pencil I marked out the cut lines for the four wall sections. I next drew the outlines for the four louvered 4 x 6-foot openings, spaced on the strip so that they would be centered on each wall. Then I made louvers to fit each opening from styrene clapboard siding **5**.

Using the Nibbler, I cut out the openings. I laminated the plain wall sections to the back of the siding, taking care that the louvered opening was centered. I turned the assembly over and glued the clapboard louvers into the openings.

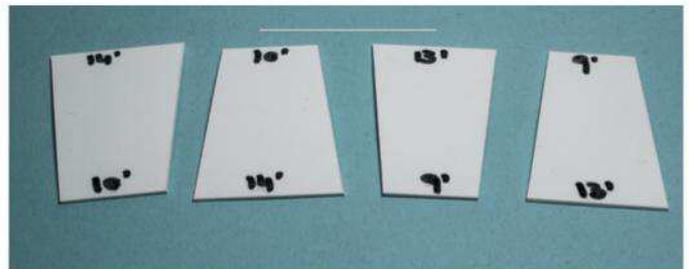
I made the trim around the louvered panels using Evergreen strip styrene. First I shaped the peaked top pieces from HO scale 1 x 10 strip. I made several extra pieces so I could select the best from the batch. The side trim is scale 1 x 8 strip styrene. I made the bottom sill from pieces of scale 2 x 4 strip styrene and the lower trim with a piece of scale 1 x 6 strip styrene. To get all of the trim straight and square, I cut each piece separately to avoid gaps. I used liquid cement to apply the trim **6** on the next page).

## Assembly

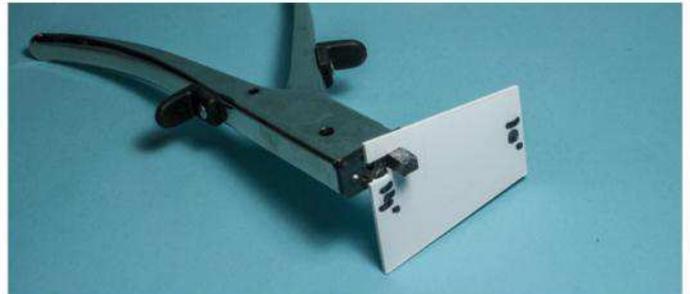
With all the siding laminated to the wall sections, I assembled the base. I glued the sections together, using a magnetic gluing jig to keep them square. A couple of rubber bands held the

upper part of the assembly together until the adhesive dried **7** on page 49). I used the same procedure on the tank enclosure.

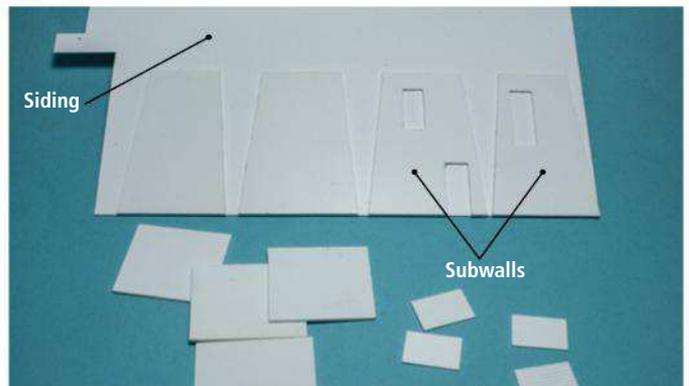
I cut a piece of .040" plain styrene approximately 11



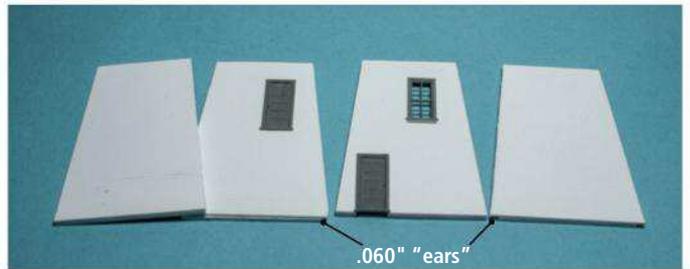
**1 Subwalls.** Alain Kap cut the base layer of the trapezoidal walls from .060" plain styrene sheet.



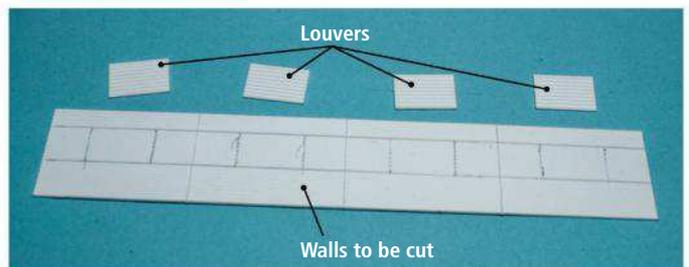
**2 Nibbling.** He used a nibbler, a tool for making square cuts in thin material, to cut openings for the doors and windows.



**3 Siding.** Alain laminated the subwalls to the back of styrene novelty siding.



**4 Castings.** Doors and windows from Grandt Line were glued in place.

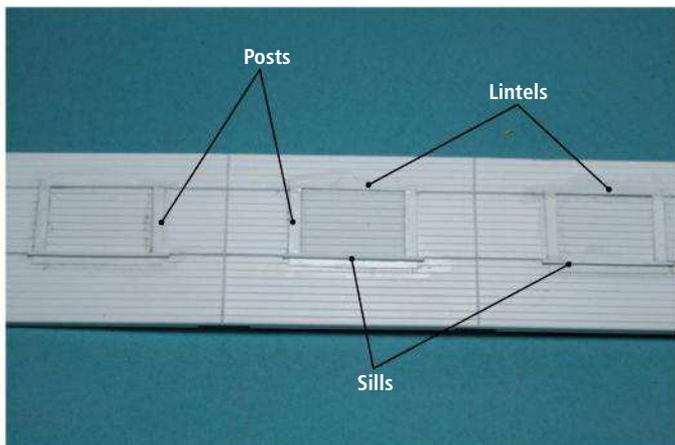
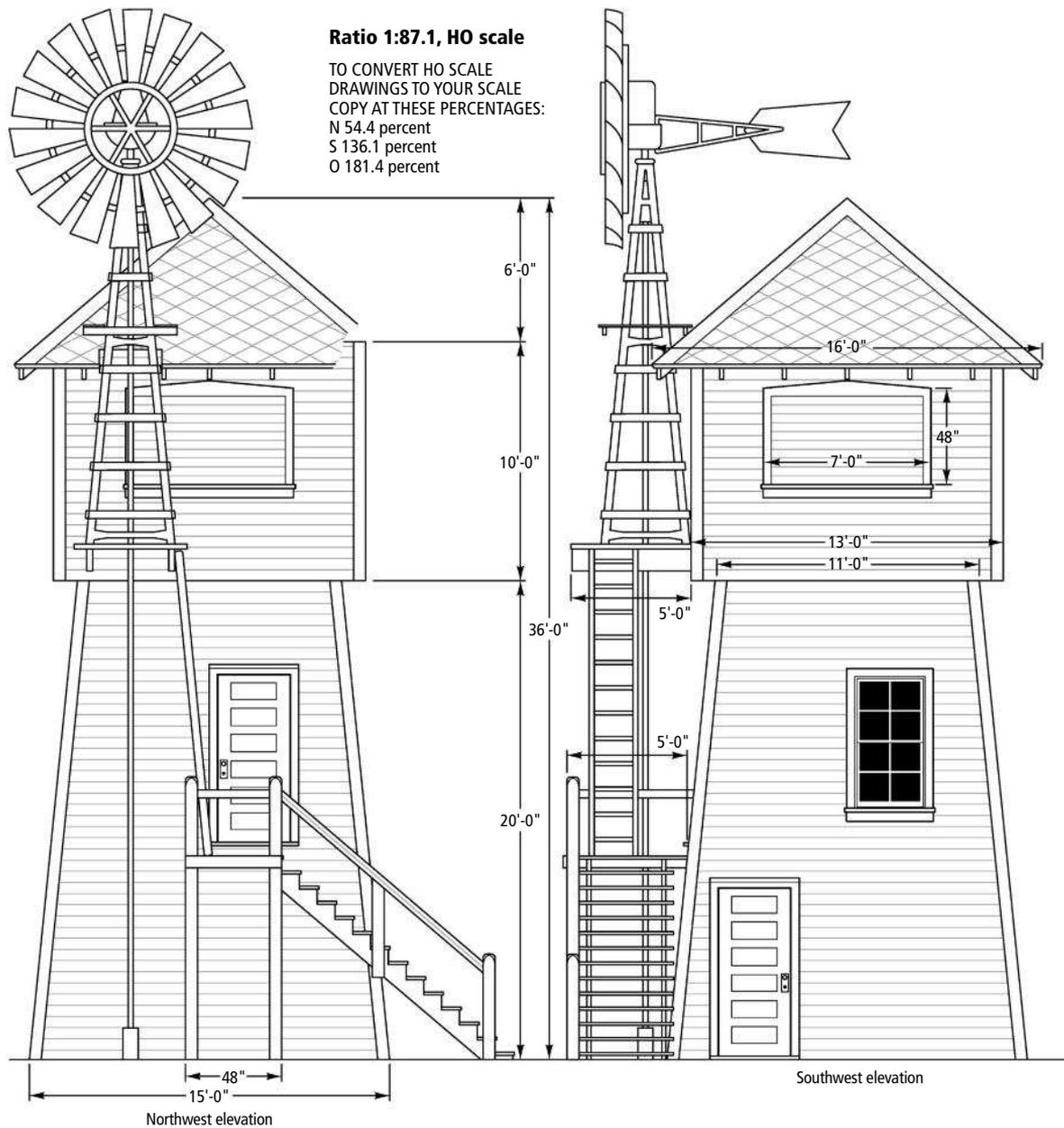


**5 Adding vents.** Alain cut windows in the tank walls for louvered openings.



### MORE ON THE WEB

Download the drawings on page 48 as well as a materials list for this project from our website, [ModelRailroader.com](http://ModelRailroader.com)



**6 A frame job.** He framed the louvers with strip styrene sills, posts, and lintels.

scale feet square and sanded it to fit snugly inside the bottom of the tank enclosure. To hide the seams, I added Evergreen .080" angle as corner trim **8**.

Next I constructed the small platform for the windmill. It consists of a 5 x 5 scale foot square piece of scribed siding glued to two supporting timbers of .060" x .125" styrene strip.

I attached the platform to the lower part of the tank enclosure. To make the joint secure, I drilled a hole in each

of the timbers to accept a piece of .019" brass wire. I secured the wire with a drop of cyanoacrylate adhesive (CA). Then I drilled two matching holes into the side of the tank enclosure and attached the platform.

I fabricated the concrete platform base from .060" plain styrene, including the pad for the door on the first floor and the well.

I wasn't sure whether I would include an interior on the second floor, so in case I later decided to do so,

I inserted a square piece of scribed siding to separate the floors. I sanded the sides until it fit snugly into the sloping walls at the right height 9.

## Roof

The hipped roof has overhanging eaves with exposed wood rafters. I started by building diagonal supports for the roof.

I first cut a square piece of plain styrene the same size as the footprint of the tank enclosure. Then, from some scrap pieces of plain styrene sheet, I cut two isosceles triangles with a peak of 6 scale feet and a base that measured the same as the diagonal across the square roof base, which came out to a scale 18'-6". Then I glued the triangles to the square piece, giving the shape of the hipped roof. I glued this assembly on top of the tank enclosure 10.

I covered the four sides of the roof one by one with .020" freight car siding, with the plain side up. After the glue on one side had dried thoroughly, I trimmed off the excess and repeated the step on the next side. This way, each side lined up perfectly without a lot of complicated calculations 11.

Then I turned the roof over and attached the exposed rafter tails using small bits of HO scale 2 x 4 strip styrene, spaced equally around the perimeter. On one side I made a cut-out for the windmill frame 12.

I covered the roof with Atchison, Topeka & Santa Fe-style diamond shingles from American Model Builders, although three-tab shingles could be substituted. From a previous project, I'd learned that peel-and-stick shingles detach after some time. So I covered the roof with double-sided tape and attached the shingle strips to it, starting from the bottom up, taking care to overlap them to create the diamond pattern 13.

## Windmill

The windmill is supported by a large wooden frame consisting of four angled posts. It rests on a small platform that's bolted to the side of the tank enclosure. There are horizontal cross braces across the members, forming a ladder to the top, where the windmill itself is mounted.

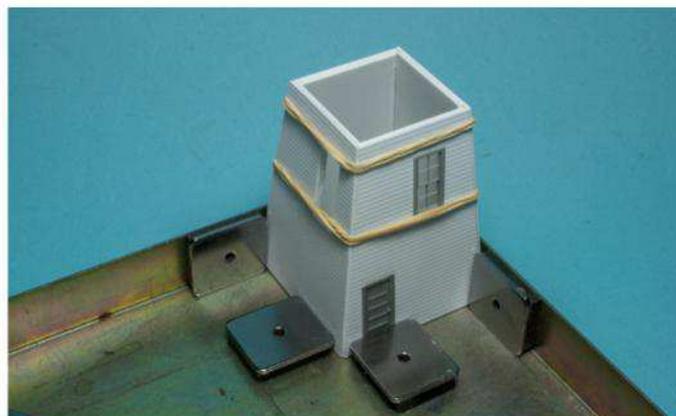
Initially I wanted to use a Campbell windmill, but that model's base only has three posts, so I instead chose the Van Dyke Farm Windmill by Walthers. This model has a simulated metal base, but I modified it to resemble the prototype. I shortened the posts at the third cross brace from the top and glued the sides together.

After the frame assembly dried, I applied 2 x 4 styrene strip cross braces. To space the rungs equally, I made a spacer from scrap styrene. I made the small platform on the frame from 2 x 6 styrene strip supports and 1 x 8 planks. As a final touch, I also modified the metal tail to make it arrow-shaped, like the prototype 14.

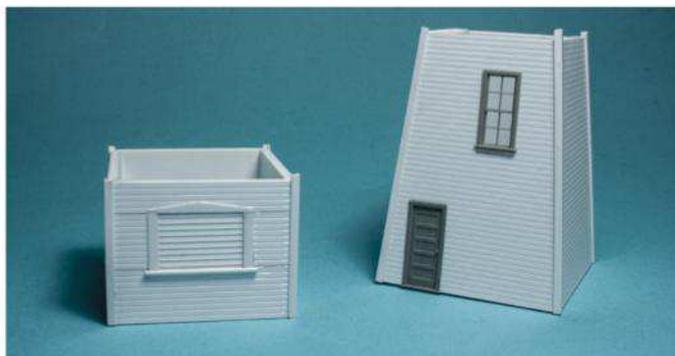
In the center of the pad over the well, I glued a short piece of  $\frac{3}{32}$ " styrene tube to accept the windmill shaft that drives the pump. I made the shaft from .047" styrene rod.

## Stairway

There is a wooden open-riser stairway on the side of the tank house extending from the first to the second floor. To build the stairway, I first built a small jig from scrap styrene to hold the stringers evenly, 4 feet apart. Then I slotted a pair of Campbell stair stringers into the slots in the jig. I cemented scale 4'-6" long treads made from HO scale 1 x 8 strips to the stringers 15. After the stair assembly had dried, I attached the stringers to the landing platform. As I'd done on the windmill platform, I inserted two pieces of .019"



7 **Keep it square.** A magnetic jig held the walls square while the glue cured.



8 **Corner trim.** Alain used .080" styrene angle as trim to cover the corner joints.



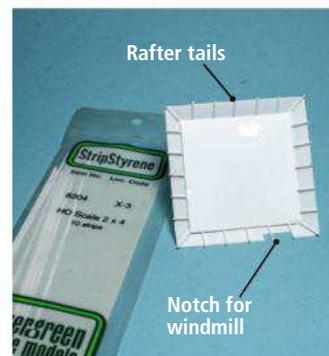
9 **Interior floor.** Alain made a floor for the second story in case he wanted to add an interior later.



10 **Raise the roof.** Alain started the roof with a flat base and a pair of diagonal supports of styrene sheet.



11 **Cut to fit.** Alain glued the roof sides on and cut them to fit, avoiding calculations.



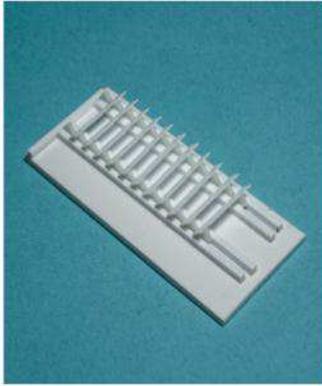
12 **Roof details.** He glued rafter tails of 2 x 4 styrene strip under the roof's eaves.



**13 Shingles.** Alain used double-sided tape to apply paper Santa Fe-style diamond shingles to the roof.



**14 Adding bracing.** Alain made wood cross braces and a platform for the windmill base from styrene strip.



**15 Straight and true.** A scratchbuilt jig held the styrene Campbell stair stringers during assembly.



**16 Attaching the stairs.** A pair of brass wires helped secure the stair platform to the wall.



**17 Finished up.** With the details painted and applied, the tank house was complete.

brass wire to secure the stairway to the wall. I glued the bottom of the stairway to a piece of plain styrene, representing a concrete pad.

The landing is supported by two wooden posts that also support the railing. I cut the 14'-0" long posts from .080" x .080" strips and beveled the tops. Then I cemented the posts to the side of the landing. The simple wooden handrail extends from a newel on the first level to the post at the landing, having one intermediate support. I made this handrail from 4 x 8 strip. I sanded the top of the intermediate post to fit the slope of the railing.

The wooden railing extends around the landing, ending at the wall. Before I attached the last piece of railing, I cemented the stairway assembly to the extended concrete base **16**.

### Painting

Painting was straightforward, since the prototype was painted white, including the doors and windows. I air-brushed the structure, including the stairway and the tank enclosure, with white Vallejo paint. Then I brush-painted the windmill frame and the wooden ladder with Vallejo Dark Earth.

I touched up the windmill with Steel and the blades with Aluminum. On the prototype, windmill tails were often painted a bright color,

so I painted mine Signal Red. Then I painted the windmill shaft with Vallejo Primer Grey, as well as the roof.

I painted the concrete foundation last, after all the sub-assemblies had been cemented together.

### Final assembly

Before I cemented the base structure to the tank enclosure, I attached clear acetate window glazing to the backs of the window frames, using canopy glue. This is a tacky glue that dries clear. Then I glued the roof assembly on top of the tank.

Next I inserted the windmill shaft that drives the pump through the platform and into the base. I placed the windmill on top of its tower, but didn't cement it, so it could turn freely. Finally, I added the ladder that connects the landing with the windmill platform **17**.

With this model, I have a prototypical structure that helps establish a time and place for my layout's citrus groves. **MR**

*A native of Luxembourg, Alain Kap is president of the National Model Railroad Association's European Region. He lives in Germany with his wife, Alice, and son, Alan Justin, and also has two grown daughters, Audrey and Shirley. He models the Atchison, Topeka & Santa Fe's Surf Line in HO scale.*

## For more information

I recommend the book *Tank House: California's Water Towers from a Bygone Era* by Thomas Cooper (Barn Owl Press, Santa Rosa, 2011). – *Alain Kap*



# Give Us 10 Minutes and We'll Take Your Hobby *HIGH-TECH*



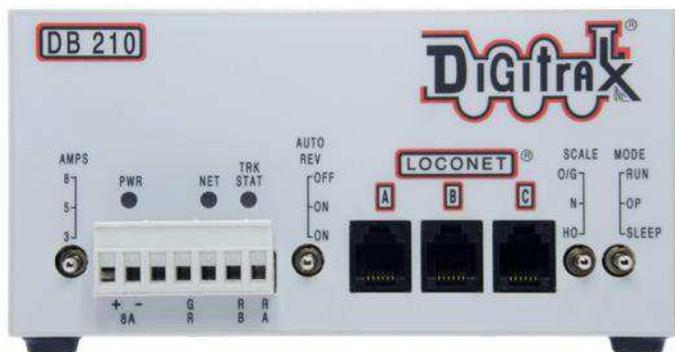
This fall, the MR Video Plus crew rolls out an **all-new series, MRVP Tech.**

Experts Ben Lake, Dana Kawala, and others offer tips and practical advice for incorporating cutting-edge technology advances now available to model railroaders! The series will cover everything from working with DCC decoders to installing and wiring signals to running your model railroad using micro-computers, and much more! If you're looking to explore the brave new world of modern technology, you'll want to tune in to this new series!

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# DCC boosters – What to buy and how many



**1 Getting a boost.** The Digitrax DB210 booster can supply 3, 5, or 8 amps depending on the power supply used with it. Note the toggle switch for selecting from three possible voltage ranges for N, HO, and O/G scales.

In my August 2018 DCC Corner column, I discussed considerations for selecting a Digital Command Control (DCC) system. This month, we'll look at boosters – what they do, how to determine how many you need, and wiring options. But first you need to understand what a command station does.

The command station actually has two major functions: It acts as a small computer keeping track of your locomotives, function settings, speed, and more. It also converts the commands it needs to send out to the decoders into a digital signal.

The digital signal it creates is low voltage and low amperage. The signal needs to be converted to the higher voltage and amperage signal that is sent out on the track; that's the job of the booster.

All the DCC command stations I'm aware of have a built-in booster, and that may be all you'll ever need. I regularly operate on a friend's mid-sized layout that runs on the output from a single Digitrax Zephyr unit capable of putting out about 12.8V at 2.5 amps. However, if he wanted to run consists with multiple locomotives, or more trains simultaneously, he

would probably need to add a booster.

**When adding boosters** to your existing command station, there are a few considerations to be aware of. First, make sure you can easily adjust the output voltages to match. Some command stations and boosters are voltage followers – in other words, their output is close to the input voltage. However, some boosters and command stations have external switches **1** for broad adjustments and internal potentiometers that allow fine tuning of this setting.

The new Digitrax command stations and boosters allow this adjustment using an advanced throttle.

Boosters are available in various amperages. It's important to realize it isn't necessarily better to use the highest amperage unit available. Instead, several smaller units or power managers may be a better option.

Also, mixing units with different output capabilities isn't a good idea. In some circumstances, such as when a locomotive derails and shorts out across track gaps powered by two different boosters, it's possible for a higher-powered booster to feed current back into the lower-powered unit, possibly causing it to fail. This is especially true if the boosters are from different manufacturers. In most cases both boosters' self-protection circuits would kick in, but it's best to plan for the worst-case scenario.

**So how many** boosters do you need? That depends on how many locomotives, lighted cars, and accessories you plan to operate using track power. First, consider

the locomotives and scale. Motors have changed a lot over the last 30 years, and the amount of current they require has decreased greatly. Consequently, if you have a collection of older locomotives or model in scales larger than HO, motors may require as much as 1.5 amps, each. Modern HO locomotive motors, on the other hand, typically require .3 to .5 amps, and the smaller N and Z scale models draw half that.

Now just because a motor only draws .3 amps, it doesn't necessarily mean that's all you'll need, especially if you're operating diesel locomotives. While steam locomotives typically operated as single units, diesels are often operated in multi-unit consists. If you want to operate a two- or three-unit consist, you'll need enough power to run all of the locomotives at the same time.

Another factor to consider is if there are any other powered accessories in the train, such as a sound or smoke unit, or in the case of



**2 Keeping cool.** The Model Rectifier Corp. boosters are available in 3.5 and 8 amp versions but externally are essentially the same. Both include a fan to help keep the components running cool.

passenger trains, lighted cars. The power demands of those devices have to be added into the total power needs.

**Let's look at** an example of a five-car passenger train pulled by a pair of diesel locomotives with sound units installed. Assuming these are fairly new locomotives, they probably have efficient can motors requiring less than .5 amp each at maximum load with sound and lights turned on. Next, consider that the five cars are lighted with two .03 amp incandescent bulbs each. Add that all up and we find that 1.3 amps would be required. Now if you also wanted to hook up a string of lights for the station and stores in town along with some other accessories, you could end up needing 2 amps or more just to operate one train on your layout.

**Boosters share** a common weakness: They generate heat internally. This heat is a by-product of the electrical components used in the circuits and the need to decrease the input voltage to the amount we want out on the tracks. Under normal operating conditions, most boosters can run all day without heat being an issue.

However, if boosters are placed next to a heat source, in a sunny location, or run for long periods near their maximum operating amperage, the excess heat starts to build up inside the enclosure. For this reason some manufacturers like Model Rectifier Corp. (MRC) install small fans in their boosters to cool them **2**. Others attach their power transistors to the inside of the enclosure and use it as a heat sink, or install a large heat sink on the enclosure itself, which you can see on the backs of the Digitrax units in **3**.

But even boosters with large heat sinks may not be able to get rid of all the excess heat. To prevent damage to the electrical components, boosters have temperature sensors that automatically shut the booster down when the internal temperature exceeds a set value. That's why most 5 amp boosters can only maintain a sustained output of about 3 amps.

If you experience periodic shutdowns when operating several locomotives, then you should suspect excess heat as the cause. The easiest way to deal with this issue is to place a small fan so it blows directly on the booster. If you have all your boosters in one location, you can build a box for them and install a small computer fan in it to keep the boosters cool. I described my installation in "ABCs of DCC power district management"



**BOOSTERS ARE AVAILABLE IN VARIOUS AMPERAGES. IT'S IMPORTANT TO REALIZE IT ISN'T NECESSARILY BETTER TO USE THE HIGHEST AMPERAGE UNIT AVAILABLE.**  
— LARRY

in the October 2017 issue of *Model Railroader*.

**Once you add** a booster, you'll need wires to carry the command signal between the command station and your booster – the command bus. Most systems use flat telephone-type cables for the command bus. In my March 2017 column, I showed how to make your own. In many cases you'll also need a wire that serves as a reference ground between the booster(s) and the command station **3**. Typically, a single heavy copper wire will handle that job. As always, do what the manufacturer recommends.

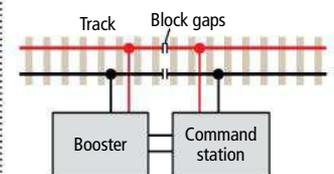
**Also, as soon as** you add a booster you'll need to subdivide the tracks into electrically isolated blocks **4**. Doing this prevents short circuits in one block from shutting down the booster and locomotives operating in the other block. Shorts are a fact of life, especially with some types of turnouts, and boosters come with built-in short circuit protection so they shut down when a short occurs. That means every train in the block that booster powers will also shut down until the short is cleared.

You can add additional blocks with separate boosters

**3 Keep it grounded.** Both NCE and Digitrax recommend installing a ground connection (the green wire) between the command station and the booster(s). The flat gray cable allows the DCC signal to be passed from the command station to the booster.

to limit the effects of short circuits, or you can install multiple circuit breakers between the booster and the blocks. Several manufacturers offer stand-alone circuit breakers that make it easy to add additional protection and help manage your power needs on medium to large layouts (my article in the October 2017 MR describes this also).

For more on wiring your layout for DCC, see my book *Wiring Your Model Railroad* (Kalmbach Books) and also visit my website at [www.dccguy.com](http://www.dccguy.com). **MR**



**4 Building blocks.** When adding boosters to a layout, the track must be subdivided into electrically isolated blocks, each powered by either the command station or booster(s).





## Bachmann HO Sound Value Baldwin 2-8-0

A steam-era freight hauler, the Baldwin 2-8-0 Consolidation, joins Bachmann's Sound Value roster. Much of the model's tooling is based on the Bachmann Spectrum-series 2-8-0 reviewed in the June 1998 *Model Railroader*. This new version comes factory-equipped with a Sound Value dual-mode decoder featuring sound technology by SoundTraxx. The decoder provides realistic effects on Digital Command Control (DCC) and direct-current (DC) layouts.

**The prototype.** In the United States, steam locomotives with 2-8-0 wheel

arrangements first appeared in the post-Civil War years. Like other locomotives of that time, a key to the design's success was a two-wheel pilot truck. Also called the Consolidation type, the 2-8-0 became the primary mainline freight locomotive in North America and remained so into the early 20th century.

Eventually the Consolidation became this country's most numerous locomotive type. New 2-8-0s were built as late as the 1930s and included "modern" features like superheaters, electric lights, and larger boilers and cylinders. By that time, most railroads had relegated their Consolidations to branchline and other

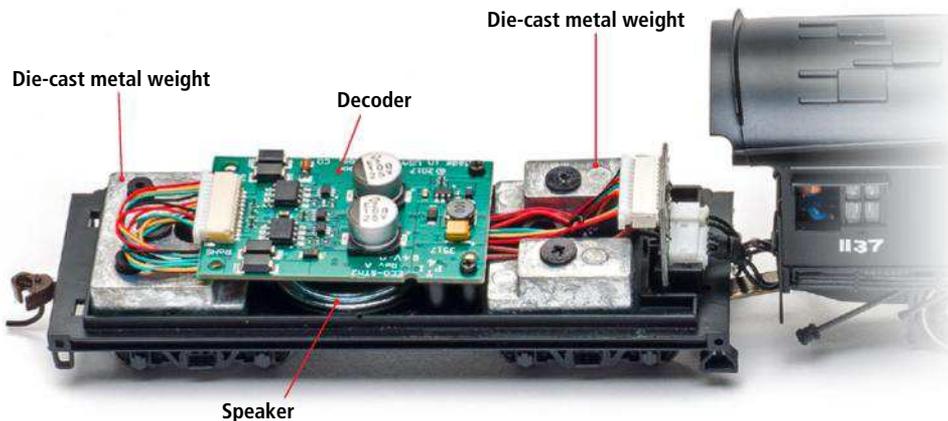
light-duty service, but many 2-8-0s rolled on through the end of the steam era in the 1950s.

**The model.** Like the Spectrum version, the Sound Value 2-8-0 is based on a Baldwin-built Illinois Central 900-class 2-8-0 that was rebuilt by the IC in the late 1930s. The model's dimensions closely follow prototype drawings published in the *Model Railroader Cyclopedia: Vol. 1, Steam Locomotives* (Kalmbach Publishing Co.). The model has some detail differences compared to the IC prototype that give it a more generic look, including an oval sand dome and a 32-foot United States Railroad Administration-style tender.

The plastic model features sharply defined boiler bands, rivet seams, and other molded detail. The handrails, piping, and air compressor are among the separately applied detail parts.

The cab interior includes a detailed backhead and painted crew figures. There's clear glazing in the cab windows.

Our review sample is decorated in a freelanced paint scheme as New York Central no. 1137. The Central had many Consolidation-type steamers, but they followed different proportions than the Bachmann model. All the lettering is clearly printed in NYC's post-1940 "modern" font.



Removing the plastic tender shell reveals the Sound Value decoder and speaker. A wiring harness connects the decoder to the locomotive's electronics.

**The mechanism.** The flywheel-equipped motor is enclosed by a metal weight that fits inside the plastic boiler. The motor drives the worm gear via a rubber belt. The worm gear engages the third driver axle while the locomotive side rods transfer power to the other driver axles.

After removing a single screw on the tender chassis, I lifted off the plastic tender shell. A downward-facing, round 28mm speaker is mounted to the bottom of the tender chassis. The Sound Value decoder is above the speaker. There are also die-cast metal weights attached to the chassis above each tender truck.

A wiring harness connects the decoder to the motor, headlight, and track power pickups in the locomotive.

**Performance.** I ran the model on our workshop test track with an NCE Powercab DCC system. Out of the box, the 2-8-0 accelerated smoothly from 3.5 scale mph in speed step 1 to a top speed of 72 scale mph in step 28. A typical 2-8-0 had a top speed of about 45 mph.

After setting the decoder to 128 steps, the engine crept along at 1 scale mph in speed step 1. The decoder's supported configuration variables (CVs), include those for fine-tuning the model's performance with speed tables as well as acceleration and deceleration momentum.

During real-world testing on our DCC-controlled staff layout, the Milwaukee, Racine & Troy, the Bachmann 2-8-0 proved to be a capable workhorse. The locomotive rolled through no. 5 and 6 turnouts without so much as a headlight flicker.

On the 3 percent climb to Sky Ridge, the Consolidation hauled a 10-car freight train without slipping. On straight and level track the locomotive can handle about 38 free-rolling HO freight cars.

On our DC test track, powered by a Model Rectifier Corp. Tech 4 power pack, the Bachmann 2-8-0 didn't start moving smoothly until I applied 7 volts to the track. At that point the model was traveling at 17 scale mph. The locomotive then accelerated smoothly as I advanced the throttle, reaching a speed of 75 scale mph at 12V, the maximum used for our DC speed tests.

I improved the locomotive's low-speed performance in DC by using our DCC system to set the decoder's analog starting voltage (CV 63) to a value of 2. At that setting the model started rolling



The Bachmann locomotive includes working front and rear knuckle couplers. Details include well-defined rivet seams, a coal load, and a separately applied tender ladder.

smoothly at 12 scale mph when I set the DC power pack to 6V. For those without a DCC system, these CVs can also be set with an analog programmer, such as an MRC Tech 6.

**Sound Value.** The Sound Value decoder offers the excellent, realistic sound reproduction of a top-of-the-line SoundTraxx decoder, but has simplified function and programming options. Unlike the Tsunami or Econami, the Sound Value decoder doesn't have Digital Dynamic Exhaust or button-controlled braking.

However, I could still use a DCC throttle to trigger many sound effects, including the bell, long and short whistle blasts, and a steam release. In addition to a master volume control (CV128), there are other CVs that allowed me to set the volume levels of individual sounds.

Function 0 turns on the headlight, which shines brightly when the locomotive's direction is set to forward and automatically dims when the direction is set to reverse. There's also a manual headlight dimmer that's programmed to function 7 by default. All the available functions can be remapped if desired.

Out of the box, the model's exhaust chuffs were out of synch. I easily fine-tuned the chuffs using CV 116. After some trial and error I found that a value of 121 provided the correct four chuffs per wheel revolution.

Free user manuals are available for download at [www.soundtraxx.com](http://www.soundtraxx.com).

## Facts & features

**Price:** \$349

**Manufacturer**

Bachmann Trains  
1400 E. Erie Ave.  
Philadelphia, PA 19124

[www.bachmanntrains.com](http://www.bachmanntrains.com)

**Era:** 1930s to 1950s (as detailed)

**Road names:** New York Central; Atchison, Topeka & Santa Fe; Pennsylvania; Southern Ry.; and Union Pacific

**Features**

- Die-cast metal chassis
- Electrical pickup on eight drivers and four tender wheels (two per side)
- Front and rear plastic E-Z Mate Mark II knuckle couplers at correct height
- Light-emitting diode headlight
- Minimum radius: 18"
- Precision motor with brass flywheel
- RP-25 contour metal wheels in gauge
- SoundTraxx Sound Value dual-mode decoder
- Weight: 1 pound, .5 ounce (Engine alone weighs 13 ounces)

### PERFORMANCE TESTS

<b>DRAWBAR PULL</b>	2.72 ounces 38 HO scale freight cars
---------------------	---

SCALE SPEED (DC)	
VOLTS	SCALE MPH
7 (start)	17
8	29
9	41
10	51
12	72

SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	3.5
7	20
14	41
21	62
28	75

In DC the available sound effects are automatic. With power to the track I heard the air pumps. As I advanced the throttle I heard the exhaust chuff. When I moved the throttle quickly, a grade crossing whistle signal sounded. Other automatic whistle signals or other sound effects can be added or turned off by programming CV 197 with either a DCC system or analog DC programmer.

Looking right at home hauling a local or other pike-size freight train, the Bachmann Sound Value 2-8-0 is a great choice for rounding out an HO steam roster. — Dana Kawala, senior editor



## Walther's N scale EMD SW1200 diesel

**Electro-Motive Division's SW1200** was its last switcher powered by the 567-series diesel engine, and Walther's has re-released the model in N scale in seven paint schemes. The direct-current (DC) models are equipped with Micro-Trains couplers and are upgraded to accept Digitrax or Train Control Systems Digital Command Control (DCC) decoders.

**The prototype.** Electro-Motive Division built 1,024 SW1200s in the United States and Canada between January 1954 and May 1966 for 81 customers in North and South America. Another 815 nearly

identical SW9s were built between February 1951 and December 1953.

These 1,200-hp locomotives featured 12-cylinder 567-series two-stroke diesel engines. SW9s and early SW1200s look identical, with two exhaust stacks and six louvers on the battery boxes behind the cab. SW1200s built after March 1955 have five louvers on their battery boxes.

Many options were available. Most locomotives had AAR Type A trucks, but EMD Flexicoil trucks were available. Different headlight and number box combinations were built, and several fuel tank sizes were offered. The largest,

1,200 gallons, required the air tanks to be mounted atop the hood.

Since these locomotives were also used as light road switchers, m.u. connections and the related drop steps were popular options. A few locomotives were even equipped with dynamic brakes.

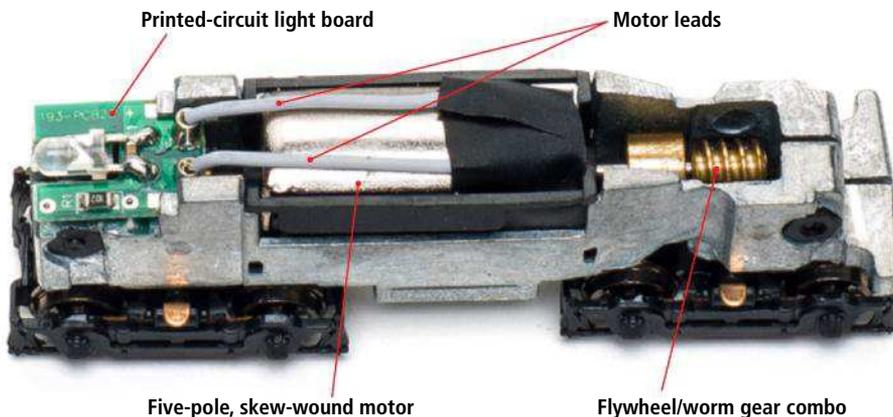
These engines led long lives, with some still working short lines today. BNSF Ry. was still operating its inherited units into the mid-2000s.

**The model.** We first reviewed an ancestor of this model in February 1998 when it was produced by Life-Like. The body shell appears to be the same, but the mechanism has been upgraded to accommodate a DCC decoder.

To remove the shell, first pull off the fuel tank casting. Be careful with the fine air-piping details. Pull on the bottom of the frame casting to remove the shell from the frame. The cab end of our sample was reluctant to move, so I tried pulling on the truck.

This resulted in the sideframes and wheelsets separating from the truck, which at least allowed me to slip a hobby knife between the frame and shell to lever the pieces apart. The truck parts snapped back together.

Be aware of the metal wipers attached to the bottom of the sill on the shell. They conduct electricity from the trucks



Walther's N scale SW1200 features a split die-cast metal frame. The motor is isolated from the frame to simplify adding a Digital Command Control decoder.

#### PERFORMANCE TESTS

**DRAWBAR PULL** .48 ounce  
11 N scale freight cars

#### SCALE SPEED (DC)

VOLTS	SCALE MPH
1.5 (start)	<1
3	5.2
6	27
9	52
12	75

to the frame halves and are fragile. This also means the model won't move with the body detached.

Under the shell is the typical N scale die-cast metal split-frame chassis. A five-pole, skew-wound open frame motor is trapped between the halves. At the cab end, a brass flywheel/worm gear combination drives the rear truck. Another worm gear drives the front truck.

Mounted above the front truck is a small printed-circuit (PC) board carrying a light-emitting diode (LED) for the headlight. The motor power wires are plugged into this PC board as well. The rear light isn't illuminated.

Instructions on the Digitrax and TCS websites ([www.digitrax.com](http://www.digitrax.com) and [www.tcsdcc.com](http://www.tcsdcc.com), respectively) show the relatively simple (no soldering) installation procedure for adding a DCC motor-only decoder. Adding sound would be a more challenging project, as there's hardly any room for a speaker.

The body shell is molded in three pieces: the cab, hood, and walkways and steps. Micro-Trains knuckle couplers are mounted to the body shell. The model matches drawings printed in *Model Railroader Encyclopedia: Vol. 2, Diesel Locomotives* (Kalmbach Publishing Co., out of print). The six louvers on the battery boxes make this an early SW1200.

The handrails are flexible plastic molded to near-scale dimensions. Separate bell, headlight, and horn castings complete the detail. The handrails and grab irons on the left side are molded on the long hood.

Our sample was decorated for the Milwaukee Road. The separation between the orange and black paint is sharp. The Milwaukee Road logo on the cab side and the road number and unit class are all printed clearly. The cab side windows have silver painted frames, and the gaskets on the cab end windows are painted black.

**Test track.** This little switcher can really crawl. At 1.5V, it began moving but

## Facts & features

**Price:** \$99.98

#### Manufacturer

Wm. K. Walther's Inc.  
5601 W. Florist Ave.  
Milwaukee, WI 53218  
[www.walthers.com](http://www.walthers.com)

**Era:** 1954 to 1985, as decorated

**Road names:** Milwaukee Road; Atchison, Topeka & Santa Fe; BNSF Ry.; Denver & Rio Grande Western; Elgin, Joliet & Eastern; Reading; and Southern Pacific. Two road numbers each, except Milwaukee Road and D&RGW (one road number each).

#### Features

- All-wheel drive and electrical pickup
- DCC-ready – can be equipped with TCS MT1500 or Digitrax DN-126M2 decoders, both sold separately
- Five-pole skew-wound motor
- Micro-Trains couplers, rear at correct height, front .040" too high
- RP-25 metal wheels, in gauge
- Split die-cast metal frame
- Weight: 1.7 ounces

cogged a bit. At 3V, when the locomotive smoothed out its motion, it moved at 5.2 scale mph. At 12V, the maximum of our speed tests, the model reached 75 scale mph. A prototype SW1200 had a maximum speed of 65 mph.

Our test force meter registered .48 ounce, equivalent to 11 free-rolling N scale freight cars on straight and level track. I took the Walther's SW1200 to our Red Oak project layout to put it through its paces. The slow speed characteristics made it fun to switch the stockyard, grain elevators, and feed mill on the layout. The locomotive had no trouble with a 12-car train.

I also set up an Atlas N scale code 80 starter set with a pair of Snap Switches and 9<sup>3</sup>/<sub>4</sub>" radius curves. Again, the locomotive operated well and had no trouble pushing and pulling both a 40- and 50-foot boxcar around the track.

With the SW1200's long production run and multitude of owners, plus its long life on the used locomotive market, these models are worthy of a place on any post-World War II N scale layout. If you model in N scale and you're shopping for a switcher, give these a look.

– Eric White, associate editor

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SmartController throttle



SmartBox command station



L-Net Converter (sold separately)

## Facts & features

**Price:** \$479.99 (basic set), \$409.99 (throttle and charger only)

**Manufacturer**

PIKO America LLC  
4610 Alvarado Canyon Road, Suite 5  
San Diego, CA 92120  
www.piko-america.com

**Features**

- Can control and store more than 16,000 locomotive addresses
- National Model Railroad Association Digital Command Control compatible
- Supports 28 functions and 14, 28, or 128 speed steps
- Supports up to 32 SmartController throttles
- WiFi wireless operation

# PIKO America SmartControl WiFi DCC system

**Touchscreen train control** via a Smartphone app over a WiFi connection has been around for several years now. What I miss when using my smartphone as a throttle, though, is that my smartphone *isn't* a throttle. PIKO America has taken the app-control concept to the next level with its SmartControl system.

The heart of the system is the SmartController, a device that combines the functionality of a mini tablet running the Google Android operating system with an ergonomic handheld model train throttle.

The SmartControl system was developed by a partnership between PIKO and Elektronik Solutions Ulm (ESU). ESU also sells its own nearly identical version called CabControl.

**SmartControl components.** For this review I tested the PIKO SmartControl Basic Set, which includes a SmartBox command station, a SmartController throttle, and a 120V input, 16V, 2.25A output power supply. The set also came with a USB charger and neck lanyard for the throttle and a length of paired stranded wire to connect to the track bus, which isn't needed if you have an existing layout. An easy-to-understand, 77-page printed instruction manual covers all aspects of the system.

The SmartBox measures 1½" x 3" x 7" and can be freestanding or mounted to the layout benchwork. Weighing 8.5

ounces and measuring ⅝" x 2⅛" x 6½", the SmartController throttle fits easily in one hand.

Track output includes both main and programming track terminals. This simplifies setting up an isolated programming track section.

Programming on the main is limited to activating or deactivating function keys. On RailComm equipped decoders, I could change addresses on the main. However, I could only program configuration variables via the READ/WRITE CVS menu when the system was connected to a programming track.

**Running trains.** Setting up SmartControl is simple. I connected the track bus of our Milwaukee, Racine & Troy staff layout into the screw terminals marked MAIN on the back of the SmartBox, plugged in the power supply, and turned on the fully charged SmartController throttle.

I touched the throttle's STOP button to turn on track power and clicked the SmartControl app icon. The app menus are intuitive and easy to navigate with the 1⅝" x 2¾" touch screen.

To operate a locomotive I simply entered its address in the CREATE NEW LOCOMOTIVE screen. This information would then be saved in a locomotive list.

As noted in the previous section, the SmartControl system supports RailComm Plus. Whenever a RailComm-enabled

decoder, such as an ESU LokSound Select, is placed on the track, the system automatically loads the decoder's information into the SmartController. Then all I had to do is click on the locomotive address to add its information to my locomotive list.

The locomotive menu screens can be customized, including deleting any unused function keys from the screen. Also helpful is the ability to replace the function numbers with icons representing each function (i.e., images of a whistle, bell, coupler, etc.).

The large 2¼"-diameter throttle knob with direction control made it easy to operate a locomotive without having to constantly look at the display.

For those who prefer touchscreen speed control, there is an on-screen slider. When the slider is used, the servo-controlled knob automatically turns to the corresponding setting. This allowed me to seamlessly switch between knob or touchscreen control.

There are four soft keys, two on each side of the throttle. Using the KEY BINDINGS menu, I programmed these keys to frequently used functions, such as the horn and bell. These keys were also useful for manual notching functions or activating the DRIVE/HOLD function on LokSound decoders.

I used the CREATE CONSIST menu to m.u. locomotives and select which locomotive functions would be activated or

deactivated. For example, I wanted the bell and horn to sound only on the lead unit. The CREATE CONSIST menu uses universal consist-ing, where the consist information is stored and controlled in the command station. Advance consists can be set up by programming CV19.

In addition to running locomotives, the SmartController can be used to operate switches, signals, and other decoder-equipped accessories connected to the system.

**Expanding the system.** The 2.25 amp power supply included with the set provides enough current for a room-sized N or HO scale layout and about three to five sound-equipped locomotives running simultaneously. For those who operate larger, club-sized layouts or model in larger scales, a 5.3A power supply is available separately for \$99.99.

Various ports on the back of the SmartBox allow the system to be easily expanded. There are LAN and USB sockets for connecting the SmartBox to a



On the back of the SmartBox are various ports for expanding the system. The two ports marked PROG and MAIN are for the included screw terminals.

home computer or WiFi network. There are also two sockets (ECoSLINK and EXTEND) for connecting to an ESU ECoS DCC system or power boosters. For modelers who use CD/E compatible power boosters, a CD/E adapter is available separately for \$24.99.

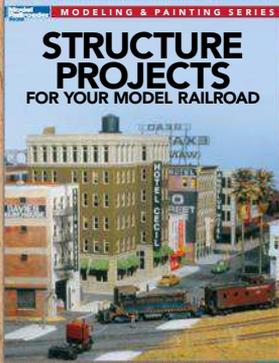
According to the instruction manual, the SmartBox LNET port is inactive and intended for a future update. For modelers who wish to use Digitrax throttles, occupancy detectors, and other LocoNet-compatible devices, the PIKO L-NET converter, available separately for

\$59.99, connects to the SmartBox via the ECoS port and has four LocoNet ports.

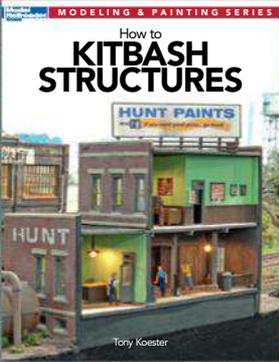
Other apps preloaded onto the SmartController include a calendar, calculator, clock, and Google for surfing the web. The device has about 1.8 GB of available storage. Before downloading too many additional apps, note that high memory use can slow down the device.

With its WiFi connection, touchscreen, and simple yet sleek design, the PIKO SmartControl system truly feels like model train control for the 21st century. – Dana Kawala, senior editor

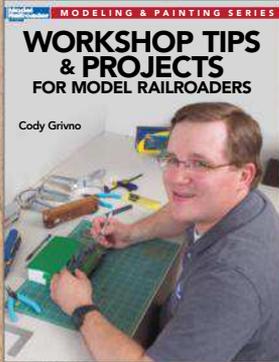
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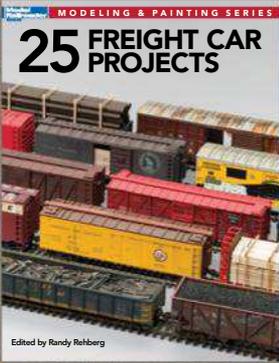
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**QUICKLOOK**

## Kato HO scale Amtrak Superliner II transition sleeper

**Price:** \$90

**Manufacturer**

Kato USA Inc.  
100 Remington Rd.  
Schaumburg, IL 60173  
www.katousa.com

**Era:** 2002 to present (as decorated)

**Road name:** Amtrak (Phase 6 [also known as phase 4b] paint scheme).

**Comments:** Kato has released a new run of HO scale Amtrak Superliner II passenger equipment, including a transition sleeper. Our sample is decorated as Amtrak no. 39027, part of its 39012 through 39046 series built by Bombardier Transit Corp. between 1994 and 1996. The cars were delivered in Amtrak's phase 4 paint scheme. In 2002, the Superliner cars were repainted into the current phase 6 scheme.

The Kato model is painted Platinum Mist. The placement of the Amtrak

Travelmark herald, numbers, stripes, and safety labels match the prototype.

Like the prototype, the model has tinted windows. The car features separate tan plastic castings for the upper and lower levels. The upper level has eight roomettes and crew rooms, a conductor's office, and the chef's room. The lower level has a crew lounge and handicapped-accessible bedroom.

If you want to show off the car's interior, Kato offers an optional lighting kit with white light-emitting diodes (no. 7-504, \$24). The marker lights can be illuminated with a light board (no. 958046, for \$8.50 each).

The transition sleeper's dimensions closely match prototype drawings. At 8.1 ounces, the model is 1.4 ounces too heavy per National Model Railroad Association Recommended Practice 20.1. The metal wheels, mounted on plastic axles, are correctly gauged.

The long-shank couplers are mounted at the correct height. The draft-gear-box design allows the couplers to swing freely from side to side. This allows the transition sleeper to operate on 18" radius curves, but the car will look better on broader curves.

The sleeper includes optional Kinematic couplers. The modeler-installed rigid-jaw couplers allow for close coupling without affecting the turning radius.

I ran the car in a full-length *Empire Builder* on our HO scale Milwaukee, Racine & Troy layout. The car performed flawlessly as it navigated the 36" radius curves and no. 6 turnouts.

If you're modeling one of Amtrak's contemporary long-distance trains, such as the *Empire Builder*, *California Zephyr*, or *Southwest Chief*, a transition sleeper is a must-have car. – Cody Grivno, associate editor



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# Obedience to the rules

**Dutifully, *The Baltimore Sun*** reported that two railroaders lost their lives in a head-on collision of a passenger train with a freight train on the Maryland & Pennsylvania. The accident attaches grave importance to a phrase that appears in many railroad rulebooks: “Obedience to the rules is essential to safety.” This admonition remains as important today as it was on that fateful Saturday afternoon so long ago.

The passenger train was No. 11, a northbound first-class train scheduled to depart from Baltimore at 5:30 p.m. The freight was No. 32, a southbound third-class train. No. 32 often operated with a helper, and it was routine to divide the train into two parts at certain places along the line. This way, the engines could work at different points at the same time. That day, engine 41, the road engine, handled the head part of the train and engine 26, the helper, handled the rear. The conductor stayed with the rear and protected it by putting the head brakeman in charge of the head part with instructions to flag and hold any opposing movement.

Instead, the head brakeman proceeded to Baltimore, expecting the rear of the train to provide its own flag protection. Arriving there, he failed to hold No. 11, so the passenger train departed on time. Meanwhile, the rear of No. 32, expecting protection from the head end, also proceeded. The trains collided at 5:46 p.m. The head



Maryland & Pennsylvania engine 41, a locomotive whose history includes a fatal crash caused when it arrived in Baltimore without the second section of its train, leads freight No. 31 over Orson’s Run trestle in early spring of 1940. William Moedinger Jr. photo

brakeman was later charged with misunderstanding the conductor’s instructions.

The Interstate Commerce Commission’s investigation noted that the Ma & Pa relied on this method for 20 years and criticized the railroad for allowing practices that didn’t follow rules of safe operation.

Train No. 32’s manner of operation was virtually the same as running in two sections. Properly, a train order would govern No. 32’s movements: “ENG. 41 DISPLAY SIGNALS AND RUN AS FIRST 32 FROM DELTA TO BALTIMORE.” This requires the crew to mount green flags on the front of the engine, signaling that a second section was following. By rule, First 32 would whistle when it reached Baltimore, calling No. 11’s attention to its signals. No. 11 would whistle an answer.

If No. 11 didn’t respond, rules demanded that First 32 stop and confirm understanding.

The use of a train order puts instructions in writing for both engineer and conductor, greatly reducing the chances of forgetting or misunderstanding them.

**There’s more.** As a first-class train, No. 11 was superior, with authority to depart at 5:30 p.m. whether third-class Second 32 had arrived or not. This forces Second 32 to wait and meet No. 11 at a point where Second 32 can clear the main track five minutes before No. 11 was due.

It surprised me that the investigator didn’t mention the requirement that a train carry a marker to indicate its end. If not for the long-standing two-part practice, No. 11 might have questioned a marker’s absence on the head part of No. 32. However, it’s easy to imagine No. 11 departing anyway, relying on the head brakeman’s insistence, to which he later testified, that the rear of the train was protecting itself.

## The Ma & Pa incident

reminds me of a question a reader asked recently: “Would a regular train ever run between sections of another regular train?” This invites confusion. All sections of a train display green flags except the last. A regular train doesn’t display signals, either. If First 1, No. 3, and Second 1 ran in that order, it would be hard for an opposing train to distinguish between No. 3 and Second 1.

On the other hand, an extra train could run between sections safely. Extras must display white flags, making an extra running behind First 1 (green flags) easily distinguishable from Second 1.

The Ma & Pa wreck occurred long ago on May 22, 1920. However, its underlying causes are just as relevant today as they were then: experienced railroaders failing to follow safe practices. Obedience to the rules creates a highly authentic experience on a layout, even though the consequences we face in our operating sessions are far less severe. **MR**



**A TRAIN ORDER PUTS INSTRUCTIONS IN WRITING, GREATLY REDUCING THE CHANCES OF FORGETTING OR MISUNDERSTANDING THEM. — JERRY**



**MORE ON THE WEB**

📍 Lou Sassi's photo of Sam Novello's HO layout is this month's wallpaper. Download it from our website, [ModelRailroader.com](http://ModelRailroader.com)



**A Boston & Maine E7A** trundles past with a passenger train on its way to Boston, while the trawler *Lily* unloads at the lobster shack. The scene takes place on the HO scale railroad built by Sam Novello of Atkinson, N.H., which was featured in our July 2012 issue. The locomotive is a Broadway Limited Imports model; the lobster shack is scratchbuilt. Lou Sassi shot the photo.



**A pair of Arizona & California** GP35s pulls a local freight through the desert to Blythe, Calif. The N scale diorama was built by Doug Midkiff of Parker, Colo. The locomotives are Atlas and Kato models, and the cars are from Micro-Trains Line Co. Paul Brennecke photographed the diorama outdoors.

**The track gang loads up** the inspection speeder at Melody, Calif., preparing to head out to do some quick track repairs down the line. Ken Kirkwood of Yucaipa, Calif., built and photographed the scene on his HO scale Ma & Pa K Ry., set in northern California.

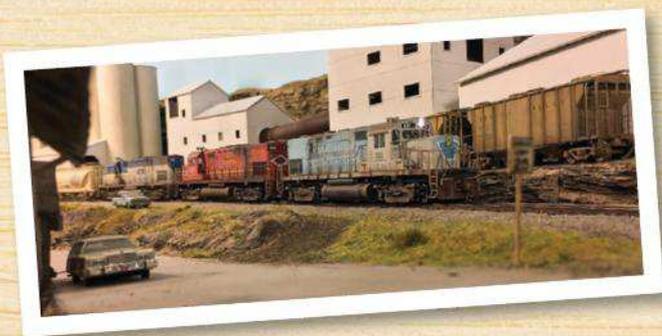
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**There's an extra freight** to pull today, so the crew at Weston & Matherly's South Yard is prepping the railroad's aging 4-8-2 Mountain for a day's work. The action takes place on Steve McIver's freelanced Weston & Matherly RR, set in the northeastern United States in the mid-1950s. Steve, of Feasterville, Pa., photographed the HO scale scene.



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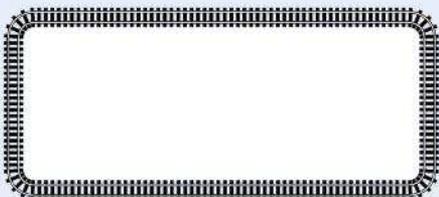
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For MR's private records, please furnish: a telephone number and, when using a P.O. Box in your ad, a street address. *Model Railroader* reserves the right to refuse listing.

**All Copy:** Set in standard 6 point type. First several words only set in bold face. If possible, ads should be sent typewritten and categorized to ensure accuracy.

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

**CLOSING DATES:** Jan 2018 closes Oct. 20, Feb. closes Nov. 13, March closes Dec. 19, April closes Jan. 22, May closes Feb. 19, June closes Mar. 19, July closes Apr. 23, Aug. closes May 18, Sept. closes June 22, Oct. closes July 23, Nov. closes Aug. 17, Dec. closes Sept. 24.

## Schedule of Events

**AR, JACKSONVILLE:** Train Show, Jacksonville Community Center, Municipal Drive. August 25-26, 10:00am - 4:00pm. Vendors, Clinics, Contests. Admission \$7.00, 12 and under free w/adult. Contact Rail & Sprue Hobbies, 1200 John Harden Drive, Jacksonville, AR, 72076. 501-982-6836, or [railandspvue@aol.com](mailto:railandspvue@aol.com)

**AZ, TUCSON:** Tucson Toy Train Show & Swap Meet. Tucson Expo Center, 3750 E. Irvington. November 9-10, 2018 Friday, 1:00pm-6:00pm and Saturday 9:00am-2:00pm. Admission \$6.00, kids under 12 are free-proceeds support the Gadsden Pacific Toy Train Operating Museum. [www.gpdtoystrainmuseum.com](http://www.gpdtoystrainmuseum.com) or call Jeff. 520-310-1392.

**CA, SAN DIEGO:** 2018 NMRA/PSR Convention hosted by San Diego Division, at PSR at the Marriott Courtyard, 575 Hotel Circle South. Convention dates: September 12th thru September 16th, 2018, from 8:00am-10:00pm. Includes clinics, layouts, tours, prototype tours, actions, swap-meet and banquet. Information: [sandiegodivision.org](http://sandiegodivision.org) or email: [registrar2018@sandiegodivision.org](mailto:registrar2018@sandiegodivision.org)

**CT, ESSEX:** New Haven RR Historical & Technical Association train show September 8, 2018 at Valley Railroad Co. Modeling clinics, dealers, film & slide shows. Contact Rick Abramson 203-372-0818 or [nhrh379@att.net](mailto:nhrh379@att.net). Information at [www.nhrhta.org](http://www.nhrhta.org)

**CT, GREENWICH:** Southern Connecticut Model Train Show, Greenwich Civic Center September 23, 2018, 9:00am-3:00pm. Adults \$7.00, under 12 free. Valley HO-Trak Layout & more. Clinics, 150 tables; trains, books, artwork, DVD's. Door prizes, free parking, refreshments. Ron's Books, PO Box 714, Harrison, NY 10528, 914-967-7541. [ronsbooks@aol.com](mailto:ronsbooks@aol.com), [www.southerncttrainshow.com](http://www.southerncttrainshow.com).

**FL, BROOKSVILLE:** Regal Railways presents Toy Trains & Hobby Show. Hernando Fairgrounds, 6436 Broad St. Saturday, September 22, 2018. 9:00am-2:00pm. Adults \$5.00. Vendors and operating layouts. Serving lunch items. Contact: Joe at 727-244-1341 or visit: [www.regalrailways.com](http://www.regalrailways.com) for more information.

**FL, ORLANDO:** TCA-Southern Division Toy Train Meet. Lake Nona Middle School, 13700 Narcoossee Rd. Saturday September 15, 2018, 10:00am-3:00pm. Admission, \$5.00, children under 12-free. All ScalesTrains, Z to G. Layouts-workshops. Free parking, refreshments on site for purchase. Contact information: Mike Mills, Cell 612-382-0325 or [Flyermike1949@gmail.com](mailto:Flyermike1949@gmail.com)

**FL, PLANT CITY:** Strawberry Sunshine Limited annual convention, on October 11-13, 2018 at John Trinkle Center of Hillborough Community college, 1206 N. Park Rd. \$65.00 registration and includes Clinics, Model Contest, Display Room, Layout tours and Operating sessions. Information: Jim Robertson, 352-746-4039 or [jnr@tampabay.rr.com](mailto:jnr@tampabay.rr.com)

**GA, ATLANTA:** 55th ATLANTA MODEL TRAIN & RAILRODIANA SHOW. Infinite Energy Center, 6400 Sugarloaf Parkway, Duluth, GA 30097. Saturday August 25, 2018. 9:00am-4:00pm. Adults: \$9.00 (under 12 free). Operating layouts. Miller, 3106 N. Rochester St., Arlington, VA 22213. 703-536-2954. Email: [rrshows@aol.com](mailto:rrshows@aol.com)

**IL, KANKAKEE:** Kankakee Model Railroad Club Train Show. Gov. Small Memorial Park Civic Center, 803 South 8th Ave. Sunday, October 21, 2018 9:30am-3:00pm. Admission: \$3.00, under 5 free. 8' tables \$15.00 and 6' tables \$12.00. Operating layout. Contact [lrvt@815-465-2420](mailto:lrvt@815-465-2420) or [daswoodwerkhauz@yahoo.com](mailto:daswoodwerkhauz@yahoo.com) for more information.

**IL, ST. CHARLES:** 27th Annual Chicago Railroadiana and Model Train Show. Kane County Fairgrounds, 525 South Randall Rd. Sunday, October 21, 2018, 10:00am-3:00pm. Admission: \$6.00 (includes tax). Tables \$60.00. For information: 847-358-1185, [RussFierce@aol.com](mailto:RussFierce@aol.com) or [www.RRShows.com](http://www.RRShows.com)

**IN, AUBURN:** RxR Mania Train Show & Antique Show. Kruse WWII Museum, (National Military History Center), 5634 County Road 11-A; from Interstate 69, Exit 326; Saturday, October 20, 2018, 9:00am-3:00pm. Adults \$5.00, under 12 free. \$20.00 per table, 5+ tables \$15.00 each. Info: [www.RxRMania.com](http://www.RxRMania.com) or 260-715-2519

**IN, INDIANAPOLIS:** The Indianapolis Model Railroad Show and Open House. Manual High School Gymnasium, Saturday, September 15, 2018, 10:00am-3:00pm. Admission \$5.00, children 12 and under free. Boy Scouts in uniform free. Free parking. Naptown & White River Model Railroad Club. Contact: Michael Roderick 317-833-3556, E-mail: [naptownmrr@gmail.com](mailto:naptownmrr@gmail.com)

**IN, INDIANAPOLIS:** The Indianapolis Model Railroad Show and Open House. Manual High School Gymnasium, Saturday, December 8, 2018, 10:00am-3:00pm. Admission \$5.00, children 12 and under free. Boy Scouts in uniform free. Free parking. Naptown & White River Model Railroad Club. Contact: Michael Roderick 317-833-3556, E-mail: [naptownmrr@gmail.com](mailto:naptownmrr@gmail.com)

**IN, SOUTH BEND:** NMRA Michiana Division Education and Training Conference. September 21-22 at Aloft Hotel, \$35.00 both days. (\$5.00 off before August 31) Great clinics - Interactive Workshops - Free-mo Layouts for operating-Layout tours! Questions? Email [dbrr@comcast.net](mailto:dbrr@comcast.net) or call Bob Blake: 203-788-1342. See website for details: <http://michiana-nmra.org>

**MI, CLINTON TWP:** St. Louis Men's Club, Mount Clemens Michigan Train Show. St. Louis Church Comm. Center, 39140 Ormsby Street. Saturday, September 22, 2018. 10:00am-3:00pm. \$3.00/person, \$5.00/family, under 12 free. \$10/table. Contact Carl Hikade, 181 Riverside Drive, Mt Clemens, MI 48043, 586-463-5184 or e-mail: [cdhikade@juno.com](mailto:cdhikade@juno.com)

**MI, HASTINGS:** Train & Toy Show & Swap Meet at Barry Expo Center, 1350 North M-37 Hwy. September 15, 2018, 10:00am-3:00pm. Admission \$5.00 13 and older. Sponsored by Iron Rails. Over 120 dealer tables, door prizes, several operating layouts. Information: Brad Miles, 269-953-9171, [magichb@aol.com](mailto:magichb@aol.com)

**MI, LANSING:** NCR-NMRA Regional Convention, Lansing Lashup. Thursday-Sunday October 11-14, 2018. Ramada Convention Center. Includes 30+ clinics, 20 home layouts, prototype tours, operating sessions, layouts on site, model showcase room, banquet with speaker and more. Visit our website [nmranrcdiv5.com](http://nmranrcdiv5.com) or email [nmranrcdiv5@gmail.com](mailto:nmranrcdiv5@gmail.com)

**MI, WYOMING (GRAND RAPIDS):** Grand River Valley Railroad Club Fall Train Show. Largest Train Show in Western Michigan. Saturday, October 13, 2018. Home School Building, 5625 Burlingame Avenue SW. 10:00am-3:00pm. Adults \$5.00, under 12 free. 208 vendor tables of Trains, and supplies. Contact Ken Skopp, 616-667-9680, [kwsokopp@outlook.com](mailto:kwsokopp@outlook.com), [www.grrvrc.org](http://www.grrvrc.org)

**NH, CONCORD:** Concord Model Railroad Club Show at the Everett Arena, Loudon Road, Concord, NH. Sunday August 19, 2018, 10:00am-3:00pm. Adults \$5.00, children under 12 free with an adult, \$12.00 per family max. Dealers, door prizes and operating layouts. For more information: [www.trainweb.org/cmrc/index.html](http://www.trainweb.org/cmrc/index.html)

**NY, ORCHARD PARK:** TCA Upstate NY Chapter Show. American Legion Post 567, 3740 North Buffalo Rd. Zip: 14127. Sunday, September 16, 2018. TCA members 9:00am. Public: 9:30am-2:30pm. Admission, Adults \$3.00, Family \$5.00, under 17 FREE with paid adult. Info, [www.upstate-ny-tca.com](http://www.upstate-ny-tca.com) Chuck 716-390-8216

**OH, CLEVELAND:** Great Berea Train Show, Cuyahoga County Fairgrounds, 19201 E Bagley Rd. Middleburg Heights, OH 44130. NMRA MCR Div. 4. October 6-7, 2018. NEW SHOW TIMES 10:00am-4:00pm. This is an all gauge Train Show with over 300 tables. 440-785-9907, [www.thegreatbreatrainshow.org](http://www.thegreatbreatrainshow.org)

**OH, FOSTORIA:** 17th Fostoria Rail Festival, 1001 Park Avenue, Zip 44830. Saturday, September 22, 2018, 10:00am-4:00pm. Admission: \$4.00, children 10 and under free w/adult. Information: Fostoria Rail Preservation Society, 419-435-1781, [EllenGatrell@gmail.com](mailto:EllenGatrell@gmail.com), [www.FostoriaIronTriangle.com](http://www.FostoriaIronTriangle.com), Fostoria Rail Park Facebook

**OH, HOLMES COUNTY:** Old Eli's Train & Toy Show. Heritage Center, 3558 SR. 62, Millersburg, OH 44654, between Berlin-Winesburg, Saturday, October 20, 2018, 10:00am-3:00pm. Adults \$5.00, under 12 free! \$10.00/table, no refund, 150+ tables. Contact: Galen Hoover, PO Box 45, Mt. Hope, OH 44660, 330-763-1184.

**OH, PAINESVILLE:** Railroad Memorabilia Show, Painesville Railroad Museum (Painesville Depot), 475 Railroad Street, Zip Code: 44077. Sunday, August 26, 2018, 10:00am-5:00pm. 216-470-5780 Email: [prrm@att.net](mailto:prrm@att.net); [www.painesvillerrailroadmuseum.org](http://www.painesvillerrailroadmuseum.org)

**OK, BIXBY:** Greater Tulsa Train Show, Bixby Community Center, 211 N. Cabaniss Avenue, Zip 74008. Saturday October 13, 2018, 9:00am-3:00pm. Admission: \$5.00 adults, under 12 Free. For info: TTOS-Sooner.org

**SC, COLUMBIA:** Jamil Temple, 206 Jamil Road. Saturday, October 13, 2018, 9:00am-3:00pm. Admission \$5.00, under 10 FREE. Over 200 vendor tables. Large variety of G, O, HO, S/A/F, N gauge. Contact Todd at 843-307-8674, [sctradeshow.com](http://sctradeshow.com)

**SC, MURRELLS INLET:** 9th Annual Myrtle Beach Model Train Show, Inlet Square Mall, 12125 Hwy. 17 Bypass, November 10-11, 2018. Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$5.00 under 12 FREE. Operating Layouts, All Scales, Clinics and door prizes. [www.gsmrrc.org](http://www.gsmrrc.org) or Call Joe 843-297-7162 or 443-520-2600.

**TX, PLANO:** NTC 4th Annual Fall Plano Train Show. Plano Center, 2000 E. Spring Creek Parkway. September 29-30, 2018 Saturday, 10:00am-5:00pm and Sunday, 10:00am-4:00pm. Adults \$10.00, under 12 free w/paid adult. All scales & Tin Plate. Dealer tables and How-To-Clinics. Information: Chris Atkins, [chris@railroadmodeler.com](mailto:chris@railroadmodeler.com) 469-438-0741. [www.dfwtrainshow.com](http://www.dfwtrainshow.com)

**TX, TEMPLE:** 36th Annual Temple Model Train Show by Central Texas Area Model Railroaders, Frank Mayborn Convention Center, 3303 North 3rd St. September 15-16, 2018, Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$7.00, Seniors & Military \$6.00, under 12 Free. FREE Parking! Contacts: Ron Miller, 254-749-0700.

**VA, VIRGINIA BEACH:** Tidewater Division 29th Annual Train Show & Sale October 13-14, 2018, 10:00am-4:00PM. 1000 19th St. Virginia Beach, 23451. Admission \$9.00, under 12 Free w/paid adult. 150+ Vendor Tables, White Elephant table, Train Doctors, Test tracks and more! Contact Bill Miller 757-409-3623, [Ktsdadi1994@cox.net](mailto:Ktsdadi1994@cox.net)

**VT, RUTLAND:** Vermont Train Show & Swap Meet, September 29, 2018, Holiday Inn, South Main Street (Route 7). 10:00am-3:30pm. Admission \$6.00, children under 13 FREE. Info/dealer tables: Paul 802-259-2123 e-mail [p\\_a\\_r@vermontel.net](mailto:p_a_r@vermontel.net) or John 802-774-8412 phone/text.

**WA, PORT ANGELES:** North Olympic Peninsula Railroaders' 19th Train Show & Swap Meet. Clallam County Fair Grounds. October 13-14, 2018. Saturday 10:00am-5:00pm, Sunday 10:00am-3:00pm. FREE Admission & Parking. Operating layouts. First table \$25.00, additional \$20.00. Contact [stevensstripp@juno.com](mailto:stevensstripp@juno.com) or call 360-582-1316

**WI, MILWAUKEE:** Trainfest, 9am to 5pm Nov. 10-11, 2018 at Wisconsin State Fair Park. Exhibitors include operating layouts, major manufacturers, modeling clinics, and hobby vendors. Admission information, discount tickets and PRIME ACCESS tickets available at [www.trainfest.com](http://www.trainfest.com) Staged by NMRA WISE Division. Contact us at [info@trainfest.com](mailto:info@trainfest.com)

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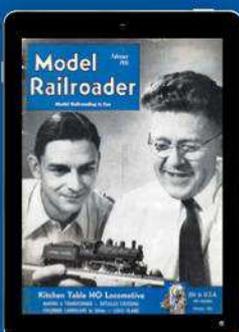
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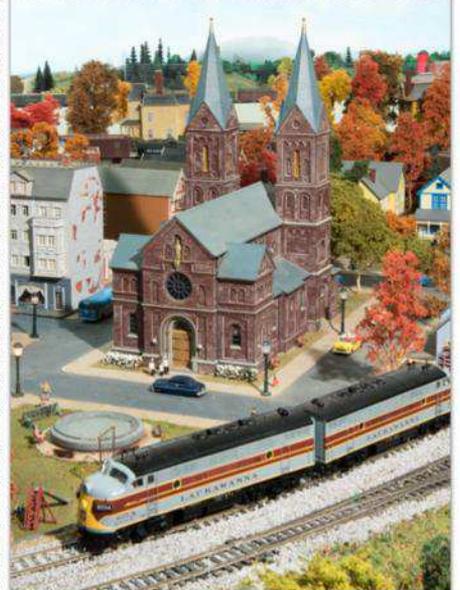
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# Rags to riches, after 50 years of trying

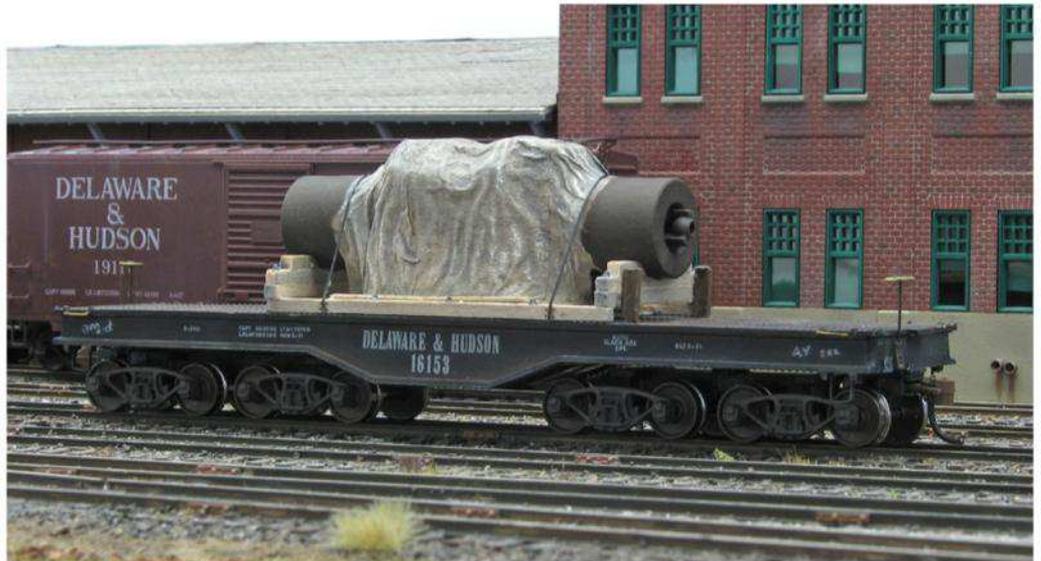
**Who among us** doesn't have a project in waiting? Maybe it's a model that has some historical or personal meaning. Maybe it's one that doesn't quite measure up but seems to have potential. Maybe it's one that's just developed roots and is increasingly hard to toss out. Maybe it's one that just won't be allowed to get the best of us. Maybe.

Delaware & Hudson modeler Kip Grant came across such a treasure: "I've had this AHM [Associated Hobby Manufacturers] 4-truck flatcar since I graduated from high school," he said. "It always ran poorly on my 4 x 8 layout back then, so it spent its life in an old Athearn box. Now and then I'd spot it and take it out, try to make it run better, fail, and box it up again. A couple of years ago, I got rid of the Talgo-style truck-mounted couplers and installed body-mounted Kadees. No dice. Back in the box.

"When a friend in Canada sent me a photo of the same AHM car and asked if I had one, I admitted I did and told him my sad story. Then, inspired to hear that the one he has runs fine, I got it out again. I installed Accurail trucks and InterMountain wheelsets, but the car would derail each time it hit a curve or switch point.

"When my friend Don was here last week, he spied the car in the shop, and we discussed my woes. He grabbed it to see for himself. Don studied the underside and felt that snipping the 'ears' off the Kadee draft-gear boxes might help.

"Mind you, I'd previously moved the articulated truck assemblies in every possible direction and couldn't see where they were rubbing. Sure enough: snip, snip, and



This ancient Associated Hobby Manufacturers four-truck, heavy-duty flatcar resided in Kip Grant's to-be-fixed roster for half a century until a friend spotted what ailed it. A few details and a load converted it into a reliable, eye-catching model. Kip Grant photo

it was doing better. I filed off the remaining rough plastic from the surgery, and bingo! I had a new car that – after 50 years – actually sailed around curves and through turnouts."

**Kip's story didn't end** there, of course. The car still looked like a model from the 1960s. Detail improvements were in order – new grabs, stirrups, brake wheels, and weathering. And he needed an appropriate big-time load for this heavy-duty flatcar.

"I settled on a motor from an old Kato (Atlas) RS-3," he said, "with appropriate bracing based on photos of similar loads and wooden beams sized according to the old AAR [Association of American Railroads] book *Loading of Commodities on Open Top Cars*, which I acquired some time ago and am eternally thankful I did. Per D&H photos, pieces of rail were 'welded' to the steel deck to protect against forward/backward shifting. Bolts went through beams into holes that line the deck."

Kip concluded by noting he's quite happy to see this "oldie but goodie" has finally found a job on the Sonnyvale Branch carrying machinery to Sandy Hill Iron & Brass.

**We all kid each other** about having a personal hobby shop of kits stashed away. One of these days ...

I did a quick inventory and discovered I have two long shelves filled with car kits that need a little assembly. On top of that, I have two moving-size cartons filled with older but, for the most part, still serviceable kits. If I built every one of those kits, I suspect they'd fill every yard track, passing track, and industry track on the entire railroad.

My sketchily defined plan of the moment is to put a low, low price on the kits and put them up for sale at future

operating sessions. I should also encourage my crew to bring their surplus models for potential sale. What is no longer of value to me might be just what someone else has been looking high and low for.

**Knowing me, however,** what would probably happen is I'd get rid of some of my extra kits but pick up some of yours. My inventory of kits would thus not move to the left at all.

But maybe, like Kip, I'd find something of yours – or even in my own stack of kits – that catches my eye and earns a place on my workbench. It could be that new trucks and wheel sets plus a few extra details would convert a shelf sitter to a car that at long last is out and about earning its keep.

Hey, it worked for Kip. **MR**

**WHAT IS NO LONGER OF VALUE TO ME MIGHT BE JUST WHAT SOMEONE ELSE HAS BEEN LOOKING HIGH AND LOW FOR. — TONY**



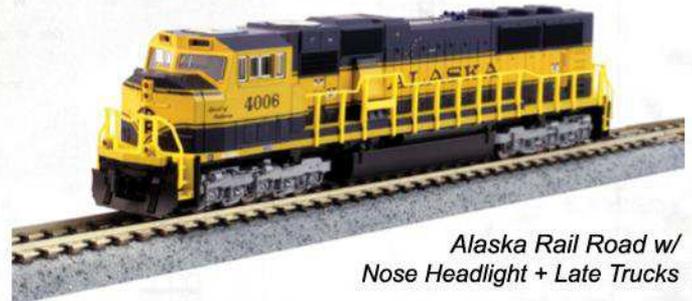
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New for 2018! Kato USA is re-releasing the perennial favorite - the EMD SD70MAC, in **Alaska Rail Road** and **BNSF "Swoosh" modern paint!** Available in two different body styles with two differing headlight arrangements, these locomotives are available now in your local hobby shop both as standard DC (Analog) engines and with **Kato-installed Ready-to-Run DCC!**

Looking for some rolling stock? The BNSF SD70MAC is a perfect match for the also-available **Bethgon Protein Gondolas!** These specialized cars are used to run high-priority feed trains on the BNSF lines across the Southwestern United States, and will make an excellent complement to modelers' existing intermodal or freight consists!



*BNSF "Swoosh" w/  
Cab Headlight + Early Trucks*



*Alaska Rail Road w/  
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*Kato's Protein Gondolas come eight to a package and have removable covers, allowing modelers to operate them however they desire!*

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