

FIRST LOOK: UNIVERSAL WIFI THROTTLE p.52



October 2020
ModelRailroader.com

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Make room for action!

NEW SERIES: Adding waterfront industries to the HO Milwaukee, Racine & Troy p.24

Realistic Civil War layout in HO scale

p.36



A VIA Rail Turbo Train speeds along Jason Shron's HO scale Kingston Sub. Turn to page 62 for more Trackside Photos.

PLUS

Guide to 1970s hoppers and tank cars p.44

Reviewed: New EMD SD35 from Atlas p.56

Lessons from a scenic Northwoods layout p.30

Rotary control for RailCrew uncouplers p.50

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by Cody Grivno



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by Thom Radice

• Online bonus ModelRailroader.com



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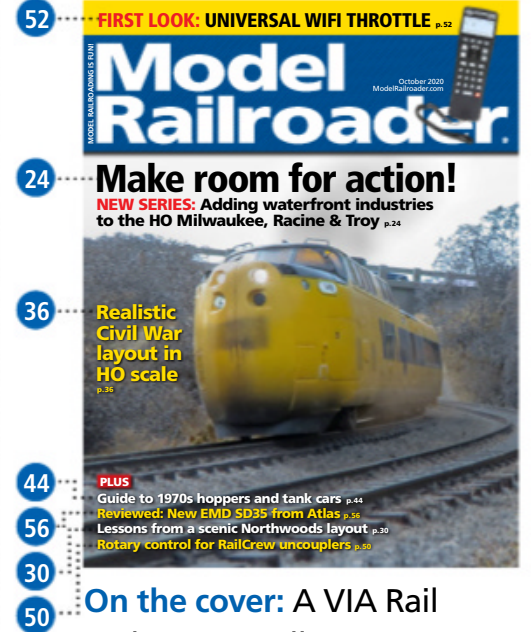
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Alternate uses of house cars



On the cover: A VIA Rail Turbo Train rolls on Jason Shron's HO scale Kingston Sub. See Trackside Photos, page 62. Jason Shron photo



Next issue

November's issue is full of how-to, with articles on hardshell, mountains, and bridges. Plus, visit an On30 shelf layout (above), benchwork for our Jones Island project, and more!

MREXTRA

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Model Railroader (USPS 529-810, ISSN 0026-7341) is published monthly by Kalmbach Media Co., 21027 Crossroads Circle, P.O. Box 1612, Waukesha, WI 53187-1612. Periodicals postage paid at Waukesha, Wis., and additional offices. POSTMASTER: Please send address changes to *Model Railroader*, P.O. Box 8520, Big Sandy, TX 75755. Printed in USA. Canada Publication Mail Agreement # 40010760.

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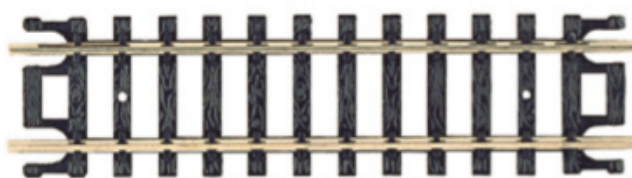
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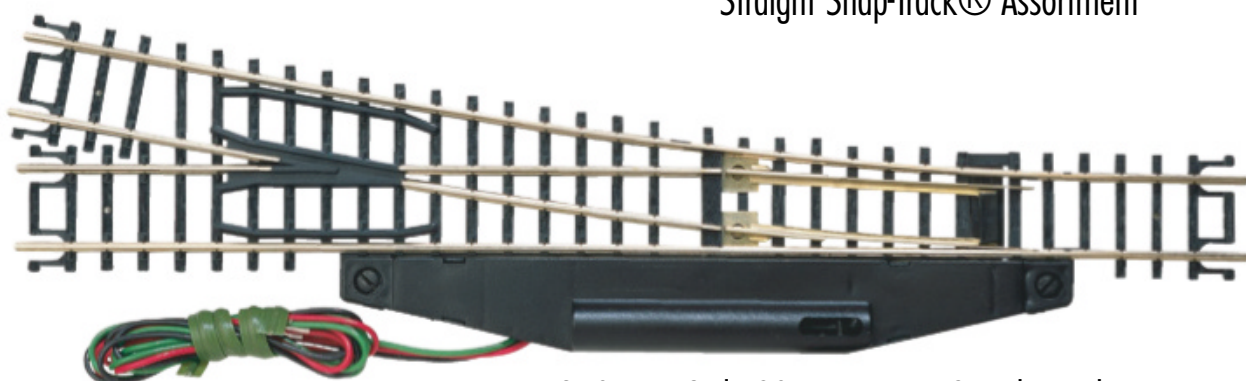
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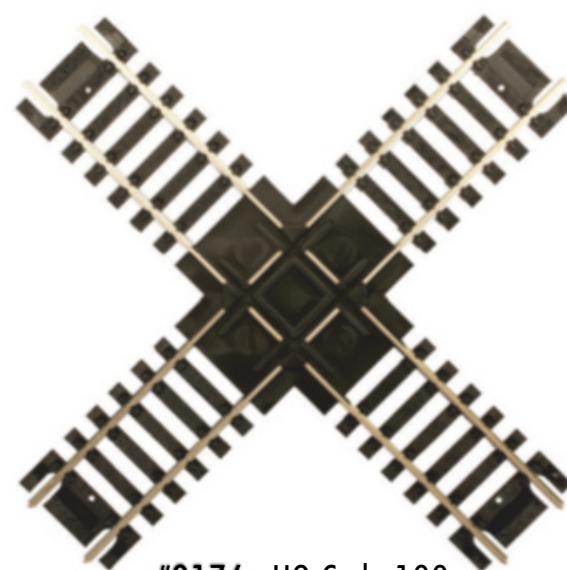
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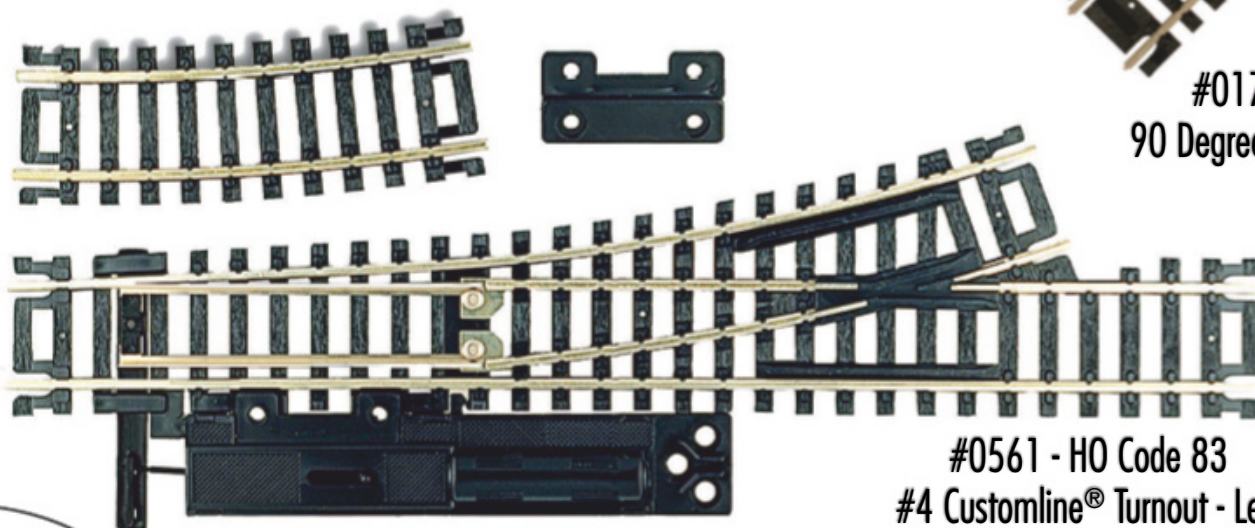
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Video: Tour the HO scale North Western

John Mueller's HO scale Northern Memories layout features first-generation Chicago & North Western diesel power leading trains through beautifully modeled Northwoods scenery. Model Railroader Video Plus subscribers can enjoy this exclusive tour of John's model railroad.

You'll find hundreds of videos, including layout tours, how-to demos, and more, at MRVP. This web-based video channel provides exclusive content covering all aspects of our hobby. Subscribe at MRVideoPlus.com/27deal.

REHAB THE MR&T



Meet Jones Island

In this new series on Model Railroader Video Plus, you'll get a behind the scenes look at our Jones Island project, introduced on page 24 of this issue. Check out episode 6 to see how we installed Rapido Trains RailCrew uncouplers and switch motors.

STEAM DREAM



Video: The Royal Hudson

Rapido Trains kicked off its *Icons of Canadian Steam* series with a 4-6-4 Royal Hudson. Check out the ESU LokSound 5-equipped locomotive as it hauls varnish around our staff layout, the Milwaukee, Racine & Troy.

FIND MORE ON THE WEB

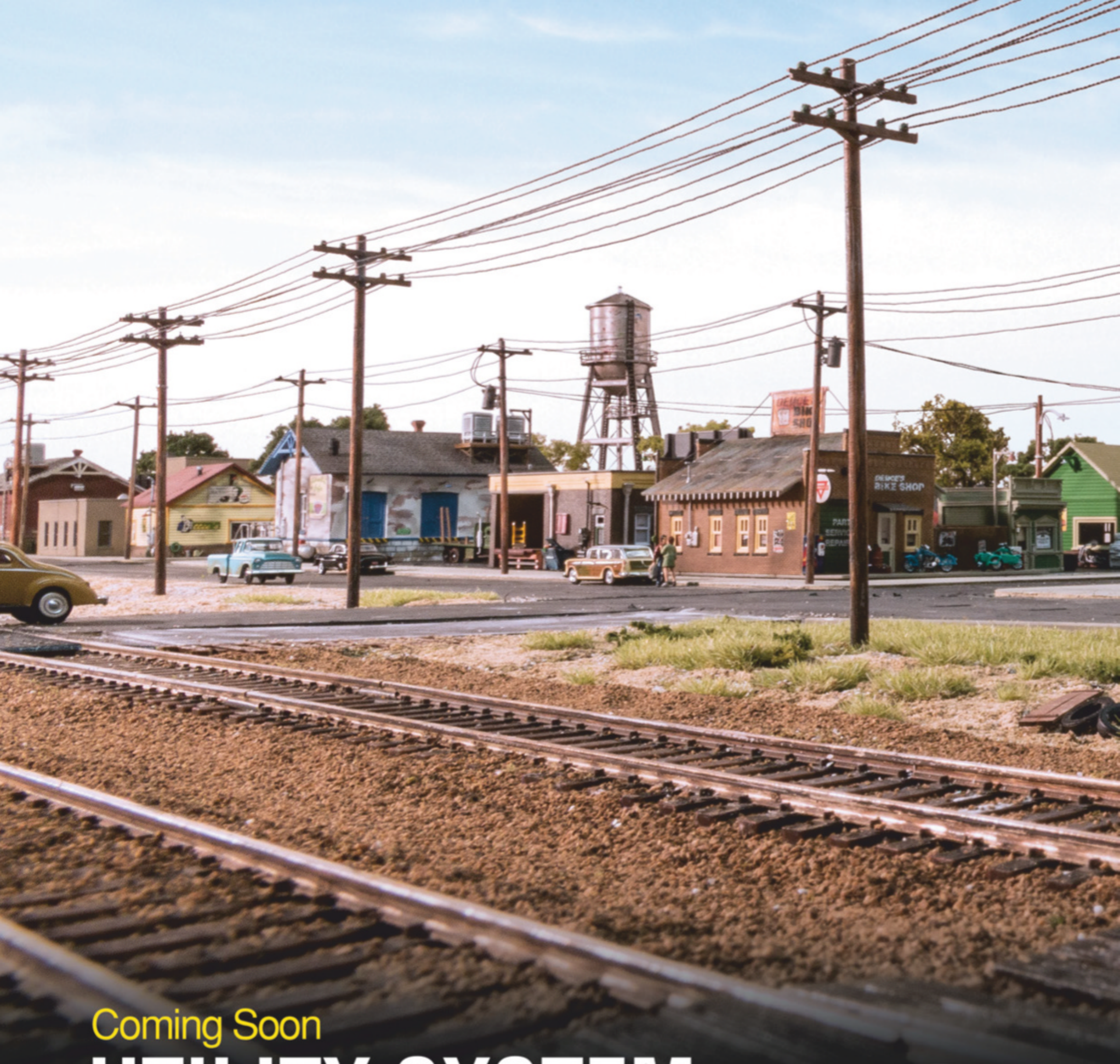
Cody's Office videos and more!

Sign up to get a free weekly e-newsletter with links to all the latest online extras. Highlights include video updates and tips from our Group Technical Editor Cody Grinvo. Join our online community today at www.ModelRailroader.com.



Gallery: More Civil War railroading

Thom Radice's HO scale Western & Atlantic fills a 20 x 38-foot space with scenes inspired by railroading during the American Civil War. Check out Thom's story and track plan on page 30. Registered users of ModelRailroader.com can click on the link under Online Extras to view a bonus gallery of W&A photos.



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Access to the HO scale

Milwaukee, Racine & Troy (MR&T) club layout is an unusual perk of working at *Model Railroader* magazine.

Yes, the editors of MR have our own club railroad, and we've been running trains on it for 45 years now.

Supported by our publisher, Kalmbach Media, the first MR&T was built in 1975 when our offices were located

in downtown Milwaukee. The current railroad was designed in 1989 by Andy Sperandio when we moved to Waukesha in suburban Milwaukee.

But we didn't just build our layout and call it done. As improved products hit the market and better techniques were developed, we tweaked, modified, and even replaced sections of the MR&T to keep it up to date.

These projects generated scores of how-to articles over the years as editors worked out improved ways to build and shared that knowledge with you.

The MR&T is much more than a source of recreation for the *Model Railroader* staff. The layout plays an important role in the ongoing development of our hobby.



The *Manitowoc*, a 630-foot bulk carrier, unloads crushed furnace slag at Milwaukee's Jones Island. Carl A. Swanson photo

The MR&T is changing again.

In this issue we introduce a new how-to series called "Rehab My Railroad." Over the next year or so, in collaboration with our friends at Model Railroader Video Plus, we will guide you through the process of building a 2'-6" x 14'-0" extension to our existing layout.

Named after the land occupied by the Port of Milwaukee, our Jones Island extension will include many of the modern port's rail- and

water-served industries, including a cement company, a grain elevator, an oil tank farm, and a dockside terminal warehouse. Follow along as the story unfolds and see this modern switching-intensive addition take shape.

Forty-five years later, and the Milwaukee, Racine & Troy is still a work in progress. And we like it that way!

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Trains.com

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We welcome contributions from readers, including articles, photographs, and drawings. For more information on submitting material, call us at 262-796-8776 and ask for an MR staff member or e-mail us at mrmag@mrmag.com. Model Railroader assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Kalmbach Media unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

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HO scale



Alco RSD-5 diesel locomotive. New paint schemes on this Atlas Classic line model are Chicago & North Western; Atchison, Topeka & Santa Fe (pinstripe scheme); and Southern Pacific ("black widow" scheme). The HO scale model is offered in two numbers per scheme plus undecorated with air- or water-cooled exhaust. The RSD-5 has metal grab irons

and improved tooling on the turbo exhaust stack. Direct-current models with an eight-pin socket for a Digital Command Control decoder are priced at **\$164.95** (undecorated, **\$149.95**). Versions with a dual-mode ESU LokSound sound decoder sell for **\$274.95** (undecorated, **\$259.95**). Atlas Model Railroad Co., 908-687-0880, atlasrr.com

Walthers announces next HO name train



The late 1960s combined Santa Fe *Super Chief – El Capitan* is the next name train from Walthers. Equipment for the HO scale train will start arriving in mid-2021.

Wm. K. Walthers Inc. announced that the late 1960s Atchison, Topeka & Santa Fe combined *Super Chief-El Capitan* is its next HO scale WalthersProto name train. The train will feature Hi-Level cars (making their debut as WalthersProto models) and 11 conventional cars assigned to the combined train from the winter months of 1958 into the early Amtrak years.

Two newly tooled cars will be released in the name train, a Pullman-Standard

(PS) 85-foot *Indian*-series 11-double-bedroom sleeper (\$94.98, April 2022) and a steam generator car. Other PS models include a 74-foot standard baggage car (\$84.98, June 2021); 85-foot baggage-dorm transition car (\$94.98, July 2021); 85-foot Pleasure Dome bar lounge (\$99.98, November 2021); 85-foot 36-seat diner (\$94.98, December 2021); and 85-foot *Regal*-series 4-bedroom, 4-compartment, 2-drawing-room sleeper (\$94.98, January 2022). Models based on Budd prototypes include Hi-Level 68-seat Step-Down coaches with forward and reverse seats (August and September 2021, \$99.98 each), Hi-Level diner (February 2022, \$99.98 each), Hi-Level Sky Lounge (March 2022, \$99.98), and a *Pine*-series 10-roomette, 6-double-bedroom sleeper (October 2021, \$94.98). All cars in the series are assembled with tinted window glazing as appropriate, modeler-installed extended drawbars for 22" radius curves, and factory-installed grab irons. Each car is offered with factory-printed names and numbers or waterslide decals.

In addition to the separate sale cars, Walthers is offering two deluxe edition

11-car sets for \$1,460 each. A deluxe edition *Denver Connection* (\$305) was also announced. The three-car set will include a steam generator car, baggage car, and 46-seat coach.

The deluxe edition sets include Preiser passenger and crew figures and factory-installed light-emitting diodes, as appropriate.

The train is powered by Electro-Motive Division F7A and F7B Phase II diesel locomotives. The models, scheduled for release in December 2021, will be painted in Santa Fe's warbonnet paint scheme with a combination painted and real metal finish, an offset five-chime air horn and rear-mount firecracker radio antenna on the A unit, vertical grills, and a 48" dynamic brake fan. Direct-current models (two numbers each) are priced at \$189.98 (single A and B units) and \$369.98 (A-B sets). Locomotives with an ESU LokSound 5 dual-mode sound decoder are \$279.98 (single A and B units) and \$549.98 (A-B sets).

To learn more about the WalthersProto HO scale late 1960s combined *Super Chief – El Capitan*, visit walthers.com/super-chief-el-capitan.



HO scale locomotives

- **Electro-Motive Division GP38-2 diesel locomotive.** Canadian National (red, white, and black with Illinois Central reporting marks); Canadian Pacific (red with large herald in two road numbers, small herald in one number); Illinois Central Gulf (orange-and-white and orange-and-gray schemes, two numbers each); Missouri Pacific (1972 as-delivered paint scheme); Soo Line (red "SOO" lettering on long hood); Toledo, Peoria & Western (as-delivered scheme in two road numbers, revised later scheme with "TP&W" on nose in one number); and Union Pacific (Armour Yellow and Harbor Mist Gray with dual remote-control locomotive strobe lights, four numbers). Three numbers per scheme unless noted. Road-number-specific details, light-emitting-diode headlights, and factory-installed and painted wire grab irons. Direct-current model with 21-pin NEM connector, \$209.98. With SoundTraxx Tsunami2 dual-mode sound decoder, \$299.98. June 2021. Genesis series. Athearn Trains, 800-338-4639, athearn.com



- **Siemens ACS-64 electric locomotive.** Amtrak ("Reliability, Efficiency, Mobility" and Travelmark schemes) and Southeastern Pennsylvania Transportation Authority. One road number per scheme. Dual-mode TCS WOWSound electric locomotive sound package; fully remappable light functions, including blinking ditch lights, on/off marker lights, and directional headlights with Rule 17 dimming; and selector switch for choice between rail or pantograph operation. \$429. Bachmann Trains, 215-533-1600, bachmanntrains.com



- **Electro-Motive Division SD45 diesel locomotive.** Burlington Northern; Atchison, Topeka & Santa Fe (blue-and-yellow warbonnet); Conrail (blue with "can opener" herald); and Norfolk &

In Memoriam

Neil Besougloff, 1959-2020

Neil Besougloff, *Model Railroader's* editor from June 2007 to June 2017, passed away July 26 from complications related to COVID-19. He was 61.

Neil joined Kalmbach in February 1997 when he became editor of MR's sister publication, *Classic Toy Trains*. He built two large toy train layouts while working on the magazine, and particularly enjoyed collecting tinsplate-era trains.

Besides trains, Neil's other passion was cars. He owned a wide variety of cars, from performance models such as the Mercury Marauder, Pontiac GTO, and Ford Mustang to a 1920s Ford Model A. He also was a big fan of slot car racing and enjoyed attending sports car races and the Indianapolis 500.

After retiring, Neil and his wife, Susy, moved to Puerto Vallarta, Jalisco, Mexico. He is survived by his wife; sons Austin and Hunter; stepsons Ricky, Michael, and Sammy; and parents, Paul and Roslyn.



Western (high short hood; Pevler Blue in five numbers, American Revolution Bicentennial in one number). Six numbers per scheme unless noted; also available undecorated (Burlington Northern, Conrail, Norfolk & Western, and Santa Fe body styles). Light-emitting-diode headlights, number boxes, and marker lights; see-through dynamic brake intakes with resistor grid; and detailed cab interior. Direct-current model, \$184.99 (N&W Bicentennial, \$189.99); with dual-mode ESU LokSound 5 sound decoder, dual cube-type speakers, and ESU PowerPack with two super capacitors, \$274.99 (N&W Bicentennial, \$279.99). Late 2020/early 2021. Rivet Counter line. ScaleTrains.com Inc., 423-299-3689, scaletrains.com

HO scale freight cars



- **Assorted freight cars.** Pullman-Standard 4,750-cubic-foot-capacity three-bay covered hopper (Farmers Coop, Farnhamville, Iowa; Corn Sweeteners; and Georgia-Pacific. Single car, \$20.98; three-pack, \$61.98). Milwaukee Road 40-foot plug-door steel refrigerator car (orange), \$19.98. Pittsburgh & Lake Erie 36-foot double-sheathed boxcar, \$18.98. Reading Co. 40-foot double-sheathed boxcar, \$18.98. United States Railroad Administration 55-ton two-bay hoppers (Grand Trunk

Club offerings



- **Stanley Motor Carriage Co. 36- and 40-foot double-sheathed boxcars.** Accurail HO scale kits decorated for the Illini Chapter of the Professional Car Society. One road number per car. \$23.98 each plus \$8.30 shipping (one car) or \$9 (multiple cars) to U.S.A. addresses, \$20.75 shipping for foreign orders of any size. Illini Chapter PCS, 918 W. Colfax St., Palatine, IL 60067



- **Dominion Atlantic Ry. 36-foot double-sheathed boxcar.** Accurail HO kit custom-decorated for the Illini Chapter of the Professional Car Society. One road number. Renumbering decals available upon request. \$19.98 each plus \$8.30 shipping (one car) or \$9 (multiple cars) to U.S.A. addresses, \$20.75 for foreign orders of any size. Illini Chapter PCS, 918 W. Colfax St., Palatine, IL 60067

HO scale



Gunderson

5,188-cubic-foot-capacity

covered hopper.

ScaleTrains.com has released a new run of modern covered hoppers decorated for AIG Rail Services (SOXX reporting marks, three numbers), BNSF Ry. (Fort Worth & Denver and five other heritage schemes in one number each, post-2005 herald in 22 road numbers), General American with CMO reporting marks (Oxide Red, three numbers), Kansas City Southern (three schemes, three to 12 numbers each), Northwestern Oklahoma (gray, three numbers), and Union Pacific (two schemes, six numbers each). The HO scale Rivet Counter line models have metal Type E lower shelf couplers and are priced at **\$44.99**. ScaleTrains.com Inc., 844-987-2467, scaletrains.com

and Susquehanna & New York), \$17.98 each. Injection-molded plastic kits with plastic wheelsets, Accumate couplers, and steel weight(s). Accurail, 630-365-1173, accurail.com

- **40-foot wood-chip hopper.** Ashley, Drew & Northern (green); Atlantic Coast Line (black); Gulf, Mobile & Ohio (black); Louisville & Nashville (Oxide Red); Seaboard Coast Line (black); and Southern Ry. (Freight Car Red). Nine road numbers per scheme (single car and two four-packs). Wire grab irons, removable wood chip load, and body-mounted McHenry scale couplers. Single car, \$41.98; four-pack \$154.98. June 2021. Ready-to-Roll. Athearn Trains, 800-338-4639, athearn.com

- **Gunderson 50-foot hi-cube box-cars.** Single-plug-door car: Burlington Northern (green with herald but no road name), Canadian National (blue with CNA reporting marks), CSX (dark blue with "Big Blue" slogan), Illinois Central (gray), International Bridge & Terminal Co. (green), and Wisconsin Central (maroon). Double-door car: Montana Rail Link (dark blue with original herald and plug doors) and Southern Pacific (Freight Car Red with Youngstown doors and SP herald). Six road numbers

per scheme. Injection-molded plastic model with modern ends, flat roof, and metal wheelsets. \$28.95. Value Line. InterMountain Railway Co., 303-772-1901, intermountain-railway.com



- **Baltimore & Ohio class I-18 steel bay-window caboose.** Chessie System (light blue Chessie Safety 1973+, maroon Chessie Safety 1975+, 1981+ Raceland repaint, and 1982+ restencil [one road number each]; 1973+ repaint in two new numbers), Baltimore & Ohio (original blue 1968+ in two new numbers and simplified blue 1969+ in one number), and CSX (2002+ ex-Chessie System patchout, one number). Undecorated kit with Pyle marker lights also available. Model features full International Car Co. interior, wire grab irons, Kadee scale couplers, and Gould 70-ton roller-bearing trucks with separate brake beam part. \$94.95. Tangent Scale Models, 828-279-6106, tangentscalemodels.com

HO scale structures

- **Digital Command Control-equipped turntable.** National Model Railroad Association-compliant dual-mode decoder, maintenance building, operator's cabin, and 16 nickel-silver track positions. Turntable bridge is 10" (outside diameter, 14"). Spring-loaded direction switch and wires provided for direct-current operation. Separate power supply not required for DCC operation. Designed for use with Bachmann E-Z Track; adaptable to other track systems. Also compatible with On30 locomotives. \$299. Bachmann Trains, 215-533-1600, bachmanntrains.com

HO scale details and accessories

- **Ford C Telesqurt fire truck.** Red, red and white, red with white cab, red with white roof, safety green, and white. Medium wheelbase chassis with conventional cab, positionable Telesqurt arm with fire monitor and photo-etched ladders, detailed cab interior with separate steering wheels, and vinyl tires. \$36.98. June 2021. Athearn Trains, 800-338-4639, athearn.com

- **45-foot Pines trailer.** Pabst Blue Ribbon (red, white, and blue), Lucky Lager (white and red), Old Milwaukee (white, red, and gold with "It doesn't get any better than this!" slogan), Old Style (blue, white, and red), Schlitz (white and maroon), and Stroh's Beer (red, white, and gold). Injection-molded plastic trailer with riveted sides, raised and lowered landing gear, and hinge and latch detail. \$29.95. First quarter 2021. Master Line. Atlas Model Railroad Co., 908-687-0880, atlasrr.com

- **1970s GMC 9500 short wheelbase wrecker.** Kit includes resin cab and body; cast pewter wheels, tires, and details; etched-metal parts; decals; and clear window glazing. \$34.95. Showcase Miniatures, 334-750-3276, showcaseminatures.net

N scale locomotives



- **Electro-Motive Division SD40-2 diesel locomotive.** Norfolk Southern/

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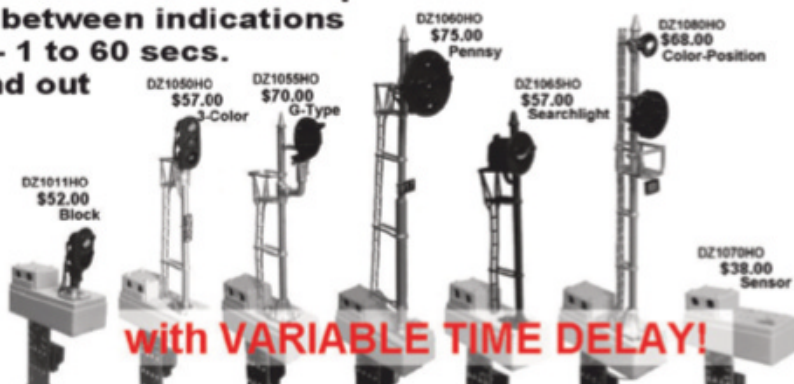


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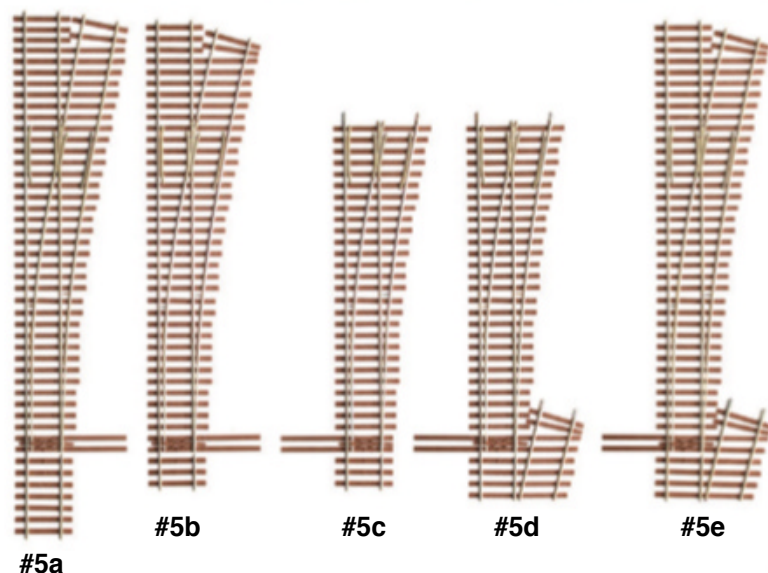
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Maersk Sealand (one road number); Atchison, Topeka & Santa Fe (blue and yellow warbonnet); and Burlington Northern (Cascade Green and black with nose stripes). Two numbers per scheme unless noted. Mid-production model with golden-white light-emitting-diode headlights and ditch lights, factory-printed number boards, and Kato knuckle couplers. Direct-current model designed for drop-in installation of Train Control Systems K1D4-NC decoder (sold separately). Direct-current model, \$120; with pre-installed Digitrax Digital Command Control motor and light decoder, \$200; and with pre-installed ESU LokSound, \$320. Prices are estimates and are subject to change upon release. December 2020-January 2021. Kato USA Inc., 847-781-9500, katousa.com

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circle-cross herald with “Ship and Travel Santa Fe – All the Way” slogan. Single car without number and three-pack with numbers); Fruit Growers Express (yellow with brown roof and ends), Northern Pacific (“Scenic Route of the Vista-Dome *North Coast Limited*” slogan), Rath (orange with silver roof), and Wilson (red with silver roof and black ends). Each road name offered as three single cars only unless noted. Separate brake rigging, screw-mounted trucks, Santa Fe-style reversed ice hatches, and McHenry couplers with springs. Single car, \$29.98; three-pack, \$84.98. AthearnN. Athearn Trains, 800-338-4639, athearn.com



- **53'-6" flatcar.** Minneapolis & St. Louis (brown with black-and-white Chicago & North Western “Employee Owned” herald), Conrail (brown), Illinois Central Gulf (orange), Rock Island (brown), Southern Pacific (brown), and Union Pacific (Armour Yellow). Two road numbers per scheme; also available undecorated. Die-cast metal construction and truck-mounted Accumate couplers. \$29.95. Master Line. Atlas Model Railroad Co., 908-687-0880, atlasrr.com



- **Association of American Railroads 40-foot boxcar.** Baltimore & Ohio (Time-Saver Service scheme), Pennsylvania RR (Merchandise Service scheme), Wabash (dark blue), and Western Pacific (black, silver, and orange with “Rides Like a Feather” slogan). Positionable doors, RP-25 contour blackened metal wheels, and plastic E-Z Mate couplers. \$35. Silver Series. Bachmann Trains, 215-533-1600, bachmanntrains.com



- **Cryogenic tank car.** AirCo., Air Liquide, Air Products, American Cryogenics, Canadian Liquid Air Co.,

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Large scale freight cars



- **Water tank car.** F scale (1:20.3) kit with Carter Brothers swing-motion trucks; 24" Sierra Valley wheels; and sprung, frame-mounted link-and-pin couplers. \$265. The Train Department, 732-770-9625, thetraindepartment.com

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to be announced. PIKO-America LLC, 619-280-2800, piko-america.com

Z scale locomotives



- **Alco RS-3 diesel locomotive.** Northern Pacific. Three road numbers. Prototype-specific details, directional light-emitting-diode headlights, 7.5mm coreless motor with dual flywheels, traction tires, and body-mounted couplers. American Z Line, 614-764-1703, americanzline.com

Z scale freight cars

- **Gunderson Maxi-I five-unit articulated well car.** “K” Line Rail-Bridge. Five road numbers (two sets include five “K” Line intermodal containers). Wells have metal chassis, roller-bearing trucks, etched-metal details, and add-on parts. End units feature AutoLatch couplers. American Z Line, 614-764-1703, americanzline.com

Z scale passenger cars

- **Chicago & North Western light-weight passenger cars.** 6-section, 6-roomette, 4-double-bedroom sleeper (*American Buffalo* and *American Indian*); 4-bedroom, 4-compartment, 2-drawing-room sleeper (*Imperial Drive* and *Imperial Ranch*); diner; coach; observation car; baggage car; and U.S. Mail/Railway Post Office (no. 8201). American Z Line, 614-764-1703, americanzline.com

Tools



- **Fine wire strippers.** Tool has two stripping grooves and locking adjustment. Compatible with wire between .004" and .118". \$15.87. Price may vary

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Excel Blades, available from Kalmbach Hobby Store, KalmbachHobbyStore.com

Scenery

- **Fiber optic-illuminated billboard.** Cadillac, Chevrolet, Chevrolet Camaro, Ford, Hellmann's mayonnaise, Levi's, Packard, Phillips 66, Schlitz Beer, Shell Oil, and Texaco Motor Oil. For HO, S, and O scales. Billboard comes with 9 feet of 1mm fiber optic pre-installed and drill template. Requires Lamplighter box, sold separately. Flat packed, \$23.90; fully assembled, \$29.90. Dwarvin Enterprises Ltd., 717-350-1747, dwarvin.com
- **MBR scenery products.** Deciduous and coniferous trees, shrubs, bushes, static grass, mats, leaves, and more. Products are made from natural materials. Trees are handmade with leaf- or needle-like foliage and detailed trunk and branches. Available in Z, N, HO, and O scales. Tree prices start at \$19.99. Produced by MBR, available from Reynauld's Euro Imports Inc., 888-762-6872, reynaulds.com 

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Mike Tylick liked this artillery spotting tower for his layout even though it might be an anachronism. Lou Sassi photo

A tower out of time?

I enjoyed the article about Michael Tylick's Marshfield & Old Colony [July 2020]. I did,

however, notice an anomaly. The railroad is set in the '20s and '30s, but the track plan shows a World War II artillery spotting tower. Was this maybe left over from WWI?

Marty Theissen,
Minneapolis

Mike Tylick responds:
Hi, Marty. You're most likely correct about the artillery tower being from WWII. When I found the prototype, it caught my eye and seemed like a more interesting model than the expected cute lighthouse.

When researching the tower, I must have missed the part about which war it's from. The design is such that it could have been built for either war, and I'm not all that

fussy about historical accuracy to begin with. I needed a focal point on the wooded hills, and it seemed more suitable than a fire tower, which would have been a better fit for an inland mountain scene.

Thanks for being observant enough to pick this out and thoughtful enough to write me. Glad you enjoyed the article. – Mike Tylick

More on Marshfield & Old Colony

I very much enjoyed Lou Sassi's story on Michael Tylick's Marshfield & Old Colony layout, published in the July 2020 issue of *Model Railroader*. I've always been a fan of Michael's layouts

described in past issues of MR. I especially relate to his impressionist approach to scenery, a technique that I also try to apply on my own layout. Michael is a retired art teacher, and his artistic sense shows in his layouts. Congrats, Michael!

Patrick Quintal,
Longueuil, Que.

Correction

Our review of the HO scale Russian 2-10-0 Decapod from Bachmann Trains (July 2020) said the model had a set of blind drivers to negotiate tight curves, unlike the prototype. The prototype did, in fact, have a set of blind drivers for the same reason. 

Comments, suggestions, and additional information on *Model Railroader* articles and departments are welcome in this column. Every comment will be read, but not all can be printed or answered. Make your statement in 300 words or less, and send it to **Railway Post Office, Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187**, or e-mail rpo@mrmag.com. Please include your name, city, and state.

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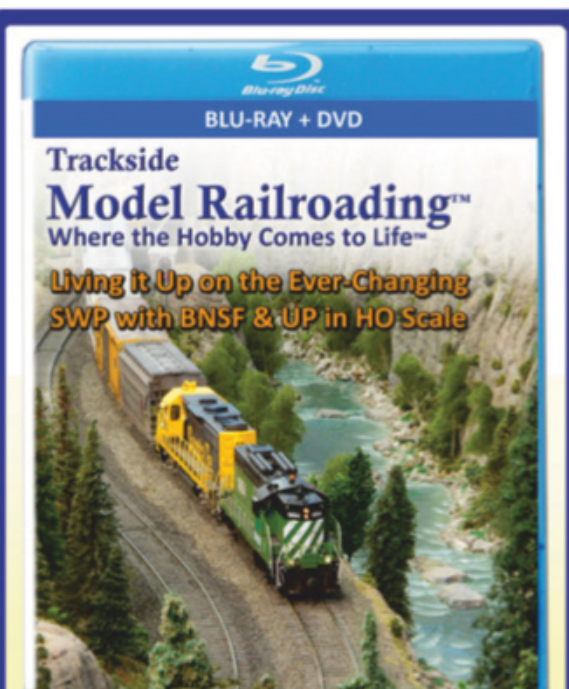
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Colorado & Southern narrow-gauge 2-8-0 Consolidation no. 68 takes on water at Golden, Colo., on Jan. 30, 1939. As smoke escapes the front of the locomotive's "bear trap" stack, cinders are caught by the device and routed into the pipe on the side of the smokebox for later disposal. R.H. Kindig photo

This "bear trap" caught cinders, not bears

Q In Bob Kuchar's picture in the 2020 Photo Contest winners [Trackside Photos, July 2020], what's the purpose of the smokestack being routed to the ground? Since the locomotive has a snow plow in front, I would guess it's to help melt snow along the tracks, but the pipe only goes down one side.

Richard Rustad, Aiken, S.C.

A What you see on that locomotive's smokestack is a Ridgway Spark Arrestor, colloquially known as a "bear trap stack." Invented by Colorado & Southern Ry. Superintendent of Motive Power H.W. Ridgway, its purpose was to minimize the risk of fire in the dry brush along the C&S's right-of-way. It doesn't route the exhaust to the ground; in fact, that tube is capped at the bottom. The purpose of the tube is to collect any cinders that might otherwise fly up the stack. The sloped front of the trapezoidal-shaped smokestack cap is a metal grill that lets the smoke escape. The cinders bounce off the grill and fall down the tube, to be collected there. When the locomotive pulls over the ash pit at the end of the day, the fireman opens a door at the bottom of the tube and dumps the accumulated cinders. Why railfans thought it resembled a bear trap is unclear; the railroad itself never used that term.

Q I enjoy reading your Product Reviews every month, particularly the comparison between the performance of the locomotives under direct current and DCC. I have a few dual-mode DCC engines and would like to do some of the comparisons you do. I have a multimeter, an Accutrack II speedometer, an NCE DCC setup, and a Model Rectifier Corp. Tech 7 power pack. How would I use that equipment to establish

the number of volts and scale MPH for each engine under DC? I can do it myself under DCC.

Dennis Featherstone, Ottawa, Ont.

A Sounds like you have all the ingredients you need to run some direct-current speed tests. Simply hook up your DC power pack to the rails as normal, switch your multimeter to read voltage, and connect the leads in parallel across the

rails. Then you'll be able to read the voltage being supplied to the engine at various power pack throttle settings so you can compare apples to apples.

Q I've been looking for the "Selkirk leaves" seen in Rick Sutton's entry in the MR 2020 Photo Contest (July 2020, page 66). So far, no luck. Where can I find them?

Rick Bailey, Oxford, Ohio

A We've searched, too, and it looks like the website for the company that made them is gone. Selkirk Leaves may be out of business. (If not, please contact us and we'll gladly share your contact info.) Luckily, other manufacturers including Noch and Scenic Express make similar paper-leaf products in a variety of colors and scales. Hit up your local hobby shop or go to Walthers.com and search for "leaf flake." Happy hunting.

Q I'm designing and scratchbuilding a modern freight warehouse that will serve both boxcars and tractor trailers. How high off the ground should the freight doors be? Thank you.

Nathan Penn, Monmouth, Ill.

A The actual height of a boxcar floor can vary as the weight of the load compresses the truck springs. But nominally, the height of a boxcar floor ranges from 3'-6" loaded to 3'-9" light. That's the height above the railhead, so be sure to take the height of your track and road-bed into account. Since an industrial siding usually doesn't have a built-up road-bed, but is usually laid at ground height, four scale feet would probably work for you. Since most semi-trailers have a nominal four-foot floor height, that would work for the other side of the building, as well.

Also, consider whether the warehouse primarily receives goods via rail or ships them that way. It's a common practice for the floor of a receiving warehouse to be built a couple inches lower than the floor of a loaded boxcar, or for a shipping warehouse to be a couple inches higher than the floor of an empty car, so loading and unloading are always done "downhill." If your warehouse does both, split the difference and use the actual height of the car floor above the ground.

Send questions and tips to associate editor Steven Otte at AskMR@MRmag.com.

Q I'm having a problem consisting two diesel engines. I follow the instructions and the diesels will run with sound, but there are no lights, horn, or bell. This is very frustrating. Is there something I'm missing? If you could keep your answer as simple as possible, I'd appreciate it.

James Newins, Topeka, Kan.

A I assume you're using advanced consisting, in which consisting is handled by programming the individual locomotives' DCC decoders to respond to a single consist address. When you're consisting two (or more) locomotives this way, you want only the lead locomotive to respond to commands for the headlight, horn, and bell. The rear unit should respond only to the backup light, and intermediate units shouldn't respond to any of those keys. It sounds like when you're programming your consist, your locomotives are defaulting to thinking they're all intermediate units, so none of them will respond to those commands.

The simplest way to handle things is to use your throttle to address the lead

locomotive individually, using its cab address, when you want to trigger the headlight, bell, or horn, then switch back to the consist address to control the lashup's speed again. Your DCC throttle's "Recall" button should make this not too hard, and after a while, making the switch will become second nature.

Still, if you find it annoying to have to remember to switch addresses whenever you want to trigger a sound effect, you can program two Configuration Variables (CVs) to tell the locomotives which function keys you want them to respond to while consisted. Older decoders may not have these CVs, but since your locomotives don't respond to the function keys, I'm going to guess they have those CVs and they need to be set. So, the simplest version of this answer is: To make your lead unit respond to the front headlight, bell, and horn functions only, program CV21 to 3 and CV22 to 1; to make the trailing unit respond to the backup light only, set its CV21 to 0 and CV22 to 2. For a three- or four-unit lashup, set both CVs to 0 on the intermediate units.

If you want to set your consisted locomotives to respond to other function keys, too (like, say, the dynamic brake button), the programming gets a bit more complex. I suggest you watch episode 3 of senior editor Dana Kawala's "DCC Programming" series on Model Railroader Video Plus.

Q I'm looking for a track plan that I think is in one of your books. It's called the NEAR. Not a large layout design, probably 4 x 8 in size, with a Canadian grain theme. It was a two-page article with a drawing of a train switching covered hoppers at a grain elevator. Where was it published? I want to build an N scale version.

Russell Opre, Dewey, Ariz.

A I remember that track plan, but the fact that "near" is also a very common word made our article index useless to find it. So I started thinking about what that acronym could stand for in a Canadian grain context, and came up with North East Alberta Ry. Bingo! The



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NEAR was a 4 x 8 track plan published in our June 1988 issue. It's a two-page article illustrated with a drawing of a diesel switching grain hoppers, so I'm confident it's the article you're looking for. You can read that article, as well as any other from our 87-year publication history, by subscribing to our Archive at ModelRailroader.com/Archive.

Q My local hobby shop stocks HO scale replacement wheel sets in both 33" and 36" diameters. Is there a standard rule concerning which rolling stock utilizes which wheel size? I'm trying to decide which size to purchase.

James White, Green Bay, Wis.

A Although there are exceptions (auto racks and some intermodal cars), contemporary 100- and 110-ton capacity freight cars use 36" wheels. Freight cars with up to a 70-ton capacity use 33" ones.

When you replace the wheelsets on your cars, measure the wheels they came with compared to their prototypes and replace them as needed.



Testor's Clear Parts Cement can be used to make locomotive headlight lenses and glaze small windows, not just to glue clear parts. Steven Otte photo

Q "DCC Corner" columnist Larry Puckett mentioned using Testor's Clear Parts Cement to make headlight lenses for Athearn locomotive shells. What's the trick to do this?

David Moyer, Arcadia, Ohio

A Testor's Clear Parts Cement is a milky liquid out of the bottle, but dries clear. If you pick up a drop of the cement

on the end of a toothpick or similar applicator, you can touch the drop to the headlight opening on the locomotive's body shell and draw the toothpick flat across the opening to fill it with a thin bubble of glue. When it dries, the glue will form a flush "lens" in the opening. The same trick can be used to make small panes in plastic window castings or passenger car windows. Try it. **MR**



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The HO boxed set explosion

In the 1930s, expensive ready-to-run locomotives and rolling stock were for hobbyists with money but lacking the time, tools, or skills to build them. Some required intense labor to construct. Locomotive kits were offered to appeal to different skill levels. The more work required, the less one paid, and the less work, the more expensive, with ready-to-run being the costliest. Only two late 1930s HO manufacturers sold ready-to-run train sets with track. Mantua offered a three-car freight, with an extra-cost DC power pack, and A.C. Gilbert had two freight sets and one passenger set marketed like tinplate with extra-cost AC transformers.

After World War II, Gilbert provided only ready-to-run HO, ideal for servicemen living in new, basement-less Levittown-type homes, and who remembered the ease of setting up Lionel, American Flyer, or Marx tinplate. Other manufacturers caught on and offered boxed sets, some with

power packs, and became mainstays in entry-level HO, helping broaden the hobby.

In December 1955, *Model Railroader* magazine ran a pre-Christmas piece listing 52 boxed sets from 10 manufacturers. The National Model Railroad Association's new X2f horn-hook couplers were available only in the Gilbert and Herkimer sets. Varney included power packs; Mantua offered several with and several without. Montgomery Ward and Sears-Roebuck began selling boxed HO sets with track and power packs in Christmas holiday catalogs from 1956 on from Gilbert, Varney, Marx, Lionel, and Tyco, a major mail-order play.

1957 and 1972 America's Hobby Center (AHC) catalogs reveal how quickly train sets proliferated. In 1957, there were 56 sets offered by nine companies, a bump from MR's 1955 accounting. Old-timers were shocked. True hobbyists

N-SCALE ELECTRIC TRAINS AND ACCESSORIES

DIESEL SPECIAL
 -GP 30 Diesel -Complete -Passenger Car -40 Wheel Cabinet
 -Choice of track -MRC Powerpack with Taper Round Speed Control

ROAD NAMES	COMPLETE AS ABOVE	WITHOUT POWERPACK
Union Pacific	7400	7400
Santa Fe	7401	7401
Penn Central	7402	7402
New York Central	7403	7403

ALCO FREIGHT EXPRESS
 -Alco C420 Diesel with operating headlights -Stock Car -Coal Box Car -Flat Car with Cable Drums -40 Wheel Cabinet -Choice of track -MRC Powerpack with Taper Round Speed Control

ROAD NAMES	COMPLETE AS ABOVE	WITHOUT POWERPACK
Santa Fe	7404	7404
Southern Pacific	7405	7405
Canadian National	7406	7406
Penn Central	7407	7407

RAILLINE COMMUTER
 -GP30 Diesel -Coach -Observation Coach -Comet Car
 -Choice of track -MRC Powerpack with Taper Round Speed Control

ROAD NAMES	COMPLETE AS ABOVE	WITHOUT POWERPACK
Penn N.Y.	7408	7408
Santa Fe	7409	7409

America's Hobby Center offered a huge variety in its 1972 catalog. These N scale sets from Model Rectifier Corp. were from one of six companies offering sets for the 1:160 market.

were expected to build everything from complex kits and handlay track. Considered tinplate by some, boxed sets gave many a start in the hobby. By 1972 there were 78 HO and six N scale firms. HO proliferated with imports made for and sold by domestic companies. N scale had grown rapidly, as well. In the 18 years since MR's 1955 listing, there was remarkable growth in reasonably priced ready-to-run starter outfits in both gauges.

Comparing the 1972 AHC catalog with a 1953 Model Railroad Equipment Corp. HO catalog, the latter is a snapshot of a hobby a few years after war's end. Attitudes toward the hobby had changed dramatically, and ready-to-run locomotives, cars, and sets were no longer signs of amateurism, smacking of tinplate. All were acceptable, letting hobbyists start up quickly, freeing time to put more effort into better scenery, something many early HO layouts lacked.

Tyco and Model Die Casting offered die-cast metal steam locomotive kits, others in plastic. Car kits were craft or plastic, allowing one to rapidly build freight and passenger consists for different eras. Structure kits ranged from simple plastic to more complex wood craftsman kits for both country and industrial settings.

It's a vanished world today.

The number of ready-to-run sets have shrunk with the loss of the manufacturers that made them, creating fewer opportunities for a novice to get started in HO or N scale. But our hobby has returned to its craftsman roots in creating museum-quality scenery. **MR**

CONSIDERED TINPLATE BY SOME, BOXED SETS GAVE MANY A START IN THE HOBBY.
 —KEITH

LIFE-LIKE TRAINS

DIESEL FREIGHT SET
 T446C Penn Central
 T446D Union Pacific
 T446E Chi & North Western

24⁹⁵ EACH

DOCKSIDE SWITCHER FREIGHT
 T445A Baltimore & O
 T445B Santa Fe

21⁹⁵ EACH

OVER THE HILL FREIGHT
 T446B Santa Fe
 T446C Penn Central
 T446D Union Pacific

34⁹⁵ EACH

THE SHUNTER SPECIAL
 T447G Southern Pacific
 T447H Pennsylvania

29⁹⁵ EACH

Life-Like was one of 78 firms offering HO scale sets in the 1972 America's Hobby Center catalog.



More industry for the MR&T

Welcome to the first installment of Rehab My Railroad, a new series featuring our latest HO scale project layout, Jones Island. Instead of starting from scratch, we're going to rebuild Kelly's Island, a 3'-6" x 13'-10" section of our staff model railroad, the Milwaukee, Racine & Troy (MR&T).

For the past 20-plus years, Kelly's Island has largely been ignored. Though all of the track was installed and some structures were set in place back in the late 1990s, only a few stretches of track were ballasted and a couple of patches of scenery were completed.

Unfortunately, this part of the layout is also the most visible. Large display windows in the hallway overlook Kelly's Island, and the scene is the first thing you see when you enter the room. Half-completed buildings and unfinished trackwork don't make a great first impression on visitors and co-workers.

The inspiration for our project layout came from Jones Island at the Port of Milwaukee, about 20 minutes east of our offices. The island, more accurately a peninsula, is home to warehouses, cement plants, oil dealers, salt distributors, and an export grain elevator. It's served by Union Pacific and Canadian Pacific. We didn't have space for all of the industries, so we picked a combination that would provide a variety of rail traffic. You can see the track plan on the opposite page.

As with any remodeling project, you need to deal with demolition first. We were able to reuse one structure for the new layout. Other buildings will be repurposed elsewhere on the MR&T, cannibalized for parts, or put into storage. We also, with mixed results, tried to save track. See steps 2 and 3 for more on that.

We hope you'll follow along over the coming months as we make a long

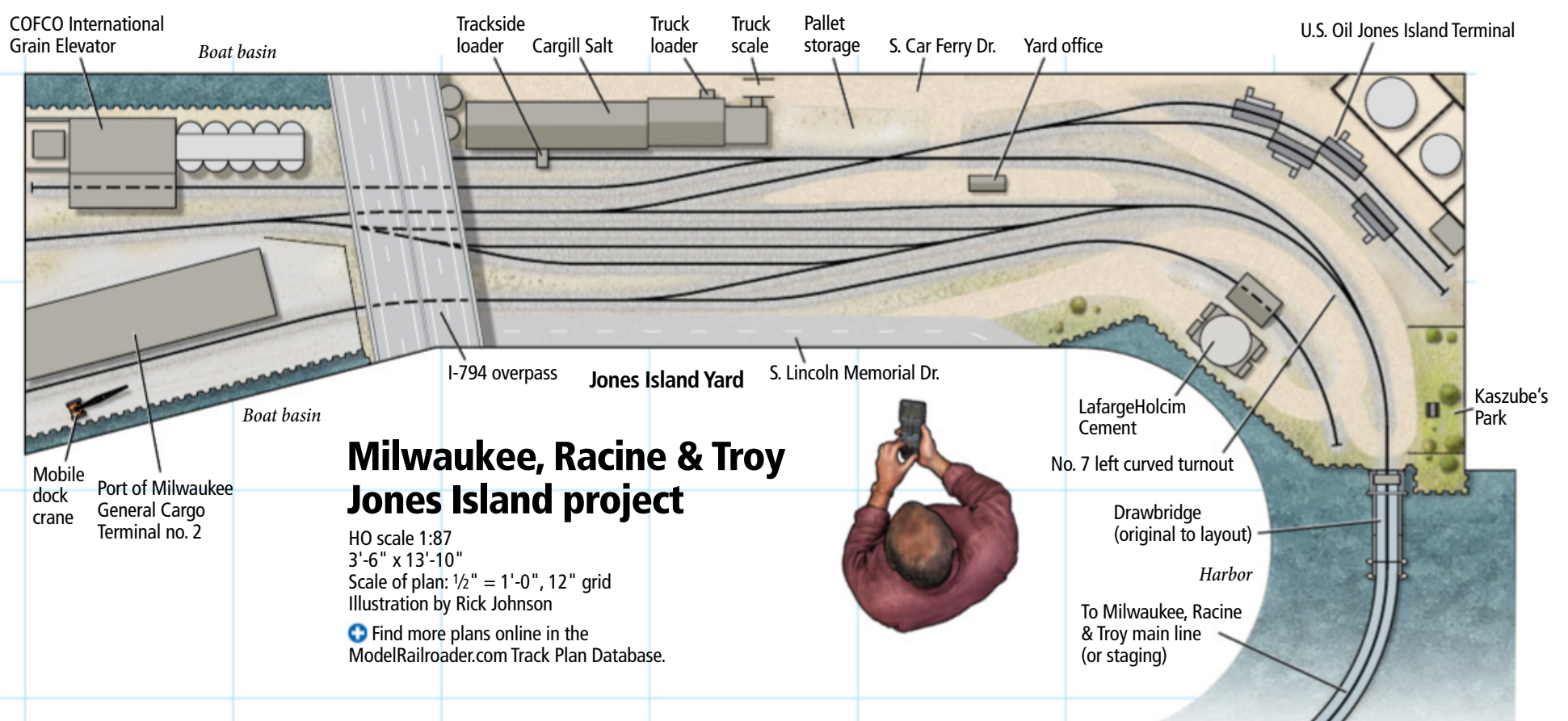
overdue upgrade to this section of the MR&T. Jones Island can be built as a stand-alone layout or grafted on to an existing model railroad. Either way, you'll end up with an enjoyable switching layout that's a credible representation of at least some of the industries on the prototype. – David Popp



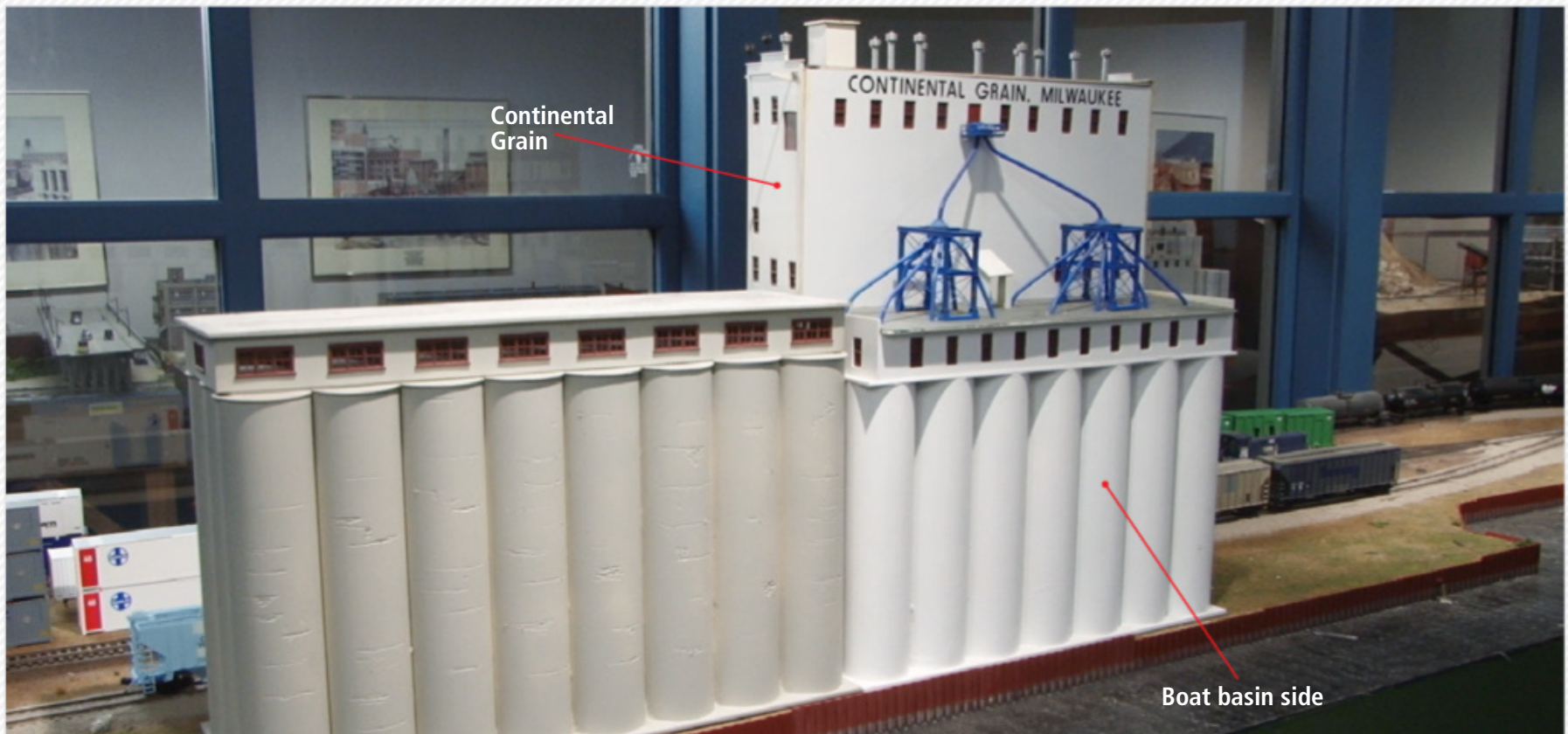
▶ See what the crew is up to between issues by watching "Rehab My Railroad: Jones Island." The exclusive videos can be found at MRVideoPlus.com.



Union Pacific Electro-Motive Division GP40-2 no. 1440 switches covered hoppers at the Cargill Salt warehouse on Jones Island in Milwaukee, Wis. The large silo in the background is the LafargeHolcim cement plant. At left, ocean-going vessel *Solina* takes on grain at the COFCO International grain elevator. Robert S. McGonigal photo



STEP 1 WHAT STAYS, WHAT GOES?



There were a handful of structures on Kelly's Island, most of which were repurposed from the old MR&T when *Model Railroader's* offices were located at 1027 N. 7th St. in Milwaukee. The one building we kept for our Jones Island project was Continental Grain. The grain elevator was built by retired managing editor Jim Kelly and featured in the November 1986 MR (pp. 78-83). Today, the full-size elevator is operated by COFCO International. Except for the name and some minor modifications, the prototype structure is largely unchanged.

Because of how the elevator was positioned on the old layout, the track side was thoroughly detailed while the boat basin side, shown above, was a bit sparse. On our project layout, the grain elevator will be next to the display windows, so adding those details is a must. Look for that project in an upcoming issue.

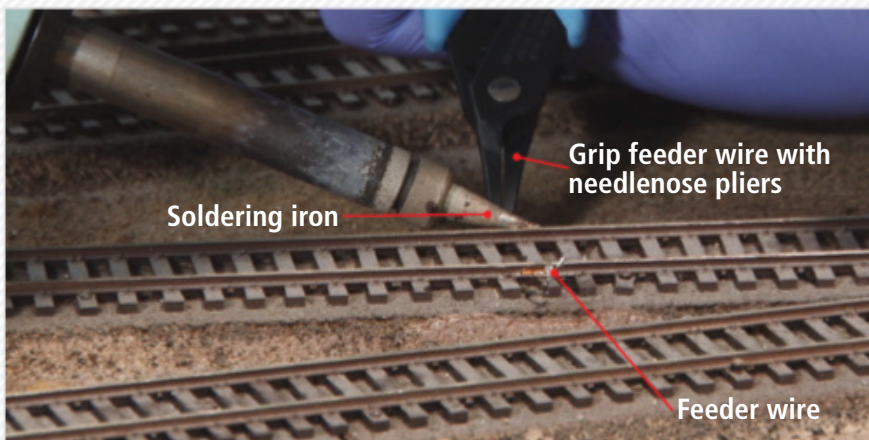
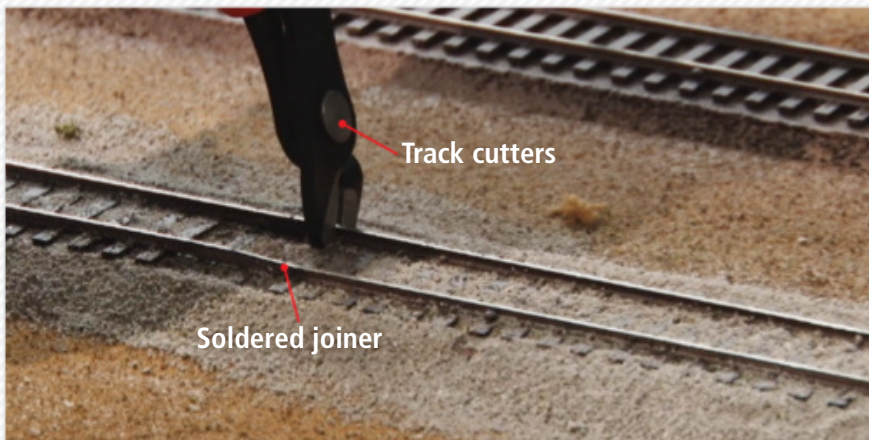
Other structures didn't make the cut. Medusa Cement looks similar to plants in the nearby Menomonee Valley, but it doesn't match the towering single-silo affair at LafargeHolcim. The prototype distributes and receives aggregates, cement, and ready-mix concrete at its Jones

Island location. Associate editor Eric White will scratch-build LafargeHolcim using PVC pipe as a starting point. We gave him the Medusa Cement plant so he could harvest detail parts.

Ladishfeger Steel Products will be relocated to Mukwonago on the MR&T. The building's narrow footprint fits nicely between the MR&T main line and the fascia, and it helps conceal a scenic void between Artz Lumber and Empire Level. The new location is better illuminated, allowing visitors and operators to appreciate the industry's interior details. But we'll save that industry transplant for down the road.

The largest collection of structures on Kelly's Island was the B. Fine Co., Brallen Adley Co., and Shippman Inc. These structures, the subject of an article in the June 1997 MR, were kitbashed by the late Art Curren. If possible, we'd like to repurpose these buildings across the harbor. The structures tie in nicely with the photo backdrop that editor Carl Swanson and recently retired senior illustrator Rick Johnson worked on for an article in the September 2005 issue of MR. – David Popp

STEP 2 SALVAGING FLEXTRACK



David and I next turned our attention to the flextrack and turnouts, starting with the former. Instead of unsoldering the rail joiners, we used Xuron track cutters to cut the track on each side of the joints and create new flush ends (upper left). We cut the track while it was still nailed down.

Before we could lift the flextrack out, we had to remove the track nails on the Shinohara track (upper right). The nails were installed where the ties meet the base of the rail on the field side of the track. The pointy tip of the track cutters made it easy to hook the spikes and gently lift them out.

As we were pulling spikes, we encountered feeder wires soldered to the web of the rail. Though cutting the feeders would have been quicker, we unsoldered them, since we'll be reusing the track (middle left). Make sure the soldering iron is hot and work quickly so you don't melt the plastic crossties.

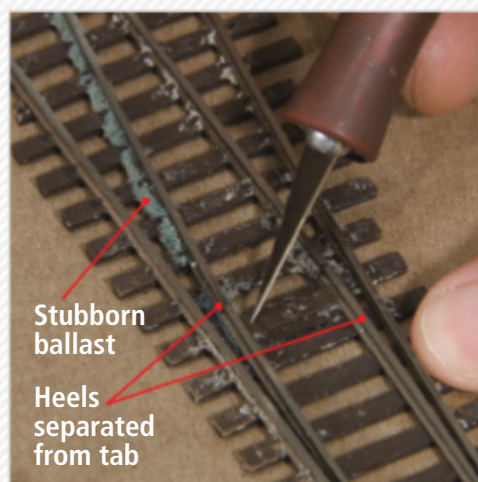
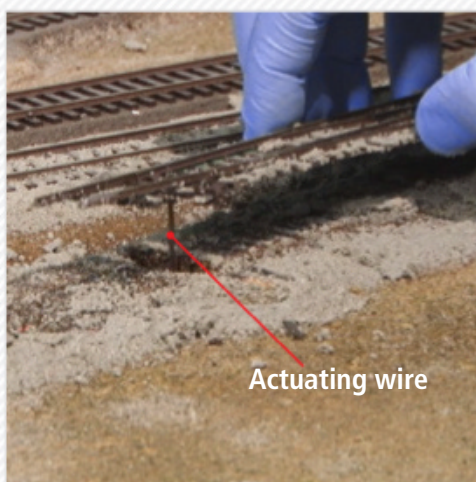
Next, we sprayed the ballast with 70 percent isopropyl alcohol and let it soak in for about 10 minutes. Then we used a 5-in-1 tool (middle right) and putty knife to lift out

the flextrack. We found a few track nails that we overlooked earlier when removing the track, which is why we stopped when we felt any resistance.

There was still quite a bit of ballast attached to the flextrack after it was removed. To clean it off, David soaked the rail for 15 minutes in wallpaper troughs filled with water. Then he used a toothbrush to scrub the rails (bottom left). One thing David discovered is that the ballast wasn't secured with white glue, as it came out in chunks instead of separating into granules. We later learned it was attached with matte medium. David was still able to remove the ballast; it just took a bit more effort. He used a hobby knife with a no. 11 blade to clean out ballast in spots where the toothbrush wouldn't reach.

Salvaging the flextrack turned out to be an unqualified success (bottom right). There were a few spots of stubborn ballast that David couldn't remove. However, once the track is reinstalled, painted, and ballasted, those stubborn granules will be difficult, if not impossible, to see. Those 30-year-old sticks of Shinohara flextrack will continue to earn their keep on Jones Island. – *Cody Grivno*

STEP 3 RECLAIMING TURNOUTS



Though turnouts aren't cheap, trying to save ones that have been ballasted is difficult. David and I tried to save two. On the first turnout, I started by removing the feeder wire for the frog. Then I used a pair of track cutters to cut the rail on the end by the points. Since there wasn't much track to work with on that end of the turnout, I made the cuts beyond the joints in the piece of connecting flextrack.

When I cut the rail, the pressure caused the rails to pop out of the molded spikes that held them in place (upper left). It's not impossible to save a turnout with this kind of damage, but it would involve drilling holes in the ties and using track nails to hold the rail in gauge. We abandoned trying to save that turnout.

On the second turnout, David used a motor tool with a cutoff disc to cut the rails (upper right). Work slowly and let the disc do the cutting. If you apply too much pressure, the disc may shatter. Eye protection is a must when using a motor tool.

I then wet the ballast with isopropyl alcohol and let it soak in. As before, I used a putty knife to remove the turnout, being careful not to apply too much pressure. There were a few track nails hidden under the ballast that I had deal with. Once those were removed, the turnout was easy to lift out. I removed the actuating wire (lower left) and gave the turnout to David for cleaning.

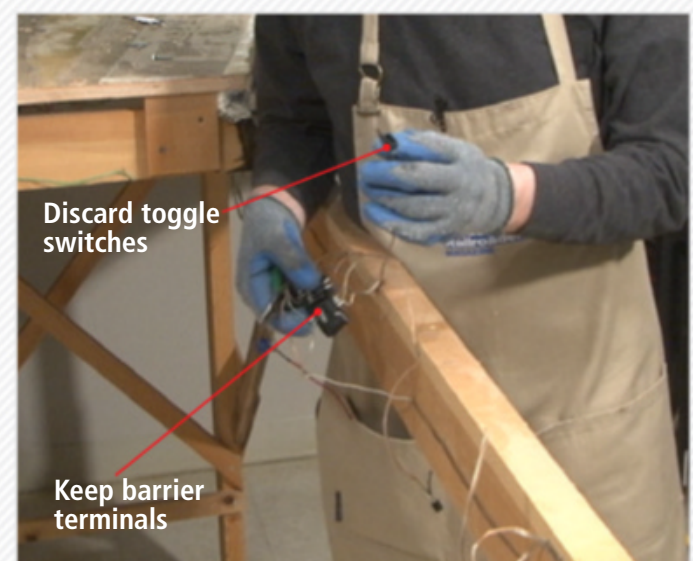
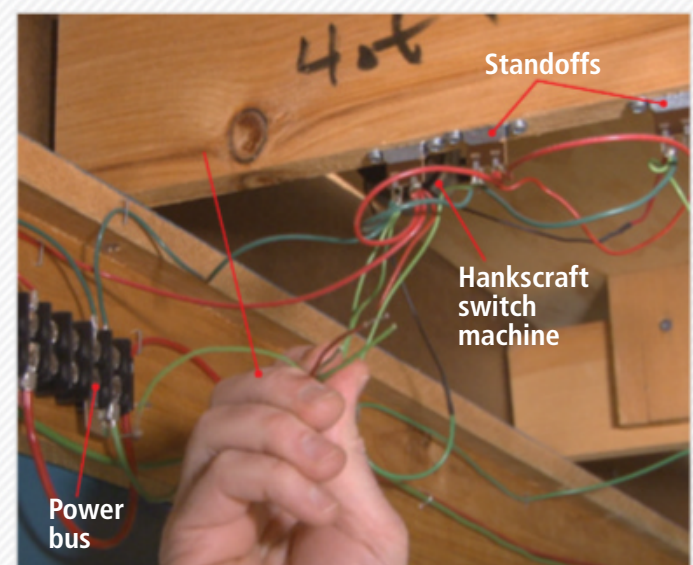
Even after soaking and scrubbing the turnout, we deemed it too far gone to save. There were ballast granules stuck to the ties and in the guardrails that would require a lot of time-consuming cleaning. In addition, the heels had separated from the tab that held them in gauge (lower right), and the stock rails had popped out of the ties on the point end. Upon further review, new turnouts proved a better, more reliable option. – Cody Grivno

STEP 4 WIRING CONSIDERATIONS

Next, David and I shifted our focus under the layout to deal with the wiring. The feeder wires were neatly organized under the layout and attached to the power bus. To preserve the feeders, we unscrewed the standoffs attached to the joists on the section of benchwork that we were going to remove (top). We left items to be discarded, like the Hanksraft switch machines, attached to the benchwork.

Once the benchwork and fascia were out of the way, we removed the rest of the wiring. The wiring attached to the L-girder closest to the aisle was related to the turnout controls. Since we'll be using a different turnout control system on the new layout, we threw out the toggle switches (most of them disintegrated when we tried to take them apart, anyway). The barrier terminals were still in good shape (bottom), so we put them in our electrical supply cart.

But the fun has only begun. Next month, we'll look at how the new benchwork sections were constructed and how they'll be integrated into the existing layout. Watch the videos and leave comments and questions at MRVideoPlus.com. – Cody Grivno 



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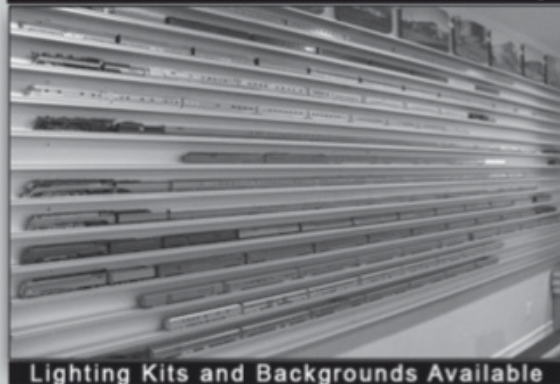
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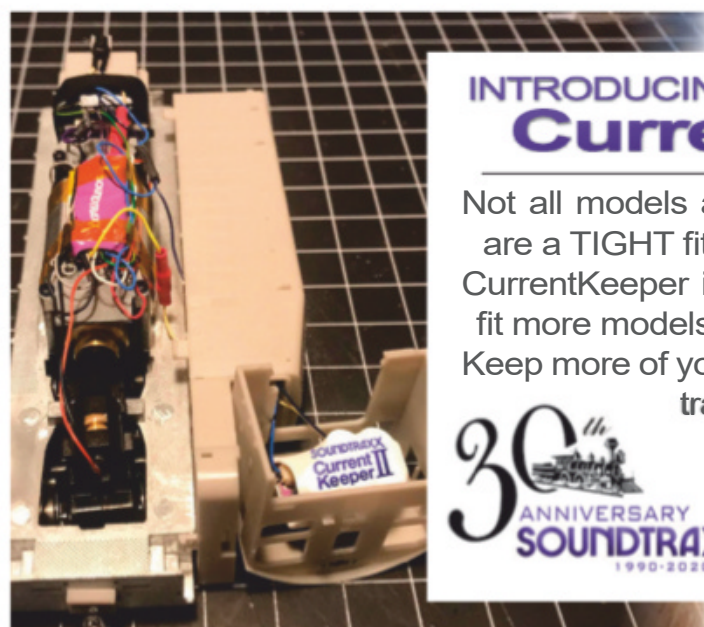
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North by North Western



① Three Chicago & North Western Fairbanks-Morse Trainmasters ease a loaded ore train down a 2 percent grade on John Mueller's HO scale Chicago & North Western Northern Memories layout. The 32 x 39-foot model railroad is set in northern Wisconsin in 1953.



② As people find various ways to enjoy the Uppanort River, a Chicago & North Western 4-8-4 Northern thunders across the double-track truss bridges above. The steam locomotive is a custom-painted Broadway Limited Imports model. The train on the adjacent track is waiting in the hole before it can continue its journey to Woodland and Two Lakes.

This 32 x 39-foot HO scale layout is set in northern Wisconsin in 1953

By Cody Grivno • Photos by the author

Winding rivers and dense stands of evergreen trees. The rumble of diesel engines and the echo of steam whistles. Fishermen hoping to reel in the big one and tourists looking to get away from the hustle and bustle of the big city. These are just some of the sights and sounds on John Mueller's HO scale Chicago & North Western (C&NW) Northern Memories layout. The 32 x 39-foot model railroad is set in the northwoods of Wisconsin in 1953.

John has been a model railroader for more than 50 years, starting with a train set he received for Christmas in 1968. However, John says he's loved trains for as long as he can remember. "I had a close family friend named Walter Chossek who had a beautiful layout," John said. "I would visit occasionally and dream. I've also read *Model Railroader* since I was a kid."

Before John was old enough to drive, he used to chase trains on a bike as his

childhood home was close to the C&NW in Port Washington, Wis. The city, located along the shores of Lake Michigan in southeastern Wisconsin, hosted passenger and freight trains running between Chicago and Green Bay, Wis.

Childhood memories also inspired the setting for John's layout. "My family did a lot of camping in northern Wisconsin, so that's where my love for the area began," John said. "The C&NW ran right by the campground in Woodruff." The town of approximately 2,000 is located near the border with Michigan's Upper Peninsula.

A return visit

If John's model railroad looks familiar, it should. We first featured it in the April 2016 issue of MR. At that time, the layout consisted of a 13 x 17-foot section with the fictional communities of Two Lakes and Woodlander. Both ends of the model railroad connected with an unnamed 10 x 21-foot section in an

adjacent room that included Big Piney Lumber, Mueller Wood Products, and the Uppanort River.

John's Northern Memories layout has blossomed to 32 x 39 feet, thanks in part to the addition of a new town. Iron Point is an industrial center, home to Bemis Manufacturing Co., the Greasy Spot potato chip factory, and an assortment of small rail-served businesses typical of those in the 1950s. In addition to freight traffic, Iron Point is also served by C&NW's *Oreland Limited*.

The section of layout across the aisle from Iron Point already existed, but now it has a name, Turtle River. Businesses supporting the timber industry are still there. They've been joined by a small gas station and a cluster of rental cottages.

John rearranged the track slightly at Turtle River to provide access to both ends of the new staging yard. The 21-foot-long yard is in the crew lounge behind Turtle River. The yard is neatly framed in wall paneling, with two rectangular openings providing access to the



3 This view shows the original 13 x 17-foot section of the layout. Woodlander is to the left and Two Lakes is to the right. The new bump-out section with the Woodlander Co-op elevator is visible at left.

Northern Memories

HO scale (1:87.1)

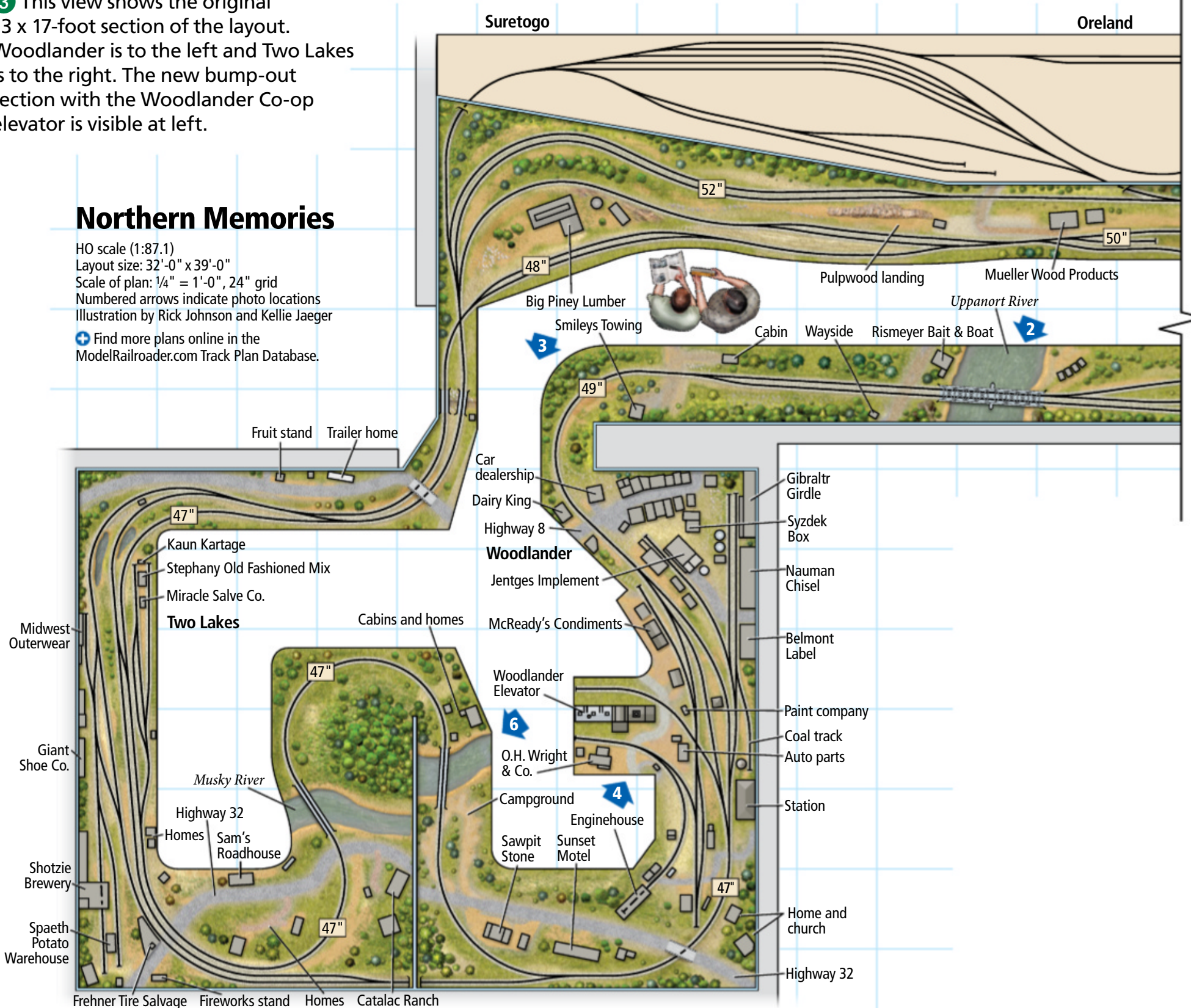
Layout size: 32'-0" x 39'-0"

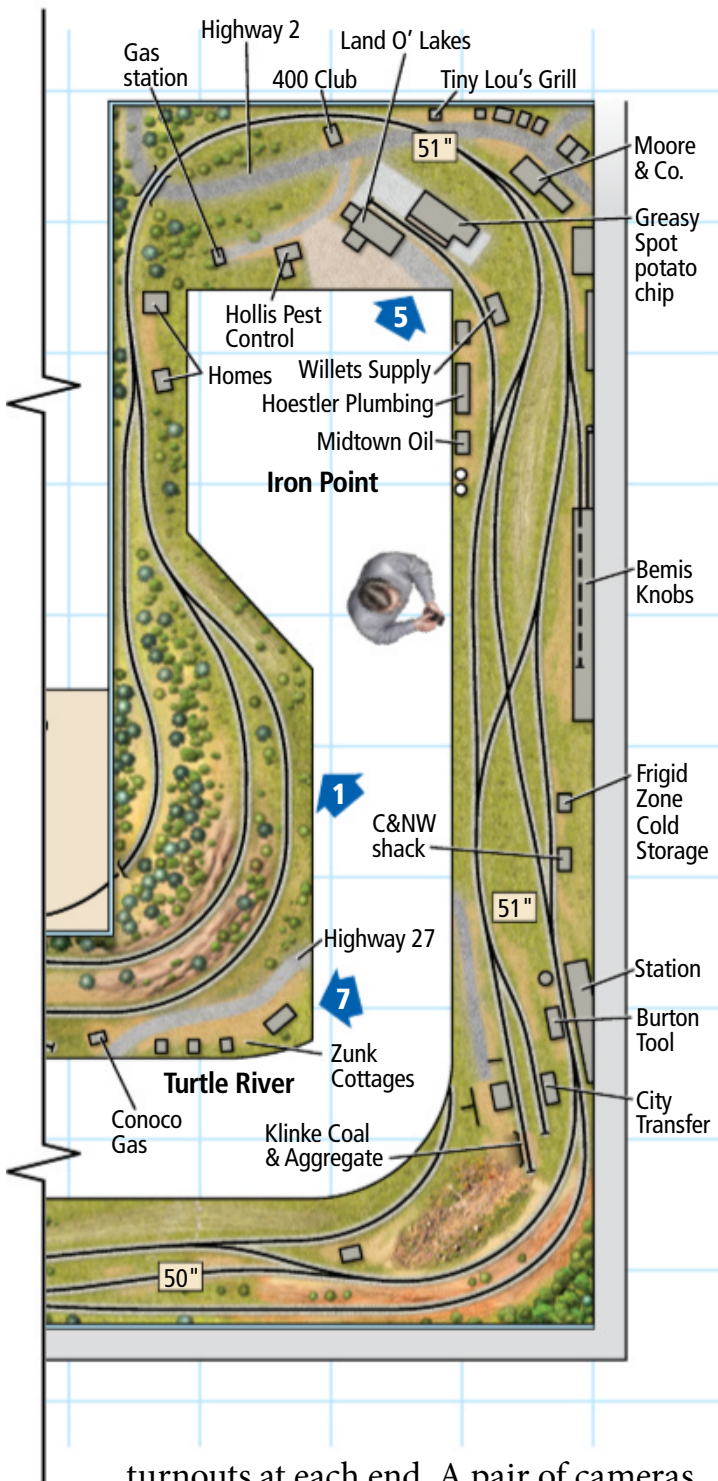
Scale of plan: 1/4" = 1'-0", 24" grid

Numbered arrows indicate photo locations

Illustration by Rick Johnson and Kellie Jaeger

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





turnouts at each end. A pair of cameras, connected to a monitor in the layout room, make it possible to see the staging yard from outside the crew lounge.

Building benchwork

The track plan for the Northern Memories layout is an original design, based on the space John had available and the areas he wanted to model. The railroad is based on the C&NW between Antigo and Ashland, Wis., in 1953. Though John tries to capture the types of trains that ran at that time, he enjoys the ability to proto-freelance.

John built two layouts prior to the one shown here, but he said they were both primitive. Construction on Northern Memories began in 1990. Before starting benchwork, John prepped the layout



4 John added a bump-out in Woodlander to make room for more rail-served industries. As employees load bagged feed into a stakebed truck on one side of Woodlander Co-op, Chicago & North Western H-10-44 no. 1050 switches boxcars fitted with grain doors on the opposite side of the industry.

The layout at a glance

Name: Chicago & North Western
Northern Memories
Scale: HO (1:87.1)
Size: 32 x 39 feet
Prototype: C&NW
Locale: northern Wisconsin
Era: 1953
Style: around the walls
Mainline run: 230 feet
Minimum radius: 24"
Minimum turnout: no. 6

Maximum grade: 3 percent
Benchwork: L girder, open grid, and tabletop
Height: 47" to 52"
Roadbed: cork
Track: codes 83 and 100 flextrack
Scenery: hardshell
Backdrop: 1/8" tempered hardboard
Control: NCE Digital Command Control with wireless throttles

room, adding a drop ceiling, painting the floor, installing fluorescent and light-emitting-diode lighting, and hanging a door to keep the pets out.

The layout features a mixture of L-girder, open-grid, and tabletop benchwork. "I built the layout very strong to support my weight," John said. He used tempered hardboard for the fascia and added skirting to give the model railroad a finished look.

Northwoods scenery

John considers scenery his model railroading strength. "My hope is that any visitor can tell they're in the Wisconsin northwoods," John said. Though there are many well-detailed locations on the layout, John considers the area in and around Iron Point the best looking. "There's a swampy area where some logging is being done, as well as a bridge scene with a recessed highway that I really like," John added.

He modeled the hilly areas using cardboard strips and nylon screen covered with plaster and Sculptamold, a papier-mache-like material. Once the plaster and Sculptamold dried, John painted the hills with a flat, earth-tone latex paint. To model rock outcroppings, John used commercial molds, a rubber cliff from Cripplebush Valley Models, tree bark, and acoustic tiles.

The scenery is a combination of ground foam, static grass, and natural materials such as ground-up dried leaves. The foreground trees are a mixture of commercial offerings, including Scenic Express SuperTrees and Coastmans Scenic Products (coastmans.com), among others. John scratchbuilt pines using balsa trunks and caspia branches.

In the wooded background locations, John used twigs covered with poly fiber and ground foam. He modeled bushes using Micro-Mark black poly fiber coated with various colors and textures of ground foam.



5 The industrial center of Iron Point is a new addition to John's layout. One of the town's rail-served customers is the Greasy Spot potato chip factory. Here, Chicago & North Western Alco S-2 no. 1015 prepares to pick up a boxcar loaded with packages of the tasty treat.

mudded, and sanded all of the joints. He painted the backdrop using blue and white paint, with lighter color near the bottom and darker color near the top, following a method popularized by noted modeler Dave Frary. Then he added hills and stippled in a tree line. In other locations John used backdrops from Walthers and LARC Products.

Structures amongst the trees

John's layout features a variety of kit-built, kitbashed, and scratchbuilt structures. He most enjoys building wood craftsman-style structures, but says he likes assembling all types of kits.

Two examples of John's scratchbuilding skills are the Greasy Spot potato chip factory in Iron Point and Miracle Salve, located in Two Lakes.



6 Chicago & North Western no. 4166 leads a local over the Musky River outside of Woodlander. To give the river a murky look, John applied Timberline Scenery Pond Scum to the riverbed. He used Unreal Details' Magic Water for the river.

John experimented with products from different manufacturers when modeling water features. He used Magic Water by Unreal Details and Enviro-Tex, both two-part resins, and Woodland

Scenics water for the rivers. Before pouring the water material, he detailed the riverbed with small rocks and deadfall.

The backdrop is tried-and-true 1/8" tempered hardboard. John taped,



John scratchbuilt the potato chip factory shown in the photograph above. The rail-served industry has interior lighting and detail. He enhanced Big Piney Lumber Co. by adding a sound module that can be activated with a fascia-mounted switch.

Though John added lighting and detail to some structures, he doesn't enhance all of his buildings. "I try to detail foreground structures as much as possible, but if the details won't show, I feel they're not needed," John said.



▶ Don't just read about John's HO scale layout. See it in action! Watch the video online at the Model Railroader Video Plus website, MRVideoPlus.com.



7 While two Conoco employees check the fluid levels on a panel truck, the driver watches a passing pulpwood train led by an A-B set of Electro-Motive Division F7s. Much of the trade in Turtle River revolves around the timber industry.

Track, trains, and controls

John used Atlas codes 83 and 100 flextrack and no. 6 turnouts by Atlas and Peco throughout the layout. He operates some turnouts remotely using Tortoise by Circuitron switch motors and others manually with metal fascia-mounted rods or the built-in springs in Peco switches.

The model railroad features era-specific locomotives and freight cars. "Nothing with a build date past 1953," John notes. He's especially fond of his custom-decorated Broadway Limited Imports 4-8-4 Northern steam locomotive and Fairbanks-Morse Trainmasters.

John has detailed some flatcars with board-by-board wood decks and added pulpwood loads fashioned from soft maple twigs to gondolas. He weathers with all of his models with chawks, PanPastel products, washes, and an airbrush as appropriate. In addition, he equips every model with Kadee couplers and metal wheelsets.

The layout depicts dark territory, so there are no signals. John runs trains using a wireless NCE Digital Command Control system with two cabs. Thanks to his wife, Carla, John now owns an Iowa Scaled Engineering ProtoThrottle.

Bringing back the memories

Though John enjoys his HO scale Northern Memories layout, he said if he were starting over he would use code 83

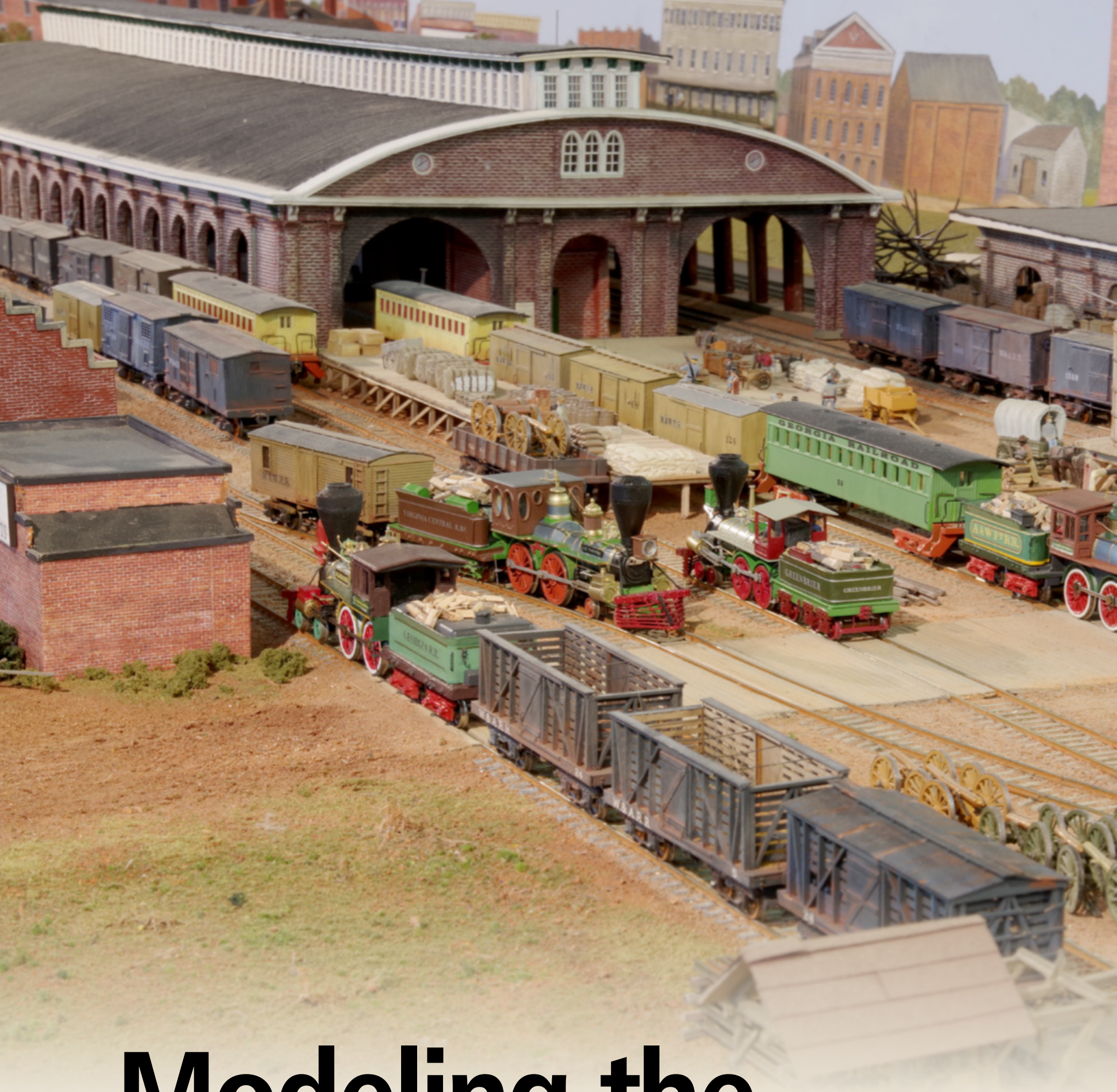
track and Peco turnouts exclusively. John's glad he selected a specific railroad and era, as that's provided focus for his hobby spending. "I spent years buying anything that looked good," John said. "Now I have equipment that I can't use."

In the end, John is satisfied with his 32 x 39-foot HO scale layout. "I've created a proto-freelance version of the C&NW I loved as a youth in an area that I enjoyed as well," John said. "The layout is a source of relaxation as well as a challenge. I hope to refine and detail even more and get the operational side going – that looks like it will be a blast!" **MR**



Meet John Mueller

John and his wife of 35 years, Carla, live in DeForest, Wis., where they raised one daughter, Angelica. John has been a sales professional for 40 years. He also enjoys working in their hosta garden, carpentry, puttering around the house, and being a puppeteer for their church.



Modeling the **CIVIL WAR** in HO scale



Fortunate connections to a dramatic moment in history inspired the Western & Atlantic

By Thom Radice

Photos by Andy Salcius and D.C. Cebula

was 8 years old when my grandfather told me one of his more captivating stories, of meeting Civil War veterans in his youth. Most striking was his elaboration of their appearance. All five veterans were missing a body part. His story was my first imprint for the American Civil War.

The next was my first trip to Gettysburg, Pa. This experience pulled me to learn about those events. Gettysburg was my second ‘wow’ moment, and the Civil War was securely embedded into my psyche.

In April 1964, *Model Railroader* published “A Civil War Layout” by Bob Hawley. Reading this article was hugely influential. Bob’s article conveyed possibilities that lit my enthusiasm for building a Civil War-themed model railroad.

Choosing the Western & Atlantic

As many of us have read, time and place are important for establishing a prototype. My initial research revealed more information (films, memoirs, and photographs) about the Western & Atlantic (W&A) than any other rail line of the era. But there was a person who became my 3 degrees of separation to a key individual on the W&A. This was Col. James Bogle, whom I met around 1999 while conducting research at the Atlanta History Center.

As resident historian of the Great Locomotive Chase, James told me about Wilbur Kurtz, who worked as a consultant on both *Gone With The Wind* and Disney’s *The Great Locomotive Chase*. James and Wilbur became good friends and collaborators, bringing the stories of this event to light.

Wilbur was married to a prominent lady of the Atlanta area whose father happened to be William Fuller, conductor for the train pulled by the now famous locomotive, *The General*. William was hailed throughout the Confederacy as a hero whose tenacious pursuit, along with help from others, derailed the Raiders’ intentions.

Wilbur was also fortunate to interview many people associated with the great chase of April 12, 1862. Included were the surviving members of the Raiders, the Union soldiers on a mission to burn railroad bridges and disrupt troop and supply movements. Kurtz also corresponded with those remaining Confederates who pursued the engine thieves. He compiled numerous binders of handwritten notes, letters, and diagrams that would have otherwise been lost to history. From James to Wilbur and the connection with William, choosing the W&A seemed to be my destiny.

One of my “Druthers” was to blend both civilian and military aspects of the period. Initially I chose to model August 27, 1863. A friend then suggested broadening my era to summer 1863, as choosing a single day was prototype overload. In the summer

1 It’s a busy day on the south end of the Atlanta passenger station on Thom Radice’s HO scale Western & Atlantic RR. Thom models the Civil War era of 1863, when this station was known as the Car Shed.



② The locomotive *Catoosa* enters Dalton, Ga., as Confederate troops approach the loading platform. The railroad will take them to an area that will soon become known for the Battle of Chickamauga.



③ Western & Atlantic locomotive *New York* waits at the cotton shed in Kingston, Ga., for its train to be loaded with bales shipped from the river port of Rome, Ga.

of 1863, Union forces were approaching Tennessee, requiring Confederate forces to transfer troops north to counter and defend. Civilian activity was also prevalent, from conducting business as usual to evacuating Chattanooga. Choosing the season rather than a single day expanded possibilities.

Room prep and design

Half the reason I bought our home was for the basement. The better space, however, was the third floor attic. My first order of business was to finish the walls. The room had a cathedral ceiling. The knee walls connect with the sloped ceiling at about 4'-6" high along the room's perimeter. There are also two

alcoves. One became my workshop, the other space for the HVAC unit. I chose track lighting for flexibility.

Once the room was ready, including a stairway into the center of the room, I thought about what I had learned about the W&A and considered the question, "What do I want from my layout?"

One of MR contributing editor Tony Koester's articles influenced my thoughts about design. He talked about the value of having a purpose and meaning. My first criterion was an authentic interpretation of the W&A. At first, I didn't think about operation. My imagination lived in locomotive cabs watching grand panoramic landscapes and envisioning battle-hardened troops with materiel piled into, and onto, freight cars.

The layout at a glance

Name: Western & Atlantic RR

Scale: HO (1:87.1)

Size: 20 x 38 feet

Prototype: Western & Atlantic RR

Locale: Atlanta, Ga., to Chattanooga, Tenn.

Era: 1863

Style: modular

Mainline run: 130 feet

Minimum radius: 20"

Minimum turnout: no. 4

Maximum grade: none (flat)

Benchwork: modular tabletop

Height: 47"

Roadbed: none, track laid on tabletop

Track: code 83 flextrack

Scenery: Sculptamold over plaster gauze and cardboard strips or extruded foam insulation board

Backdrop: painted on tempered hardboard

Control: NCE Digital Command Control

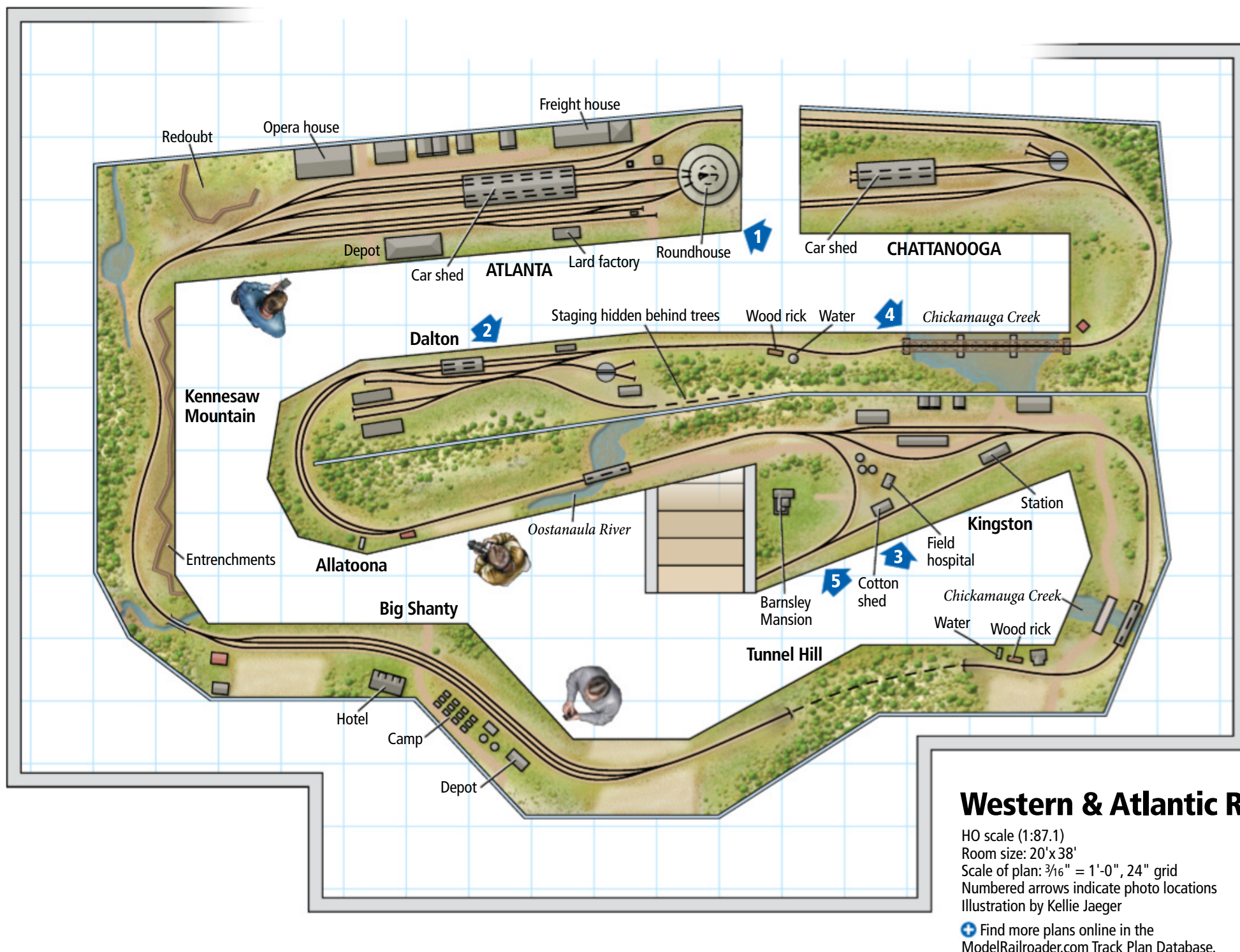
I found an article by John Hostler in the June 2001 issue of *NMRA Bulletin* in which he identified three modeler personality types – Dispatcher, Engineer, and Railfan. The article helpfully included a list of 33 questions to help identify your preference. Unhelpfully, I scored 11 in each category. However, these results illustrated my desire for all three types. But as a railfan, the panorama effect was a priority.

I now needed a map from the time. Most military maps were too vague. Wilbur drew me a terrific map of the entire length of the line, from Atlanta to Chattanooga. Using information from his interviews, he also depicted the rail yards of different towns.

Studying his and other maps, additional requirements evolved, one being interchanges. In addition to the landscapes and scenery, there were four towns where other rail lines connected. Atlanta had the Georgia RR, Atlanta & West Point, and the Macon & Western. Chattanooga had both the Memphis & Charleston and Nashville & Chattanooga. Dalton linked with the East Tennessee and Georgia RR, and Kingston connected with the Rome RR and the Coosa River. With these four interchanges, my road map was in place.

Construction and track work

The ruling grade was about 0.5 percent, so a level railroad was appropriate.



The norm was to survey around hills and along rivers whenever possible. The W&A became known for its extremely curvy path through the countryside; as one author stated, “there were enough curves to make 30 full circles.” Another cool feature is Tunnel Hill. Built in the 1850s, the tunnel ran 1,447 feet. I compressed it slightly to 400 scale feet.

I was doing a lot of traveling at this time and had neither the time nor the knowledge to build benchwork and lay track, let alone wire it. So I hired Rail Dreams. Dick Taylor, the owner, was quite patient with me.

I chose a point-to-point railroad from Atlanta to Chattanooga, with a drop bridge at the entry to allow continuous running. In November 2003 Dick came to my home, and in three days he and his crew had assembled 23 modules built using 2" extruded-foam insulation board on top of lauan plywood. Standing 48" high, the legs are fitted with carriage

bolts for height adjustment. Rail Dreams also installed NCE Digital Command Control, which I think is user friendly.

The W&A was ready to be brought to life. We laid out a general plan for rivers, contours, wooded areas, and towns. However, scenes were chosen in an improvised manner. The placement of vegetation, scenic breaks, and crops such as tobacco, corn, and cotton were inspired in the moment. We let the “feel” of the space tell us what to create.

A defining element of the Civil War era was the stub switch. Although Rail Dreams installed four, I added BK Enterprises stub switches and converted Atlas and Peco turnouts to stubs. Most turnouts are no. 6, with a few no. 4.

Structures and architecture

Modeling the prototype required an accumulation of a few hundred photographs, diagrams, and recorded

descriptions. Most reside in my collection of nearly 100 books. Specific to Sherman’s Atlanta Campaign, George Barnard was the photographer who accompanied the army through Georgia. His images are available at the Library of Congress; many have been digitized and are available free online. These images can be zoomed to a remarkable degree, revealing a treasure trove of structural details. Atlanta is particularly well documented. Terrain features, track work, rolling stock, and fonts to accurately portray lettering are also visible.

In order to create a truly authentic replica of the railroad, I scratchbuilt 52 of the layout’s 100 structures. The occasional kit structure is used only when references of the prototype are unavailable. Most unique were the passenger stations, known then as “car sheds.” Atlanta’s was brick, 400 feet long, and housed a long platform for ticket booths, baggage rooms, and sitting areas.



④ As Union forces threaten Chattanooga, Tenn., Atlanta & West Point 4-4-0 *Dr. Thompson* hauls freight from there to Atlanta and points south.

Interestingly, the shed was open on both ends for locomotives to pull through the structure so as not to smoke up the interior while transferring passengers.

Both covered and truss bridges were in use during the mid-1800s. I discovered a memoir from a Union soldier who came across the remnants of a destroyed covered bridge. He wasn't sure what it was, since he saw 2 x 4-foot metal sections. It was determined that these were remnants of the bridge's roof. I was able

to confirm this with Mark Brainard and Terry Koller of the Savannah Railroad Museum. Dedicated historians like Mark, Terry, and Dave Bright of the online Confederate Railroads site (csa-railroads.com/index.htm) have provided essential detailed information.

Scenery

Although Georgia has more flat land than rolling hills, visits along the right-of-way showed possibilities for both. We present the illusion of elevation change by manipulating the benchwork, cutting in low areas, adding bridge pillars,

including a cut at the base of Kennesaw Mountain, and building hills and knolls. We also incorporated two covered bridges, one truss bridge, Tunnel Hill, and lots of curves.

Landscapes have a base of carved foam board and Sculptamold applied either directly onto the foam base or layered over plaster gauze and cardboard strips. Some of the rock work you see in the images is cast resin or plaster castings, but the majority of it was modeled on site by my good friend D.C. Cebula.

Nearly every type of ground cover produced by Scenic Express, Woodland Scenics, and Heki is used. Busch



provides the corn and wheat, Alkem the tobacco, and JTT the cotton. To make the color of my terrain fully authentic, I transported several large bags of Georgia red dirt to New Jersey. (Airport security was seriously curious.)

The Bernard photos show that the dominant tree species included elm, shortleaf pine, oak, and maple. To replicate these, about half of my trees are built from kits from Scenic Express, Woodland Scenics, and Noch. For a fuller look, I drilled holes into the trunk and added branches of dried purple sedum, a local plant. I also used wire to make pine trees.

Operational considerations

Annual reports and waybills were found in state archives, researched online, and discovered by members of our American Civil War Rail Roads Historical Society group (groups.io/g/CivilWarRailRoads). These sources reveal the type and quantity of freight shipped from civilian sources.

Military reports are available in the *War of the Rebellion Official Records* and from personal letters and memoirs illustrating rail transport of troops and equipment. For example, in 1863, Union forces occupied Confederate territory that was a source for beef. Cattle had to be driven up from Florida to Dalton, Ga. This gives us a plausible reason to transport cattle between Dalton and Atlanta. Also in the summer of '63, Union forces approached Chattanooga, civilians began evacuating, and Confederate troops and supplies moved north through Atlanta. Most notable was the transport of General Longstreet's two divisions from Virginia via the East Tennessee and Carolina Rail Roads to northern Georgia. That was a lot of extra activity to weave into train schedules.

Three two-man crews fit comfortably in the layout room. The engineer handles the throttle while the conductor/brakeman manages coupling and waybills. I've been experimenting with prototype waybills to manage car exchanges.

Pre-war consists were typically two to six cars with an average speed of 10 mph. However, wartime logistical demands resulted in trains of 20-plus cars. As an operational bonus, this means that at times trains were double headed or a helper pushed from the back end. Sources for this information included brakemen and military personnel.

Motive power and rolling stock

Mantua's models of *The General* were the only game in town in 1960. Some were built with a traction tire on one driver, enhancing its otherwise limited pulling power, especially on inclines. Mantua and Tyco 4-4-0s were my primary source for locomotives. I have remotored seven so they can pull 18 cars. Most often, however, we run 10 or fewer cars. We use Alexander link-and-pin couplers (also available through Iron Horse Miniatures, Colonial Castings, and Wiseman Model Services).

Well into layout construction I was very fortunate to meet Al Mueller. He was a member of our internet Civil War

RR group. In addition to being an extraordinary model builder, Al wrote the manual, *Mantua General Rebuild*. He illustrates with remarkable detail how to convert these old production models into functioning locomotives. The tenders are gutted to install can motors and SoundTraxx Tsunami2, Micro, or Econami sound decoders. The book also covers installation of approximately 20 additional details and electronic components requiring about 25-30 hours of work. Parts are available through Shapeways and Precision Scale.

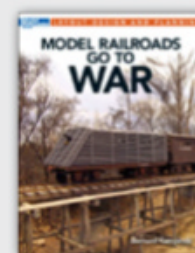
Al became a good friend, as well. Unfortunately, he passed away in October 2018. But his legacy lives on with his 20 locomotives, a Civil War layout, and one very large layout of the Great Northern.

Originally, rolling stock was limited to Mantua 1860s cars, IHC old-timers, Bachmann, and few other sources. *Model Railroader's* March 1969 issue published prototype drawings of 1860s cars. These guided my first attempts at scratch building using Mantua frames. However, I eventually met Bill Wade of B.T.S. Bill was the first to produce cars using specific civil war prototype illustrations, as well as trucks. Many B.T.S. cars now populate my railroad.

Appropriate trucks are available from Shapeways, Bitter Creek Models, Grasse River, and others. I prefer wheels by Reboxx for their smooth running. The Kurtz notebooks provide information for detailing, as does the plethora of images from the Library of Congress and the National Archives.

Cars are weighted at 1½ ounces, allowing the locomotives a lighter pull. Locomotives are also weighted, often with the original cab weights.

Discerning color is a particular challenge for this period, given the limitations of photography at the time. My research revealed that different rail lines painted their equipment in a wide variety of colors. This was an exciting revelation. Incorporating other rail lines also meant being able to add other rolling stock and colorful locomotives to further



For more about modeling Civil War railroads, get *Model Railroads Go to War* by Bernard Kempinski. It's available now at hobby shops and KalmbachHobbyStore.com.



5 Western & Atlantic locomotive *Catoosa* is turning on the Kingston wye as it passes the grandeur of the Barnsley mansion and estate. The structure was scratchbuilt by Christopher Eldridge.

enhance the visual experience. William Fuller's writings noted that the W&A painted their cars a dark slate blue, and in some instances "cars were of a dirty yellow." There have also been major contributions from Jim Wilke of the Early Rail group, John Ott (ottgalleries.com), Mark Brainard of the Tennessee

Railroad Historical Society, and Dave Schneider of SMR.

My village

My key goal was to transport viewers and operators to the summer of 1863 in central Georgia. Relying on resources including the Library of Congress, the National Archives, Georgia State Archives, and the Atlanta History Center, I spent three years accumulating files upon files of data.

A most valued source, and someone from whom I still learn, is Kenny Pruitt, also a student of the Great Locomotive Chase. Ken has hundreds of pages of research about the Western & Atlantic and has also built an HO model of the railroad. He eventually needed to reclaim the layout space, and I was fortunate to acquire his collection. This acquisition advanced my construction and inventory immensely. Ken had built many structures, one of which is the aforementioned Atlanta Car Shed.



Meet Thom Radice

Thom Radice is a management consultant who lives in Long Branch, N.J., with his wife, Ku'uipo. His railroad has been featured in magazines, books, and the National Model Railroad Association (NMRA) calendar. With his friend D.C. Cebula, he co-founded an online group for Civil War modelers and the American Civil War RR Historical Society.



Andy Salcius, another good friend, photographed, shot videos, and started up our blog, western-and-atlantic-rr.blogspot.com. I also want to thank Don Ball for his editing support.

So what have I learned from this experience?

- Focus on time and place! There are so many choices available in all categories of modeling a railroad. Doing research on those who have come before was essential.

- Know when to build for prototype and when to build for ease of operations, or to just run trains.

- Have a "just do it" mentality, whether scratchbuilding, handlaying track, scenery building, or whatever. Initially, I was very hesitant to rebuild my locomotives. But it's become a favorite aspect of modeling.

- "If you build it, they will come." I'm grateful for the extraordinary, skilled people who fortuitously appeared to offer their assistance.

- The passion for your era or modeling intentions is the re-energizing, inspiring factor.

- Use the power of collaboration and be open to others' ideas, and the learning never stops.

There are very pragmatic reasons to model the American Civil War era. You don't need a massive space. Everything is a bit smaller, including locomotives, cars, consists, and the almighty radius. The beauty of those unique engines, the rocket ships of the time, is quite appealing. Including the *Mantua General*, we now have several sources for locomotives, cars, and parts. As always, the key is the joy and fellowship that comes with following your passion. 

About 1998, *Model Railroader* published an ad by D.C. Cebula looking for Civil War model railroaders. Other than Ken, I knew of no other modeler with this interest. Meeting D.C. led to the creation of our Civil War Rail Roads group. He's become my most dedicated contributor and dear friend, building more than 20 structures and many scenic elements.

Others have become very good friends as well as immense contributors. Brian Kammerer, a graphic artist and civil war historian, painted remarkable

backdrops on 1/4" tempered hardboard. He also produced and modeled all figures, trains and sets for his film *The Other Great Locomotive Chase* (found on YouTube). Christopher Eldridge, a masterful modeler, built three signature structures from photos and paintings.

I also joined a local model railroad club, the Garden State Central, to learn the ins and outs of model railroading. As I had almost zero knowledge of wiring, many members provided their time and expertise, which is greatly appreciated.

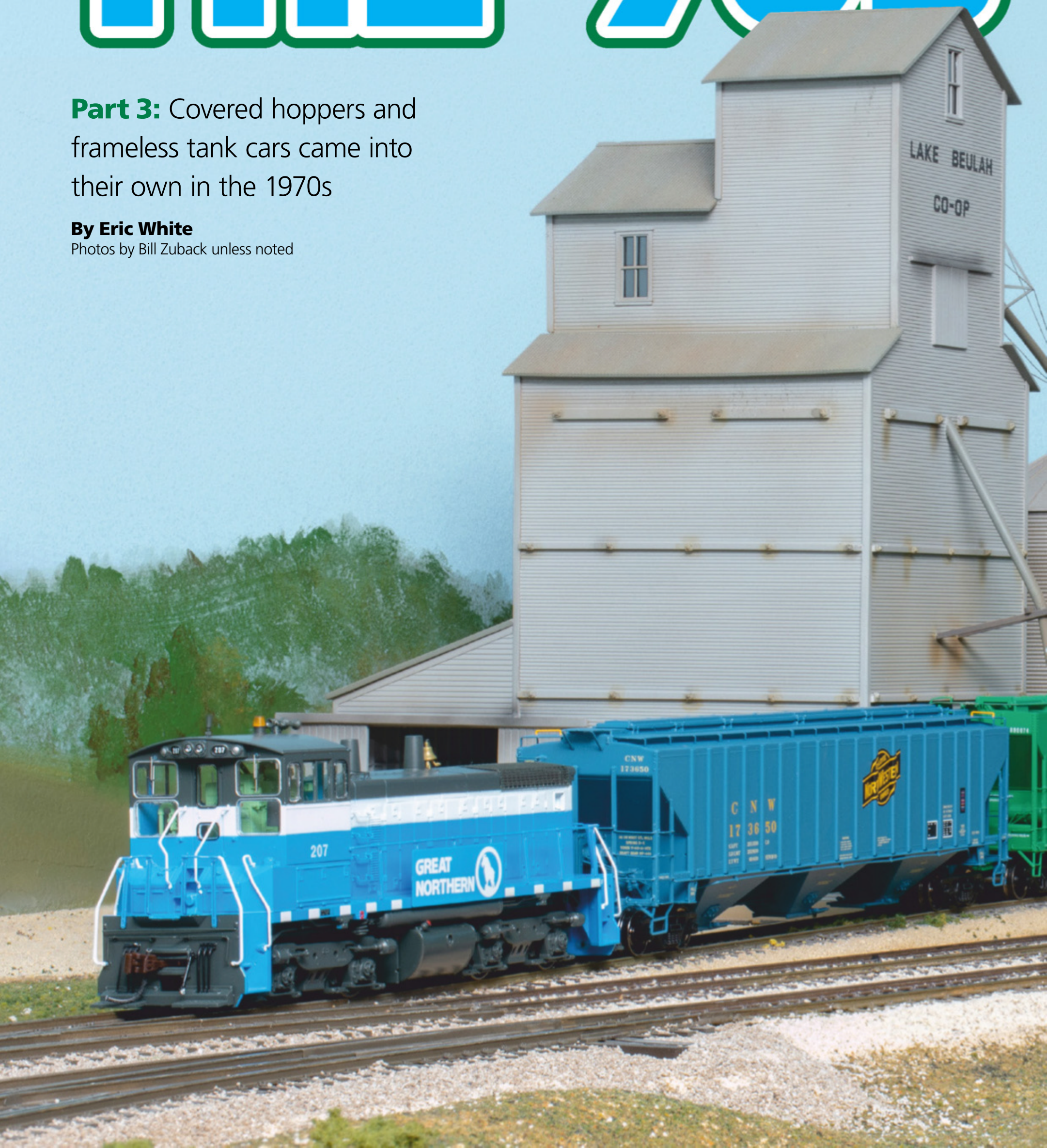
FREIGHT CARS OF

THE '70S

Part 3: Covered hoppers and frameless tank cars came into their own in the 1970s

By Eric White

Photos by Bill Zuback unless noted



Through the transition era (World War II to the late-1950s), railroads were interested in general-purpose cars. Boxcars were the ultimate general-purpose car, carrying manufactured goods, grain, lumber, food products – plus anything else that could be put in a bag, box, or crate or lashed to a pallet.

But loading and unloading some of these products, grain especially, was labor intensive. Once railroads had sued for the right to set competitive rates for moving grain, it made sense to buy specialized grain hoppers that could be loaded and unloaded quickly.

This taught railroads that profits lay in bulk transportation, leading to rates that favored large shipments of the same commodity. In addition to large covered hoppers to carry grain, open

hoppers grew in size as railroads cut deals to move unit trains of coal from mines to large-scale consumers like power plants.

Specialty car manufacturing also spread to tank cars, with designs optimized to carry lightweight cargoes, such as liquefied petroleum gas (LPG), or

heavier loads, such as kaolin clay slurry, used in the paper-making industry.

Engineering advancements meant that heavy frames were giving way to car bodies that could support themselves, changing the look of tank cars, especially. All of this meant that in the 1960s, freight trains started to take on a different look. **MR**

Freight cars of the '70s

Part 1: Changing proportions of the fleet; labels and lettering; trucks and couplers; Railbox and incentive per diem cars; intermodal in the '70s; charts for auto racks, coil steel cars, reefers, flatcars, and gondolas

Part 2: Updating transition-era boxcars; boxcar models chart

Part 3: Covered hoppers and frameless tank cars take over; popular subjects for freight cars; railroad icons – signature cars that show up all over; charts for covered hoppers, open hoppers, and tank cars

By the 1970s, large covered hoppers were becoming common across the plains of North America. While a Great Northern local switches the grain elevator, the rest of its train, including another '70s icon, a Railbox boxcar, waits on the siding.



COVERED HOPPER ROOF HATCHES

Early covered hoppers were used for heavy, dense materials such as cement, lime, and sand. Hatches for loading these materials were either round or square, and on the small side. These hoppers had a capacity of around 2,000 cubic feet and 70 tons.

By the mid-1950s, hopper sizes began to increase, and railroads began using the cars for lighter density loads such as grain and plastic pellets.

Chemicals, plastic pellets, and food products such as sugar and flour require an airtight seal, which the round and square hatches

easily provided. But the small openings took more time to load, as the loading spout had to be repositioned over each opening in turn.

Unprocessed grain doesn't require as tight a seal as other products, so car builders introduced longer individual openings and continuous trough openings covered by several overlapping rectangular lids. This allowed faster loading, as the cars could be slowly moved under a spout that quickly fills all of the hopper bays. Since the early 1960s, most cars in grain service have these longer openings.



Covered hopper roof hatches come in different configurations depending on the intended load. The long trough hatches are usually found on raw grain hoppers. The round hatches are used for loadings that are more sensitive to moisture, such as refined food products and chemical loads.

MODERN TANK CARS

Beginning in the early 1960s, tank cars without frames became the norm. The first modern frameless tank car was built in 1954, Union Tank Lines' HD (or "hotdog") car. In 1961, the Interstate Commerce Commission allowed construction of tank cars without running boards, resulting in larger diameter tanks, since designers didn't have to allow room for walkways along the sides of the cars.

Pressure domes also disappeared in the 1960s, with expansion space allowed for in the tank design. Tank cars grew significantly in volume and weight during the '60s, exceeding 60,000 gallons and weighing 150 tons, but legislation in 1970 limited cars to 34,500 gallons and 263,000 pounds, or 131 tons.

Older designs remained in operation into the '70s, but tank cars built to the old American Railway Association standards from 1919 were to be removed from service by Jan. 1, 1975.



In the 1960s, frameless tank cars began to appear in large numbers. In 1974, General American Transportation Corp. (GATX) introduced the TankTrain, an interconnected train of frameless tank cars used to carry loads of oil between refiners and large customers.

POPULAR SUBJECTS

Some of the most common freight cars have been offered by several model manufacturers. Some models have been around for years and are fairly basic. Many newer models have high levels of detail. Generally, the more you pay, the more intricate the paintwork and detail on the models.



This HO scale 40-foot PS-1 boxcar from Kadее wears a transition-era paint scheme that would be heavily weathered by the '70s.



The Association of American Railroads 40-foot boxcar was built by multiple manufacturers. This HO model is from Walthers.

Boxcars from the '30s to the '80s

Pullman-Standard PS-1

When it was built: Starting in 1947, with about 200,000 produced

Who bought them: More than 75 railroads

Distinguishing features: Welded sides; proprietary roof, ends, and doors

Options: 6-, 7-, or 8-foot door openings on 40-foot cars; 8-, 9-, or 15-foot openings on 50-foot cars; cushion underframe; single (SD), double (DD), or plug (PD) doors

40-foot PS-1: 1950s to 1980s

Atlas, Con-Cor in N; Accurail, InterMountain, Kadее (shown), MTH in HO

50-foot PS-1 single-door: 1950s to 1980s

Athearn (N only, SD, PD), InterMountain (HO only, SD, SD-cushion underframe, DD), Kadее (HO only)

AAR

The Association of American Railroads offered standard designs for boxcars starting in 1932, when it was known as the American Railway Association. A 1937 revision became known as the AAR boxcar. It had either a 10'-0" or 10'-6" (ARA modified) interior height.

The AAR adopted a 50-foot car in 1942 (and many were built earlier following AAR designs for 40-foot cars, just stretched). The 1942 car had a 10'-6" inside height with options for 6-, 7-, or 8-foot door openings.

Built by: American Car & Foundry, Pullman-Standard, Bethlehem Car Co., General American, Magor, Mt. Vernon Car Mfg. Co., Pressed Steel Car Co., and others

40-foot AAR: 1937 to 1980s

Accurail (PD, SD, DD), Atlas (postwar, 1937 SD), InterMountain (HO, N, 1937 SD; HO, modified N, 1937 DD), Walthers (shown, HO postwar)

50-foot AAR: 1950s to 1980s

Accurail (HO, SPD, DPD), InterMountain (N, SD, DD), Walthers (HO, SD, DD, Express)

More recent prototypes have also appeared in several manufacturers' model lines. They include:

50-foot FMC 5283: 1970s to present

Athearn (HO, DD), Fox Valley (N, DD)

50-foot FMC 5347: 1970s to present

Athearn (HO, N, SD), Atlas (HO, SD, DD), Fox Valley (N, DD)

50-foot Pullman-Standard 5277 single-door: 1970 to 1990s

Athearn (HO), InterMountain (HO, N)

50-foot Pullman-Standard 5344 single-door: 1970s to present

Athearn, ExactRail (HO), Fox Valley (N)

RAILROAD ICONS

Two of these 1920s-1930s cars have unique looks that make them stand out: the Milwaukee Road ribbed-side boxcar and the Baltimore & Ohio wagontop boxcar.

Economics kept the ribbed-side cars in revenue service – the Milwaukee Road needed boxcars, so they went through rebuilding programs that included

removing running boards. Also, they were in production into the 1940s, so some of the cars were newer.

The B&O wagontop cars were designed to solve one

of the major boxcar problems, the leaky roof, by making the roof and sides a continuous piece. This probably helped their longevity, as they lasted into the 1970s.

Unique and long-lived

40-foot Milwaukee Road ribbed-side: mid-1940s to 1980s

ExactRail (shown, HO), Fox Valley (40- and 50-foot, N), and InterMountain (HO)

40-foot B&O class M-53 wagontop: 1937 to 1970s

ExactRail (HO) and Fox Valley (HO, N)

Passenger train advertising was common when these ribbed-side boxcars were new. This is ExactRail's HO model.



COVERED HOPPERS

TYPE	1950s	1960s	1970s	1980s	1990s
Accurail (includes built/rebuilt dates on website) (HO only)					
PS 4750 3-bay			1972	X	present
Athearn					
ACF 3-bay Center Flow (+N)		mid-'60s	X	X	present
ACF 2970 two-bay (+N)			X	X	present
FMC 4700 three-bay			X	X	present
PS 4740 three-bay		1967	X	X	present
PS-2 2600 two-bay (+N)		1960	X	X	present
PS-2 2893 three-bay (+N)	1950	X	X	X	present
ACF four-bay Center Flow		1960	X	X	present
PS-2 2003	1940	X	X	X	present
GATC 2600 Airslide (N only)	1955	X	X	X	present
Atlas Model Railroad Co.					
ACF 3- and 6-bay cylindrical		1961	X	X	2000s
ACF 4650 Center Flow		late '60s	X	X	present
ACF 5701 plastics and grain (+N)			1972	X	present
ACF 5800 plastics, 5748 grain (+N)			mid-'70s	X	present
ACF Pressureaide Center Flow (+N)			late '70s	X	present
PS-2 two-bay (+N)	1940s	X	X	X	X
ACF 3560 3-bay (+N)		late '60s	X	X	present
Thrall 4750 three-bay (+N)			late '70s	X	present
PS 4000 (N only)		X	X	X	2000s
GATX Airslide (N only)	1953	X	X	X	2000s
PS 2750 and 2960 three-bay (N only)	1954	X	X	X	2000s
ACF 5250 (N only)			1971	X	present
ACF two-bay Center Flow (N only)		1969	X	X	present
Bachmann					
4-bay cylindrical grain (+N)		mid-'60s	X	X	present
56-foot ACF Center Flow (+N)		mid-'60s	X	X	present
PS-2 two-bay (+N)		X	X	X	X
Bowser					
H30 three-bay	1930s	X	X		
70-ton 2-bay, open side	1950s	X	X	X	X
70-ton 2-bay, closed side	1950s	X	X	X	X
Two-bay Airslide (N only)	X	X	X	X	2000s
Three-bay cylindrical (N only)		X	X	X	present
Broadway Limited Imports					
PRR class H32 (+N)	1948	X	X	X	X
Con-Cor					
PS-2 three-bay (+N)	X	X	X	X	X
2,600 cubic foot Airslide	1953	X	X	X	X
52-foot PS-2 four-bay (N only)		X	X	X	present

Accurail PS-2CD 4750



Athearn FMC 4700 covered hopper



Athearn N PS-2 2600



Athearn N ACF 2970



COVERED HOPPERS (CONT'D.)

TYPE	1950s	1960s	1970s	1980s	1990s
ExactRail					
PS-2CD 4000 (+N)		1962	X	X	2000s
Magor 4948 "Big John"		mid-'60s	X	X	present
PS-2CD 4427 (+N)		X	X	X	2000s
Evans 4780			1976	X	present
Magor 4750		1966	X	X	2000s
Fox Valley Models (N only)					
H30	1930s	X	X		
PS 4750 3-bay			X	X	present
PS 4740 3-bay		X	X	X	present
FMC 4700 3-bay			X	X	present
InterMountain					
ACF 2927 three-bay (+N)	'50s	X	X	X	2000s
Cylindrical, trough hatch (+N)			1970	X	present
Cylindrical, round hatch (+N)			early '70s	X	present
4750 three-bay (+N)			early '70s	X	present
ACF Center Flow two-bay (+N)		late '60s	X	X	present
ACF 4650 Center Flow (+N)		mid-'60s	X	X	present
PS-2CD 4785 three-bay early frame (+N)		mid-'60s	X	X	present
PS-2CD 4785 three-bay late frame (+N)			early '70s	X	present
PS-2CD 4785 three-bay H-100-21 (+N)			early '70s	X	present
1958 two-bay, open sides	late '30s	X	X	X	X
1958 two-bay, closed sides	mid-'50s	X	X	X	X
Procor Pressure-Flow			early '70s	X	present
Kadee (HO only)					
PS-2 2-bay	mid-'50s	X	X	X	X
Kato					
ACF 70-ton two-bay open sides	early '50s	X	X	X	X
ACF 70-ton two-bay closed sides (+N)	mid-'50s	X	X	X	X
Micro-Trains Line (N only)					
ACF 3-bay, w/ round hatches		1964	X	X	2000s
ACF 3-bay, w/ elongated hatches		1965	X	X	2000s
3-bay aluminum		1965	X	X	2000s
PS-2 4427 3-bay high-side			1970	X	present
Evans 3-bay 100-ton			1978	X	present
2-bay Airslide, round hatches			X	X	present
ACF 2-bay			1970	X	present
North American Rail Car					
4550 four-bay cylindrical			X	X	present
ScaleTrains.com					
PS-2CD 4785		1967	X	X	present
Thrall 5750 carbon black (+N)			1977	1980	present
GATC 4566 Airslide			1978	X	present
GATC 4180 Airslide			X	X	2000s
Spring Mills Depot					
NACC PD3000			1971	X	present
Tangent (HO only)					
General American 4180 Airslide		1963	X	X	present
General American 3500 Dry-Flo	1959	X	X	X	X
PS-2 4000		1962	X	X	early 2000s
PS-2CD 4740		1966	X	X	present
PS-2CD 4750			1972	X	present
Trainworx (N only)					
NACC PD3000			X	X	2000s
PS-2CD 4427		mid-'60s	X	X	present
True Line Trains					
Slab side	1948	X	X	X	2000s
Walthers (2015)					
Evans three-bay			1970	X	present
50-foot two-bay Airslide		X	X	X	present



Atlas HO ACF 5701



Atlas N Dry-Flo 3500

OPEN HOPPERS

TYPE	1950s	1960s	1970s	1980s	1990s
Accurail (includes built/rebuilt dates on website) (HO only)					
AAR offset triple	X	X	X	X	X
Offset twin	X	X			
USRA 55-ton	X	X			
Athearn					
26-foot ore	X	X	X	X	present
40-foot three-bay w/ exterior posts (+N)	1953	X	X	X	X
40-foot three-bay offset-side (+N)	1940s	X	X		
40-foot offset ballast		X	X	X	present
40-foot wood chip (+N)	1940	X	1970		
50-foot five-bay rapid discharge			1976	X	present
24-foot ore	1940s	X	X	X	
34-foot two-bay offset-side	1940s	X	X		
34-foot two-bay w/ exterior posts	1940s	X	X		
40-foot four-bay offset-side	1940s	X	1970		
Atlas Model Railroad Co.					
70-ton Hart ballast (+N)	1940s	X	X	X	X
Two-bay offset (+N)	1930s	X	X		
AAR 70-ton 3-bay, 9 panel	1930s	X	X		
90-ton (N only)		X	X	X	2000s
Bachmann					
Bethlehem Steel 100-ton		mid-'60s	X	X	2000s
40-foot quad	1930s	X	X		
55-ton, two-bay, outside-braced (+N)	1930s	X	X		
Bluford Shops (N only)					
30'-6" USRA two-bay	1920s	X	X		
30'-6" USRA two-bay panel side	1920s	X	X		
Rebuilt two-bay war emergency	1920s	X	X		
8-panel two-bay	1930s	X	X		
Two-bay offset-side	1930s	X	X		
Three-bay offset-side	X	X	X	X	X
14-panel three-bay	mid-'50s	X	X	X	X
Bowser					
100-ton three-bay		early '60s	X	X	2000s
70-ton offset side	1940s	X	X		
H21a four-bay (+N)	1930s	X	X		
GLa two-bay (+N)	1930s	X	X		
70-ton, 12-, 13-, and 14-panel three-bay	X	X	X	X	X
70-ton four-bay (N only)	X	X	X	X	X
Broadway Limited Imports					
ARA 70-ton four-bay (+N)	1920s	X	X		
N&W H2a three-bay (+N)	1930s	X	X	X	
Con-Cor					
Greenville 15-panel and 12-panel three-bay		X	X	X	2000s
Longitudinal open (N only)	X	X	X	X	present
75-ton four-bay (N only)	X	X	X	X	X
ExactRail					
Bethlehem 3483 100-ton quad		1964	X	X	present
Bethlehem 4000 100-ton quad			mid-'70s	X	present
Fox Valley Models (N only)					
Ortner five-bay			1976	X	present
InterMountain					
AAR alternate standard two-bay	1940	X	X	X	
Kadee (HO only)					
50-ton 2-bay offset-side	1940s	X	X		
Micro-Trains Line (N only)					
100-ton three-bay with exterior posts and coal load			1978	X	present
43-foot Ortner			early '70s	X	present
33-foot two-bay, offset-side, exterior posts, panel side; flat end, notched arch-and peak-end, arch end, and peaked end	1930s	X	X		
MTH					
USRA 55-ton twin	1920s	X	X		
70-ton center discharge ore	1940s	X	X	X	X
Tangent					
Bethlehem quad (+N)			1974	X	present
PS-3 2750 coal	1957	X	X	X	
Trainworx (N only)					
100-ton quad		1963	X	X	present
Walthers (2015) Mainline, Trainline					
40-foot Ortner 100-ton three-bay			early '70s	X	present
34-foot war emergency, steel rebuilds	mid-'50s	X	early '70s		
36-foot two-bay offset	1940s	X	X		
36-foot 50-ton, two-bay, outside post	1940s	X	X		
34-foot 100-ton, two-bay			X	X	present
Four-bay open	1930s	X	X		

Atlas N
PS-3 2960



TANK CARS

TYPE	1950s	1960s	1970s	1980s	1990s
Athearn					
50-foot 20,000-gallon acid			X	X	present
TankTrain (+N)			1977	X	present
62-foot		X	X	X	present
30-foot 8,000-gallon NACC		1969	X	X	present
20,900-gallon (+N)			1970	X	present
Chemical	1940s	X	X	X	
Single-dome	1940s	X	X	X	
Triple-dome	1940s	X	X		
Atlas Model Railroad Co.					
ACF 17,360-gallon (+N)		late '60s	X	X	present
ACF 23,500-gallon (+N)		1969	X	X	present
GATX 20,700-gallon non-insulated (+N)			mid-'60s	X	X
ACF 33,000-gallon "whale body" (+N)			early '60s	X	X
ACF kaolin (N only)			X	X	present
"Shorty" beer can (N only)		X	X	X	present
Bachmann					
40-foot single-dome (+N)	1940s	X	X	X	
Broadway Limited Imports					
6,000-gallon ACF Type 27	1920s	X	X		
Cryogenic		1960-'63	X	X	2000s
Con-Cor					
40-foot Funnel-Flow (N only)		late '60s	X	X	present
InterMountain					
ACF type 27 riveted 10,000 gallon	1930	X	X	X	X
ACF type 27 riveted 8,000-gallon (+N)	1920s	X	X	X	X
10,000-gallon welded	X	X	X		
Micro-Trains Line (N only)					
56-foot 24,900-gallon general service			1975	X	present
39-foot single-dome	1920s	X	X	X	
Tangent (HO only)					
1917 GATX 8,000-gallon radial course	1917	X	about 1970		
1917 GATX 8,000-gallon insulated radial course	1917	X	about 1970		
1917 GATX 10,000-gallon radial course	1917	X	about 1970		
1928 GATX 6,000-gallon three-compartment	1928	X	X	X	X
1949 GATX welded 8,000-gallon acid	1949	X	X	X	X
Walthers (2015) Mainline, Trainline					
40-foot UTLX 16,000-gallon Funnel-Flow			X	X	present
54-foot UTLX 23,000-gallon Funnel-Flow			X	X	present
32-foot Type 21 8,000-gallon	1920s	X	late '70s		
32-foot ACF Type 21 10,000-gallon insulated	1920s	X	X		



Athearn acid tank car



Athearn NACC
8,000-gallon tank car



Athearn
TankTrain car



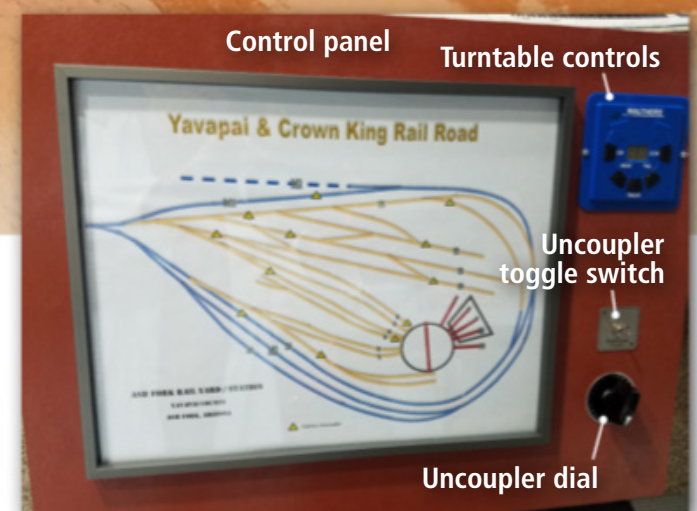
RailCrew uncouplers from Rapido Trains offer a reliable way to switch cars in hard-to-reach areas. Learn how Craig Williams controls 13 uncouplers using a single toggle switch and a rotary selector (inset).

ROTARY SWITCH CONTROL FOR RailCrew uncouplers

How to use a dial and a single toggle to control multiple installations

By Craig Williams

Photos by the author



Following my recent retirement, I began building my dream model railroad. Several locations, including some yards and industry spurs, were more than an easy arm's reach away for manual uncoupling with a pick. In these areas I needed to use remote uncouplers.

Permanent magnets that fit between the rails have been used as uncouplers for many years, but they can be tricky to use reliably. It's easy for cars to inadvertently uncouple over them. For a more reliable solution, I incorporated RailCrew Remote Uncouplers from Rapido Trains into my layout design.

Installed between the rails at roadbed level, RailCrew uncouplers use a momentary on/off toggle switch to

change the position of a permanent magnet to trigger a magnetic coupler overhead. As long as the toggle is set to "off," there's no danger of inadvertent uncoupling. Since each device requires so little current, a single 12V (minimum 500mA) power supply is all that's needed for a dozen or so uncouplers.

Rotary switch solution

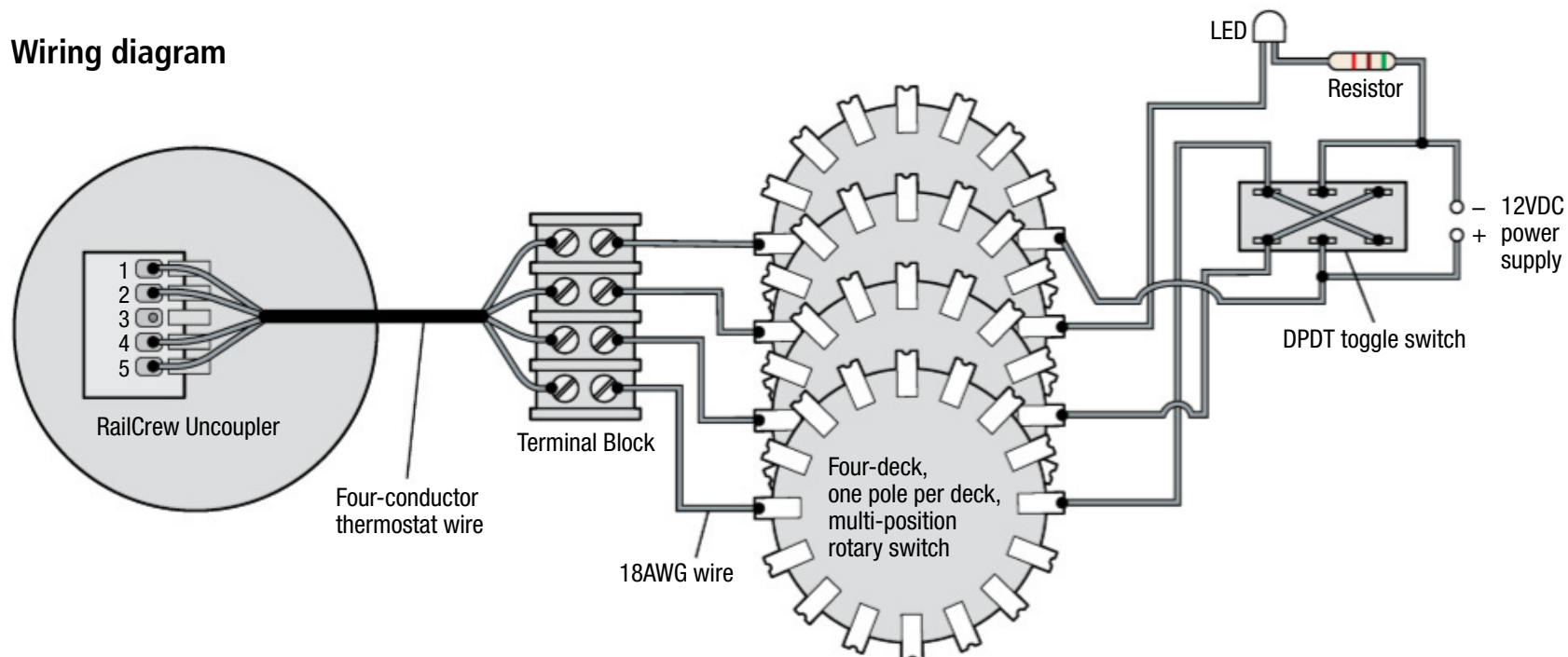
I've recently finished laying track in the Ash Fork Yard and engine terminal section of my layout, which includes 13 RailCrew uncouplers. The uncouplers can be installed during initial track laying or retrofitted into ballasted track. [Installing the RailCrew uncouplers is a straightforward process, but beyond the

scope of this article. For anyone interested in learning more about the product, including watching installation videos, visit rapidotrains.com. – Ed.]

Each uncoupler includes a pre-wired single-pole double-throw (SPDT) auto-center-off momentary toggle switch and a light-emitting diode (LED) with resistor that can be mounted in the included fascia plate or on a larger control panel. My control panel uses Berrett Hill Touch Toggles to trigger turnout switch motors at the yard and engine terminal. Another set of controls operates a Walther's turntable. I incorporated a separate compact panel on the fascia for the uncouplers.

I used only one RailCrew toggle switch and LED to trigger all 13 uncouplers. I accomplished this by routing the

Wiring diagram



power source, LED, and toggle wiring through a rotary switch out to each individual uncoupler.

Each uncoupler includes a built-in LED, visible through the track when activated. I opted not to power that LED, and instead only powered the fascia-mounted LED that showed when an uncoupler was in the “on” position.

By not wiring the built-in LED, I needed only four of the five wiring terminals on each uncoupler. This meant that my rotary switch needed a minimum of four poles. The switch would control 13 uncouplers, so it needed to have at least 13 positions for each pole. Rotary switches have soldering connections for each position on a metal disk (or disks) called a deck.

On eBay, I found a four-deck, four-pole (single pole on each deck),

16-position rotary switch. I purchased a switch plate and knob to finish the installation on the fascia.

Wiring the switch

A wiring diagram using only a single uncoupler for clarity is shown above. Two of the switch’s decks were used for the power supply and the other two were for the toggle switch and LED.

Using a multimeter set to find continuity, I located the input terminal (pole) for each deck and soldered the source leads, as shown in the diagram.

It’s important to be consistent with the wire colors and to label each lead. I used a different color of 18AWG wire cut to 14” lengths for each of the four decks. After soldering a wire to a position terminal, I applied heat-shrink tubing or liquid electrical tape to the connection and labeled the lead with the number assigned to the uncoupler. I used Klein wire markers, as, unlike masking tape, these won’t fall off over time. I repeated the process for all 13 positions on each deck.

I ran the leads from each deck to terminal blocks. To help keep things neat I used four conductor 18AWG solid thermostat wire to connect each terminal block to the individual uncouplers. The conductor’s colors are the same as the individual wire colors I used and are also labeled with the number of the corresponding uncoupler.

With the installation complete, I can turn the dial to an uncoupler’s number noted on the control panel and flip the toggle switch. Then I can easily drop a car on a yard track or spur hands-free. The LED is a good reminder to turn the uncoupler off when I’m done.

Although my layout is still under construction, I’m very happy with the operation of my rotary-switch-controlled Rapido RailCrew uncouplers at Ash Fork Yard and engine terminal. I look forward to installing more at other out-of-the way locations on my railroad. **MR**

Recently retired and living in a new home with a large unfinished basement, Craig Williams is excited to finally build the layout he’s been dreaming about for the past 30 years. This is his first article for Model Railroader.

Materials list

Ebay

Four-deck (single-pole per deck), multi-position rotary switch (position depends on how many uncouplers need to be controlled, similar switches can be found at digikey.com, mouser.com, or other electronics suppliers)
18AWG, four-conductor thermostat wire (also available from heating and cooling suppliers and some home centers)
18AWG wire

Home Depot

HST-093 Gardner Bender $\frac{3}{32}$ ” (2.4mm) heat-shrink tubing
56253 Klein Tools Wire Markers
Starbrite Liquid Electrical Tape

Mouser Electronics

633-AT432 Rotary Knob (BLK SM)
690-P173 Dial Plate (1-23)

Rapido Trains

320001 RailCrew uncoupler (13)



Rotary and toggle combination. Each uncoupler is selected by turning the dial to the appropriate number, then turning the toggle switch to the “on” position, which will also illuminate the LED. The view from behind the fascia (right) shows how Craig had to solder 13 individual connections to each of the rotary switch’s four decks.

Finally, a universal throttle we can love



1 Going universal. The TCS Universal WiFi Throttle (UWT-100) comes with an impressive array of buttons and a 1¼" x 2" display. Note the convenient wrist lanyard provided to prevent accidental drops.

Back in the February 2019

DCC Corner I showed how to use cell phones as throttles with DCC systems, using a Wi-Fi interface to connect to Digital Command Control (DCC) command stations. The downside of this approach is that cell phones aren't designed to be used as throttles, and the user experience leaves a bit to be desired.

In the spring of 2020, after a couple of years of research and development, the folks at Train Control Systems (TCS) released their

Universal WiFi Throttle, the UWT-100, so let's take a look at what it offers.

First off, why Wi-Fi? Wi-Fi offers a number of advantages over the use of proprietary wireless systems. It's a universal standard, which means throttles can be designed to connect and operate with a variety of DCC systems.

Secondly, the Wi-Fi signal typically is much stronger than proprietary wireless systems, and if signal strength is an issue, Wi-Fi boosters are readily available (and often cheap). For example, with my home Wi-Fi router and booster, I can pick up a signal at the far edges of my half-acre backyard.

Finally, most model railroaders probably already have a home Wi-Fi router that can be connected to a personal computer running DecoderPro, and from there to their DCC system.

Or, dedicated Wi-Fi interfaces are available for systems from Digitrax, MRC, or NCE. (Note: the WFD-30 NCE Wi-Fi interface is produced by WiFiTrax). In addition, some newer DCC systems like the DigiKeijs DR5000 come with a built-in Wi-Fi interface.

Let's take a look at the UWT-100

1. You notice the big difference in the UWT-100 right off when you pick it up; the sleek ergonomic case fits comfortably in your hand and the relatively light weight (4.9 ounces) means you can hold it for an all-day operating session



2 Clear screen. The active locomotive address is shown in large letters and numerals in the upper left; on the right are battery power and Wi-Fi signal strength indicators.

without strain. In spite of having a pair of AA batteries in the lower half, it balances at the midpoint. And in case you lose your grip, it comes with an adjustable lanyard that can be looped around your wrist.

When first powered up, the UWT-100 goes through a tutorial and guides you through the Wi-Fi setup process. Since I had watched the UWT-100 videos on the TCS YouTube channel, I skipped the tutorial and was able to connect to my Digitrax LnWi Wi-Fi interface without difficulty. I then turned on the Wi-Throttle option in

DecoderPro and connected to it just as quickly.

When entering a Wi-Fi router password, be aware that in addition to having an on-screen text entry interface, numerals are entered using the numeric keypad.

The bright, backlit display is more than adequate. Even at the

default 50 percent brightness setting, I could easily read it in bright sunlight. The active locomotive address is shown in large letters and numerals at the upper left; on the upper right are battery power and Wi-Fi signal strength indicators **2**. Direction and speed indicators are beneath the address, and across the bottom of the screen are four programmable function readouts. These functions are activated by the buttons immediately below the display. The defaults display the locomotive address in the immediate recall stack, followed by the horn, bell, and headlight.

Below the display buttons are fast and slow speed control buttons and a thumbwheel. I will admit up front that I was skeptical about the thumbwheel. I've had thumbwheel speed controllers since the Wangrow SystemOne debuted in 1995 and always found them uncomfortable.

I was also afraid that someone with arthritis in their thumb joints might find it difficult to use. However, the smooth, easy action, combined with the ergonomic design of the case and slightly



THERE ARE MORE FEATURES AVAILABLE ON THIS THROTTLE THAN I CAN BEGIN TO TOUCH ON IN THIS ARTICLE.
— LARRY

recessed thumbwheel position, made me a fan right away.

Before I go on, let me say that there are more features available on this throttle than I can begin to touch on in this article. Please take a look at the overview video on the TCS YouTube channel or on the manufacturer's website, tcsdcc.com.

Almost everything can be modified in the settings menu option **3**, but there are a couple of defaults that can't be. The recall function on the first button only swaps between the active locomotive or consist and one other in memory. Also, the larger recall list is limited to 20 addresses **4**, which was recently increased from eight. The throttle can be upgraded by the owner using the free "Depot" program available on the TCS website.

I've written in the past about various consisting methods – basic, universal (a.k.a. command station assisted), and advanced, but with the UWT-100 comes a new one – throttle-based

consisting. Using this method, the active locomotive becomes the lead locomotive in the consist, and additional ones can be added to it. Consists created using this method can include consists created using the other methods, and they remain in memory on that throttle even when powered down.

For each locomotive in the consist, you can set which functions it responds to, and the throttle will automatically only send certain commands to the lead locomotive. So what happens when you get a consist to the end of a branch line and reverse the direction of travel for the return trip? There's a special option in the consist menu that allows you to switch cabs, just like the engineer has to do on the prototype. After you select which locomotive is the new lead, it will receive the horn, bell, and headlight commands.

One neat feature I discovered goes back to the active recall button. Let's assume you have a consist out on the main line active in the throttle, and one of the other

locomotives in the consist in the recall position. When you get to an industry or siding, you can simply hit the recall button, and the single locomotive will become active and can be operated independently to break out of the consist and do the local switching. After it's finished and recoupled, all you need to do is hit the recall button again, and the full consist will become active and you can proceed on to the next destination.

The other really neat feature is how it interacts with DecoderPro. As soon as you connect to your computer via a Wi-Fi link, the UWT-100 will download the entire roster of locomotives and accessory decoders into its memory. After that, when you want to select a locomotive or create a consist you can select from a list of those locomotives **5**. To streamline the process, as soon as you start entering the desired address, the throttle will filter the selection so you don't have to scroll through all the possible entries.

There are other features, as well. You can create custom function labels in DecoderPro for each decoder in your roster, and these will be downloaded and displayed on your screen. (Note: I'm already planning a future article on using the various extended features of DecoderPro with the UWT-100 and cell phones).

So what don't you get with the UWT-100? Well, it doesn't have programming capabilities; that still requires one of the larger programming throttles offered by the DCC system manufacturer or using DecoderPro.

In addition to all its features, the greatest value of the UWT-100 is its ability to work with any brand of DCC system. If you're an operating session nut, and travel the layout circuit each month, you can do so with only one throttle in hand. That convenience alone is worth 4 stars.

For more on the UWT-100, visit "The DCC Guy" YouTube channel, and don't forget to say hello in the comment field. [MR](#)

3 It's on the menu. Almost everything can be modified in the throttle settings menu option.

4 Find it quick. The larger recall list is limited to 20 addresses, up from 8 in earlier firmware releases.

5 Download the list. As soon as you connect to your computer via a Wi-Fi link, the UWT-100 will download the entire roster of locomotives and accessory decoders into its memory.





Rapido Trains HO scale H1d Royal Hudson

Part of the “Icons of Canadian Steam” series, the HO scale Canadian Pacific Ry. class H1c, d, and e 4-6-4 Hudsons from Rapido Trains represent some of the most successful modern steam locomotives to run on North American rails. Their semi-streamlined boilers and handsome liveries certainly make them among the most attractive. For this review I evaluated an HO model of CPR no. 2851. The engine came factory-equipped with an ESU LokSound 5 dual-mode decoder that provides sound effects on Digital

Command Control (DCC) and direct-current (DC) layouts.

The prototype. Looking for faster and more powerful locomotives to handle its heavy, long-distance passenger trains, the Canadian Pacific Ry. adopted a 4-6-4 “Hudson” wheel arrangement, pioneered by the New York Central RR, for its new design. These first CPR Hudsons, the H1a and H1b classes, were delivered in 1928 and 1930, respectively.

At the end of the 1930s, the Montreal Locomotive Works delivered semi-streamlined 4-6-4 Hudsons to the CPR in three batches: class H1c nos. 2820 to 2849 (1937), H1d nos. 2850 to 2859 (1938), and H1e nos. 2860 to 2864 (1940) for a total of 45 locomotives. The H1e

Hudsons were oil burners and 16 other H1c and H1d locomotives were converted to oil later in their careers.

The semi-streamlined

Hudsons became “royal” in 1939 after King George VI and Queen Elizabeth made a 31-day tour of Canada on a special 12-car train led by class H1d no. 2850. Both the locomotive and cars wore a special royal blue livery. After the tour the CPR was granted permission to designate all its semi-streamlined Hudsons as “royal” by affixing a brass casting of the royal crown to the sides of each locomotive’s running boards.

By the end of the 1950s, diesels had bumped the Royal Hudsons to commuter and freight runs, and most were retired from regular service in 1960. Four Royal Hudsons survive on display in Canada and the United States.

The model. The model’s major dimensions match those of official CPR steam locomotive diagrams. Our review sample models CPR class H1d no. 2851 after the mid-1940s, when the prototype had its streamlined smokestack replaced by a straight stack. Like its prototype, the model also features a Franklin booster engine on the trailing truck.

Boiler bands, rivet seams, and other molded detail are well defined. Separate details include piping, builder’s plates, and the crown herald on the running boards. The boiler handrails are separate metal parts.

In addition to handrails, separate parts on the tender include a movable diaphragm that fits snugly against the

The HO scale Royal Hudson is loaded with prototypical details. The model’s many separate parts include the bell, generator, tender hatches, and all piping and handrails.



PERFORMANCE CHARTS

DRAWBAR PULL	4.8 ounces 22 HO scale passenger cars
SCALE SPEED (DC)	
VOLTS	SCALE MPH
8.2 (start)	3
10	17
11	38
12	55
14	72
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
1	1
7	8
14	22
21	48
28	72

locomotive's all-weather cab. As per its no. 2851 prototype, the coal tender rides on Commonwealth trucks. Tenders with Buckeye trucks, as well as versions with oil bunkers, are available as appropriate for the road number offered.

There aren't any figures inside the cab, but the interior does feature a detailed backhead with painted valves and gauges as well as interior and ground lights. There's also clear plastic glazing in all the cab windows, and the side windows slide open and closed.

The mechanism. Although a modeler shouldn't need to take the locomotive apart, instructions are provided in the printed manual for removing the top half of the boiler shell. The process involves removing the coupler, two screws at the rear of the cab, and two more screws under the pilot. Be careful, as wires run between the boiler halves.

The flywheel-equipped can motor and die-cast metal weight are inside the boiler, along with the LokSound 5 decoder plugged into a 21-pin socket on the motherboard. All three driver axles are powered via gearboxes. A round speaker is inside the smokebox. As outlined in the instructions, there are connections on the motherboard for a smoke unit (not included). However, this would require removing the front weight.

An eight-pin plug on the drawbar connects the electronics in the engine to those in the tender. An additional speaker in the tender can be turned on or off via a slide switch on the underframe.

Performance. On the test track, our DCC-sound-equipped model produced a

4.8 ounce drawbar pull that's equivalent to 22 HO scale passenger cars. Its 72 scale mph top speed is less than the 90 mph of the prototype but fast enough for most HO scale main lines. On our DCC-equipped staff layout, the locomotive easily led a passenger train through crossovers and no. 5 and 6 turnouts without any interruptions in sounds, lights, or motion.

Pressing F8 turned on steam hisses, air pumps, and other ambient sounds of a steam locomotive. As I advanced the throttle, the exhaust chuffs were erratic. Thankfully the chuff timing and every other sound, light, and performance aspect of the LokSound 5 decoder is easy to adjust using configuration variables (CVs). To fix the chuffs, I followed the ESU instruction manual (available as a free download at loksound.com). First I used a stopwatch to time the wheel rotation in speed step 1 of 28. Then I divided that number (16 seconds) by 4. After multiplying this value (4) by 32, I entered the result (128) in CV57. (Note that the ESU instructions omit this last crucial step.) With CV58 set to its default value (43), the locomotive's exhaust was then synchronized at a prototypical four chuffs per wheel revolution.

In addition to the CPR five-chime whistle, which sounds like prototype recordings, other user-triggered features include a bell, coupler sounds, injector, cylinder cocks, and other effects outlined in the included printed manual. There's also a button-controlled independent brake (F10) for realistic stops. I especially enjoy using the heavy load (F9) and coast (F4) functions, which simulate the locomotive working hard (as when starting a heavy train) or drifting (as when running light), respectively.

Lighting effects are equally impressive. In addition to a directional headlight and backup light, the model features class lights that can be toggled between white, green, and off, plus an illuminated number board.

Inside the cab is an interior light and flickering red firebox. Under the cab, ground lights can be turned on or off.

In DC, the model required 6.6V for the lights and sound to come on. At 8.2V, the model started moving smoothly as shown in the charts above. Sound effects are limited to

Facts & features

Price: \$699.95 (DCC sound), \$599.95 (DC, no sound)

Manufacturer

Rapido Trains
500 Alden Road, Unit 21
Markham, ON L3R 5H5
rapidotrains.com

Era: 1937 to 1960 (mid 1940s to 1960 as detailed and decorated for no. 2851)

Classes/Road names and numbers:

H1d: 2851, 2850 (Royal Train), 2852, 2857, and 2858 (as preserved at Canada Science & Technology Museum). H1c: 2829 (oil), 2839, 2839 (Southern Ry.), and 2846. H1e: 2860 (British Columbia, versions with or without coat of arms), 2861, and 2863. Unnumbered versions also produced. Canadian Pacific coal and oil tenders (Commonwealth or Buckeye trucks) also available separately for \$149.95.

Features

- 21-pin decoder socket
- Electrical pickup on four drivers and all tender wheels
- ESU LokSound 5 dual-mode decoder (DCC versions only)
- Flywheel-equipped can motor
- Light-emitting diode headlight, backup light, cab and ground lights, class lights, numberboard, and flickering red firebox
- Macdonald-Cartier knuckle couplers at correct height
- Metal wheels in gauge
- Minimum radius: 18" (22" recommended)
- Traction tires on third driver set
- Speakers in smokebox and tender (DCC sound versions only)
- User-installed optional non-traction-tire-equipped driver set
- Weight: 1 pound, 9.4 ounces (engine and tender), 1 pound, 3.8 ounces (engine alone)

exhaust chuffs and squealing brakes when the throttle is quickly reduced. The number board is illuminated and the headlight operates directionally.

The HO scale Royal Hudson from Rapido Trains accurately depicts one of the last mainline steam locomotives to operate in North America. The model's state-of-the-art decoder and sound system also ensure that it sounds as good as it looks. Be sure not to miss it. – Dana Kawala, senior editor





Atlas HO scale EMD SD35 diesel locomotive

Atlas RR Co. is back with another run of its well-detailed SD35s, this time with Electronic Solutions Ulm (ESU) dual-mode decoders. This run features two Chessie System variations and a Penn Central model with a red P.

The prototype. General Motors' Electro-Motive Division (EMD) launched its "35 Line" with the GP and SD35 in 1963 and '64, respectively. These locomotives set the design standard for more than two decades of EMD locomotives with their sharply creased lines.

They were the last locomotives to use the 567 series of diesel engines, first introduced in 1938. By the early '60s, they were producing nearly double the horsepower of their progenitors, albeit with 16 instead of 12 cylinders.

But getting 2,500hp out of a 25-year-old design had stretched the engine to its limits, and the turbocharged 16-567D3A wasn't considered as reliable as its earlier incarnations. The 567 would be replaced by the 645 in EMD's 40-series diesels. Those numbers, 567 and 645, referred to the displacement of each cylinder in the engine in cubic inches.

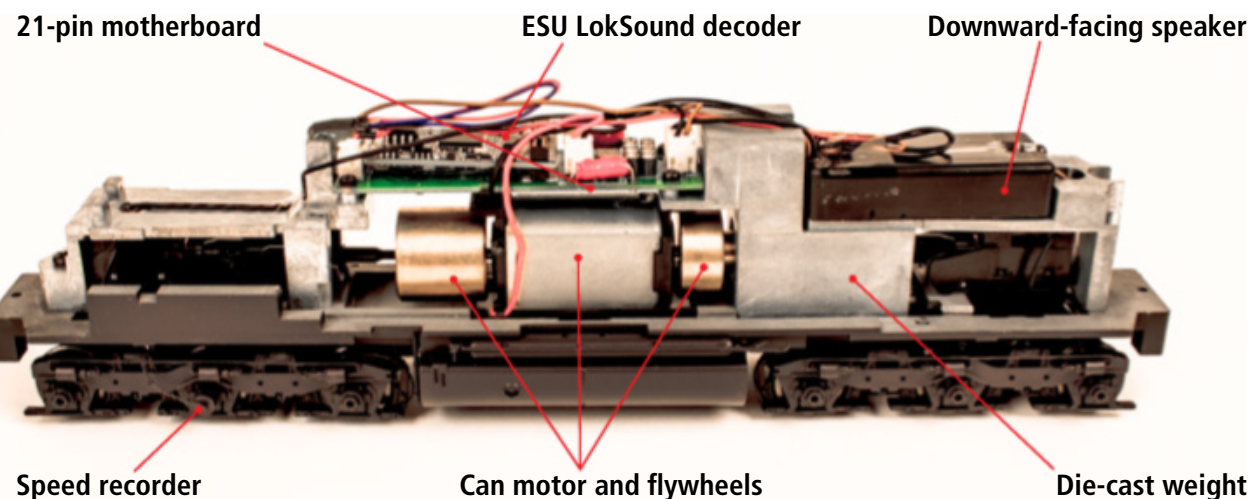
EMD sold 360 SD35s in both standard low short hood versions (170) and high short hood versions (190). There was also a passenger-oriented SDP35 that was part of Atlas' earlier runs of this model. The prototype made up 35 of the low short hood production numbers.

Most SD35s were leaving Class 1 railroad rosters in the mid-1980s. Chessie rebuilt some of the engines into lower-horsepower SD20-2s.

Three SD35s survive. One at the Baltimore & Ohio Museum in Baltimore, Md., has been repainted to B&O colors after time on Chessie System and CSX. The other two locomotives are in storage, one at the Southern Appalachia Railway Museum in Oak Ridge, Tenn., the other on the Georges Creek Railroad in Westernport, Md.

The model. Atlas first introduced this version of its SD35 in 2002, and Jim Hediger reviewed it in the October 2002 issue. Our sample is decorated in Chessie System colors with Western Maryland (WM) reporting marks. The separations between the Federal Yellow, Vermillion, and Enchantment Blue sections are sharp, and all the colors are opaque. Detail painting includes silver frames on the cab side windows and EMD builder's plates centered under the cab on the sills. There are a couple of voids in the Chess-C logo where it goes over door latches on the long hood, but they would be easy to take care of with a drop of Enchantment Blue paint.

Separately applied grab irons and lift rings festoon the body of the Atlas SD35. Other separately applied parts include windshield wipers, operating drop steps, m.u. hoses, uncoupling levers, perforated footboards, and m.u. stands. The handrails are molded in orange (Vermillion) flexible plastic to resist damage. The parts appear to be scale sized.



The Atlas Master Line SD35 uses a die-cast metal frame to support its flywheel-equipped can motor. A weight supports the ESU LokSound decoder and speaker.

The trucks feature separately applied brake cylinders, brake lines, sanding lines, and on the fireman's (left) side lead truck, a speed recorder and cable.

The mechanism. Under the hood of the Atlas SD35 is a die-cast metal frame. To separate the body from the frame, I removed the front and rear draft-gear boxes, then slipped a thin flat screwdriver under the walkway at the cab end and pried the body shell from the frame, releasing the plastic clips that snap over the tabs on the inside edge of the frame. There are three clips on each side of the body shell – one at each end and another centered over the fuel tank.

The locomotive's can motor and flywheels are mounted above the fuel tank. Plastic driveshafts carry power to both trucks and drive all 12 wheels. These blackened wheels carry electrical current to a motherboard mounted to a die-cast metal weight screwed to the top of the frame. An ESU LokSound decoder is attached to the motherboard with a 21-pin connection.

Light-emitting diodes (LEDs) illuminate the headlights and number boards. The front light is secured to the frame with glue; the rear light sits in a groove molded into the speaker enclosure and is held in place with tape. The arrangement means there are no wires tethering the body shell to the frame. The speaker faces down over the rear truck.

On the test track. I started direct current (DC) testing using a Model Rectifier Tech II Railmaster 2400 powerpack. It took 8.5V to get the sound effects to start up, a little more than the common 7.5V. The locomotive started moving at 10V at 5 scale mph. Top speed at 13V, my power pack's maximum, was 50 scale mph.

PERFORMANCE CHARTS	
DRAWBAR PULL	2.9 ounces 41 freight cars on straight, level track
SCALE SPEED (DC)	
VOLTS	SCALE MPH
10.24 (start)	4.8
11	12
12	26
13	50
SCALE SPEED (DCC)	
SPEED STEP	SCALE MPH
2 (start)	1.8
7	13
14	34
21	60
28	89

The lights and number boxes illuminated depending on the direction of travel. The LEDs are a little too yellow for my taste. With 2.9 ounces of drawbar pull, the Atlas SD35 should be able to pull 41 freight cars on straight and level track.

I switched to my NCE PowerCab for the DCC testing and found the locomotive started moving in speed step 2 at just under 2 scale mph. Top speed in speed step 28 was a bit high at 89 scale mph. One of my favorite features on LokSound decoders is the independent brake, but to get this working required a trip to the LokProgrammer to activate the feature.

I adjusted Brake 1 so the max speed allowed was 0 out of 126. This caused the locomotive to stop when I pressed the Independent Brake function button, which I moved from F10 to F6, which is unused on this model. While I was using the LokProgrammer (the software is free, but the hardware is an extra-cost item), I remapped some other functions and set the lights to turn on and off independent of direction. Using the dimmer function, I could reduce the light output prototypically when switching or waiting on a siding.

Facts & features

Price: \$279.95 (DCC and sound), \$169.95 (DC, no sound)

Manufacturer

Atlas Model RR Co. Inc.
378 Florence Ave.
Hillside, NJ 07205
atlasrr.com

Era: early '70s to mid-'80s in as-tested paint scheme

Road names: Chessie System (WM reporting marks), Chessie (Torco patch), Penn Central (red P), undecorated with high short hood

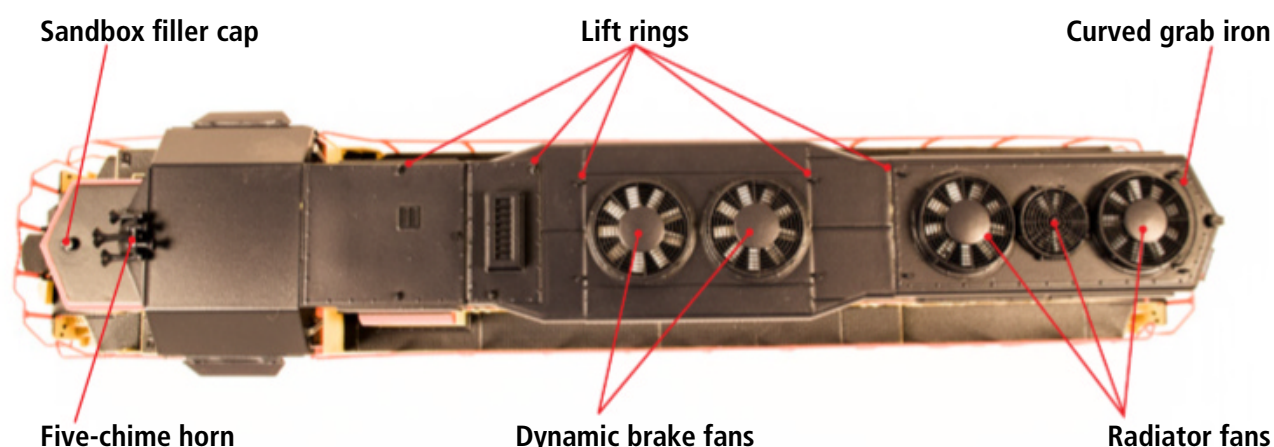
Features

- Blackened metal wheels, in gauge
- Detailed cab interior with crew
- Die-cast metal underframe
- Directional lighting
- Five-pole skewed armature motor with dual flywheels
- Flat or raised dust bin as appropriate by railroad
- Eight-pin plug for DCC decoder (direct-current version)
- Plastic knuckle couplers, mounted at correct height
- Separate, factory-installed scale windshield wipers, metal grab irons, and fine scale handrails
- Snowplow (included but not installed)
- Weight: 14.4 ounces

One of the other things I like about ESU LokSound decoders is the way the engine sound ramps up before the locomotive starts moving. It's possible to make other brands do this as well, but it's nice to have this feature working out of the box.

I tested the SD35 on my home switching layout, and it had no trouble with the Atlas Custom Line no. 4 turnouts in my industrial sidings or small yard. I also tested the engine on *Model Railroader's* staff layout, the Milwaukee, Racine & Troy. Climbing the 3 percent grade out of Bay Junction, the SD35 pulled nine HO scale freight cars.

The addition of an ESU LokSound dual-mode decoder means modelers can have the sounds of these locomotives on either DC or DCC layouts. Modelers of Mid-Atlantic railroads won't be disappointed with these fine-running engines. – *Eric White, associate editor*



The roof of the SD35 has plenty of detail with its see-through radiator and dynamic brake fans and separately applied lift rings and grab irons.

Container loading



Trailer loading



Container loading



Walthers HO General American G-85 flatcars

A **General American G-85** flatcar has joined the WalthersMainline product range. The HO scale model features plastic and die-cast metal construction, underbody brake detail, and Proto-Max metal couplers. Walthers offers the car in trailer- and container-loading versions.

The prototype. The General American G-85 flatcar was a versatile hauler. An ad for the car in the *1961 Car Builders' Cyclopedica of American Practice* (Simmons-Boardman Publishing Corp.), noted the flatcar was “designed for handling trailers, van and tank containers, automobile racks, auto carriers, specialized containers, and is interchangeable with all other types of piggyback cars.”

The G-85 featured exposed side bearers and a raised center sill that doubled as a guide for trailer tires. The flatcar lacked side sills, allowing it to haul trailers of virtually any width.

Our sample is decorated as GTTX 300329, part of Trailer Train's 300112 through 300613 G85 class built between August 1961 and March 1963. Cars 300314 through 300328 were leased to the Railway Express Agency as its 3314 to 3328. Cars in this order originally had TTX marks; the GTTX marks were applied starting in 1964.

The full-size cars were equipped with two cushioned, tractor-operated General American G-85 hitches, also known as “knockdown” hitches.

Piggyback-service G-85 flatcars could transport two trailers up to 40 feet in length without front-mounted refrigeration units or a single 45- or 48-foot trailer. The trailers could be loaded circus-style or with an overhead crane.

The G-85s were phased out of piggyback and container service in the mid-1980s. The flatcars were converted to general service and lasted into the 2000s.

The model. Our review sample (center) is accurately painted brown with a Signal White deck. The separation lines between the colors is sharp. The lettering placement matches prototype photos.

The photo also shows the REA (top) and VTTX (bottom) container-loading versions that are also available.

The center sill is die-cast metal with sidebearers. A plastic plate with flanges for the sidebearers spans the sills between the bolsters. Other underbody details include a separate, factory-applied air reservoir, control valve, and brake cylinder. Plastic rod, chain, and hangers run between the hand brake lever and the hand brake. The car also includes two each modeler-installed raised and lowered G-85 hitches.

Plastic deck pieces are glued to the top of the body bolsters and sidebearer. The top flange of the I-beam center sills and cushioned rub rails are separate plastic parts. The grab irons and stirrups are molded.

A one-piece plastic nameplate glued to the model carries the reporting mark; road number; capacity, load limit, and light weight data; and Trailer Train name and logo. Walthers produced nameplates in different sizes to match the road names it offers. The plates and brake rod detail are delicate, so be careful where you handle the model.

In addition to Trailer Train, the G-85 flatcar was rostered by several railroads,

Facts & features

Price: \$29.98

Manufacturer

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

Era: 1961 to 2000s

Road names: With trailer hitches: Trailer Train (GTTX reporting marks, brown and yellow schemes); Atchison, Topeka & Santa Fe; Penn Central; and Southern Pacific. For 20- and 40-foot container loading: Railway Express Agency and Trailer Train (VTTX marks). Four road numbers per scheme.

Features

- 24" minimum recommended radius
- 33" metal wheelsets, correctly gauged
- 70-ton roller bearing trucks
- Detailed underbody with brake gear
- Die-cast metal center sill
- Modeler-installed trailer hitches in raised and lowered position
- Proto-Max couplers, correct height
- Weight: 2.9 ounces (4 ounces too light per National Model Railroad Association Recommend Practice 20.1)

including the Erie Lackawanna; Great Northern; and Atchison, Topeka & Santa Fe, so these cars could be found throughout the North American rail network. If you model 1961 through the 2000s, this HO scale flatcar would look right at home in an intermodal train or mixed into a manifest freight. – *Cody Grivno, group technical editor*

Athearn N scale TTX tri-level auto rack



Innovative for its day, auto racks were developed in the 1960s as a way to reclaim automobile-shipping traffic from highway trucks. Athearn is offering a new N scale version of this iconic and important freight car in a well detailed, smooth running model.

The mother of invention. Prior to the 1960s, automobiles were shipped in specialized boxcars. They had extra-wide doors and internal tie-down equipment, but they could hold few autos each and were difficult to load and unload. Auto racks, an entire string of which could be loaded circus-style from a single set of ramps, addressed these shortcomings.

Early auto racks were usually owned by the railroads and attached to flatcars owned by a car-leasing company like Trailer Train. The dominant manufacturer of auto racks was Whitehead & Kales, which built the racks depicted by Athearn's model. Tri-level racks were used for low-roofed vehicles such as sedans, sport cars, and station wagons; pickup trucks and other tall vehicles had to ride on two-level racks. The flatcar used in Athearn's model is a Bethlehem Steel 89-foot channel-side car, so named for its distinctive C-profile sill.

In 1960, the standard length for flatcars was 85 feet. Auto rack makers like Whitehead & Kales pushed for longer flatcars, finding that an increase of just 4 feet per rack let them load an extra car per deck. Trailer-Train adopted 89 feet as its new standard for all flatcars, not just those for use with auto racks, in 1963. (This proved to be a boon for trailer-on-flatcar shipping, as well, when trailer lengths grew in the 1970s.)

Measuring up. In James Kinkaid's *Missouri Pacific Color Guide to Freight and Passenger Equipment* (Morning Sun Books, 2004) I found a photo of RTTX 911081, a Missouri Pacific car from the same series as one of our sample models. The model strongly resembled the prototype photo, with a couple exceptions. The first is that the model is lacking crossover plates. The prototype photo also lacked the model's top deck safety railing, though I have seen such a railing on other three-deck auto racks.

The paint on our sample models was smooth, even, and did not clog fine details like the rivets on the side posts. With a magnifying glass, I could read even the smallest white printing on the sills. Under magnification, I could see the white printing on the Missouri Pacific car's two-color "buzzsaw" herald wasn't completely opaque, but to the naked eye, it looked fine from even just a few inches away.

Most of the cars' weight comes from their die-cast metal flatbed decks. Open cars like this sometimes tend on the light side, but these matched the NMRA Recommended Practice 20.1 for weight. The underbodies have some small circular markings from the mold ejection mechanism, but they're not visible when the car is upright. The underbody brake detail is finely molded from flexible engineering plastic and separately applied, as were the ladders and top safety railings.

The cars have newly tooled 70-ton ASF Ride Control trucks with blackened metal wheelsets, all of which were in gauge. The body-mounted McHenry scale-head couplers were, likewise, at the correct height.

Long cars with body-mounted couplers usually add up to a wider minimum radius. The manufacturer says the cars can handle curves of 10" radius, but recommends 12" or greater. The cars encountered no problems with the 13" radius, 1.9 percent grade helix on our N scale Canadian Canyons project railroad. Nor did they balk at an S-curve of Peco medium radius turnouts in that layout's staging yard.

If you model a bridge line or Class 1 railroad in the second-generation diesel era, your railroad probably would have handled auto traffic. A few early auto racks like these from Athearn would be a great way to visually set your layout's era. – Steven Otte, associate editor

Facts & features

Price: \$42.98

Manufacturer

Athearn Trains
1600 Forbes Way Suite 120
Long Beach, CA 90810
athearn.com

Era: 1964 to early 1980s

Road names: Re-releases: Missouri Pacific/Texas & Pacific (buzzsaw herald), St. Louis-San Francisco ("Frisco"), Norfolk & Western, Northern Pacific, and Seaboard Coast Line (three road numbers); one road number each unless noted. New road names: Baltimore & Ohio; Denver & Rio Grande Western; Gulf, Mobile & Ohio; St. Louis Southwestern ("Cotton Belt"); Union Pacific; Wabash; and Western Pacific (three numbers per scheme).

Features

- Blackened metal wheelsets, in gauge
- Die-cast metal flatcar body
- Injection-molded plastic auto rack
- McHenry scale knuckle couplers, body-mounted at correct height
- Minimum radius: 10" (12" or greater recommended)
- Weight: 1.6 ounces (matches National Model Railroad Association RP-20.1)

Plastic auto rack

Separately applied brake gear

Body-mounted coupler



Screw-mounted trucks

Die-cast metal flatcar

Blackened metal wheelsets

Despite having no room to hide weights, the Athearn auto rack meets National Model Railroad Association weight standards due to its die-cast metal flatcar.

Automatic Block Signals

July's On Operation discussed the principles of protection and authority. To railroaders, protection means collision prevention. Authority is protection's companion. Denying trains authority to move keeps two objects from occupying the same space at the same time, a dependable way to obtain protection. However, it wouldn't be much of a railroad if trains never moved.

The solution to that dilemma lies in ensuring protection before authorizing movements. Railroads in the United States began by relying on schedules for protection and authority. Signals appeared as early as 1832 in ball signals on a Pennsylvania RR predecessor, and the train order first appeared in 1851. As train speed and frequency increased with growing traffic, more protection was demanded.

In 1873, Dr. William Robinson pioneered a new Automatic Block Signal (ABS) system on another Pennsy predecessor, the Philadelphia & Erie. Robinson's system was the first based on electrical track circuits. His patents were the origins of the Union Switch & Signal Co. Like George Westinghouse's air brakes, this was an exceptionally durable invention. Signaling continues to rely on track circuits completed by a train's wheels and axles, as useful in model railroad signal systems as it is essential to the prototype.

Today's General Code of Operating Rules (GCOR) defines Automatic Block Signal system as follows: "A series of consecutive blocks governed by block signals, cab signals, or both. The signals are activated by a train or by certain conditions that affect the block use." Switch position, broken rail, and slide detector fences are examples of "certain conditions." The current Northeast Operating Rules Advisory Committee (NORAC) rulebook has a similar definition.

An Automatic Block Signal system adds an extra measure of safety, an overlay on other forms of protection. It doesn't authorize train movement except in specifically designated track

territory. Under timetable-and-train-order (TTTO) rules, authority comes only from schedule or train order. Track Warrant Control (TWC) and Direct Traffic Control (DTC) systems are similar; authority is independent of ABS.

Rule 99 was the most basic form of protection in the TTTO era. It required the flagman of a stopped train to go back far enough to prevent a following train from rear-ending his train. An ABS signal acted like a mechanical flagman, stopping a train before it entered an occupied block. The signal might allow the following train to proceed slowly, prepared to stop without colliding, expecting to find a train's flagman observing Rule 99 to protect his train.

Both GCOR and NORAC continue to prescribe flag protection in rules 6.19 and 130, respectively. However, neither code requires flag protection against following trains in ABS territory when protected by at least two consecutive block signals. Both rules also permit timetable special instructions to modify flagging requirements.

Separating protection from authority is important. Nevertheless, ABS was capable of both. Double-track TTTO lines that justified ABS investment spawned Rule D-251. It conferred authority by signal indication, reading in part: "On designated tracks so specified on the timetable, trains will run with reference to other trains in the same direction by block signals whose indications will supersede the superiority of trains." This is commonly called current of traffic.

Various forms of Rule 97 allowed extra trains to run with current of traffic without a train order. Some railroads authorized trains with numbered clearances, allowing them to enter D-251 territory and proceed on signal indication. Movements against the current of traffic required train orders because the track is unsignaled in that direction. However, Rule D-254 specified that all other rules remained in effect, keeping Rule 99 in force.



This Conrail caboose crew enjoys additional rear-end protection in ABS territory on ex-Erie double-track main line near Smithboro, N.Y., in late 1979.

Jerry Dziedzic photo

Automatic Block Signal methods can be adapted to model railroads. A hybrid of single-track and double-track prototype rules could have a layout's dispatcher authorize a train with a numbered clearance naming the stations where the train receives the clearance and where the clearance expires.

Modeling ABS signals can be as simple as tent-folded cardstock, with red, yellow, and green cards nested at each signal location. A crew that passes such a signal places the red card atop the stack, increasing protection against following trains. When the train passes the next signal, the crew repeats this, and also changes the previous signal to yellow. [See "A signal system to fit any railroad" in the April 2017 MR for a similar approach. – Ed.]

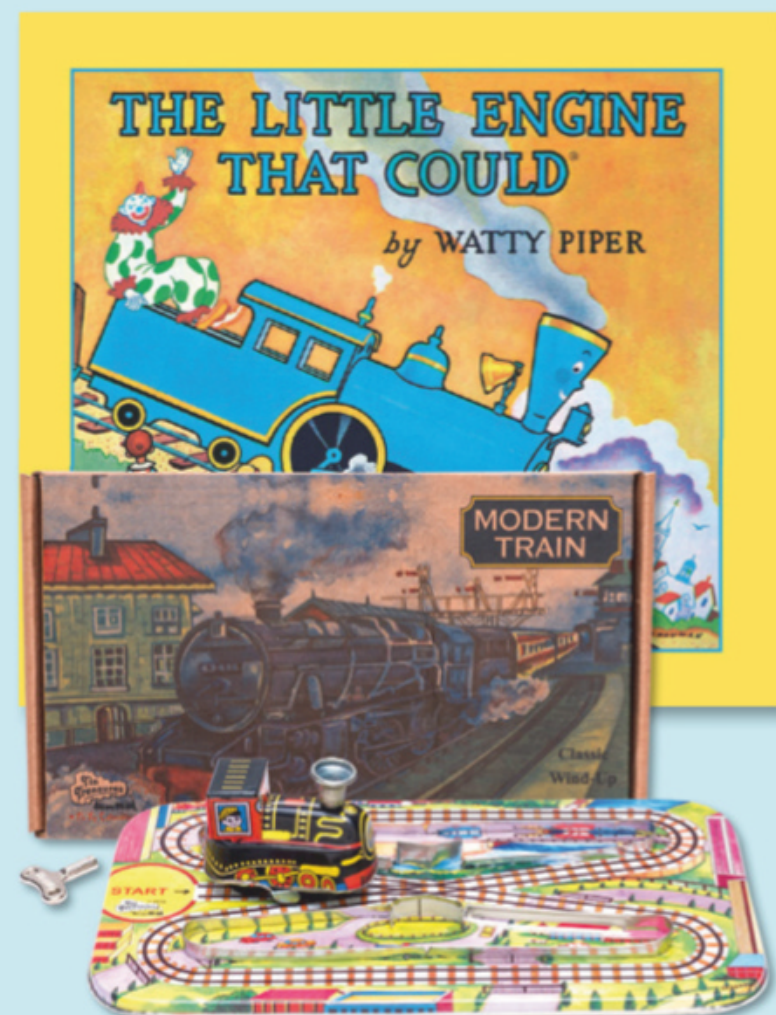
Whether your model railroad's signal system is as low-tech as a paper system or is a fully operational D-251 ABS equipped with current detectors, logic tables, and illuminated target signals shining along rail heads, it can satisfy protection and authority. 



**AUTOMATIC
BLOCK SIGNAL
METHODS CAN
BE ADAPTED TO
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RAILROADS.
— JERRY**



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VIA Rail Turbo no. 2 approaches Lyn Road in December 1980. Jason Shron photographed the scene on his triple-deck HO scale Kingston Subdivision layout, lightly editing the image to add some dust and exhaust. The Turbo Train is an out-of-production Rapido Trains model weathered and detailed by Jason. The trees are Scenic Express SuperTrees and the track is Peco Streamline code 83.

MORE ON THE WEB

Jason Shron's photo of his HO scale Kingston Sub is this month's wallpaper. Download it free at ModelRailroader.com



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Ma & Pa Ry. McKeen car no. 3 stops to pick up a couple of passengers arriving by auto at Holly's Crossing. Ken Kirkwood of Yucaipa, Calif., staged the scene on his HO scale layout, which models a tourist line deep in California's redwood forest. The McKeen car is a Ken Kidder brass model and the Ford Model T is from Jordan Highway Miniatures. Ken scratchbuilt the trees and also shot the photo.



Norfolk Southern no. 6920, a railroad-rebuilt SD60E diesel locomotive, runs through Taylor Junction. Ryan Bartlett of Titusville, Pa., shot the action on an HO scale switching module he designed to be part of a future branch line layout based on the Norfolk Southern line from Meadville, Pa., to Corry, Pa. The locomotive is an Athearn Genesis model.



Oregon Coast RR Electro-Motive Division GP9 no. 41 waits for SW7 no. 18 to tack a few more cars onto its train before departing Astoria Yard for Portland, Ore. In 1957, Astoria is a busy Pacific port that receives products from Asia to ship inland. Mat Thompson of Gainesville, Va., photographed the scene on his HO scale OCCR. The GP9 is an Athearn Genesis model, while the SW7 is from Broadway Limited. Both have been custom decorated for Mat's freelanced railroad.

Mann's Creek Ry. Shay no. 8 runs light on the dual-gauge line past the two-stall enginehouse at Sewell. Thomas J. Maule of Sandisfield, Mass., photographed the scene on his HO scale layout. The two-truck Shay is a Precision Scale brass model that's been converted to run on "dead rail" with a Tam Valley receiver. Thomas built the enginehouse stone by stone using real rocks.







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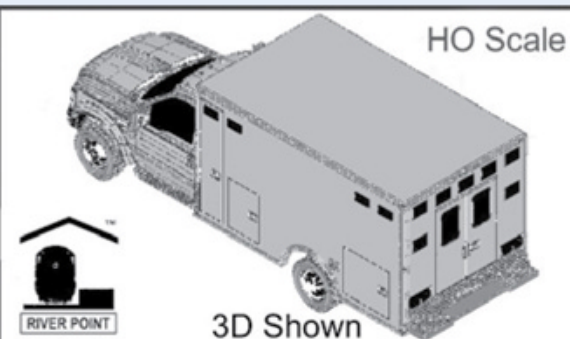
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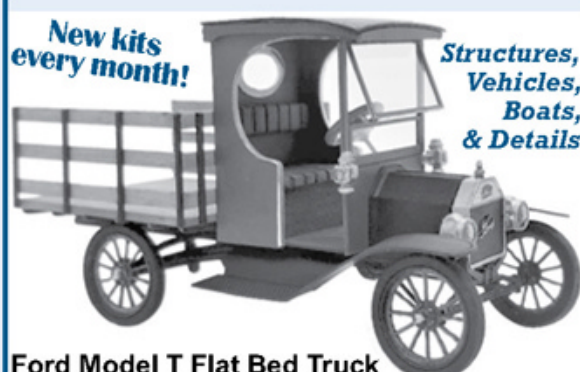
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CLOSING DATES: Nov closes Aug. 20, Dec closes Sept. 21, Jan. 2021 closes Oct. 19.

Schedule of Events

CA, SACRAMENTO: TTOS-Sacramento Valley Div. River City Toy Train Meet. Scottish Rite Center, 6151 H Street, Sacramento 95819. Saturday, September 26, 2020. 10am-3pm. Single \$5, family \$9. Children under 13 free with adult. Free parking. Food. Operating layouts. Free door prize drawing for those 16 and under. Contact John DeHaan, Meet Chair: (707) 642-8023

DE, ROXANA: Indian Summer Train & Toy Show. Roxana Fire House, Route 20, between Millsboro & Fenwick Island. Saturday, September 26, 2020, 9:00am-3:00pm. Admission: \$5.00 adults, children 10 and under free. Operating layouts, refreshments, door prize. For information contact Bill Ziegler, 302-537-0964 or www.delawareseasiderailroadclub.com Check our website in September for latest show updates.

FL, OCALA: Lions Tri-Annual Train Show. First Christian Church, 1908 E Fort King St. Saturday, November 7, 2020, 9:00am-2:00pm. Adults \$5.00, children 12 and under free w/ adult. Bring two canned goods and receive \$1.00 off admission. Information: Bob 352-694-6381 or cell 813-203-3216

IL, ST. CHARLES: 29th Annual Chicago Railroadiana and Model Train Show. Kane County Fairgrounds, 525 South Randall Rd. Sunday, October 18, 2020, 10:00am-3:00pm. Admission: \$6.00 (includes tax). Tables \$60.00. For information: 847-358-1185, RussFierce@aol.com or www.RRShows.com

KS, WICHITA: 26th Annual Wichita Model Train Show. Cessna Activity Center, 2744 George Washington Blvd. September 26-27, 2020. Saturday 9am-5pm, Sunday 10am-3pm. Exhibits, buy, sell, parts, repairs. All gauges: Z, N, HO, S, O & G. Concessions and door prizes. Admission: \$8.00 for both days, children under 18 FREE w/ paid adult. More information: www.WichitaToyTrainMuseum.org

MA, TAUNTON: UPDATE-CANCELLED. OLD COLONY MODEL RAILROAD CLUB 20th ANNUAL MODEL RAILROAD SHOW AND SALE, Taunton Holiday Inn, Myles Standish Industrial Park, Exit 9 from Route 495, September 20, 2020, 10:00am-3:30pm. Adults \$5.00, children under 12/scouts in uniform free. Contact Dennis Ingalls, 508-558-9883, email: dingalls@comcast.net

ME, LEWISTON: Kora Shriners Train Show. October 10, 2020. Kora Shriners, 11 Sabattus St., Lewiston, Maine. Admission \$4 per person. Kids under 12 FREE. Operating layouts and Dealers in many scales. Free parking, handicapped accessible, food on site. Space available. Contact Rob Selberg, 207-272-0390 rselberg@gmail.com

OH, MT. HOPE: CJ Trains Fall Train and Toy Show. Mt. Hope Event Center, 8076 St. Rt. 241, Zip 44660. Saturday, November 7, 2020, 10:00am-4:00pm. Admission: \$5.00, under 12/FREE. \$25.00/dealer table, 600+ 8' dealer tables. Contact: Jon Ulbright, PO Box 446, Wooster, OH 44691. 330-262-7488, cathijon@sssnet.com www.cjtrains.com (GPS info: 8076 St. Rt. 241, Millersburg, OH 44654)

OK, BIXBY: Greater Tulsa Area Train Show. Saturday, October 10, 2020, 9am-3pm. Bixby Community Center, 211 N. Cabaniss Avenue, Bixby, OK. Table sales, operating layouts, door prizes. Admission: \$5.00 adults, kids under 12 free. For information: Ron 918-869-7228 or www.ttos-soonerdiv.org

TX, TEMPLE: 38th Annual Temple Model Train Show by Centra Mod Inc. Central Texas Area Model Railroaders, Frank Mayborn Convention Center, 3303 North 3rd St. September 19-20, 2020, Saturday 10:00am-5:00pm and Sunday 10:00am-4:00pm. Adults \$7.00, Seniors & Military \$6.00, under 12 Free. FREE Parking! Contact: Craig Caddell, 254-760-3761

WA, SPOKANE: The Spokane Train Show, sponsored by the River City Modelers, on October 11, 2020 has been cancelled due to these uncertain times. We do plan on having our show on March 7, 2021 and will provide more information by January 2021. For information contact: Shirley at 509-991-2317 or shirley@busnws.com

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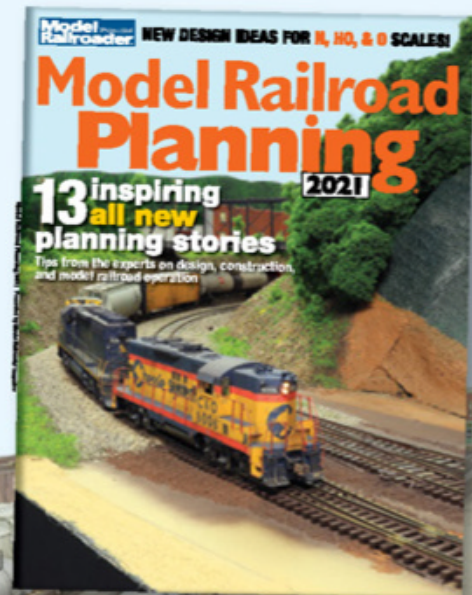
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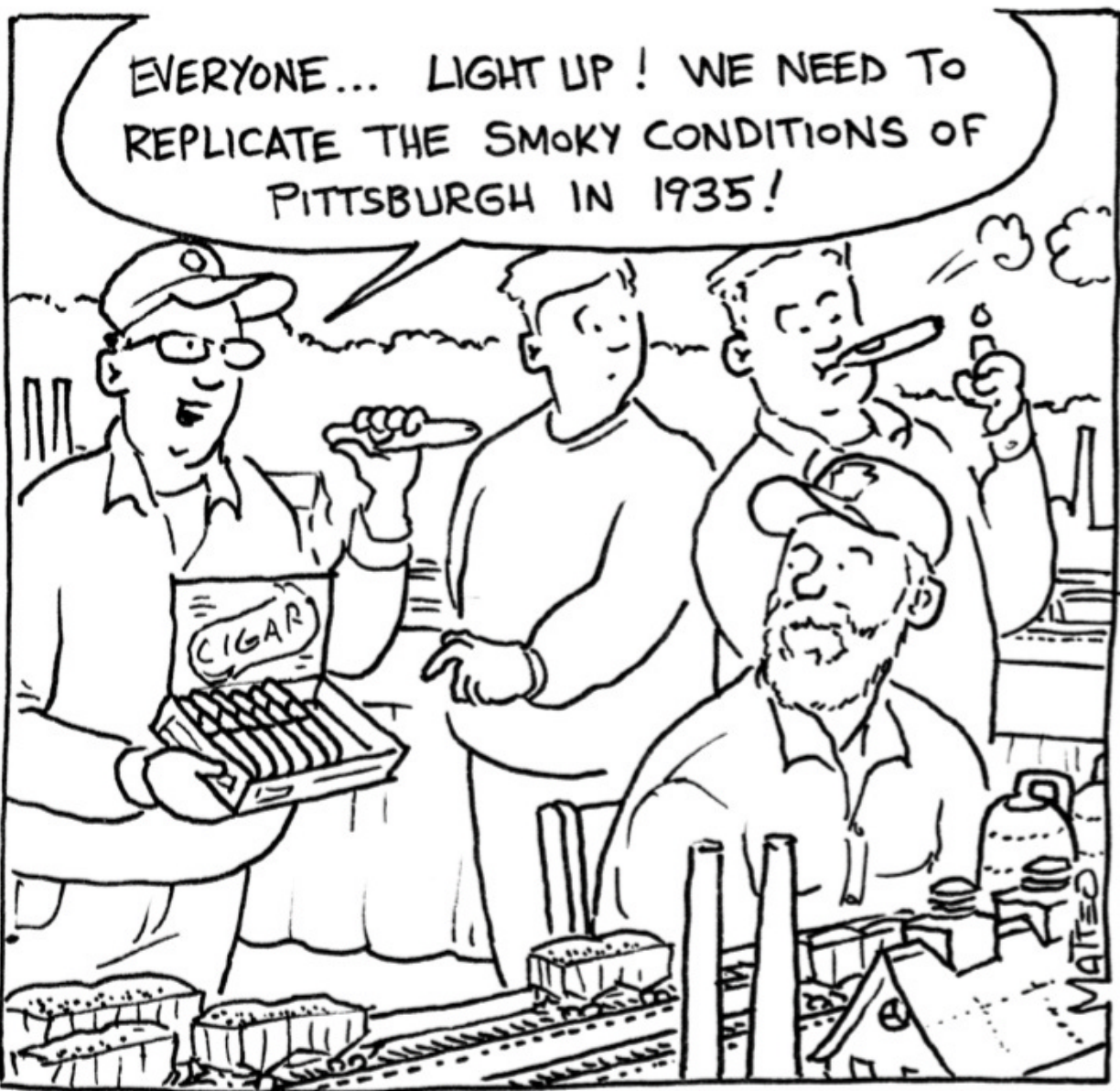


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Alternate uses of house cars



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I'm certainly not an expert

on freight cars, so this month's commentary is meant to start a conversation rather than to make definitive statements that you can take to the bank. My hope is that we can all benefit from those who are far more informed than I and are willing to share their knowledge with those of us who can benefit.

What started this quest was the accompanying photo from Chris Lantz, who took most of the photos of the late Bob Lucas's outstanding HO scale depiction of the Akron, Canton & Youngstown that was featured in *Model Railroad Planning 2019* ("Modeling an Ohio classic"). The photo shows a ventilated Atlantic Coast Line boxcar and an AC&Y stock car at an Ohio brickyard.

My dad spent most of his career working in the brick industry, and I never saw anything but steel boxcars, often 50-footers, being loaded with bricks. But I have seen photos of ventilated boxcars and stock cars at brickyards ready for loading with bricks or tiles, so it must have been relatively common practice. Moreover, Bob worked for the AC&Y and was fastidious in his modeling. So if he spotted such cars at

one or more of his brickyards, you can indeed take his example to the bank.

Freight car modeler and MRP author Clark Propst keeps records of such "unusual" uses of house cars and notes that he is aware of stock cars being lined with plywood and then loaded with grain. His lists also show stock cars loaded with flour and coke, and ventilated boxcars loaded with beet pulp, cement, lumber, clay, and railroad ties.

We're so used to seeing covered hoppers that it's easy to forget that before the late 1960s, grain was shipped from local elevators to processing plants in 40-foot boxcars. The largest industry on my railroad is the Swift soybean processing plant at Frankfort, Ind., today operated by ADM. Endless strings of steel boxcars arrived every day during the bean-harvest season; today, you see nothing but huge covered hoppers occupying those same tracks.

And that's just house cars. Consider something much more mundane: gondolas. Those who model coal-hauling railroads are well aware that black diamonds rode from mine to customer not only in hoppers but also

in gondolas. Many small towns had coal sheds that were clearly designed to receive coal manually shoveled from gons rather than conveyed upwards from pits under the tracks. Back when hiring labor was cheaper than buying machinery, this made good economic sense. So those who model the 1950s or an earlier period should take a close look at how home-heating fuel was delivered and stored. You may find that it arrived in gondolas rather than hopper cars.

Operation on my model railroad comprises a series of macro and micro steps. The macro steps are train movements, which involve first schedules published in employee timetables and then, as required, amendments in the form of train orders. The micro steps are individual car movements, which are governed by waybills and Empty Car Orders.

Before each session, I use a job aid to check to see

that each industry – grain elevators, brickyards, stock pens, gravel pits, etc. – has enough empty cars to meet expected loading demands. If not, I pull Empty Car Order forms from each industry's bill box and give them to the yardmaster. His job is to find suitable empty cars for loading by that particular industry and see that they are forwarded to the industries in a timely manner for loading.

The "MTYs" are often forwarded to a storage track in each town by a through freight, as too many empties would bog down the local. The local does the spotting when it arrives in each town, however.



MY YARD-MASTERS NOW HAVE A FEW MORE OPTIONS WHEN IT COMES TIME TO FIND EMPTIES TO SEND TO THE BRICKYARDS.
– TONY

Thanks to Chris's photo of Bob's brickyard, where a ventilated boxcar and a stockcar were spotted for loading with brick or tile, my yardmasters now know that they have a few more options when it comes time to find suitable empties to send to the brickyards at Cayuga and Veedersburg, Indiana. **MR**



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